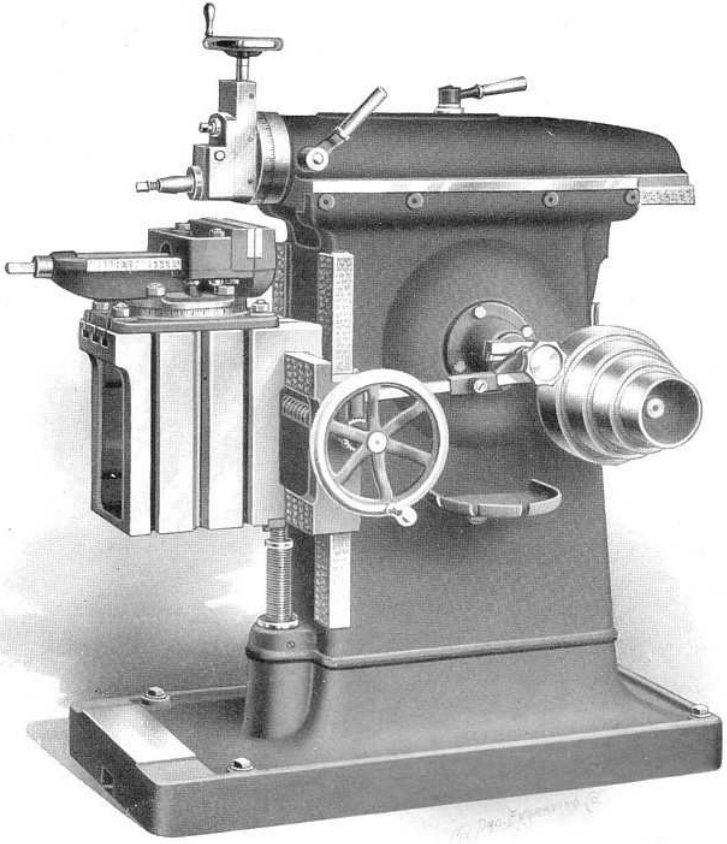
THE

JOHN STEPTOE SHAPER CO.

MANUFACTURERS OF
HIGH GRADE SHAPERS

CINCINNATI
OHIO
U.S.A.



14 Inch Steptoe Improved Crank Shaper.

THE above cut represents our 14 inch single geared crank shaper with quick return of stroke. We have been established since 1845, and have had a very long experience in the manufacture of shapers, and are therefore in a position to know what is necessary to build a good machine. We have placed in this machine the best material that money will buy, and every care and attention is taken in its construction. Every machine which we build is run under belt for about a week before it leaves our shop, and we therefore know that it will give perfect satisfaction when put in operation. We have given most careful attention to the designing of our machine, and have very strongly ribbed and braced the column, ram and base, to stand the severe strains incident to the use of high speed steel. This machine has been especially designed to meet the wants of the market for a plain shaper, adapted for medium classes of work.

ADJUSTABLE STROKE—The length of stroke on this machine is adjusted from the inside by means of an indicator on the pendulum. The position of the ram can be very quickly adjusted to suit the position of the work by means of the lever shown at the center of the ram, and a short stroke can be taken at any point.

BEARINGS—All flat bearings are very carefully scraped by hand to standard surface plates, thus insuring a high degree of accuracy, and avoiding the possibility of our machine chattering. All wearing surfaces are provided with gibs susceptible of fine adjustments. The shaft bearing and bull gear bearing is provided with a ring oiler, the ring carrying the oil from an oil well, thereby affording perfect lubrication, and avoiding the possibility of these bearings getting hot and cutting, which will prolong the life of the machine. The cone-pulley shaft bearing projects to the center of the cone-pulley, thereby making a very rigid support. There is absolutely no wear on our pendulum shaft bearing, as the shaft is held firmly in position and the pendulum or rocker arm swings back and forth on this shaft. The only wear therefore that occurs will take place on the shaft, which can be very readily replaced should it become worn.

CROSS-RAIL—The cross-rail is of very heavy design, and is strongly braced. The bearings are wide and very carefully scraped to a surface plate. The ways on the top are very heavy, thereby avoiding the possibility of springing when the cut is being taken.

TOOL HEAD—The tool head can be instantly set, and very rigidly held at any angle by means of the lever shown at the side of the head. This will be found a great improvement and time-saver over the old method of fastening the head with bolts, as it draws the tool head squarely against the face of the ram, and will not move while being tightened. The feed screw is provided with micrometer graduations in .001."

TABLE—The table is slotted on top and one side. The other side is drilled to permit easy clamping. The top of the table measures 9 x 13½ inches.

VISE—The vise is of very substantial construction. The base is graduated on an angle of 30 degrees, and can therefore be very readily read by the operator. The vise body is held to the base, by means of bolts, which hold it very firmly in position. The upper jaw is scraped by hand to a perfect fit on the lower jaw, and is held in position by means of slats, which grip firmly under the lower jaw. The upper jaw has two bolts to allow clamping to lower jaw, with the object of overcoming the tendency of the work to raise as it is tightened in the vise. The vise is provided with steel faced jaws 9 inches wide, 2 inches deep, and opens 8 inches.

