

SECTION No. 1

LATHES

SLIDING, SURFACING AND SCREW-CUTTING.

Manufactured by

JOHN LANG & SONS LTD

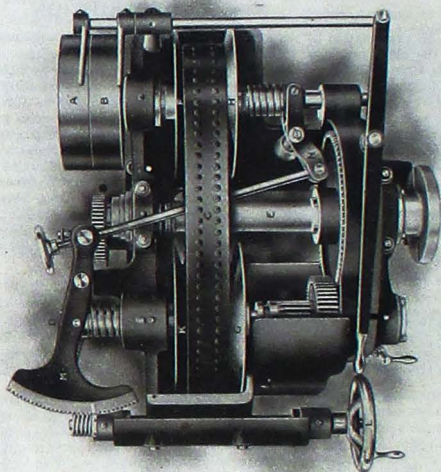
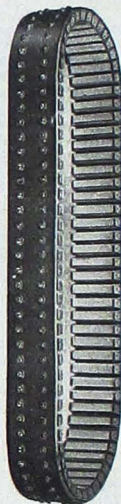
JOHNSTONE

ASSOCIATED BRITISH MACHINE TOOL MAKERS Ltd.
7, GROSVENOR GARDENS, LONDON, S.W. 1.



Lang's Patent Variable Speed Drive.

Belt should run easy when taking ordinary cuts. Hand wheel **Q** is used for tightening belt when taking heavier cuts.



No. 4001

DESCRIPTION.

WE have pleasure in showing a plan view of Lathe Headstock fitted with Lang's Patent Variable Speed Drive. A and B are the fast and loose pulleys, which are driven direct from the main shaft. C is a belt connecting the shaft, on which the fast pulley A is keyed, with the shaft D. This belt is of special design and is shown separately. It drives entirely by its bevelled edges through the cones seen in illustration. The shaft D is connected with the main spindle E either through a single or treble reduction by gearing. The cones F and G are stationary, while H and K are free to slide longitudinally, and are moved by levers M and N. When the hand-wheel L is revolved, longitudinal motion is conveyed to the cones K and H by the levers, M and N through the worm and quadrant seen in illustration. The levers are arranged so that as the cone H moves towards F, the cone K recedes from G. Thus the diameter of the driving part of cones H F becomes larger, while the driven part of cones K G becomes smaller, and by revolving hand-wheel L in the opposite direction the operation is reversed. It will thus be seen that while the speed of shaft, on which the fast pulley A is keyed, is constant, the speed of spindle E may be varied, as required, by hand-wheel L. A new and simple design of mechanism is fitted, by which either the single or treble reduction by gearing may be had by the movement of one lever. An important feature of this arrangement is that no wheels are in gear unless they are doing work.

AN EXPLANATION.

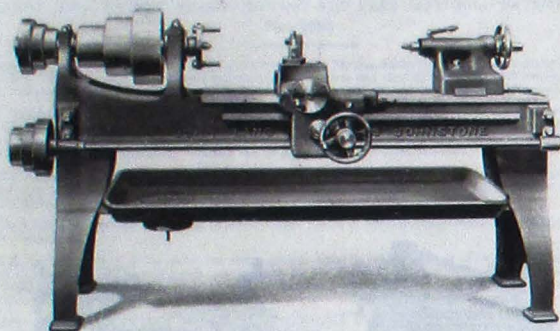
No illustration can give an adequate idea of the merits of this Drive, especially when applied to Surfacing and Boring Lathes, and in combination with Lang's Patent Automatic Speed-changing Mechanism. We therefore take this opportunity of cordially inviting prospective buyers to inspect these Lathes in daily operation at our works. We have large numbers fitted with this Patent Drive in our Turning Department, and they can be seen doing all classes of work, frequently with two or three tools cutting at one time, without giving notice of visit. At the same time it affords us great pleasure in stating, for the benefit of those who are unable to inspect these Lathes at work, that, of the many hundreds who have visited our establishment for the purpose of seeing this Drive doing daily duty, we cannot recall one instance where the visitor has not expressed himself most favourably with the results obtained.

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



6in. Centre Single-Geared Sliding Lathe.



No. 4002

THE above illustration shows a useful and convenient tool which has been designed for producing the lighter class of shafts and studs, such as are required in every engineering establishment. It has been thoroughly tested in our own works, and we can recommend it with every confidence.

THE BED is Lang's Patent Type of latest design, and is a distinct advance on our previous patent type already well known.

THE SADDLE has longitudinal guide about eight times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. The self-acting motion is by shaft in front of bed, and there are three changes of feed by cone; quick hand traverse by rack and pinion.

THE FAST HEADSTOCK is cast on bed, and arranged to admit a cone of large diameter, which is turned inside and balanced. The spindle is of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameter.

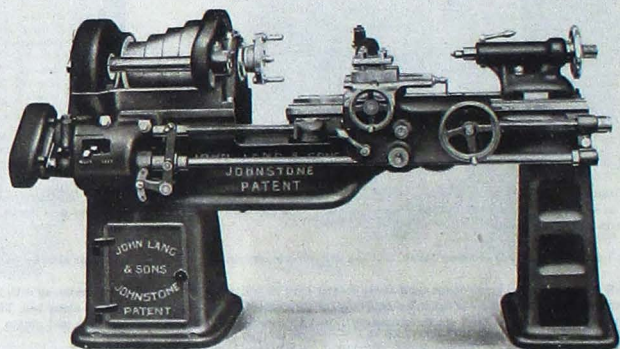
THE LOOSE HEADSTOCK rests on an inverted V on the bed, making it impossible to have side shake; the spindle has side adjustment by screw, for convenience in keeping centres of Lathe in correct alignment, and for taper turning; substantial friction grip for binding spindle; small oil-holder and pin for oiling centre.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; water pot and stand; counter gear, including improved adjustable self-oiling hanger bearings; shaft, cone, pair of pulleys, and belt-shifting apparatus; set of wrought-iron case-hardened screw-keys; pan for catching water and cuttings.

Length of bed	5ft. 6in.	Revs. per minute of countershaft	100
Admits between centres	27in.	Spindle speeds obtained	55, 100, 181
Width of bed on face	11in.	Approx. floor space required	6ft. 3 x 2ft. 6
Depth of bed on face	7in.	Approx. finished weight	2128 lbs.
Diam. of front bearing of spindle	3in.	Approx. weight packed for shipment	2876 lbs.
Diam., largest step of cone	12in.	Shipping measurement	80 cu. ft.
Diam., smallest step of cone	8in.	As illustrated; Code No.	0001
Width of each step on cone	4in.	With 1 1/2" hole through fasthead spindle,	
Diam. of countershaft pulleys	12in.	Code No.	0008
Width of countershaft pulleys	4in.		

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4003

6½ in. centre Sliding, Surfacing and Screw-Cutting Lathe

JOHN LANG & SONS LTD.

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6in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4003

THE illustration on opposite page shows our latest developments in Sliding, Surfacing, and Screw-cutting Lathes having ordinary step cone drive. We now build these Lathes embodying great power and rigidity combined with convenience in the manipulation of the various motions, thus allowing engineers to obtain the advantages of modern high-speed steel.

THE FAST HEADSTOCK is of new design with gearing at front and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced; the spindle is of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameter. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) It is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) It is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 12in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; counter-gear, including improved adjustable self-oiling hanger bearings; shaft cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 4 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Length of bed	6ft.	Dia. largest step of cone	12in. dia.
Admits between centres	2ft. 5	Dia. smallest step of cone	8in. dia.
Width of bed on face	11in.	Width of each step of cone	2 1/2in.
Width of bed on body	10in.	Dia. of countershaft pulleys	12in. dia.
Swings clear of bed	13in. diam.	Width of countershaft pulleys	3 1/2in.
Swings clear of saddle	8 1/2in. dia.	Revolutions per minute	120 r.p.m.
Gap admits in diameter	2 3/4in. dia.	H.P. required to drive (maximum)	4 h.p.
Gap admits in front of faceplate	7in.	Weight of bed per foot extra	168 lbs.
Dia. of front bearing of spindle ...	3in. dia.	Approximate finished weight	2378 lbs.
Length of front bearing of spindle ...	3 1/2in.	Approx. weight packed for shipment ...	3136 lbs.
Ratio of gearing in fasthead	64 to 1	Approx. measurement packed for shipment	75 cu. ft.
Standard feeds per rev. of spindle ...	1/16 1/8 1/4 1/2 in.	Floor space occupied. Bed 8ft. long ...	86in. x 32in.

LATHE AS ILLUSTRATED. CODE NO. 0003.

Modifications—	Extra Weight	Code No.	Code For extras	Description	Extra Weight	Code For Extras
With duplex double-gear fasthead	7 lbs.	0004	—	Adjustable steady rest	58 lbs.	07
12 speed, all-gear	224 lbs.	0005	—	Taper turning attachment	168 lbs.	08
Extra—	—	—	—	Sq. turret in place of ordinary rest	—	09
Straight bed (no gap)	—	—	01	Four additional feeds	32 lbs.	10
Sliding and Surfacing only ... less	112 lbs.	—	02	Pump, pan and pipe connections ...	178 lbs.	11
12in. dia independent four-jaw chuck	58 lbs.	—	03	... .. per ft. extra	46 lbs.	12
22in. dia. faceplate for use in gap	122 lbs.	—	04	Arranged for motor drive (constant speed motor)	672 lbs.	13
1 1/2in. dia. hole through spindle ...	—	—	05	.. .. (variable sp. motor)	672 lbs.	14
2 1/2in. dia.	—	—	06			

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4005

8½ in. centre Sliding, Surfacing and Screw-Cutting Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



8 1/2 in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT BED. PATENT CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No 4005

THE illustration on opposite page shows our latest developments in Sliding, Surfacing, and Screw-cutting Lathes having ordinary step cone drive. We now build these Lathes embodying great power and rigidity combined with convenience in the manipulation of the various motions, thus allowing engineers to obtain the advantages of modern high-speed steel.

THE FAST HEADSTOCK is of new design with gearing at front and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced; the spindle is of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameter. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gear, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 16in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; counter-gear, including improved adjustable self-oiling hanger bearings; shaft cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 6 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

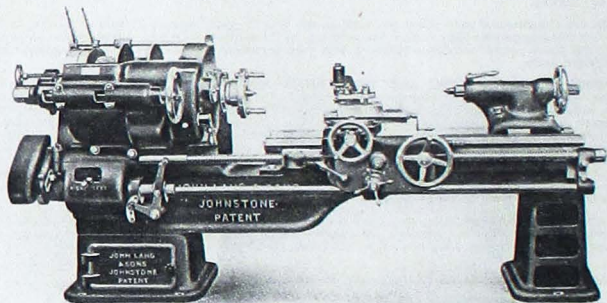
Length of bed	8ft.	Dia. largest step of cone	16in. dia.
Admits between centres	3ft. 5in.	Dia. smallest step of cone	7 1/2 in. dia.
Width of bed on face	15in.	Dia. of countershaft pulleys	14in. dia.
Width of bed on body	13 1/2 in.	Width of countershaft pulleys	3 1/2 in. dia.
Swings clear of bed	17in. dia.	Revolutions per minute	110 r.p.m.
Swings clear of saddle	11 1/2 in. dia.	H.P. required to drive (maximum)	6 b.h.p.
Gap admits in diameter	30 1/2 in. dia.	Approx. weight of bed per foot extra	280 lbs.
Gap admits from faceplate	9 1/2 in.	Approx. finished weight	4816 lbs.
Dia. of front bearing of spindle	4in. dia.	Approx. weight packed for shipment	5600 lbs.
Ratio of gearing in fasthead	7 to 1	Approx. measurement packed for shipment	170 cu. ft.
Standard feeds per rev. of spindle	1/16, 1/8, 1/4, 3/8, 1/2 in.	Floor space occupied. Bed 8ft. long	105in. x 44in.

LATHE AS ILLUSTRATED, CODE NO. 0007.

Modifications—	Extra Weight	Code No.	Code for Extras	Adjustable steady rest	Extra Weight	Code for Extras
With duplex double geared fasthead	—	0008	—	Taper turning attachment	61 lbs.	07
12 speed all-geared fasthead	336 lbs.	0009	—	Sq. turret in place of ordinary rest	236 lbs.	08
Extras—	—	—	—	Four additional feeds	56 lbs.	10
Straight bed (no gap)	—	—	01	Pump, pan and pipe connections	300 lbs.	11
Sliding and Surfacing only less	210 lbs.	—	02	" " " " per ft. extra	53 lbs.	12
16in. dia. independent four-jaw chuck	120 lbs.	—	03	Arranged for motor drive (constant speed motor)	896 lbs.	13
29in. dia. faceplate for use in gap	215 lbs.	—	04	(variable sp motor)	896 lbs.	14
1 1/2 in. dia. hole through spindle	—	—	05			
3 1/2 in. dia. hole through spindle	—	—	06			

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4006

8½ in. centre Sliding, Surfacing and Screw-Cutting Lathe
with Variable-speed Drive

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



8¹/₂in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT TREBLE-GEARED VARIABLE-SPEED DRIVE.

PATENT BED, PATENT SCREW-CUTTING AND FEED MOTIONS, PATENT LOOSE HEAD.

No. 4006

THE illustration on opposite page shows one type of our latest development in Sliding, Surfacing, and Screw-cutting Lathes. A number of new and important features have been added, including Lang's Patent Variable-speed Drive, placing the Lathe in a class of its own for power, rigidity, and convenience in the manipulation of feeds and speeds, the natural sequence being the economical production of correct work.

THE FAST HEADSTOCK has Lang's Patent Variable-speed Drive, by which the correct surface speed may be had for any diameter within the range of Lathe, however small the variation. A hand-wheel is conveniently placed so that the workman may get the correct cutting speed without handling belt. The same operation which changes the speed moves an index to show at all times the revolutions of spindle per minute. The type of head shown here has treble and single reduction by gearing, and is speeded to turn up to full diameter of gap. We draw special attention to the fact that even when running at the greatest speed there is a reduction by gearing of 3.5 to 1. With this arrangement the Lathes have greater power when turning smaller diameters than when belt is used driving direct to main spindle. This type of head is suitable for beds with or without gaps. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 16in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; set of case-hardened screw-keys.