DIMENSIONS Length of Stroke, 14¾ inches. Automatic cross feed, 14 inches. Vertical adjustment of table, 13 inches. Feed of tool block, 7 inches. Opening under ram for key-seating shafts up to 1½ inches in diameter. Cone-pulley has four changes of speed for 2¼ inch belt. Countershaft has tight and loose pulleys, 10 inches diameter for 2½ inch belt, and should make 175 revolutions per minute.

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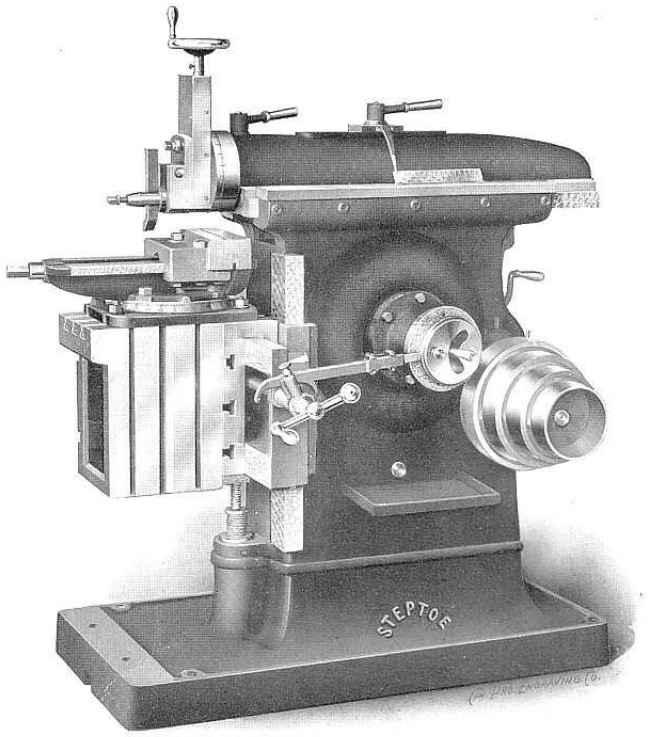

16 inch Improved Steptoe Crank Shaper.

THE above cut represents our 16" Crank Shaper with quick return of stroke, which we manufacture as either a single geared or back geared machine. We have been established since 1845, and have had a very long experience in Shaper building, and we are therefore, in a position to know what is necessary to build a good machine. We have equipped our Shaper with many time saving features, thus insuring the maximum of production and in designing our machine, a great deal of thought was given to the proper distribution of the metal. The column, ram and base on our machine have been given most careful attention in designing, and have been very strongly ribbed and braced to withstand the severe strain incident to the use of high speed steel.

ADJUSTABLE STROKE—The length of stroke on our machine can be adjusted while the machine is at rest or in motion, thereby avoiding the necessity of stopping the machine to perform the operation. The device for changing the stroke is self-locking, thus preventing any possible chance for the stroke to vary while the machine performs its work. The ram can be very quickly adjusted to suit the position of the work, and a short stroke can be taken at any point.

BEARINGS All flat bearings are very carefully scraped by hand to standard surface plates, thus insuring a high degree of accuracy, and avoiding the possibility of our machine chattering. All wearing surfaces are provided with gibs susceptible to fine adjustments. The shaft bearings in this machine are provided with cast iron bushings which can be very readily removed and replaced at any time, should it become necessary. We do not believe it will ever become necessary, as we have equipped these bearings with ring oilers; the ring carrying the oil to the shaft, as it revolves thereby affording constant and pefect lubrication. We have thereby avoided the possibility of these bearings getting hot and cutting. The bull gear bearing is also provided with a ring oiler. The cone pulley shaft bearing projects to the center of the cone pulley, thereby making a very rigid support. There is absolutely no wear on our pendulum shaft bearing, as the shaft is held firmly in position, and the rocker arm swings back and forth on this shaft. It will therefor never become necessary to replace this bearing, and the piece of steel can be very readily replaced should it become worn.

BACK GEARS—The back gears in our machine are of very simple construction, and consist of a pair of sliding gears. When one gear is working, the other is out of mesh, and the only wear on these gears occurs when they are actually working. These gears are splined to the shaft, thereby avoiding any possible wear on the hole, and insuring a perfect fit as long as the machine will last. By shifting these gears the power is increased or decreased, and the speed is increased or decreased at the will of the operator, which thereby gives two changes of speed for each step of the cone pulley.

CROSS RAIL- The cross rail is of very heavy design. The bearings are wide, and very carefully scraped to a surface plate. The ways on the top are very carefully gauged with a hand gauge, and are very heavy, thereby avoiding the possibility of springing.

TOOL HEAD—The tool head can be instantly set, and very rigidly held at any angle, by means of lever shown at the back of the head. This will be found a great improvement and time saver over the old method of securing the head with bolts, as it draws the tool head squarely against the face of the ram, and will not move while being tightened. The screw is provided with micrometer graduations in .001".

FEED PLATE—The holes in the feed plate are drilled, tapered, and are graduated to correspond with the teeth in the feed ratchet, so that any desired feed can be very quickly secured. The pin which enters these holes is tapered, so that any wear that may occur is automatically taken up. The ring is split, and provided with a fibre washer, thus permitting any wear that may occur in the ring to be easily adjusted.

TABLE—The table is slotted on top and both sides, and can be very readily removed, and work bolted to the slotted apron to which the table is attached. The top of the table measures 10 x 16 inches, and being slotted its entire length affords a very liberal clamping surface.

VISE—The vise is of very substantial construction. The base is graduated on an angle of 30 degrees, and can therefore be very readily seen by the operator. The vise body is bolted to the base, by means of bolts, which hold it very firmly in position. The upper jaw is scraped by hand to a perfect fit on the lower jaw, and is held in position by means of slats, which grip firmly under the lower jaw. The upper jaw has two bolts to allow clamping to the lower jaw, with the object of overcoming the tendency of the work to raise as it is tightened in the vise. The vise is provided with steel faced jaws 2 inches deep, and 10 inches wide, and opens 10½ inches.

DIMENSIONS—Actual length of stroke, 16¾ inches. Automatic cross feed 19½ inches. Vertical adjustment of table, 13 inches. Feed of Tool Block, 7½ inches. Width of belt, 2½ inches. Countershaft has tight and loose pulleys, 12 inches in diameter for 3 inch belt and should make 200 R. P. M. Single geared ratio, 6½ : 1. Back geared ratio, 20 : 1. Side of table, 12 x 13 inches.

POWER DOWN FEED—A power down feed to the head is furnished when ordered, and is of very simple design. A shaft, which slides through a friction box, operates the feed. By use of this friction box we avoid the possibility of the gears being broken at any time.

TABLE SUPPORT—A very strong aud quickly adjusted table support furnished when ordered. All of our machines are drilled so that it can be placed on the machine at any time. It is bolted to the base directly under the cut where it is most needed.

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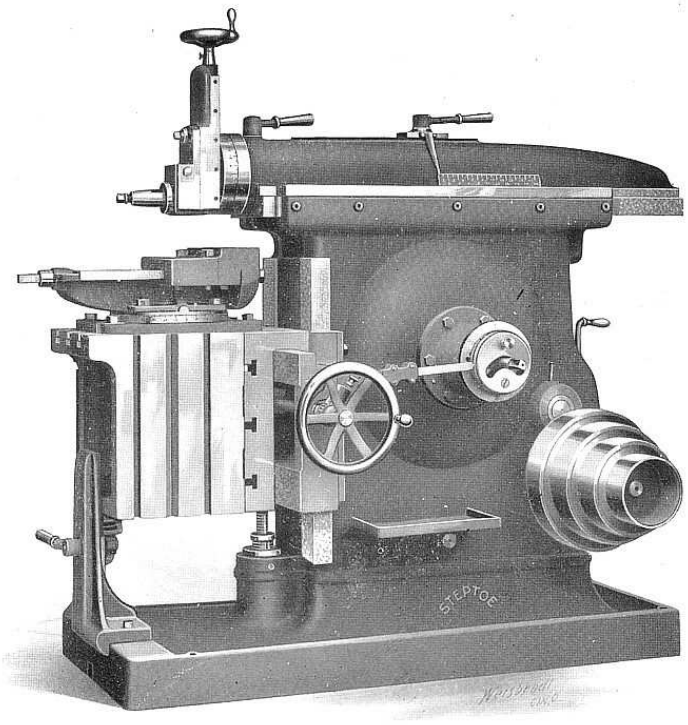

20 inch Improved Steptoe Crank Shaper.

THE above cut represents our 20" Crank Shaper with quick return of stroke, which we manufacture as either a single geared or back geared machine. We have been established since 1845, and have had a very long experience in Shaper building, and we therefore know what is necessary to build a good machine. We have equipped our Shaper with many time saving features, thus insuring the maximum of production and in designing our machine, a great deal of thought was given to the proper distribution of the metal. The column, ram and base on our machine have been given most careful attention in designing, and have been very strongly ribbed and braced to withstand the severe strain incident to the use of high speed steel.

ADJUSTABLE STROKE—The length of stroke on our machine can be adjusted while the machine is at rest or in motion, thereby avoiding the necessity of stopping the machine to perform this operation. The device for changing the stroke is self-locking, thus preventing any possible chance for the stroke to vary while the machine performs its work. The ram can be very quickly adjusted to suit the position of the work, and a short stroke can be taken at any point.

BEARINGS—All flat bearings are very carefully scraped by hand to standard surface plates, thus insuring a high degree of accuracy, and avoiding the possibility of our machine chattering. All wearing surfaces are provided with gibs susceptible to fine adjustments. The shaft bearings in this machine are provided with cast iron bushings which can be very readily removed and replaced at any time, should it become necessary. We do not believe it will ever become necessary, as we have equipped these bearings with ring oilers; the ring carrying the oil to the shaft, as it revolves thereby affording constant and pefect lubrication. We have thereby avoided the possibility of these bearings getting hot and cutting. The bull gear bearing is also provided with a ring oiler. The cone pulley shaft bearing projects to the center of the cone pulley, thereby making a very rigid support. There is absolutely no wear on our pendulum shaft bearing, as the shaft is held firmly in position, and the rocker arm swings back and forth on this shaft. It will therefor never become necessary to replace this bearing, and the steel shaft can be very readily replaced should it become worn.