No Counter Motion required for this Lathe.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 6 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

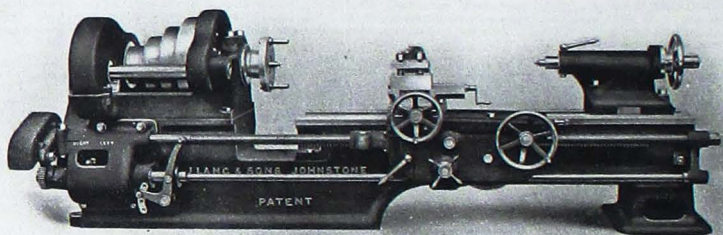
Length of bed	8ft.	Standard feeds per rev. of spindle	1/2, 3/8, 1/2 in.
Admits between centres	3ft. 5in.	Dia. of driving pulley	14in. dia.
Width of bed on face	15in.	Width of driving pulley	3in.
Width of bed on body	13 1/2 in.	Revs. per min. of driving pulley	300 r.p.m.
Swings clear of bed	17in. dia.	H.P. required to drive (maximum)	6 h.p.
Swings clear of saddle	11 1/2 in. dia.	Approx. weight per foot of bed extra	280 lbs.
Gap admits in diameter	30 1/2 in. dia.	Approx. finished weight	4816 lbs.
Gap admits in front of faceplate	9 1/2 in.	Approx. weight packed for shipment	5600 lbs.
Dia. of front bearing of spindle	4in. dia.	Approx. measurement packed for shipment	170 cu. ft.
Ratio of single gearing	3.5 to 1	Floor space occupied. Bed 8ft. long	11 1/2 in. x 45in.
Ratio of treble gearing	20 to 1		

LATHE AS ILLUSTRATED, CODE NO. 0010.

Modifications—	Extra Weight	Code No.	Code for Extras	Extra Weight	Code for Extras
With duplex double-geared headstock, less	518 lbs.	0008	—		
12 speed, all-geared headstock, less	182 lbs.	0009	—		
Extras—					
Straight bed (no gap)	—	—	01	Adjustable steady rest	61 lbs. 07
Sliding and Surfacing only, less	210 lbs.	—	02	Taper turning attachment	236 lbs. 08
16in. dia. independent four-jaw chuck	120 lbs.	—	03	Sq. turret in place of ordinary rest	— 09
29in. dia. faceplate for use in gap	215 lbs.	—	04	Four additional feeds	56 lbs. 10
1 1/2 in. hole in spindle	—	—	05	Pump, pan and pipe connections	300 lbs. 12
3 1/2 in. dia. hole in spindle	—	—	06	" " " " per ft. extra	53 lbs. 13
				Arranged for motor drive (constant speed motor)	896 lbs. 14

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4007

10 1/2 in. centre Sliding, Surfacing and Screw-Cutting Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



10¹/₂ in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4007

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THE FAST HEADSTOCK is of new design with gearing at front and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced; the spindle is of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameter. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 20in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; counter-gear, including improved adjustable self-oiling hanger bearings; shaft cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 10 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

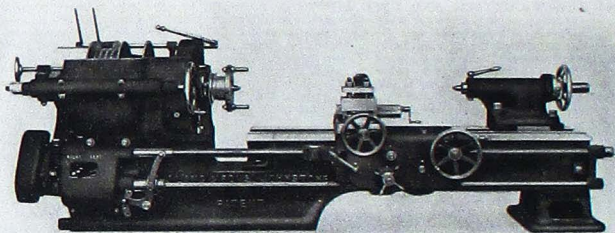
Length of bed	10ft.	Dia. largest step of cone	20in. dia.
Admits between centres	4ft.5	Dia. smallest step of cone	9in. dia.
Width of bed on face	19in.	Dia. of countershaft pulleys	16in. dia.
Width of bed on body	17 ¹ / ₂ in.	Width of countershaft pulleys	4 ¹ / ₂ in.
Swings clear of bed	21in. dia.	Revolutions per minute	120 r.p.m.
Swings clear of saddle	14 ¹ / ₂ in. dia.	H.P. required to drive (maximum)	10 h.p.
Gap admits in diameter	38in. dia.	Approx. weight of bed per ft. extra	836 lbs.
Gap admits from faceplate	12 ¹ / ₂ in.	Approx. finished weight	8064 lbs.
Dia. of front bearing of spindle	5in. dia.	Approx. weight packed for shipment	8960 lbs.
Ratio of gearing in fasthead	9.5 to 1	Approx. measurement packed for shipment	180 cu. ft.
Standard feeds per rev. of spindle	1 ¹ / ₂ , 1 ¹ / ₄ , 3 ¹ / ₈ in.	Floor space occupied. Bed 10ft. long	134in. x 52in.

LATHE AS ILLUSTRATED, CODE No. 0011.

Modifications—	Extra Weight	Code No.	Code for Extras	Extra Weight	Code No.	Code for Extras
With duplex double-gear fasthead	478 lbs.	0012	—	Adjustable steady rest	98 lbs.	07
.. 12 sp. all-gear fasthead	840 lbs.	0013	—	Self turning attachment	308 lbs.	08
Extras—				Self turret in place of ordinary rest	—	09
Straight bed (no gap)	—	01	—	Four additional feeds	84 lbs.	10
Sliding and Surfacing only, less	355 lbs.	02	—	Pump, pan and pipe connections	396 lbs.	11
20in. dia. independent four-jaw				.. .. per ft. extra	66 lbs.	12
chuck	224 lbs.	03	—	Arranged for motor drive (constant		
36in. dia. faceplate for use in gap	382 lbs.	04	—	speed motor)	1120 lbs.	13
2 ¹ / ₂ in. hole in spindle	—	05	—	.. .. (variable speed)		
4 ¹ / ₂ in. hole in spindle	—	06	—	motor)	1120 lbs.	14

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4008

10½in. centre Sliding, Surfacing and Screw-Cutting Lathe,
with Variable-speed Drive

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



10 $\frac{1}{2}$ in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT TREBLE-GEARED VARIABLE-SPEED DRIVE.

PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4008

THE illustration on opposite page shows one type of our latest development in Sliding, Surfacing, and Screw-cutting Lathes. A number of new and important features have been added, including Lang's Patent Variable-speed Drive, placing the Lathe in a class of its own for power, rigidity, and convenience in the manipulation of feeds and speeds, the natural sequence being the economical production of correct work.

THE FAST HEADSTOCK has Lang's Patent Variable-speed Drive, by which the correct surface speed may be had for any diameter within the range of Lathe, however small the variation. A hand-wheel is conveniently placed so that the workman may get the correct cutting speed without handling belt. The same operation which changes the speed moves an index to show at all times the revolutions of spindle per minute. The type of head shown here has treble and single reduction by gearing, and is speeded to turn up to full diameter of gap. We draw special attention to the fact that even when running at the greatest speed there is a reduction by gearing of 4 to 1. With this arrangement the Lathes have greater power when turning smaller diameters than when belt is used driving direct to main spindle. This type of head is suitable for beds with or without gaps. Spindle can be supplied hollow when required.

THE PATENT COMBINATION-LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 20in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; set of case-hardened screw-keys.

No Counter Motion required for this Lathe.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 10 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

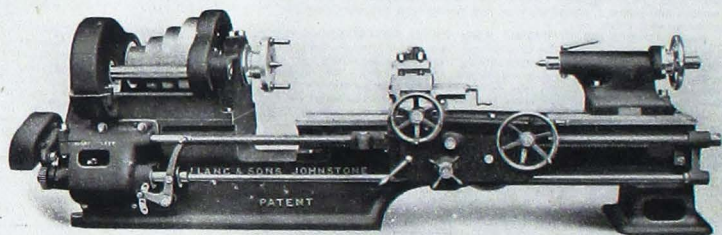
Length of bed	10ft.	Standard feeds per rev. of spindle	$1\frac{1}{2}$, $2\frac{1}{2}$, $3\frac{1}{2}$ in.
Admits between centres	4ft. 5	Dia. of driving pulley	16in. dia.
Width of bed on face	19in.	Width of driving pulley	3 $\frac{1}{2}$ in.
Width of bed on body	17 $\frac{1}{2}$ in.	Revs. per minute of driving pulley	300 r.p.m.
Swings clear of bed	21in. dia.	H.P. required to drive (maximum)	10 B.H.P.
Swings clear of saddle	14 $\frac{1}{2}$ in. dia.	Approx. weight of bed per foot extra	336 lbs.
Gap admits in dia.	36in. dia.	Approx. finished weight	8400 lbs.
Gap admits from faceplate	12 $\frac{1}{2}$ in.	Approx. weight packed for shipment	9298 lbs.
Dia. of front bearing of spindle	5in. dia.	Approx. measurement packed for shipment	180 cu. ft.
Ratio of single gearing	4 to 1	Floor space occupied. Bed 10ft. long	14 $\frac{1}{2}$ in. x 53in.
Ratio of treble gearing	27 to 1		

LATHE AS ILLUSTRATED. CODE NO. 0014.

Modifications—	Extra Weight	Code No.	Code for Extras	Extra Weight	Code No.	Code for Extras
With duplex double-geared fast-head, less	392 lbs.	0012	—	Adjustable steady rest	98 lbs.	07
.. 12 speed all-geared fasthead, less	28 lbs.	0013	—	Taper turning attachment	308 lbs.	08
Extras—				Sq. turret in place of ordinary rest	—	09
Straight bed (no gap)	—	01	—	Four additional feeds	84 lbs.	10
Sliding and surfacing only, less	355 lbs.	02	—	Pump, pan and pipe connections	396 lbs.	11
20in. dia. independent four-jaw chuck	224 lbs.	03	—	.. .. . per ft. extra	66 lbs.	12
36in. dia. faceplate for use in gap	382 lbs.	04	—	Arranged for motor drive (constant speed motor)	1120 lbs.	13
2 $\frac{1}{2}$ in. dia. hole in spindle	—	05	—			
4 $\frac{1}{2}$ in. dia. hole in spindle	—	06	—			

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4009

12½ in. centre Sliding, Surfacing and Screw-Cutting Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



12 $\frac{1}{2}$ in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4009

The illustration on opposite page shows our latest development in Sliding, Surfacing, and Screw-cutting Lathes having ordinary step cone drive. We now build these Lathes embodying great power and rigidity combined with convenience in the manipulation of the various motions, thus allowing engineers to obtain the advantages of modern high-speed steel.

THE FAST HEADSTOCK is of new design with gearing at front and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced; the spindle is of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameter. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 24in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; counter-gear, including improved adjustable self-oiling hanger bearings; shaft cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 14 b.h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

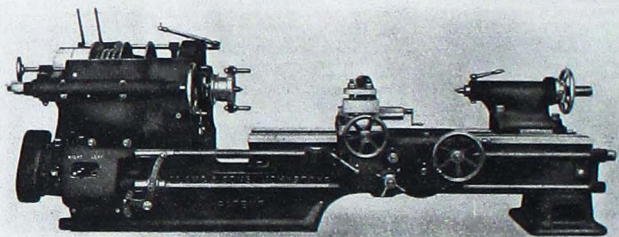
Length of bed	12ft.	Dia. largest step of cone	24in. dia.
Admits between centres	5ft. 7in.	Dia. smallest step of cone	10in. dia.
Width of bed on face	22 $\frac{1}{2}$ in.	Dia. of countershaft pulleys	20in. dia.
Width of bed on body	20 $\frac{1}{2}$ in.	Width of countershaft pulleys	5 $\frac{1}{2}$ in.
Swings clear of bed	25in. dia.	Revolutions per minute	130 r.p.m.
Swings clear of saddle	18in. dia.	H.P. required to drive (maximum)	14 b.h.p.
Gap admits in diameter	4 $\frac{1}{2}$ in. dia.	Approx. weight of bed per ft. extra	420 lbs.
Gap admits from faceplate	13in.	Approx. finished weight	11760 lbs.
Dia. of front bearing of spindle	6in. dia.	Approx. weight, packed for shipment	12788 lbs.
Ratio of gearing in headstock	10.4 to 1	Approx. measurement packed for shipment	240 cu. ft.
Standard feeds per rev. of spindle	$\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ in.	Floor space occupied. Bed 12ft. long	160in. x 60in.

LATHE AS ILLUSTRATED, CODE NO. 0015.

Modifications—	Extra Weight	Code No.	Code for Extras	Extra Weight	Code No.	Code for Extras
With duplex double-gear'd fast-h'd	520 lbs.	0016	—	165 lbs.	—	07
12 speed all-gear'd fasthead	1248 lbs.	0017	—	396 lbs.	—	08
Extra—				Sq. turret in place of ordinary rest	—	09
Straight bed (no gap)	—	—	01	Four additional feeds	116 lbs.	10
Sliding and Surfacing only, less	487 lbs.	—	02	Pump, pan and pipe connections	524 lbs.	11
24in. dia. independent four-jaw				" " " " per ft. extra	81 lbs.	12
chuck	337 lbs.	—	03	Arranged for motor drive (constant		
42in. dia. faceplate for use in gap	607 lbs.	—	04	speed motor)	1120 lbs.	13
24in. dia. hole in spindle	—	—	05	" " " " (variable speed		
5 $\frac{1}{2}$ in. dia. hole in spindle	—	—	06	motor)	1120 lbs.	14

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4010

12½ in. centre Sliding, Surfacing and Screw-Cutting Lathe
with Variable-speed Drive

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



12 $\frac{1}{2}$ in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT TREBLE-GEARED VARIABLE-SPEED DRIVE.
PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4010

THE illustration on opposite page shows one type of our latest development in Sliding, Surfacing, and Screw-cutting Lathes. A number of new and important features have been added, including Lang's Patent Variable-speed Drive, placing the Lathe in a class of its own for power, rigidity, and convenience in the manipulation of feeds and speeds, the natural sequence being the economical production of correct work.

THE FAST HEADSTOCK has Lang's Patent Variable-speed Drive, by which the correct surface speed may be had for any diameter within the range of Lathe, however small the variation. A hand-wheel is conveniently placed so that the workman may get the correct cutting speed without handling belt. The same operation which changes the speed moves an index to show at all times the revolutions of spindle per minute. The type of head shown here has treble and single reduction by gearing, and is speeded to turn up to full diameter of gap. We draw special attention to the fact that even when running at the greatest speed there is a reduction by gearing of 4 to 1. With this arrangement the Lathes have greater power when turning smaller diameters than when belt is used driving direct to main spindle. This type of head is suitable for beds with or without gaps. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of it being or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe: these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 2 $\frac{1}{2}$ in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; set of case-hardened screw-keys.

No Counter Motion required for this Lathe.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 14 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

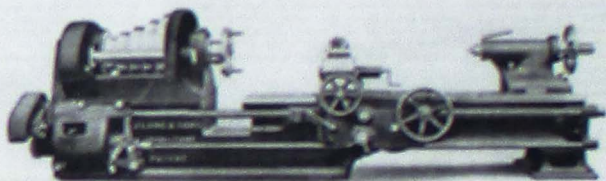
Length of bed	12ft.	Standard feeds per rev. of spindle	14	in.
Admits between centres	5ft. 7in.	Dia. of driving pulley	20in.	dia.
Width of bed on face	22in.	Width of driving pulley	5in.	
Width of bed on body	20in.	Revolutions per minute of driving pulley	300	r.p.m.
Swings clear of bed	25in. dia.	H.P. required to drive (maximum)	14	h.p.
Swings clear of saddle	18in. dia.	Approx. weight of bed per ft. extra	420	lbs.
Gap admits in diameter	45in. dia.	Approx. finished weight	11984	lbs.
Gap admits from faceplate	13in.	Approx. weight packed for shipment	12830	lbs.
Dia. of front bearing of spindle	6in. dia.	Approx. measurement, packed for shipment	240	cu. ft.
Ratio of single gearing	4 to 1	Floor space occupied. Bed 12ft. long	170in. x 62in.	
Ratio of treble gearing	30 to 1			

LATHE AS ILLUSTRATED, CODE No. 0018.

Modifications—	Extra Weights	Code No.	Code for Extras		Extra Weight	Code No.	Code for Extras
With duplex double-gearled fast-head, <i>less</i>	810 lbs.	0016	—	Adjustable steady rest	185 lbs.	—	07
12 speed all-gearled fasthead	112 lbs.	0017	—	Taper turning attachment	396 lbs.	—	08
Extras—				Sq. turret in place of ordinary rest	116 lbs.	—	09
Straight bed (no gap)	—	—	01	Four additional feeds	116 lbs.	—	10
Sliding and Surfacing only, <i>less</i>	487 lbs.	—	02	Pump, pan and pipe connections	524 lbs.	—	11
24in. dia. independent four-jaw chuck	337 lbs.	—	03	Arranged for motor drive (constant speed motor)	81 lbs.	—	12
42in. dia. faceplate for use in gap	607 lbs.	—	04		1120 lbs.	—	13
2in. hole in spindle	—	—	05				
5in. dia. hole in spindle	—	—	06				

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW.



No. 4511

15 1/2 in. centre Sliding, Surfacing and Screw-Cutting Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



15¹/₂ in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4011

THE illustration on opposite page shows our latest developments in Sliding, Surfacing, and Screw-cutting Lathes having ordinary step cone drive. We now build these Lathes embodying great power and rigidity combined with convenience in the manipulation of the various motions, thus allowing engineers to obtain the advantages of modern high-speed steel.

THE FAST HEADSTOCK is of new design with gearing at front and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced; the spindle is of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameter. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design: it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) It is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) It is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing for four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) with Whitworth pitch lead screw, a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw when cutting all threads shown on plate, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 30in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; counter-gear, including improved adjustable self-oiling hanger bearings; shaft cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 20 b.h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

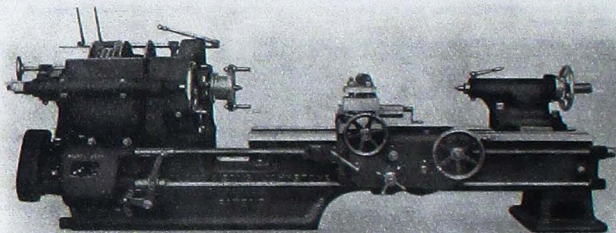
Length of bed	15ft.	Dia. of largest step of cone	30in. dia.
Admits between centres	7ft. 1in.	Dia. of smallest step of cone	11in. dia.
Width of bed on face	28in.	Dia. of countershaft pulleys	24in. dia.
Width of bed on body	25 ¹ / ₂ in.	Width of countershaft pulleys	5 ¹ / ₂ in.
Swings clear of body	31in. dia.	Revs. per minute	130 r.p.m.
Swings clear of saddle	22 ¹ / ₂ in. dia.	H.P. required to drive (maximum)	20 b.h.p.
Gap admits in diameter	55in. dia.	Approx. weight of bed per ft. extra	616 lbs.
Gap admits from faceplate	20in.	Approx. finished weight	21280 lbs.
Dia. of front bearing of spindle	7 ¹ / ₂ in. dia.	Approx. weight packed for shipment	23744 lbs.
Ratio of gearing in fasthead	12 to 1	Approx. measurement packed for shipment	450 cu. ft.
Standard feeds per rev. of spindle	1/16, 1/8, 1/4, 1/2 in.	Floor space occupied. Bed 15ft. long	199in. x 72in.

LATHE AS ILLUSTRATED, CODE NO. 0019.

Modifications—	Extra Weight	Code No.	Code for Extras	Extra Weight	Code No.	Code for Extras
With duplex double-gear fast-h'd	784 lbs.	0020	—	280 lbs.	—	08
.. 12 speed all-gear'd ..	2716 lbs.	0021	—	498 lbs.	—	07
Extras—	—	—	—	—	—	—
Sq. turret in attachment...	—	—	—	175 lbs.	—	08
Four additional feeds ...	—	—	—	782 lbs.	—	09
Pump, pan and pipe connections...	—	—	—	98 lbs.	—	10
Arranged for motor drive (constant speed motor) ...	596 lbs.	—	03	1344 lbs.	—	11
45in. dia. faceplate for use in gap	852 lbs.	—	04	—	—	—
5 ¹ / ₂ in. dia. hole in spindle ...	—	—	05	1344 lbs.	—	12

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4012

15½ in. centre Sliding, Surfacing and Screw-Cutting Lathe
with Variable-speed Drive

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



15 $\frac{1}{2}$ in. Centre Powerful Sliding, Surfacing, and Screw-Cutting Lathe.

LANG'S PATENT TREBLE-GEARED VARIABLE-SPEED DRIVE.
PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.
No. 4012

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THE FAST HEADSTOCK has Lang's Patent Variable-speed Drive, by which the correct surface speed may be had for any diameter within the range of Lathe, however small the variation. A hand-wheel is conveniently placed so that the workman may get the correct cutting speed without handling belt. The same operation which changes the speed moves an index to show at all times the revolutions of spindle per minute. The type of head shown here has treble and single reduction by gearing, and is speeded to turn up to full diameter of gap. We draw special attention to the fact that even when running at the greatest speed there is a reduction by gearing of 4.5 to 1. With this arrangement the Lathes have greater power when turning smaller diameters than when belt is used driving direct to main spindle. This type of head is suitable for beds with or without gaps. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it has substantial friction grip for binding spindle, and small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width; especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand-traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

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ADDITIONAL PARTS SUPPLIED. Adjustable travelling stay; duplex driver; face-plate 30in. diameter; set of change-wheels for screwing standard Whitworth pitches; index plate showing wheels required for the different pitches; set of case-hardened screw-keys.

No Counter Motion required for this Lathe.

LATHE can be arranged for Motor Drive, see page 31. Motor required, 20 h.p.

PRINCIPAL DIMENSIONS AND WEIGHTS.

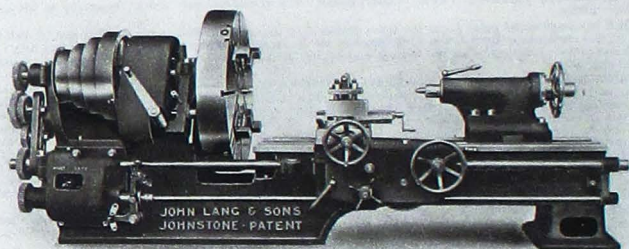
Length of bed	15ft.	Standard feeds per rev. of spindle	1/4, 1/8, 1/16, 1/32 in.
Admits between centres	7ft. lin.	Dia. of driving pulley	24in. dia.
Width of bed on face	28in.	Width of driving pulley	6in.
Width of bed on body	25 $\frac{1}{2}$ in.	Revs. per minute of driving pulley	300 r.p.m.
Swings clear of bed	31in. dia.	H.P. required to drive (maximum)	20 b.h.p.
Swings clear of saddle	22 $\frac{1}{2}$ in. dia.	Approx. weight of bed per ft. extra	618 lbs.
Gap admits in diameter	55in. dia.	Approx. finished weight	21840 lbs.
Gap admits from faceplate	29in.	Approx. weight packed for shipment	23744 lbs.
Dia. of front bearing of spindle	7 $\frac{1}{2}$ in. dia.	Approx. measurement packed for shipment	450 cu. ft.
Ratio of single gearing	4.5 to 1	Floor space occupied. Bed 15ft. long	211in. x 81in.
Ratio of treble gearing	36 to 1		

LATHE AS ILLUSTRATED, Code No. 0022.

Modifications—	Extra Weight	Code No.	Code for Extras	Extra Weight	Code No.	Code for Extras
With duplex double-gear fast'd, less	1456 lbs.	0020	—	Adjustable steady rest	280 lbs.	06
12 speed all-gear fasthead	476 lbs.	0021	—	Taper turning attachment	498 lbs.	07
Extras—				Sq. turret in place of ordinary rest	—	08
Straight bed (no gap)	—	—	01	Four additional feeds	175 lbs.	09
Sliding and Surfacing only, less	793 lbs.	—	02	Pump, pan and pipe connections	782 lbs.	10
30in. dia. independent four-jaw chuck	596 lbs.	—	03	" " " " per ft. extra	98 lbs.	11
54in. dia. faceplate for use in gap	952 lbs.	—	04	Arranged for motor drive (constant speed motor)	1344 lbs.	12
33in. dia. hole in spindle	—	—	05			

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4013

Treble Geared Rapid Reduction Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Treble-Geared Rapid Reduction Lathes.

LANG'S PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.
No. 4013

THE illustration on opposite page shows our latest design of high speed Cutting Lathes. We now build a number of sizes embodying enormous power and great rigidity, allowing engineers to obtain full advantage of modern high-speed steel when turning rough forgings, shafting, etc.

THE FAST HEADSTOCK is unique for belt power and arrangement of gearing. A special feature of the latter is the arrangement for cutting coarse pitch screws or worms. The cone is on a side shaft which is geared to the main spindle at a ratio of 1 to 5. This cone shaft may also be geared direct to the leading screw by change wheels. Thus, when equal change wheels are on the cone shaft and leading screw, the pitch of screw being cut will be 2 1/2 in., with a leading screw 1/4 in. pitch. With this arrangement the strain on change wheels is very much less than when screw is driven direct from main spindle. A brake is fitted on cone for stopping spindle quickly. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting. With this design it is impossible to have side shake. Substantial friction grip is fitted for binding spindle, also oil holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width, especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along the bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons: (1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathes is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while Lathes is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathes; these may be altered by change gears, every alteration allowing of four different pitches being cut, while the feeds for surfacing and sliding remain constant and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED—Four-jaw combination chuck and faceplate; adjustable travelling stay; set of change wheels for screwing standard Whitworth pitches; index plate, showing wheels required for the different pitches; counter-gear, including improved adjustable self-locking hanger bearings, shaft, cone, fast and loose pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

Lathes can be arranged for Motor Drive, see page 31.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Height of centres	11 1/2 in.	13 1/2 in.	16 1/2 in.	Height of centres	11 1/2 in.	13 1/2 in.	16 1/2 in.
Length of bed	11ft.	13ft.	16ft.	Diam. of largest step of cone ...	20in.	23in.	30in.
Admits between centres	4ft. 1 1/2 in.	6ft. 2 1/2 in.	7ft. 8 1/2 in.	Diam. of smallest step of cone ...	12in.	14in.	18in.
Width of bed on face	19in.	22 1/2 in.	28in.	Width of each step	3 1/2 in.	4in.	5in.
Width of bed on body	17 1/2 in.	20 1/2 in.	25 1/2 in.	Stand, feeds per rev. of spindle	1 1/2 3/4 1/2 1/4	1 3/4 1 1/4 1/2	1 3/4 1 1/4 1/2
Swings clear of bed	23in.	27in.	33in.	Diam. of fast and loose counter-shaft pulleys	16in.	20in.	24in.
Swings clear of saddle	18 1/2 in.	19 1/2 in.	23in.	Width	4 1/2 in.	5 1/2 in.	5 1/2 in.
Gap admits in diameter	40in.	47in.	57in.	Speed	300	300	300
Gap admits from faceplate	10 1/2 in.	12 1/2 in.	18in.	Approx. finished weight	1097 1/2 lbs.	1467 1/2 lbs.	2632 1/2 lbs.
First gear ratio	5 to 1	5 to 1	6 to 1	Approx. weight packed for ship.	1209 1/2 lbs.	1601 1/2 lbs.	2858 1/2 lbs.
Second gear ratio	17 to 1	20 to 1	23 to 1	Approx. meas. packed for ship.	210 c.ft.	300 c.ft.	490 c.ft.
Third gear ratio	70 to 1	80 to 1	90 to 1	Approx. floor space occupied ...	152 x 52"	171 x 54"	210 x 69"
Diam. of four-jaw chuck	38in.	48in.	55in.	Approx. weight of bed per ft. ex.	358lbs.	420lbs.	616lbs.
Diam. of front bearing of spindle	6in.	7in.	9in.	Hole in spindle	2 1/2 in.	2 1/2 in.	3 1/2 in.
H.P. required at max. duty ...	12 b.h.p.	15 b.h.p.	20 b.h.p.				

MODIFICATIONS AND EXTRAS.

Height of centres	11 1/2 in.	13 1/2 in.	16 1/2 in.	Height of centres	11 1/2 in.	13 1/2 in.	16 1/2 in.	
Lathe as illustrated	Code No. 0093	Code for Ex't'r. 0029	Code No. 0027	Taper turning attachment No. 4023	—	06	—	06
With 12-sp. all geared head-stock, No. 4020	0094	0028	0028	Sq. turret in place of ordinary rest, No. 4022	—	07	—	07
Extra—				Four additional feeds	—	08	—	08
Straight bed (no gap or chk.)	—	01	—	Pump, pan and pipe con.	—	09	—	09
Sliding and Surfacing only ...	—	02	—	Ditto per ft. extra	—	10	—	10
Hole in spindle	—	03	—	Arranged for motor drive, (constant speed motor)	—	11	—	11
Duplex slides	—	04	—	Ditto (variable sp. motor)	—	12	—	12
Adjust. stationary stay No. 4024	—	05	—					

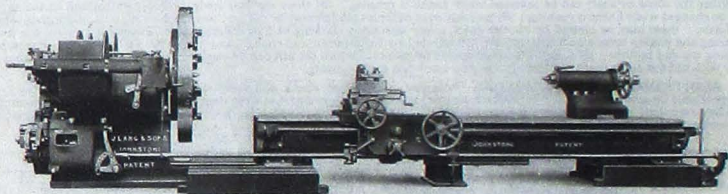
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Typho-Geared Rapid Reversion Lathes

The Typho-Geared Rapid Reversion Lathe is a machine of great capacity and accuracy, designed for the rapid production of work of all kinds. It is particularly adapted for the turning of long shafts, and for the production of work of all kinds. The machine is of a simple and robust construction, and is capable of working at a high speed. It is a machine of great capacity and accuracy, and is particularly adapted for the turning of long shafts, and for the production of work of all kinds. The machine is of a simple and robust construction, and is capable of working at a high speed.



No. 4014

Lathes with Sliding Bed

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Lathes with Sliding Bed

LANG'S PATENT BED. PATENT SCREW-CUTTING AND FEED MOTIONS. PATENT LOOSE HEAD.

No. 4014

THE illustration on opposite page shows a design of Lathe suitable for a wide range of work. Ordinary centre work can be done with the bed moved close up to chuck, and, when work of large diameter has to be finished in the gap, the bed can be moved to the most suitable position by screw and ratchet.

THE FAST HEADSTOCK shown is Lang's Patent Treble-gear Variable-speed Type, with which the correct surface speed may be had for any diameter within the range of Lathe, however small the variation. A hand-wheel is conveniently placed so that workman may get the correct cutting speed without handling the belt. Powerful Treble-gear Step-cone Headstock or All-gear Fast Headstock can be fitted if desired. Spindle can be supplied hollow when required.