BACK GEARS—The back gears in our machine are of very simple construction, and consist of a pair of sliding gears. When one gear is working, the other is out of mesh, and the only wear on these gears occurs when they are actually working. These gears are splined to the shaft, thereby avoiding any possible wear on the hole, and insuring a perfect fit as long as the machine will last. By shifting these gears the power is increased or decreased, and the speed is increased or decreased at the will of the operator, which thereby gives two changes of speed for each step of the cone pulley.

CROSS RAIL The cross rail is of very heavy design. The bearings are wide, and very carefully scraped to a surface plate. The ways on the top are very carefully gauged with a hand gauge, and are very heavy, thereby avoiding the possibility of springing.

TOOL HEAD—The tool head can be instantly set, and very rigidly held at any angle, by means of lever shown at the back of the head. This will be found a great improvement and time saver over the old method of securing the head with bolts, as it draws the tool head squarely against the face of the ram, and will not move while being tightened. The screw is provided with micrometer graduations in .001".

FEED PLATE—The holes in the feed plate are drilled tapered, and are graduated to correspond with the teeth in the feed ratchet, so that any desired feed can be very quickly secured. The pin which enters these holes is tapered, so that any wear that may occur is automatically taken up. The ring is split, and provided with a fibre washer, thus permitting any wear that may occur in the ring to be easily adjusted.

TABLE—The table is slotted on top and both sides, and can be very readily removed, and work bolted to the slotted apron to which the table is attached. The top of the table measures 14½ x 20 inches, and being slotted its entire length affords a very liberal clamping surface.

VISE—The vise is of very substantial construction. The base is graduated on an angle of 30 degrees, and can therefore be very readily seen by the operator. The vise body is bolted to the base, by means of bolts, which hold it very firmly in position. The upper jaw is scraped by hand to a perfect fit on the lower jaw, and is held in position by means of slats, which grip firmly under the lower jaw. The upper jaw has two bolts to allow clamping to the lower jaw, with the object of overcoming the tendency of the work to raise as it is tightened in the vise. The vise is provided with steel faced jaws 2¼ inches deep, and 11 inches wide, and the vise opens 12 inches.

DIMENSIONS—Actual length of stroke, 20¾ inches. Automatic cross feed 23¾ inches. Vertical adjustment of table, 12 inches. Feed of Tool Block, 9¼ inches. Width of belt, 3 inches. Countershaft has tight and loose pulleys, 12 inches in diameter for 3½ inch belt and should make 175 R. P. M. Single geared ratio, 6½:1. Back geared ratio, 22:1. Side of table, 13¾ x 16½.

TABLE SUPPORT—Our table support which is furnished with each machine is very simple in design and there is nothing on it to get out of order. It can be very quickly adjusted by means of the lever shown and is always directly under the cut, where it is most needed.

POWER DOWN FEED—A power down feed to the head is furnished when ordered, and is of very simple design. A shaft, which slides through a friction box, operates the feed. By use of this friction box we avoid the possibility of the gears being broken at any time.

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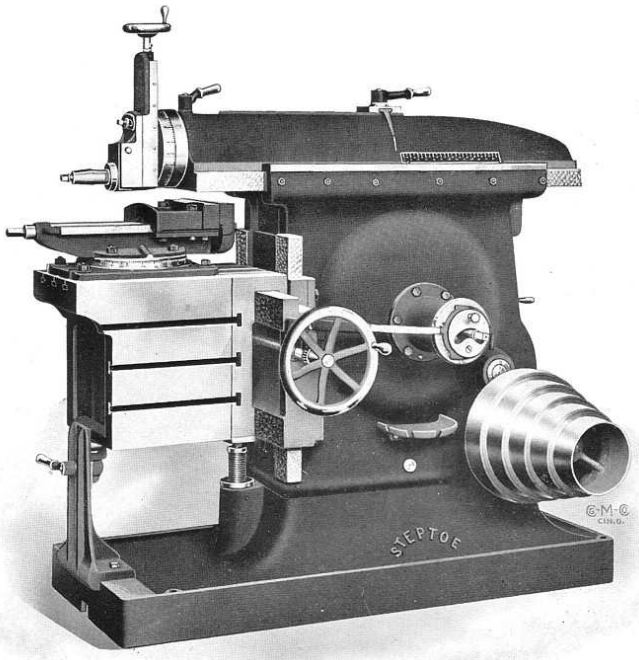

24 inch Improved Back Geared Crank Shaper.

IN designing our 24" Back Geared Crank Shaper with quick return of stroke we knew that great power and strength were absolutely necessary in this machine, in connection with good workmanship and material. We therefore back-geared our machine very heavily, thereby enabling the operator to take exceptionally heavy cuts. We have made the walls of the column, ram and base very heavy, and then strongly ribbed and braced them, thus enabling our machine to withstand exceptionally heavy strains and take very heavy cuts with high speed steel, thereby insuring the maximum of production.