THE PATENT COMBINATION LOOSE HEADSTOCK is of an entirely new type, combining the advantages of one having side adjustment for taper turning with one bolted solid to the bed for heavy cutting; it rests on a V on bed, making it possible to take up wear; substantial friction grip for binding spindle; small oil-holder and pin for oiling centre.

THE BED IS LANG'S PATENT TYPE, of latest design; it is of extraordinary width, especially on body, giving great rigidity for heavy cutting.

THE SADDLE has longitudinal guide about ten times greater than its width, instead of twice or thereby, as with the ordinary type of bed. With this arrangement there is much less tendency for the saddle to twist as it is being moved along bed. Quick hand traverse by rack and pinion; compound slide rest having large bearing surfaces for wear, and swivel arrangement for conical turning with machine-divided index.

THE PATENT SCREW-CUTTING AND FEED MOTIONS are worthy of more than ordinary investigation for the following reasons:—(1) It is impossible to screw-cut while either sliding or surfacing feeds are in action; (2) it is impossible to engage either sliding or surfacing feeds while screw-cutting; (3) it is impossible to put sliding and surfacing feeds into action at one time; (4) either the screw or shaft can be reversed while Lathe is running; (5) there are four feeds, both for sliding and surfacing, which may be changed while Lathe is running; (6) four screws of different pitches may be cut, any one of which may be had without stopping the Lathe; these may be altered by change gears, every alteration allowing of four different pitches being cut, while the feeds for surfacing and sliding remain constant, and are not affected by the alteration of change gears; (7) nut for leading screw is in halves, gripping top and bottom; (8) a dial is fitted on saddle by means of which the nut can be engaged at correct turn of screw, thus doing away with the old chalk mark method of engaging nut when screw-cutting.

ADDITIONAL PARTS SUPPLIED.—Adjustable travelling stay; combination four-jaw chuck and faceplate; set of change-wheels for screwing standard Whitworth pitches; index plate, showing wheels required for the different pitches; set of case-hardened screw-keys.

LATHE can be arranged for Motor Drive, see page 31.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Height of centres	12 $\frac{1}{2}$ in.	15 $\frac{1}{2}$ in.		
Length of movable bed	12ft.	15ft.		
Maximum distance between centres	12ft.	14ft. 9		
Diameter swung in gap	5ft.	6ft.		
Distance admitted from face of chuck when bed is farthest back	3ft.	3ft.		
H.P. required at maximum duty	14 b.h.p.	20 b.h.p.		
Approximate finished weight	19040 lbs.	30240 lbs.		
Approximate weight packed for shipment	21280 lbs.	33040 lbs.		
Approximate measurement packed for shipment	650 cu. ft.	900 cu. ft.		
Approximate weight per foot of bed extra	420 lbs.	610 lbs.		
	Code No.	Code for Extras	Code No.	Code for Extras
Lathe as illustrated	0089	—	0083	—
MODIFICATIONS.—With treble geared high-speed fasthead	0080	—	0083	—
With 12 speed all-gear fasthead	0081	—	0084	—
EXTRAS.—Sliding and surfacing motions only	—	01	—	01
Hole in spindle, 12 $\frac{1}{2}$ in. lathe, 2 $\frac{1}{2}$ in. diameter, 15 $\frac{1}{2}$ in. lathe, 3 $\frac{1}{2}$ in. dia.	—	02	—	02
Adjustable steady rest	—	03	—	03
Taper turning attachment	—	04	—	04
Square turret in place of ordinary rest	—	05	—	05
Pillar rest and bottom part of slide rest, to turn full diameter in gap	—	06	—	06
Arranged for motor drive, constant speed motor	—	07	—	07

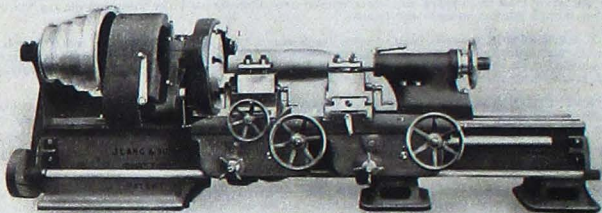
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



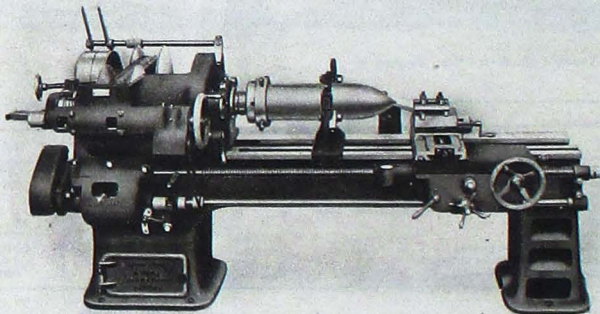
Lathes for Turning Projectiles.

16in. CENTRE SHELL-TURNING LATHE. CODE No 0035



No. 4015

8in. CENTRE SHELL POINTING LATHE. CODE No. 0036



No. 4016

SEND US YOUR ENQUIRIES

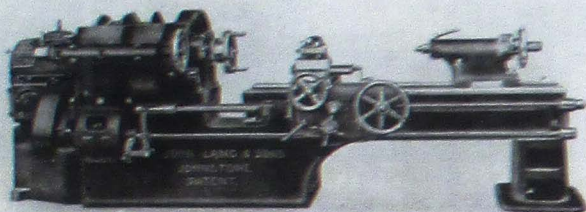
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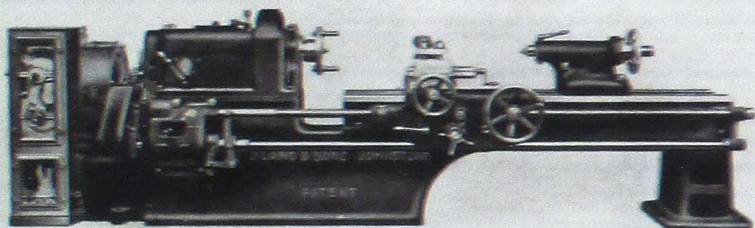
Motor-Driven Lathes.

Constant-speed Motor and Patent Variable-speed Headstock.



No. 4017

Variable-speed Motor and Geared Headstock.



216

No. 4018

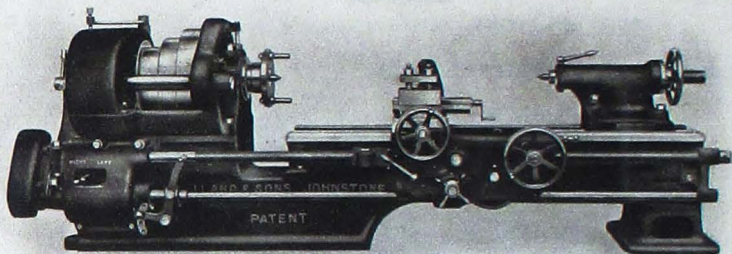
For Code Numbers, see preceding Pages.

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Duplex Double-Geared Headstock Lathes.



No. 4019

FROM the experience gained by the use of modern high-speed steel we have decided to place on the market a range of Lathes fitted with Duplex Double-geared Step-cone Headstocks. These Headstocks possess a number of excellent features not embodied in the ordinary double-geared type. The speeds are correctly proportioned to give an equal percentage of variation at each change. The cone steps are large in diameter and suitable for wide belts, special attention being drawn to the large diameter of smallest step. The gearing is placed at the front, and there are two distinct ratios. This last point is a most important one in these High-speed Lathes. It enables work of smaller diameters to be operated on with an approximate ratio of 3 or 4 to 1, giving greater power than when driving through belt only without gear, and higher cutting speeds than is possible with the ordinary Double-geared Headstocks having only one ratio approximately 8 or 10 to 1. The larger ratio is also greater than on the ordinary type of Double-geared Headstocks, giving increased power for operating on larger diameters.

We append herewith the principal dimensions, to allow customers to judge the power embodied in these Headstocks.

Height of centres	6½ in.	8½ in.	10½ in.	12½ in.	15 in.
Diameter of largest step of cone	12 in.	16 in.	20 in.	24 in.	30 in.
Diameter of smallest step of cone	8 in.	11 in.	13 in.	15½ in.	18 in.
Width of each step	3 in.	3½ in.	4½ in.	4½ in.	5½ in.
Small ratio of gearing	3 to 1	3.2 to 1	3.6 to 1	3.9 to 1	4.3 to 1
Large ratio of gearing	9 to 1	10.2 to 1	13 to 1	15.3 to 1	18.3 to 1
Number of spindle speeds with single speed counter motion	9	9	9	9	12

For Code Numbers, see preceding Pages.

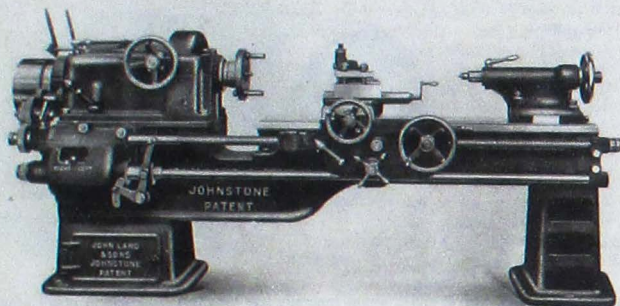
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



All-Gear Headstock Lathes.

ALL-GEAR HEADSTOCK LATHE.



No. 4020

THE success of Lathes fitted with **Lang's Patent Variable-speed Headstock** has shown engineers the advantage of direct driving without the intervention of a countershaft. A natural development, when continuous heavy cuts are to be taken at high speeds, is the **Constant Speed Pulley All-gear Headstock Lathe**, as illustrated, which shows an 8in. Centre Lathe.

With this Headstock the belt speed is constant, giving full power on all diameters within the range of Lathes. The following points are worthy of special attention —

- (1) There are twelve spindle speeds in correct geometrical progression between the limits given below for the different sizes manufactured.
- (2) There are no friction clutches.
- (3) The only gears in mesh are those transmitting power.
- (4) The drive is in every case from pinion to wheel, and never wheel to pinion.
- (5) All wheels are made of steel and run in oil.
- (6) When working on large diameters the last drive is through a pinion driving into internal wheel.
- (7) Hand-wheel and lever control all twelve speeds.

This design of Fast Headstock may be fitted to any of our standard Lathes, and we give below the principal dimensions.

Height of centres	6½in.	8½in.	10½in.	12½in.	15½in.
Diameter of fast and loose pulley	10in.	12in.	14in.	16in.	18in.
Width of each fast and loose pulley	4½in.	5½in.	6½in.	7½in.	8½in.
Revolutions per minute of fast pulley	400	400	400	400	400
Highest spindle speed in R.P.M.	256	200	170	154	100
Lowest spindle speed in R.P.M.	9	7.2	5.6	4.75	3.15
Diameter of front bearing	3in.	4in.	6in.	7in.	9in.

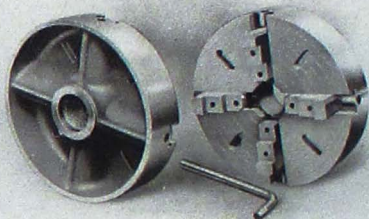
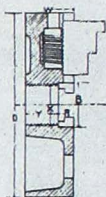
For Code Numbers, see preceding Pages.

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW.



4-Jaw Independent Lathe Chucks.



No. 4021

THE adoption of Premium and Bonus Systems generally has benefited engineers in many ways which are not obvious to a casual observer. A typical instance may be noted in the case of the four-jawed chuck. The well-known design might have been used unchallenged had not the extra strains imposed by Premium Systems disclosed their weakness. For some time we have been experimenting with various designs and strengths, and have now pleasure in showing in the accompanying illustration views of the type finally adopted. The body casting is solid and is not weakened by the oblong slot of the older style. We manufacture by jigs all sizes suitable for our standard Lathes, and shall be glad to send full particulars and prices on receipt of enquiries.

DIMENSIONS OF CHUCKS IN INCHES.										
	For 6in. Centre Lathe.	Code No.	For 8in. Centre Lathe.	Code No.	For 10in. Centre Lathe.	Code No.	For 12in. Centre Lathe.	Code No.	For 15in. Centre Lathe.	Code No.
	inches.		inches.		inches.		inches.		inches.	
D	10.	0037	16	0043	20	0049	20	0056	30	0063
	12	0038	18	0044	24	0050	24	0057	32	0064
	14	0039	20	0045	26	0051	28	0058	36	0065
	15	0040	21	0046	30	0052	30	0059	42	0066
	16	0041	24	0047	33	0053	32	0060	48	0067
	18	0042	28	0048	36	0054	36	0061		
					42	0055	48	0062		
W	3½		4		5		6½		7	
B	2½		3½		4½		5½		6½	
R	1		1½		1½		1½		1½	

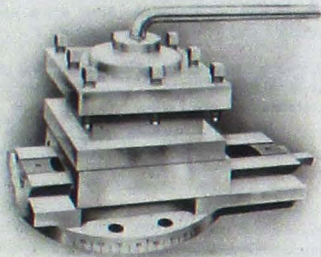
X and Y Screwed to fit Spindle Nose from Gauge sent us.

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW.



Square Turret for Centre Lathes.



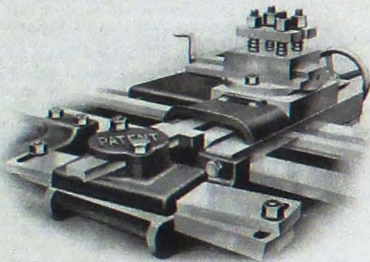
No. 4022

MANY engineering firms who appreciate the advantages of modern Hollow Spindle Capstan Lathes have not a sufficient quantity of similar parts to allow of their installation. We illustrate here a Square Turret for carrying four tools, which can take the place of the ordinary slide rest. With this Turret there is no necessity for workman to change tools for every operation. Thus, when a number of duplicate pieces require machining, some of the advantages of a special lathe may be obtained by the use of a standard machine.

With the design shown, one movement of lever loosens the square body and releases the locating pin, allowing any tool to be moved into position required. All Square Turrets are made from steel forgings, and can be fitted to any of our Lathes.

For Code Numbers, see preceding Pages.

Patent Taper Turning Attachment.



No. 4023

THE accompanying illustration shows a new design of Taper Turning Attachment which we have recently patented, and which can be fitted to our Lathes. It has a number of features not embodied in any other design at present made.

This attachment allows workman to have the full use of Swivel Slide, as the cut is put on and off by Saddle Screw, thus doing away with the necessity for turning the Swivel Slide at right angles. The change from parallel to taper turning, or vice versa, can be easily and quickly effected by the average workman.

The Bracket carrying tapering slide is fixed to saddle of Lathe, and travels with it. By this arrangement a tapered part may be turned anywhere in the length of bed.