We have been established since 1845, and our long experience has taught us what is necessary to build a good machine. We have equipped our shaper with many time-saving features, and every machine is run under belt for at least a week before it leaves our shop. We therefore know it will be in perfect working order when put in operation by the purchaser.

ADJUSTABLE STROKE—The length of stroke on our machine can be adjusted while the machine is at rest or in motion, therby avoiding the necessity of stopping the machine to perform this operation. The device for changing the stroke is self-locking, thus preventing any possible chance for the stroke to vary while the machine performs its work. The ram can be very quickly adjusted to suit the position of the work, and a short stroke can be taken at any point.

BEARINGS—All flat bearings are very carefully scraped by hand to standard surface plates, thus insuring a ligh degree of accuracy, and avoiding the possibility of our machine chattering. All wearing surfaces are provided with gibs susceptible to fine adjustments. The shaft bearings in this machine are provided with cast iron bushings which can be very readily removed and replaced at any time, should it become necessary. We do not believe it will ever become necessary, as we have equipped these bearings with ring oilers, the ring carrying the oil to the shaft, as it revolves thereby affording constant and perfect lubrication, and the possibility of these bearings getting hot and cutting. The bull gear is also provided with a ring oiler. The cone pulley shaft bearing projects to the center of the cone pulley, thereby making a very rigid support. There is absolutely no wear on our pendulum shaft bearing, as the shaft is held firmly in position, and the rocker arm swings back and forth on this shaft. It will, therefore, never become necessary to replace this bearing, and the steel shaft can be very readily replaced should it become worn.

BACK GEARS—The back gears in our machine are of very simple construction, and consist of a pair of sliding gears. When one gear is working, the other is out of mesh, and the only wear on these gears occurs when they are actually working. These gears are splined to the shaft, thereby avoiding any possible wear on the hole, and insuring a perfect fit as long as the machine will last. By shifting these gears the power is increased or decreased, and the speed is increased or decreased at the will of the operator, which thereby gives two changes of speed for each step of the cone pulley.

CROSS RAIL—The cross rail is of very heavy design. The bearings are wide, and very carefully scraped to a surface plate. The ways on the top are very carefully gauged with a hand gauge, and are very heavy, thereby avoiding the possibility of springing.

TOOL HEAD—The tool head can be instantly set, and very ridgily held at any angle, by means of lever shown at the back of the head. This will be found a great improvement and time saver over the old method of securing the head with bolts, as it draws the tool head squarely against the face of the ram, and will not move while being tightened. The screw is provided with micrometer graduations in .001".

FEED PLATE—The holes in the feed plate are drilled, tapered, and are graduated to correspond with the teeth in the feed ratchet, so that any desired feed can be very quickly secured. The pin which enters these holes is tapered, so that any wear that may occur is automatically taken up. The ring is split, and provided with a fibre washer, thus permitting any wear that may occur in the ring to be easily adjusted.

TABLE—The table is slotted on top and both sides, and can be very readily removed, and work bolted to the slotted apron to which the table is attached. The top of the table measures 16 x 25 inches, and being slotted its entire length affords a very liberal clamping surface.

VISE—The vise is of very substantial construction. The base is graduated on an angle of thirty degrees and the graduations can therefore be very readily seen by the operator. The vise body is bolted to the base by means of bolts, which hold it very firmly in position. The upper jaw is scraped by hand to a perfect fit on the lower jaw, and is held in position by means of slats, which grip firmly under the lower jaw. The upper jaw has two bolts to allow clamping to the lower jaw, with the object of overcoming the tendency of the work to raise as it is tightened in the vise. The vise is provided with steel-faced jaws 2¼ inches deep, and 12 inches wide, and the vise opens 15 inches.

DIMENSIONS—Actual length of stroke, 24¾ inches. Automatic cross feed 27½ inches. Vertical adjustment of table, 12 inches. Feed of Tool Block, 10½ inches. Countershaft has tight and loose pulleys, 12 inches in diameter for 4-inch belt and should make 235 R. P. M. Single-geared ratio, 6½ to 1. Back geared ratio, 25 to 1. The machine belt should be 3¼ inches, **extra heavy double.**

TABLE SUPPORT—Our table support which is furnished with each machine is very simple in design and there is nothing on it to get out of order. It can be very quickly adjusted by means of the lever shown and is always directly under the cut, where it is most needed.

POWER DOWN FEED—A power down feed to the head is furnished when ordered, and is of very simple design. A shaft, which slides through a friction box, operates the feed. By use of this friction box we avoid the possibility of the gears being broken.

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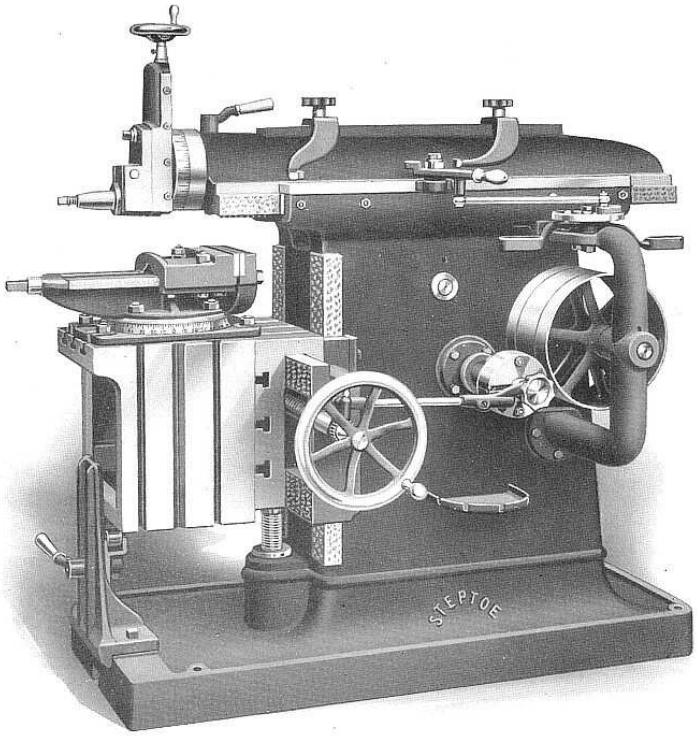

26 inch Improved Triple Geared Shaper.

THE above cut represents our latest design 26" triple geared shaper. This machine is built very much along the lines of a planer, and is driven exactly like a planer by means of shifting belts.

The triple geared shaper has some advantages over the crank shaper; it will take heavier cuts, it has a longer life, and a cheaper price. It has an even cutting speed, and in a great many shops will answer the purpose as well as a crank shaper. The two principal advantages which a crank shaper has over this machine are: a greater number of speeds can be secured and the ability to plane up to a shoulder when necessary. We recommend the triple geared shaper very strongly where the purchaser has a great deal of straight planing to do.

These machines are run under belt from a week to two weeks before they leave our shop, and we therefore know that they are in perfect working order before they leave.

The column, ram and base are of very heavy design, and have been very strongly ribbed and braced to stand the exceptionally heavy strains caused by the use of high speed steel, when taking very heavy cuts.

ADJUSTABLE STROKE—The length of stroke on this machine can be very quickly adjusted while the machine is running by means of two dogs shown at the top of the machine, which are within easy reach of the operator. This can be done while the machine is in motion, thus avoiding the necessity of stopping the machine to perform this operation. The machine can be very quickly stopped by pushing the lever which operates the belt shifting device.

BEARINGS—All flat bearings are very carefully scraped to standard surface plates, thus insuring a high degree of accuracy for all operations performed on the machine, and avoiding the possibility of the machine chattering while doing its work. These bearings are provided with gibs to take up any wear that may occur. These gib screws are provided with cast iron bushings, which can be very readily removed and replaced at any time should it become necessary. These bearings are equipped with ring oilers, and spiral oil grooves are chased on the shaft, thereby insuring the proper distribution of the oil.

BELT SHIFTING DEVICE—The belts are shifted by means of a circular plate having eccentrical slots which receive the studs of the steel arms. These slots are of such form as to shift one belt before the other, preventing the disagreeable squealing of belts. By this arrangement the shifters are always locked, so that the belts cannot move them. This will be found of special advantage when it is desired to stop the machine (without stopping the countershaft) to examine or remove the work.

GEARING—The driving pinion and intermediate gear are on the outside of the machine, permitting the use of an extra large gear, increased speed of pulleys, and consequent gain in power. The ram or cutter bar is driven by means of two rack gears of large diameter, placed on opposite sides of the ram. The racks are of steel, cut from the solid bar, and the teeth in these racks are staggered, thus avoiding the excessive jarring at each end of the stroke. All gears are keyed to the shaft. The use of two gears for driving the ram, leaves an opening in the top of the column for key-seating, a feature which is not easily found in triple geared shapers.

TOOL HEAD—The tool head can be instantly set, and very rigidly held at any angle, by means of lever shown at the back of the head. This will be found a great improvement and time saver over the old method of securing the head with bolts, as it draws the tool head squarely against the face of the ram, and will not move while being tightened. The screw is provided with micrometer graduations in .001".

TABLE—The table is slotted on top and both sides, and can be very readily removed, and work bolted to the slotted apron to which the table is attached. The top of the table measures 14½x20 inches, and being slotted its entire length affords a very liberal clamping surface.

TABLE SUPPORT—Our table support which is furnished with each machine is very simple in design and there is nothing on it to get out of order. It can be very quickly adjusted by means of the lever shown and is always directly under the cut, where it is most needed.

VISE—The vise is of very substantial construction. The base is graduated on an angle of 30 degrees, and can therefore be very readily seen by the operator. The vise body is bolted to the base, by means of bolts, which hold it very firmly in position. The upper jaw is scraped by hand to a perfect fit on the lower jaw. The upper jaw has two bolts to allow clamping to the lower jaw, with the object of overcoming the tendency of the work to raise as it is tightened in the vise. The vise is provided with steel faced jaws, 2¼ inches deep, and 11 inches wide, and the vise opens 12 inches.