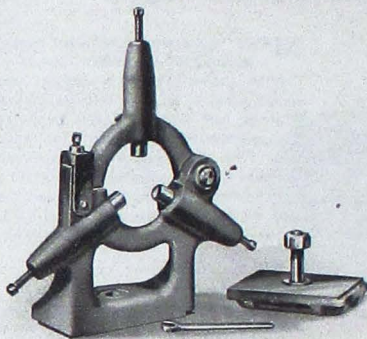
The Guide Bar is graduated at one end in degrees, thus allowing of quick adjustment. Tapers may be turned up to an angle of 9 degrees from centre line of Lathe.

Our new designs of Lathes can be fitted with Taper Attachment at any time, as there is no planed strip at back of bed.

For Code Numbers, see preceding Pages.



Adjustable Stationary Stays.



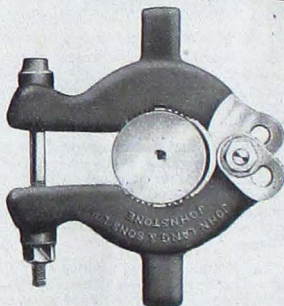
THE accompanying illustration shows a new design of Stationary Stay, which we now build suitable for our standard Lathes.

They are manufactured in large quantities, and we shall be glad to quote for supplying them to suit customers' existing Lathes.

For Code Numbers, see preceding Pages.

No. 4024

New Design of Lathe Carrier.



No. 4025

THE advent of modern High-speed Steels has caused the inefficiency of several well-known Lathe accessories to be exposed. In our own works a very short experience served to show that the ordinary glands and carriers used for driving work, when rough turning forgings, were quite inadequate for the enormous power available with our new design of High-speed Cutting Lathes. The accompanying illustration shows a New Driver which we have designed and which is giving the greatest satisfaction in our turning department. The body is made of two steel castings, the serrated gripping parts are hardened cast steel, and the other parts are mild steel. We make these carriers in three sizes, as given below, and shall be glad to furnish prices on application.

Number	Capacity	Weight	Code No.
1	Takes 2in. to 4in. diameter	28 lbs.	0088
2	" 3in. " 6in. "	59 "	0089
3	" 5½in. " 9in. "	112 "	0070

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Surfacing and Boring Lathes

(See following Pages).

GENERAL SPECIFICATION.

The Fast Headstocks of latest design are fitted with **Lang's Patent Treble-gear Variable-speed Drive** and **Lang's Patent Automatic Speed-changing Mechanism**. With these in operation, when surfacing work such as cylinder covers, faceplates, etc., the revolutions of spindle automatically increase as the diameter being turned becomes smaller. They can be used with single or treble gear, and are so arranged that even when running at the greatest speed there is a reduction by gearing. With this arrangement the Lathes have greater power when turning smaller diameters than when belt is used driving direct to main spindle. **No counter motion is required with this type of Fast Headstock.**

The Fast Headstocks, when made of the powerful duplex double-gear step-cone type, are of latest design. They have extra large cones for wide belts, giving greatly increased power for general work. The gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cones are turned inside and balanced.

All Fast Headstock spindles are of crucible cast steel, accurately ground cylindrical, and tested to the 1510 part of an inch. They run in parallel gun-metal bearings of extra large diameters.

The Beds are Lang's Patent Covered Type, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustrations extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. These covers are fixed to the bed and are independent of the movements of saddle.

The Slide Rests have extraordinary rigidity owing to their design and large proportions. We invite comparison in this detail with our customers' existing Lathes. Hexagon turrets are fitted when wanted for carrying tool-holders suitable for ordinary lathe tools, or special tool-holders, as desired.

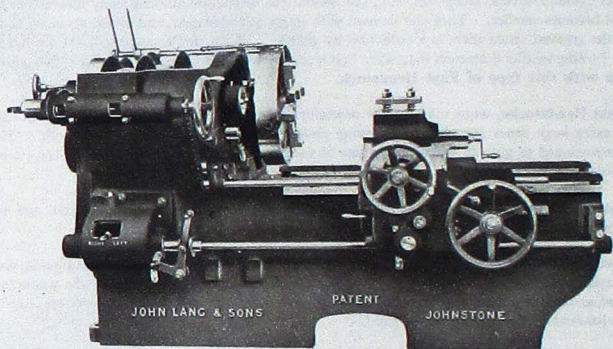
The Patented Self-acting Feed Motions are positive, and the following advantages are claimed:—(1) There is no slipping of belts or intermittent feeds as with ratchet; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by Lang's Handle Feed Motion four different feeds may be had without stopping Lathe; (5) when specially quoted for and ordered, eight feeds may be had by movement of handles without stopping Lathe, allowing holes to be drilled from solid with feed in operation; (6) feeds are the same for both surfacing and boring; automatic stops can be fitted for both longitudinal and cross traverse.

Screw-cutting can be fitted to these Lathes when desired, in which case the advantages of Lang's Patent Screw-cutting and Feed Motions are described on page 2.

Every Lathe is tested in actual operation before leaving the works. For the convenience of customers we generally keep in stock in our extensive show-rooms various types and sizes of these Lathes, ready for immediate delivery.

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW

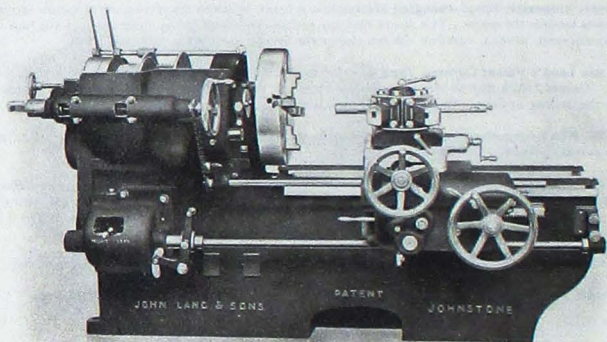


No. 4201

Surfacing and Boring Lathe with Lang's Patent Variable-speed Drive

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4202

Surfacing and Boring Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW

Surfacing and Boring Lathes



WITH LANG'S PATENT VARIABLE-SPEED DRIVE.

LANG'S COVERED BED AND FEED MOTIONS.

No. 4202

THE illustration on opposite page shows our latest development in Surfacing and Boring Lathes. All sizes have been re-designed and made from new patterns. The more important details, such as main journals, strength of slide rests, etc., have been very generously treated. Two unique features, **Lang's Patent Variable-speed Drive** and **Lang's Patent Automatic Speed-changing Mechanism**, have been added. With these in operation, when surfacing work such as cylinder covers, face-plates, etc., the revolutions of spindle automatically increase as the diameter being turned becomes smaller. These Lathes have now such a combination of important improvements as to place them in a class of their own for the economical production of chuck work.

THE **FAST HEADSTOCKS** have **Lang's Patent Variable-speed Drive**. They can be used with single and treble gear, and are so arranged that, even when running at the greatest speed, there is a reduction by gearing. With this arrangement the Lathes have greater power when turning small diameters than when belt is used driving direct to main spindle. The spindles, which are hollow when hexagon turrets are supplied, are of crucible cast steel and run in best gin-metal bearings.

LANG'S **PATENT AUTOMATIC SPEED-CHANGING MECHANISM** is fitted, by which the revolutions of spindle increase automatically as the tool travels towards the centre. This means that any surface can be finished in about half the time taken on a Lathe without this arrangement, where a workman will not change the spindle speeds while surfacing.

THE **BEDS ARE LANG'S PATENT COVERED TYPE**, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustration extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. These covers are fixed to the bed, and are independent of the movements of saddle.

THE **SLIDE REST** has extraordinary rigidity owing to its design and large proportions, and we invite comparison in this detail with our customers' existing Lathes. A Hexagon Turret is fitted for carrying tool-holders, suitable for ordinary lathe tools or special tool-holders as desired. Holes are bored in each of the faces of turret, and bolts supplied for fixing boring bars.

THE **PATENT SELF-ACTING FEED MOTIONS** are positive, and the following advantages are claimed:—(1) There is no slipping of belts or intermittent feeds as with ratchets; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by Lang's Handle Feed Motion four different feeds may be had without stopping Lathe; (5) feeds are the same for both surfacing and boring.

EVERY LATHE is tested in actual operation before leaving the works. All working nuts are case-hardened.

ADDITIONAL PARTS SUPPLIED Four-jaw expanding chuck; set of six sample tool-holders; set of case-hardened screw-keys.

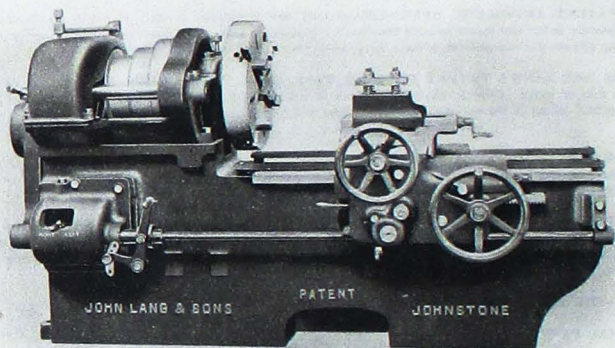
No Counter Motion required for this Lathe.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Size of Lathe	18in. swing	24in. swing	Size of Lathe	18in. swing	24in. swing
Lathe can swing clear of covers on bed	18in. dia.	24in. dia.	Dia. of front bearing of spindle	3in. dia.	4in. dia.
Lathe can swing with covers removed	21in. dia.	27in. dia.	Feeds per rev. of spindle	1/8, 1/16, 1/32, 1/64	1/16, 1/32, 1/64, 1/128
Height of centre of spindle from sole of headstock	6in.	8in.	Dia. of hole through spindle	1 1/2in.	1 1/2in.
Distance from face of chuck to front of slide when saddle is farthest back	18in.	24in.	Dia. of fast and loose pulleys	10in. dia.	14in. dia.
Dia. of standard chuck	18in. dia.	21in. dia.	Width of fast and loose pulleys	2 1/2in. dia.	3in. dia.
Ratio of single gear	3.5 to 1	3.5 to 1	Speed of fast and loose pulleys	300 r.p.m.	300 r.p.m.
Ratio of treble gear	16.5 to 1	20 to 1	Approx. floor space required	83 x 38in.	101 x 45in.
H.P. required at maximum duty	4 b.h.p.	6 b.h.p.	.. total finished weight	3248 lbs.	5040 lbs.
			.. weight packed for shipment	3808 lbs.	5712 lbs.
			.. meas. packed for shipment	100 c.ft.	120 c.ft.
	Code No. 0078	Code No. 0074		Code No. 03	Code No. 04
Lathe as illustrated			With auto. stops to longitudinal and transverse feeds		
Extras:—			Arranged for motor drive (constant speed motor)		
Lathe arranged for screw-cutting	01	01			
Arranged with fine feed gear box	02	02			

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4203

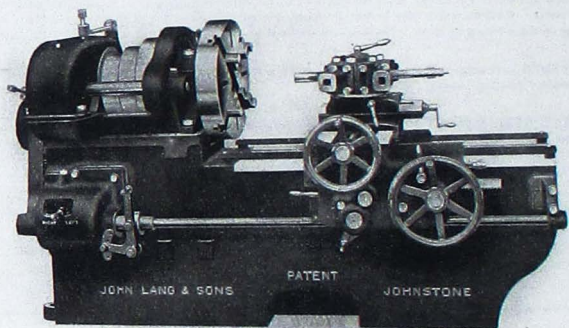
Surfacing and Boring Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Surfacing and Boring Lathes



No. 4204

Surfacing and Boring Lathe
with Lang's Covered Bed and Feed Motions

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Surfacing and Boring Lathes

WITH LANG'S COVERED BED AND FEED MOTIONS.

No. 4204

THE illustration on opposite page shows our latest development in Surfacing and Boring Lathes, having stepped-cone drive and Hexagon Turret slide rest. The design of Lathe is such that great strength and rigidity are obtained, combined with convenience for the rapid manipulation of work. Several new and important improvements, some of which have been patented, have been introduced and engineers are asked to carefully investigate the following important details:—

THE FAST HEADSTOCK is of new design, with gearing at front, and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; nine spindle speeds are obtained, and the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced; and the spindles, which are hollow when hexagon turrets are supplied, are of crucible cast steel and run in best gun-metal bearings.

THE BEDS ARE LANG'S COVERED TYPE, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustration extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. These covers are fixed to the bed, and are independent of the movements of saddle.

THE SLIDE REST has extraordinary rigidity owing to its design and large proportions, and we invite comparison in this detail with our customers' existing lathes. A Hexagon Turret is fitted for carrying tool-holders suitable for ordinary Lathe tools or special tool-holders as desired. Holes are bored in each of the faces of the turret, and bolts supplied for fixing boring bars.

THE PATENTED SELF-ACTING FEED MOTIONS are positive, and the following advantages are claimed:—(1) There is no slipping of belts or intermittent feeds as with ratchets; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by Lang's Handle Feed Motion four different feeds may be had without stopping Lathe; (5) feeds are the same for both surfacing and boring.

EVERY LATHE is tested in actual operation before leaving the works. All working nuts are case-hardened.

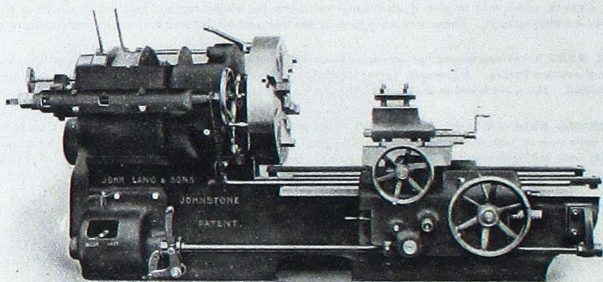
ADDITIONAL PARTS SUPPLIED. Four-jaw expanding chuck; set of six sample tool-holders; set of case-hardened screw-keys; counter gear, including improved adjustable self-oiling hanger bearings; shaft, cone, pair of pulleys, and belt-shifting apparatus.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Size of Lathe	18in. swing	24in. swing	Size of Lathe	18in. swing	24in. swing
Lathe can swing clear of covers on bed	18in. dia.	24in. dia.	Dia. of front bearing of spindle	3in. dia.	4in. dia.
Lathe can swing with covers removed	21 $\frac{1}{2}$ in. dia.	27 $\frac{1}{2}$ in. dia.	Feeds per rev. of spindle	1 $\frac{1}{2}$, 1 $\frac{3}{4}$, 2, 2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, 4, 4 $\frac{1}{2}$	1 $\frac{1}{2}$, 1 $\frac{3}{4}$, 2, 2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, 4, 4 $\frac{1}{2}$
Height of centre of spindle from sole of headstock	6 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ in.	Dia. of pulleys on countershaft	12in.	14in.
Distance from face of chuck to front of slide when saddle is farthest back	18in.	24in.	Width of pulleys on countershaft	3 $\frac{1}{2}$ in.	3 $\frac{1}{2}$ in.
Dia. of standard chuck	15in. dia.	21in. dia.	Speed of pulleys on countershaft	120 r.p.m.	110 r.p.m.
Ratio of small gear reduction	3 to 1	3.2 to 1	Approx. floor space required	76 x 36in.	96 x 42in.
Ratio of large gear reduction	9 to 1	10.2 to 1	.. total finished weight	3248 lbs.	5152 lbs.
H.P. required at maximum duty	4 b.h.p.	6 b.h.p.	.. weight packed for shipment	3808 lbs.	5824 lbs.
			.. meas. packed for shipment	100 c. ft.	120 c. ft.
			Dia. of hole through spindle	1 $\frac{1}{2}$ in.	1 $\frac{1}{2}$ in.
	Code No.	Code for Extras		Code No.	Code for Extras
Lathe as illustrated	0077	0078	Auto. stops to longitudinal and transverse feeds	03	03
Extras—			Arranged motor drive (cons. sp. motor)	04	04
Lathe arranged for screw-cutting	01	01	Arranged motor drive (var. sp. motor)	05	05
Arranged with fine feed gear box	02	02			

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4205

Surfacing and Boring Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Surfacing and Boring Lathes

WITH LANG'S PATENT VARIABLE-SPEED DRIVE. LANG'S COVERED BED AND FEED MOTIONS.