DIMENSIONS—Extreme length of stroke, 28 inches. Automatic cross feed 23¾ inches. Vertical adjustment of table, 12 inches. Feed of Tool Block 9¼ inches. Width of Machine belt 1¼ inch double. Width of countershaft belt 2½ inches double. Countershaft has tight and loose pulleys 10" in diameter with a 5" face.

COUNTERSHAFT—The countershaft is arranged to give two changes of speed to the machine, and we recommend 450 RPM and 250 RPM. This gives a cutting speed to the ram of about 35 feet per minute on the high speed, and 18 feet per minute on the slow speed. The return of the ram is twice as fast as the cutting speed.

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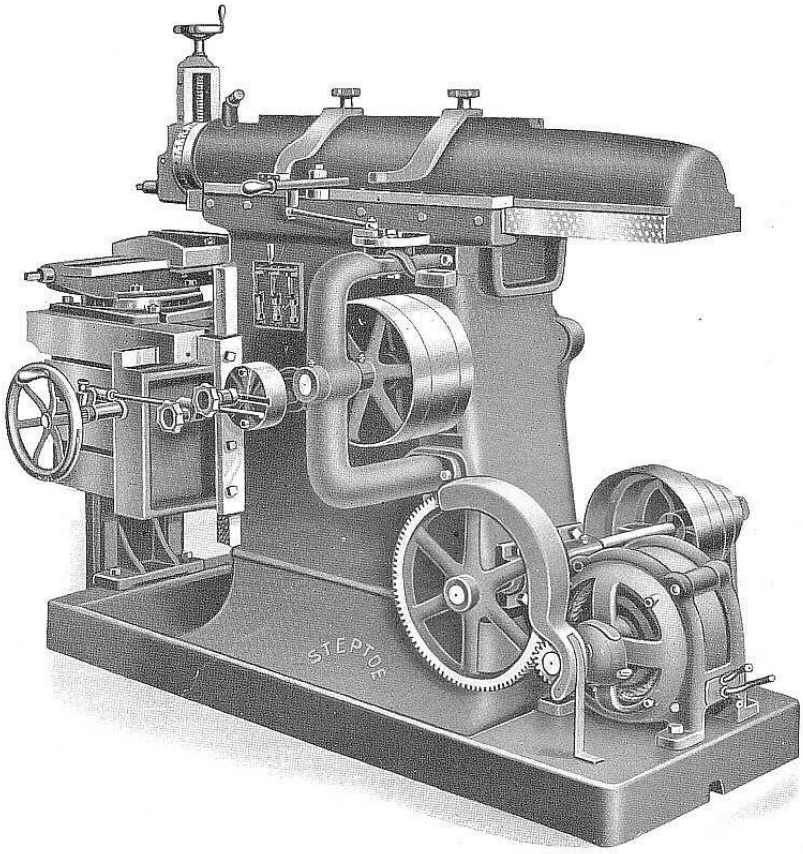


32 inch Steptoe Triple Geared Motor Drive.

THE above cut represents our 32-inch Triple Geared Shaper driven by means of a constant speed motor. The drive is a very simple one and hardly needs any explanation. The cone pulley is supported on the outer end by means of a bracket. Four changes of speed are secured through a four-step cone pulley on the countershaft. These speed changes are secured exactly as they would be on a belt driven crank shaper.

All of our machines are tested thoroughly, and run under belt for at least a week before they leave our shop, consequently, we know that they are in perfect working order, and that they will give satisfaction.

We place in them the highest grade of material and workmanship, and the column, ram and base are of of very heavy design and are strongly ribbed and braced to stand exceptionally heavy cuts with high speed steel.

ADJUSTABLE STROKE—The length of stroke on this machine can be very quickly adjusted while the machine is running, by means of two dogs shown at the top of the machine, which are within easy reach of the operator. This can be done while the machine is in motion, thus avoiding the necessity of stopping the machine to perform this operation. The machine can be very quickly stopped by pushing the lever which operates the belt-shifting device.

BEARINGS—All flat bearings are very carefully scraped to standard surface plates, thus insuring a high degree of accuracy for all operations performed on the machine, and avoiding the possibility of the machine chattering while doing its work. These bearings are provided with gibs to take up any wear that may occur. These gib screws are provided with lock nuts to prevent their moving after they have been adjusted. The shaft bearings in the column are provided with cast iron bushings, which can be very readily removed and replaced at any time should it become necessary. These bearings are equipped with ring oilers, and spiral oil grooves are chased on the shaft, thereby insuring the proper distribution of the oil.

BELT SHIFTING DEVICE—The belts are shifted by means of a circular plate having eccentrical slots, which receive the studs of the shifter arms. These slots are of such form as to shift one belt before the other preventing the disagreeable squealing of belts. By this arrangement the shifters are always locked, so that the belts cannot move them. This will be found of special advantage when it is desired to stop the machine without stopping the countershaft to examine or remove the work.