No. 4205

THE illustration on opposite page shows one type of our latest developments in Surfacing and Boring Lathes. All sizes have been re-designed and made from entirely new patterns. The more important details, such as main journals, strength of slide rests, etc., have been very generously treated. Two unique features, **Lang's Patent Variable-speed Drive** and **Lang's Patent Automatic Speed-changing Mechanism**, have been added. With these in operation, when surfacing work such as cylinder covers, facelates, etc., the revolutions of spindle automatically increase as the diameter being turned becomes smaller. These Lathes have now such a combination of important improvements as to place them in a class of their own for the economical production of chuck work.

THE FAST HEADSTOCKS have **Lang's Patent Variable-speed Drive**. They can be used with single and treble gear, and are so arranged that, even when running at the greatest speed, there is a reduction by gearing. With this arrangement the Lathes have greater power when turning smaller diameters than when the belt is used driving direct to main spindle. The spindles are of crucible cast steel and run in best gun-metal bearings. Spindle can be supplied hollow when required.

LANG'S PATENT AUTOMATIC SPEED-CHANGING MECHANISM is fitted, by which the revolutions of spindle increase automatically as the tool travels towards the centre. This means that any surface can be finished in about one-half the time taken on a Lathe without this arrangement, where a workman will not change the spindle speed while surfacing.

THE BEDS ARE LANG'S PATENT COVERED TYPE, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustration extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. These covers are fixed to the bed, and are independent of the movements of saddle.

THE SLIDE REST has extraordinary rigidity owing to its design and large proportions, and we invite comparison in this detail with our customers' existing Lathes.

THE PATENTED SELF-ACTING FEED MOTIONS are positive, and the following advantages are claimed:—(1) There is no slipping of belts or intermittent feeds as with ratchets; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by **Lang's Handle Feed Motion** four different feeds may be had without stopping Lathes; (5) feeds are the same for both surfacing and boring.

EVERY LATHE is tested in actual operation before leaving the works. All working nuts are case-hardened.

ADDITIONAL PARTS SUPPLIED. Four-jaw expanding chuck; set of case-hardened screw-keys.

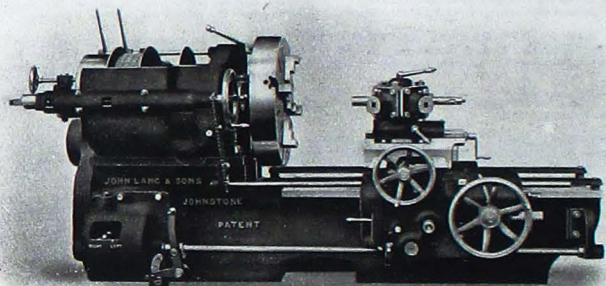
No Counter Motion required with this Lathe.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Size of Lathe	30in. swing	36in. swing	48in. swing	Size of Lathe	30in. swing	36in. swing	48in. swing
Lathe can swing clear of covers on bed	30in.	36in.	48in.	Dia. of frt. bearing of spdl.	5in.	6in.	7in.
Lathe can swing with covers removed	35in.	42in.	56in.	Feeds per rev. of spindle	$1\frac{1}{2}, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, 48, 60, 72, 84, 96, 120, 144, 168, 180$	$1\frac{1}{2}, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, 48, 60, 72, 84, 96, 120, 144, 168, 180$	$1\frac{1}{2}, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, 48, 60, 72, 84, 96, 120, 144, 168, 180$
Height of centre of spindle from sole of headstock	10in.	12in.	15in.	Dia. of fast and loose plys.	3in.	5in.	6in.
Dist. from face of chuck to front of slide when sld.	30in.	36in.	48in.	Width	300 r.p.m.	300 r.p.m.	300 r.p.m.
is farthest back	26in.	32in.	42in.	Approx. floor space required	123 x 52in.	147 x 66in.	184 x 88in.
Dia. of standard chuck	4 to 1	4 to 1	4.5 to 1	total finished weight	69 cwts.	100 cwts.	166 cwts.
Ratio of single gear	27 to 1	30 to 1	36 to 1	wt. pkd. for shipt.	79 cwts.	114 cwts.	183 cwts.
Ratio of triple gear	10	14	20	meas. pkd. for shipt.	180 c. f.	240 c. f.	400 c. f.
H.P. required at max. duty							
	Code No. 0079	Code No. 0080	Code No. 0081		Code No. 04	Code No. 04	Code No. 04
Lathe as illustrated				Auto. stops to longitudinal and transverse feeds			
Extras—				Arranged motor drive (cons. speed motor) ...	05	05	05
Hole in spindle, 30in. lathe, 2in.	01	01	01				
Doitto, 36in. lathe, 2in.							
Doitto, 48in. lathe, 3in.							
Lathe arr. for screw-cutting	02	02	02				
Arr. with fine feed gear box	03	03	03				

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4206

Surfacing and Boring Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Surfacing and Boring Lathes

WITH LANG'S PATENT VARIABLE SPEED DRIVE. LANG'S COVERED BED AND FEED MOTIONS.

No. 4206

THE illustration on opposite page shows our latest development in Surfacing and Boring Lathes. All sizes have been re-designed and made from entirely new patterns. The more important details, such as main journals, strength of slide rests, etc., have been very generously treated. Two unique features, **Lang's Patent Variable-speed Drive** and **Lang's Patent Automatic Speed-changing Mechanism**, have been added. With these in operation, when surfacing work such as cylinder covers, faceplates, etc., the revolutions of the spindle **automatically increase** as the diameter being turned becomes smaller. These Lathes have now such a combination of important improvements as to place them in a class of their own for the economical production of chuck work.

THE FAST HEADSTOCKS have **Lang's Patent Variable-speed Drive**. They can be used with single and treble gear, and are so arranged that, even when running at the greatest speed, there is a reduction by gearing. With this arrangement the Lathes have greater power when turning smaller diameters than when belt is used driving direct to main spindle. The spindles, which are hollow when hexagon turrets are supplied, are of crucible cast steel and run in best gun-metal bearings.

LANG'S PATENT AUTOMATIC SPEED-CHANGING MECHANISM is fitted, by which the revolutions of spindle increase automatically as the tool travels towards the centre. This means that any surface can be finished in about one-half the time taken on a Lathe without this arrangement, where a workman will not change the spindle speed while surfacing.

THE BEDS ARE LANG'S PATENT COVERED TYPE, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustration extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. Those covers are fixed to the bed, and are independent of the movements of saddle.

THE SLIDE REST has extraordinary rigidity owing to its design and large proportions, and we invite comparison in this detail with our customers' existing Lathes. A Hexagon Turret is fitted for carrying tool-holders, suitable for ordinary lathe tools, or special tool-holders as desired. Holes are bored in each of the faces of turret, and bolts supplied for fixing boring bars.

THE PATENTED SELF-ACTING FEED MOTIONS are positive, and the following advantages are claimed:—(1) There is no slipping of bolts or intermittent feeds as with ratchets; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by Lang's Handle Feed Motion four different feeds may be had without stopping Lathe; (5) feeds are the same for both surfacing and boring.

EVERY LATHE is tested in actual operation before leaving the works. All working nuts are case-hardened.

ADDITIONAL PARTS SUPPLIED. Four-jaw expanding chuck; set of six sample tool-holders; set of case-hardened screw-keys.

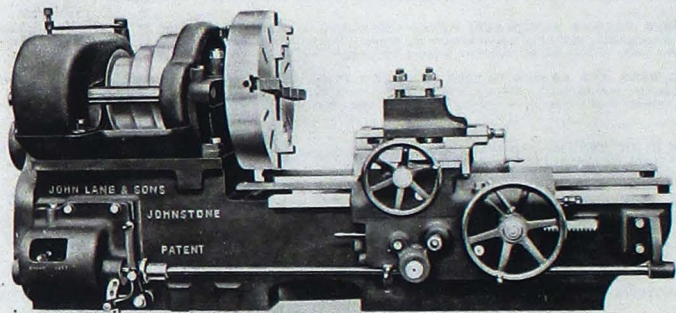
No Counter Motion required with this Lathe.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Size of Lathe	30" swing	36" swing	48" swing	Size of Lathe	30" swing	36" swing	48" swing	
Lathe can swing clear of covers on bed	30in.	36in.	48in.	Dia. of front bearing of spdl.	5in.	6in.	7in.	
Lathe can swing with covers removed	35in.	42in.	56in.	Feeds per rev. of spindle	1/4, 1/8, 1/16 in.	1/4, 1/8, 1/16 in.	1/4, 1/8, 1/16 in.	
Hgt. of cen. of spindle from sole of headstock	10 1/2 in.	12 1/2 in.	15 1/2 in.	Dia. of hole through spindle	2 1/2 in.	2 1/2 in.	3 1/2 in.	
Dist. from face of chuck to front of slide when sld. is farthest back	30in.	36in.	48in.	Dia. of fast and loose pulleys	18in.	20in.	24in.	
Dia. of standard chuck	26in.	32in.	42in.	Width	3 1/2 in.	5in.	6in.	
Ratio of single gear	4 to 1	4 to 1	4.5 to 1	Speed	300 r.p.m.	300 r.p.m.	300 r.p.m.	
Ratio of treble gear	27 to 1	30 to 1	36 to 1	Approx. floor space reqd.	123 x 52in.	147 x 66in.	184 x 68in.	
H.P. reqd. at max. duty	10	14	20	wt. total finished weight	7840 lbs.	11382 lbs.	18704 lbs.	
				wt. packed for ship.	8960 lbs.	12880 lbs.	20608 lbs.	
				meas. packed for ship.	185 c. ft.	250 c. ft.	400 c. ft.	
	Code No.	Code for Extras	Code No.	Code for Extras	Code No.	Code for Extras	Code No.	Code for Extras
Lathe as illustrated	0082	0083	0084	Auto. stops longitudinal and transverse feeds	03	03	03	03
Extras—				Arr. motor drive (cons. sp. motor)	04	04	04	04
Lathe arr. for screw-cutting	01	01	01					
Arr. with fine feed gear box	02	02	02					

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4207

Surfacing and Boring Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Surfacing and Boring Lathes

WITH LANG'S COVERED BED AND FEED MOTIONS.

No. 4207

THE illustration on opposite page shows our latest development in Surfacing and Boring Lathes, having stepped-cone drive and ordinary slide rest. The design of Lathe is such that great strength and rigidity are obtained combined with convenience for the rapid manipulation of work. Several new and important improvements, some of which have been patented, have been introduced, and engineers are asked to carefully investigate the following important details:—

The Fast Headstocks are of new design, with gearing at front, and arranged to admit extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cones are turned inside and balanced; the spindles are of hard crucible steel, accurately ground cylindrical, and running in parallel gun-metal bearings of large diameters. Spindle can be supplied hollow when required.

The Beds are Lang's Patent Covered Type, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustration extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. These covers are fixed to the bed, and are independent of the movements of saddle.

The Slide Rests have extraordinary rigidity owing to their design and large proportions, and we invite comparison in this detail with our customers' existing Lathes.

The Patented Self-acting Feed Motions are positive, and the following advantages are claimed:—(1) There is no slipping of belts or intermittent feeds as with ratchets; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by Lang's Handle Feed Motion four different feeds may be had without stopping Lathe; (5) feeds are the same for both surfacing and boring.

Every Lathe is tested in actual operation before leaving the works. All working nuts are case-hardened.

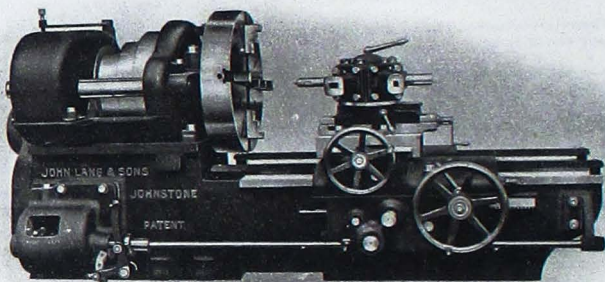
Additional Parts supplied:—Four-jaw expanding chuck; counter gear, including improved adjustable self-oiling hanger bearings; shaft, cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Size of Lathe	30in. swing	36in. swing	48in. swing	Size of Lathe	30in. swing	36in. swing	48in. swing
Lathe can swing clear of covers on bed	30in.	36in.	48in.	Dia. of front bearing of sple	5in.	6in.	7in.
Lathe can swing with covers removed	35in.	42in.	56in.	Feeds per rev. of spindle	1, 1.5, 2, 3, 4*	1, 1.5, 2, 3, 4*	1, 1.5, 2, 3, 4*
Height of centre of spindle from sole of headstock	10in.	12in.	15in.	Dia. of phys. on countersft.	16in.	20in.	24in.
Dist. from face of chuck to front of slide when saddle is farthest back	30in.	36in.	48in.	Width	4in.	5in.	5in.
Dia. of standard chuck	26in.	32in.	42in.	Speed	120 r. p. m.	130 r. p. m.	130 r. p. m.
Ratio of small gear reductn.	8.5 to 1	9.9 to 1	4.3 to 1	Approx. floor space reqd.	114 x 45in.	135 x 53in.	174 x 75in.
Ratio of large gear reductn.	13 to 1	15.3 to 1	18.3 to 1	.. total finished wgt.	7168 lbs.	11200 lbs.	18592 lbs.
H.P. reqd. at max. duty	10	14	20	.. wgt. pkd. for ship.	8176 lbs.	12656 lbs.	20496 lbs.
				.. meas. packed for shipment	180 c. ft.	240 c. ft.	400 c. ft.
Lathe as illustrated	Code No. 0085	Code No. 0086	Code No. 0087				
Extras—	Code for Extr's	Code for Extr's	Code for Extr's				
Hole in spindle, 30in. lathe	01	01	01	Auto stops to longitudinal and transverse feeds	05	05	05
2in.	01	01	01	Arr. motor drive (cons. sp. motor)	06	06	06
3in.	01	01	01	Arr. motor drive (var. sp. motor)	07	07	07
Lathe arr. for screw-cutting	02	02	02				
Arr. with fine feed gear box	03	03	03				
	04	04	04				

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



No. 4208

Surfacing and Boring Lathe

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW

Surfacing and Boring Lathes

WITH LANG'S COVERED BED AND FEED MOTIONS.

No. 4208



THE illustration on opposite page shows our latest developments in Surfacing and Boring Lathes, having stepped-cone drive, and Hexagon Turret slide rest. The design of Lathe is such that great strength and rigidity are obtained combined with convenience for the rapid manipulation of work. Several new and important improvements, some of which have been patented, have been introduced, and engineers are asked to carefully investigate the following important details:—

The Fast Headstock is of new design, with gearing at front, and arranged to admit an extra large cone and wheels, giving increased power for heavy cutting; the gearing is correctly proportioned to give an equal percentage of variation at each change of speed; the cone is turned inside and balanced. The spindles, which are hollow when hexagon turrets are supplied, are of crucible cast steel and run in best gun-metal bearings.

The Beds are Lang's Patent Covered Type, allowing saddle to have its longitudinal guide seven times or thereby greater than its width. Covers, which may be seen in illustration extending the whole length of bed, are so placed as to prevent cuttings from falling on the working surfaces. These covers are fixed to the bed, and are independent of the movements of saddle.

The Slide Rest has extraordinary rigidity owing to its design and large proportions, and we invite comparison in this detail with our customers' existing lathes. A Hexagon Turret is fitted for carrying tool-holders suitable for ordinary lathe tools or special tool-holders as desired. Holes are bored in each of the faces of turret, and bolts supplied for fixing boring bars.

The Patented Self-acting Feed Motions are positive, and the following advantages are claimed:—(1) There is no slipping of belts or intermittent feeds as with ratchets; (2) it is impossible to put the surfacing and boring feeds into action at same time; (3) feeds can be reversed while Lathe is running; (4) by Lang's Handle Feed Motion four different feeds may be had without stopping Lathe; (5) feeds are the same for both surfacing and boring.

Every Lathe is tested in actual operation before leaving the works. All working nuts are case-hardened.

Additional Parts supplied.—Four-jaw expanding chuck; set of six sample tool-holders; set of case-hardened screw-keys; counter gear, including improved adjustable self-oiling hanger bearings; shaft, cone, pair of pulleys, and belt-shifting apparatus.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Size of Lathe	30in. swing	36in. swing	48in. swing	Size of Lathe	30in. swing	36in. swing	48in. swing
Lathe can swing clear of covers on bed	30in.	36in.	48in.	Dia. of frnt. bearing of spindle	5in.	6in.	7in.
Lathe can swing with covers removed	35in.	42in.	56in.	Feeds per rev. of spindle	4 1/2 in. min.	4 1/2 in. min.	4 1/2 in. min.
Hgt. of centre of spindle from sole of headstock	10 1/2 in.	12 1/2 in.	15 1/2 in.	Dia. of hole through spindle	2 1/2 in.	2 1/2 in.	3 1/2 in.
Distance from face of chuck to front of slide when slide is farthest back	30in.	36in.	48in.	Dia. of pulleys on counts.	18in.	20in.	24in.
Dia. of standard chuck	26in.	32in.	42in.	Width	4 1/2 in.	5 1/2 in.	5 1/2 in.
Ratio of small gear redctn.	3.6 to 1	3.9 to 1	4.2 to 1	Speed	120 r.p.m.	130 r.p.m.	130 r.p.m.
Ratio of large gear redctn.	13 to 1	15.3 to 1	18.3 to 1	Approx. floor space required	114 x 54 in.	135 x 63 in.	174 x 76 in.
H.P. required at max. duty	10	14	20	total finish. wgt.	7392 lbs.	11424 lbs.	18818 lbs.
				wgt. pkg. for ship.	8400 lbs.	12880 lbs.	20720 lbs.
				measurement pkg. for shipment	180 c. ft.	240 c. ft.	400 c. ft.
	Code No. for Extr's	Code No. for Extr's	Code No. for Extr's		Code No. for Extr's	Code No. for Extr's	Code No. for Extr's
Lathe as illustrated	0088	0089	0090	Auto. stops to longitudinal and transverse feeds	03	03	03
Extras—				Arranged motor drive (cons. sp. motor)	04	04	04
Lathe arr. for screw-cutting	01	01	01	Ditto (var. sp. motor)	05	05	05
Arr. with fine feed gear box	02	02	02				

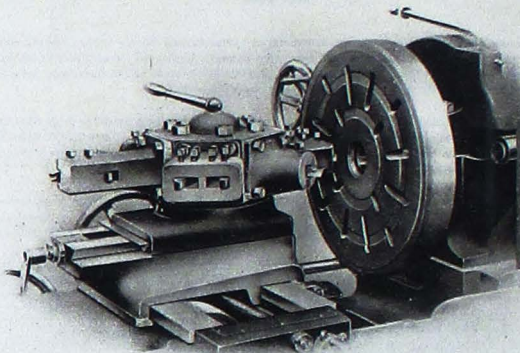
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



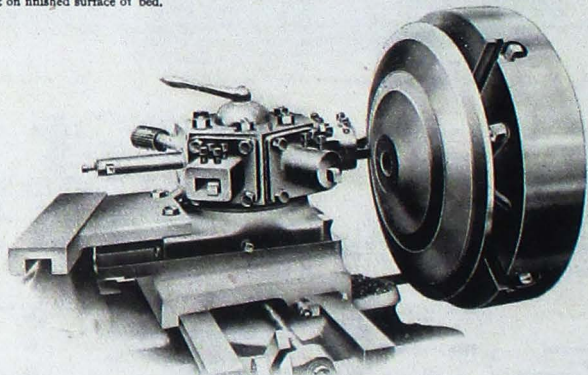
Variable-Speed Surfacing and Boring Lathes

Illustration showing work being done on our Variable-speed Surfacing and Boring Lathe, using three tools at one time, and speed increasing automatically as tool travels towards the centre.



No. 4209

Illustration showing our Variable-speed Surfacing and Boring Lathe turning taper disc with two tools in operation at one time, and speed increasing automatically as tool travels towards the centre. Attention is drawn to the cuttings falling on covers and not on finished surface of bed.

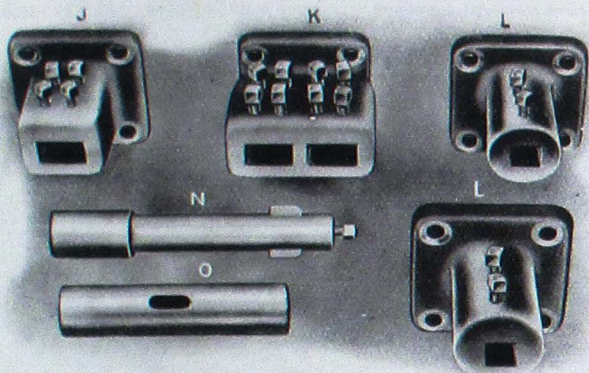


No. 4210

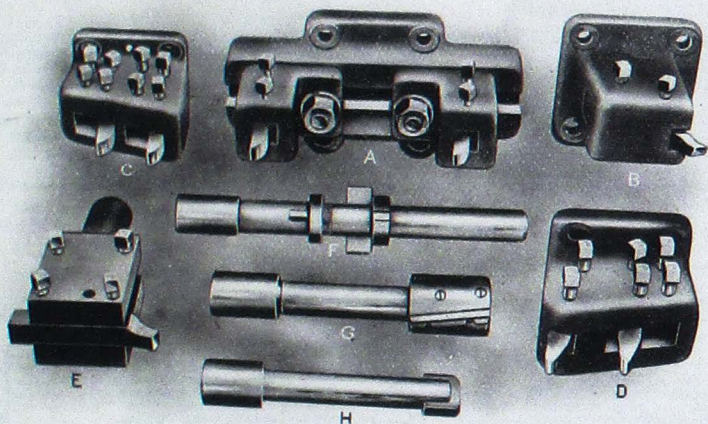
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW

Surfacing and Boring Lathes



No. 4211. STANDARD SAMPLE TOOLHOLDERS as supplied with Surfacing and Boring Lathes when fitted with Hexagonal Turrets.



No. 4212. EXAMPLES OF SPECIAL TOOLHOLDERS which may be made by customers or supplied by us.

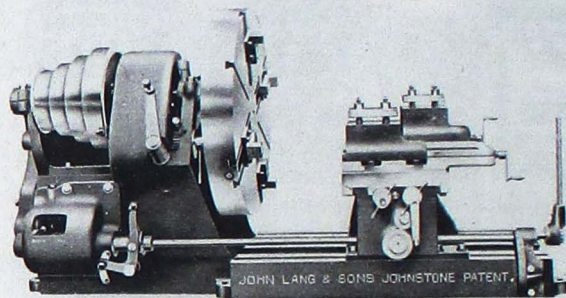
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



5ft. Swing Surfacing and Boring Lathe

TREBLE-GEARED FAST HEADSTOCK. PATENT FEED MOTIONS. DUPLEX SLIDES.



No. 4213

THE above illustration shows a type of Surfacing and Boring Lathe which we manufacture for the machining of cast-steel blank gears and work of a similar class. The Lathe shown above will swing work up to 5ft. diameter, but we manufacture this design in several sizes. The illustration also serves to indicate the general power of the treble-g geared fast headstock as well as the strength and rigidity of the saddle and slides.

The Fast Headstock is unique for belt power and arrangement of gearing. The large cone is on side shaft, which is geared to main spindle at a ratio of 5 to 1. Reductions by gearing of 20 to 1 and 80 to 1 may also be obtained. A brake is fitted on cone for stopping spindle quickly. When countershaft makes 300 revolutions per minute spindle speeds are 100, 71, 50, 36, 25, 18, 12.6, 9, 6.2, 4.4, 3.2, 2.2.

The Saddle can be moved along bed, to and from chuck, by hand ratchet, and fixed in any position. There are two slide rests, both arranged to swivel for taper turning and having independent self-acting feeds, i.e., both rests can be surfacing or boring at the same time, or one can be surfacing while the other is boring.

With Lang's Handle Feed Motion four different feeds, both for sliding and surfacing, may be obtained by moving handle in front of Lathe. Any of these feeds may also be reversed by moving handle in gear box.

All the Gearing has machine-cut teeth.

Every Lathe is put in operation and tested before leaving the works.

Additional Parts supplied.—Four-jaw expanding chuck, 48in. diameter; counter-gear, including improved adjustable self-oiling hanger bearings; shaft, cone, fast and loose pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

Swings over bed, in diameter	5ft.	Width of step on cone pulley	4in.
Standard bed admits from chuck to slide, max.	36in.	Speed of countershaft, revs. per min.	300
Diameter of spindle front bearing	7in.	Diameter of fast and loose pulleys	20in.
Feeds per revolution of spindle	1.1, 1.5, 1.75 in.	Width of fast and loose pulleys	5 1/2 in.
Ratio of gearing: 1st	5 to 1	Approx. floor space, standard bed	10 1/2 x 6 1/2 ft.
" 2nd	20 to 1	" total finished weight	12768 lbs.
" 3rd	80 to 1	" weight packed	14000 lbs.
Diam. of largest step on cone pulley	23in.	" shipping measurement	315 cu. ft.
" smallest	13 1/2 in.	Code No.	0001

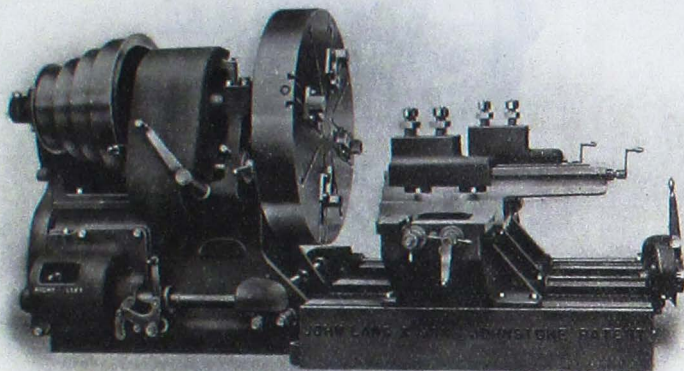
JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



6-ft. Swing Surfacing and Boring Lathe

TREBLE-GEARED FAST HEADSTOCK. PATENT FEED MOTIONS. DUPLEX SLIDES.



No. 4214

THE above illustration shows a type of Surfacing and Boring Lathe which we manufacture for the machining of cast-steel blank gears and work of a similar class. The Lathe shown above will swing work up to 6ft. diameter, but we manufacture this design in several sizes. The illustration also serves to indicate the general power of the treble-geared fast headstock as well as the strength and rigidity of the saddle and slides.

The Fast Headstock is unique for belt power and arrangement of gearing. The large cone is on side shaft, which is geared to main spindle at a ratio of 6 to 1. Reductions by gearing of 23 to 1 and 90 to 1 may also be obtained. A brake is fitted on cone for stopping spindle quickly. When countershaft makes 300 revolutions per minute, spindle speeds are 2, 2.8, 3.9, 5.5, 8, 11, 15.2, 21.8, 30, 42.3, 59, 83.3.

The Saddle can be moved along bed, to and from chuck, by power and fixed in any desired position. There are two slide rests, both arranged to swivel for taper turning and having independent self-acting feeds, i.e., both rests can be surfacing or boring at the same time, or one can be surfacing while the other is boring.

With Lang's Handle Feed Motion four different feeds, both for sliding and surfacing, may be obtained by moving handle in front of lathe. Any of these feeds may also be reversed by moving handle in gear box.

All the Gearing has machine-cut teeth.

Every Lathe is put in operation and tested before leaving the works.

Additional Parts supplied.—Four-jaw expanding chuck, 55in. diameter; counter-gear, including improved adjustable self-oiling hanger bearings; shaft, cone, fast and loose pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

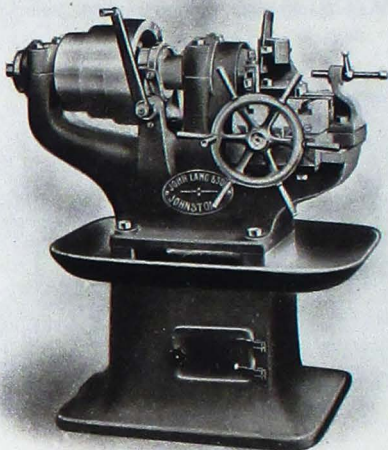
Swings over bed, in diameter	6ft.	Speed of countershaft, revs. per minute	300
Standard bed admits from chuck to slide, max.	36in.	Diameter of fast and loose pulleys	24in.
Diameter of spindle front bearing	9in.	Width of ditto	5½in.
Feeds per revolution of spindle	1, 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	Approx. floor space, standard bed	13½ft. x 9ft.
Ratio of gearing: 1st	6 to 1	total finished weight	22400 lbs.
2nd	23 to 1	weight packed	24300 lbs.
3rd	90 to 1	shipping measurement	640 cu. ft.
Diameter of largest step on cone pulley	30in.	Code No.	0098
Ditto, smallest ditto	18in.		
Width of step on ditto	5in.		

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



1½ in. Cutting-off and Pointing Lathe



No. 4351

THE illustration above shows a Lathe which we build for the use of engineers engaged in the manufacture of screws, studs, and small shafts of all kinds. It may be seen in every-day operation in a department of our works specially laid out for the manufacture of double-ended and other studs. An unskilled workman can, without difficulty, cut off from four to nine studs per minute, depending on their size.

The Automatic Gripping Chuck is of novel design, allowing the operator to loosen the bar, move it forward and re-grip, without abnormal force being required and without stopping Lathe.

The Slide Rest is strong and substantial, to withstand rough usage by unskilled workmen. It carries a front tool for cutting-off, and a back tool for pointing. The standard Lathe is fitted with hand-screw feed, but if the large majority of work done is 1 in. and under we recommend a lever feed, which allows a much larger output.

Pump, Piping Arrangement, and Pan are fitted to give a large supply of lubricant to tool when cutting.

Additional Parts supplied.—Nine sets of conical grips for holding bars from ½ in. to 1½ in., rising by ¼ in. One sample cutting-off tool and one sample pointing tool. Counter-gear, including improved adjustable self-oiling bearings, arranged to run three months without re-oiling; shaft, cone, pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

Every Lathe is put in operation and tested before leaving the works. For the convenience of customers we generally keep a number of these Lathes in stock in our extensive show-rooms, ready for immediate delivery.

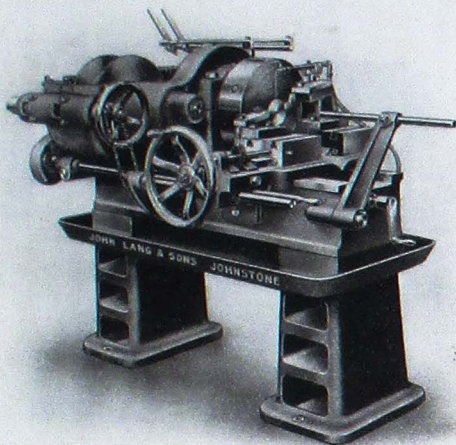
PRINCIPAL DIMENSIONS AND WEIGHTS.

Largest diameter of cone pulley	... ..	13in.
Smallest diameter of cone pulley	... ..	10in.
Number of steps of cone pulley	... ..	3
Speed of countershaft, revolutions per minute	... ..	270
Diameter of fast and loose pulleys	... ..	14in.
Width of fast and loose pulleys	... ..	4in.
Diameter of hole through spindle	... ..	1½ in.
Approximate floor space occupied	... ..	34 ft. x 24 ft.
" total finished weight	... ..	2872 lbs.
" weight packed for shipment	... ..	2832 lbs.
" measurement, packed for shipment	... ..	48 cub. ft.
Code No.	... ..	0093

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW

4-in. Cutting-off Lathe



No. 4352

THE Lathe illustrated above has been designed for the use of engineers and boilermakers for cutting off bars and tubes

The Fast Headstock is fitted with Lang's Patent Variable Speed Drive and Lang's Patent Automatic Speed-changing mechanism. By the use of these the revolutions of spindle automatically increase as the diameter being cut becomes smaller

The Slide Rests for carrying front and back tools are unusually strong and have been designed to withstand rough usage by unskilled workmen.

The Self-acting Feed has automatic knock-off, allowing the operator to do other work while the tools are cutting.

A Stop is provided for use when cutting off quantities to one length.

Pump, Pipe Arrangement, and Pan are fitted to allow a large supply of lubricant to tool when cutting. No counter motion required for this Lathe.

Additional Parts supplied.—One extra strong three-jaw independent chuck, 16in. diameter at the front end of spindle for gripping bars. One three-jaw self-centring chuck at back end of spindle for steadying bars. Two sample high-speed cutting tools. Set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

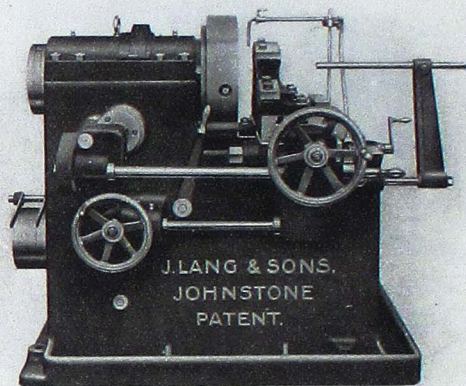
Diameter of fast and loose pulleys	...	...	...	...	...	10in.
Width of fast and loose pulleys	...	...	...	...	...	34in.
Speed of shaft, revolutions per minute	...	...	...	...	...	400
Feeds per rev. of spindle	...	...	...	...	...	8 in. 7/8 in. 3/4 in.
Diameter of hole through spindle	...	...	...	...	...	4 1/2 in.
Approximate floor space required	...	...	...	...	...	6ft. x 4ft.
" total finished weight	...	...	...	...	...	3584 lbs.
" weight packed for shipment	...	...	...	...	...	4144 lbs.
" measurement, packed for shipment	...	...	...	...	...	80 cub. ft.
Code No.	...	...	...	...	...	0094

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



6in. Cutting-off Lathe



No. 4353

THE Lathe illustrated has been designed for the use of engineers and boilermakers for cutting off bars or tubes.

The Machine is arranged with **Lang's Patent Variable-speed Drive** and **Lang's Patent Automatic Speed-changing Mechanism**. By the use of these the revolutions of spindle automatically increase as the diameter being cut becomes smaller.

The **Slide Rests** for carrying front and back tools are unusually strong, and have been designed to withstand rough usage by unskilled workmen.

The **Self-acting Feed** has automatic knock-off, allowing the operator to do other work while the tool is cutting.

A **Stop** is provided for use when cutting off quantities to one length.

Pump, Pipe Arrangement, and Pan are fitted to allow a large supply of lubricant to tools when cutting.

No Counter Motion required for this Lathe.

Additional Parts supplied.—One extra strong three-jaw independent chuck, 2 1/2 in. diameter, at the front end of spindle for gripping bars; three pin arrangements for steadying bars; two sample high-speed cutting-off tools; set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

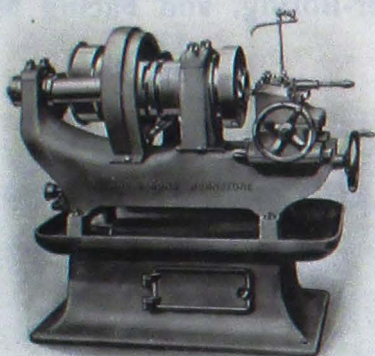
Diameter of fast and loose pulleys	14in.
Width of fast and loose pulleys	5 1/2 in.
Standard speed of shaft, revs. per minute	500
Feeds per revolution of spindle (unless otherwise ordered)	5 1/2 in.
Diameter of hole through spindle	7 1/2 in. x 5 1/2 in.
Approximate floor space required	7 1/2 ft. x 5 1/2 ft.
.. total finished weight	5712 lbs.
.. weight, packed for shipment	6608 lbs.
.. measurement, packed for shipment	170 cub. ft.
Code No.	0095

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Patent Nut Facing Lathe



No. 4026

THE above illustrates our latest design of **Nut Facing Lathe**. The greatest care has been taken to embody every feature which would tend to increase the output and improve the quality of the finished work. When the Lathe is in operation, the nut is placed on mandrel and run full on by power. After facing operations are completed the nut is **run off by power**, by the simple movement of a handle seen in front of spindle. Over a ten hours' day a considerable saving in time is thus effected, as the lathe belt, when once started, does not require to be stopped so long as one size of nut is being operated on. Very special attention is drawn to the **small overhang** of nut from the front bearing of spindle, thus ensuring great rigidity while cutting.

The **Slide Rest** is arranged with four tools for facing operations, viz., one roughing, one finishing, one chamfering, and one taking burr from inside of thread. They are so arranged as to follow each other with the least possible movement of slide. The **Tools** are plain pieces of steel, cut from the bar, and hardened without dressing. A **Stopper** is provided for each movement of slide, so that nuts may be finished to gauge. An arrangement is provided so that when large nuts are being run off they slide on to a mandrel, and are thus prevented from falling heavily on lathe.

The Body of Lathe is partly used as a tank for lubricant and partly for a cupboard for the workman's use.

A Pump is supplied for giving large supply of lubricant to tools.

All working nuts are case-hardened, and every Lathe is tested in actual operation before leaving the works.

Additional Parts supplied.—Set of nut mandrels, as specified under, each fitted with an improved spherical washer, which ensures nut being faced perfectly true to thread; counter-gear, including improved adjustable self-oiling bearings, arranged to run six months without re-oiling; shaft; cone; pair of pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

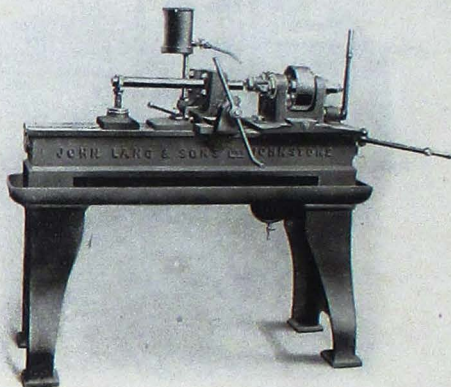
	Large Size.	Small Size.
Diameter of largest step of cone, in inches	14½	12½
Width of each step of cone, in inches	3½	3
Reduction by gearing	4 to 1	3 to 2
Countershaft pulleys, in inches, each	15 x 4½	12 x 3½
Speed of countershaft, in revolutions per minute	180	160
Mandrels supplied, rising by ¼ inch	None	½ to 1½
Mandrels supplied, rising by ½ inch	1½ to 3½	None
Approximate floor space required	5ft. 6in. x 2ft. 9in.	4ft. x 2ft.
" total finished weight	3472 lbs.	1568 lbs.
" total weight, packed for shipment	4144 lbs.	2016 lbs.
" measurement, packed for shipment	85 cub. ft.	49 cub. ft.
Code No.	0096	0097

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW



Double-Spindle Centring, Counter-Boring, and Facing Machines



No. 4031

THE Machine illustrated above has been designed to centre and counter-bore bars, bolts, studs, and similar work in the simplest and most correct manner possible. It is well known that unless the centres in an article to be turned are good, and have point of centre relieved by counter-boring small hole it is impossible to get first-class results in turning, either in speed or quality. This Machine is made in two sizes, and we can recommend it with every confidence. It has been tested in our own works and amongst our customers for many years, and has invariably given entire satisfaction.

The **Headstock** has two spindles, one for facing up to 1in. diameter or thereby, thus preparing the bar for second spindle, which centres and counter-bores. Each spindle is quickly moved into position by lever or hand-wheel.

The **Vice** has strong interlocking jaws; it has adjustment for wear, which ensures the work being gripped central. The large size—Code No. 0099—has two vices.

The **Bed** is arranged with pan underneath for water and cuttings.

All working nuts are case-hardened, and every Machine is tested in actual operation before leaving the works.

Additional Parts supplied.—Twelve double-ended centring and counter-boring drills; three facing tools; one water can and stand; counter-gear, including improved adjustable self-oiling bearings; shaft, driving pulleys, and belt-shifting apparatus; set of case-hardened spanners.

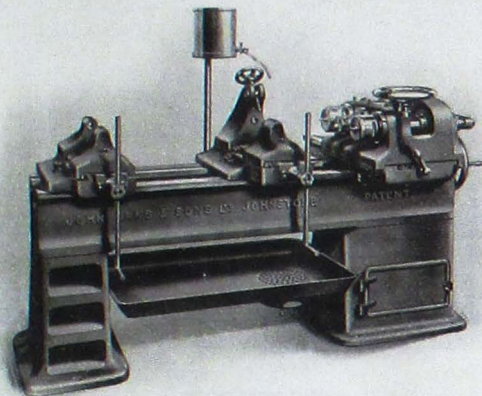
PRINCIPAL DIMENSIONS AND WEIGHTS.

	Small Size.	Large Size.
Length of bed	4ft.	5ft.
Diameter of bars gripped in vice	1/4in. to 4in.	1in. to 6in.
Speed of countershaft	200 revs. per minute.	160 revs. per minute
Fast and loose pulleys	8in. dia. x 3in. wide	14in. dia. x 9 1/2in. wide
Approximate floor space required	4ft. 6in. x 2ft. 6in.	5ft. 9in. x 3ft.
Total finished weight	1120 lbs.	1680 lbs.
.. total weight packed for shipment	1456 lbs.	2128 lbs.
.. measurement packed for shipment	48 cub. ft.	60 cub. ft.
Code No.	0098	0099

JOHN LANG & SONS LTD.

JOHNSTONE, near GLASGOW

Three-Spindle Centring, Counter-Boring and Facing Machines



No. 4032

The illustration shows a new type of Machine which we have designed and placed on the market for centring, counter-boring, and facing the ends of shafts and forgings. Its appearance among modern machine tools is due to the natural evolution resulting from the introduction of high-speed steel. To gain full advantage of heavy cuts at high speeds it is absolutely necessary for shafts and forgings to have large centres, properly counter-bored to prevent the point of lathe centres from bearing. All engineers recognise the extreme importance of the centres on the ends of any shaft being in alignment. This Machine produces work which fulfils these demands, and we are confident it will prove a valuable acquisition to any workshop where a number of Lathes are used. It is made in two sizes.

The Headstock carries three spindles, all driven by one belt, and each running at the correct speed for performing its operation. One spindle carries a simple tool for facing 1½ in. diameter or thereby; a second carries a twist drill for centring; while the third carries a small twist drill for counter-boring. Both drills are held in self-centring chucks and are easily removed for re-sharpening. Each spindle may be immediately brought into position and located mechanically.

Two Self-centring Vices are fitted on bed for gripping each end of work to be centred. They rest on an inverted V on bed, making it impossible ever to have side-shake. They are easily adjustable along bed to suit the various lengths of work to be centred.

Additional Parts supplied.—One twist drill for centring; one twist drill for counter-boring; three tools for facing; one water can and stand; pan for catching water and cuttings; counter-motion, including improved adjustable self-oiling bearings; shaft, driving pulley, fast and loose pulleys, and belt-shifting apparatus; set of case-hardened screw-keys.

PRINCIPAL DIMENSIONS AND WEIGHTS.

	Small size.	Large size
Length of bed	6ft.	8ft.
Diameter of bars gripped in vice	1½ in. to 8 in.	3 in. to 12 in.
Speed of countershaft in revolutions per minute	175	—
Speed of fast and loose pulley shaft in revs. per minute	—	300
Fast and loose pulleys	14 in. × 34 in. wide	12 in. × 3 in. wide
Approximate floor space required	6ft. 10 in. × 3ft. 3 in.	8ft. × 3ft. 9 in.
.. total finished weight	3248 lbs.	5600 lbs.
.. weight packed for shipment	3584 lbs.	6048 lbs.
.. measurement packed for shipment	62 cub. ft.	105 cub. ft.
Code No.	0100	0101

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JOHNSTONE, near GLASGOW