GEARING—The driving pinion and intermediate gear are on the outside of the machine, permitting the use of an extra large gear, increased speed of pulleys and consequent gain in power. The ram or cutter bar is driven by means of two rack gears of large diameter, placed on opposite sides of the ram. The racks are of steel, cut from the solid bar, and the teeth in these racks are staggered, thus avoiding the excessive jarring at each end of the stroke. All gears are keyed to the shaft. The use of two gears for driving the ram, leaves an opening in the top of the column for key-seating, a feature which is not usually found in triple-geared shapers.

TOOL HEAD—The tool head can be instantly set and very rigidly held at any angle, by means of lever shown at the back of the head. This will be found a great improvement and time saver over the old method of securing the head with bolts, as it draws the tool head squarely against the face of the ram, and will not move while being tightened. The screw is provided with micrometer graduations in .001″.

TABLE—The table is slotted on top and both sides, and can be very readily removed, and work bolted to the slotted apron to which the table is attached. The top of the table measures 16 x 25 inches, and being slotted its entire length affords a very liberal clamping surface.

TABLE SUPPORT—Our table support which is furnished with each machine is very simple in design and there is nothing on it to get out of order. It can be very quickly adjusted by means of the levers shown and is always directly under the cut, where it is most needed.

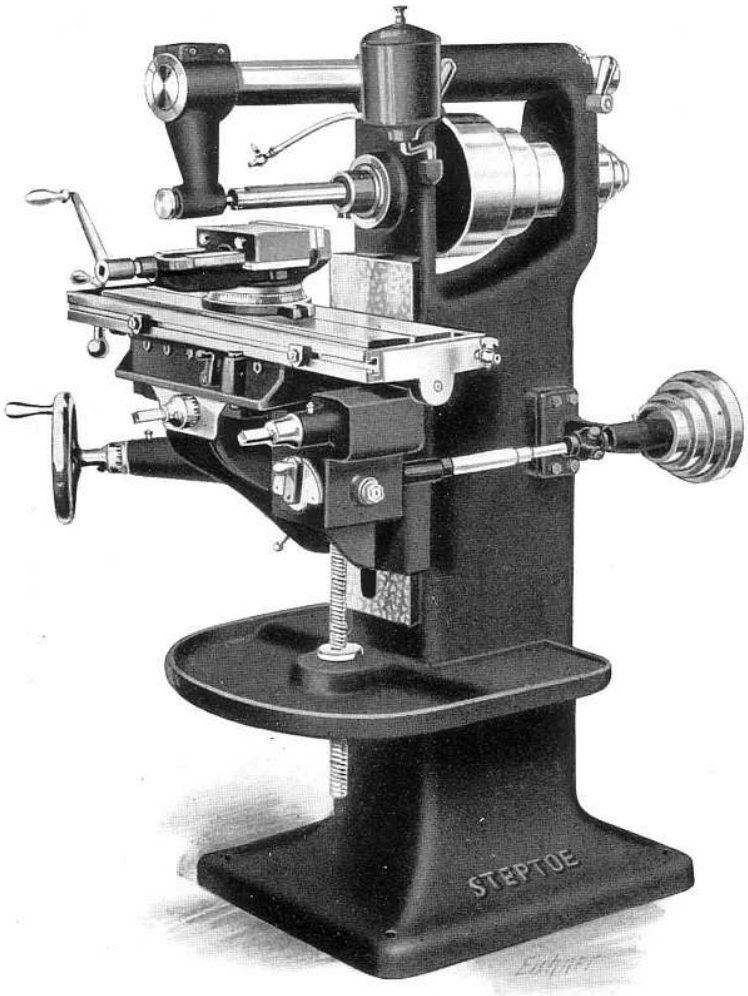
VISE—The vise is of very substantial construction. The base is graduated on an angle of thirty degrees and can therefore be very readily seen by the operator. The vise body is bolted to the base by means of bolts, which hold it very firmly in position. The upper jaw is scraped by hand to a perfect fit on the lower jaw. The upper jaw has two bolts to allow clamping to the lower jaw, with the object of overcoming the tendency of the work to raise as it is tightened in the vise. The vise is provided with steel-faced jaws 2¼ inches deep and 12 inches wide and the vise opens 15 inches.

DIMENSIONS—Extreme length of stroke, 34 inches. Automatic cross feed, 33 inches. Vertical adjustment of table, 14 inches. Feed of tool block, 11 inches. Width of machine belt, 1¼-inch EXTRA HEAVY DOUBLE BELT. Width of countershaft belt, 2½-inch DOUBLE. Countershaft has tight and loose pulleys 10 inches in diameter with a 5-inch face. Keyway capacity, 5½ inches.

COUNTERSHAFT—The countershaft is arranged to give two changes of speed to the machine and we recommend 550 R. P. M. and 300 R. P. M. This gives a cutting speed to the ram of about 35 feet per minute on the high speed and 18 feet per minute on the slow speed. The return of the ram is twice as fast as the cutting speed.

THE JOHN STEPTOE SHAPER CO.

CINCINNATI, OHIO, U. S. A.



Steptoe No. 0 Power Feed Miller.

HE above cut is that of our No. 0 Plain Power Feed Milling Machine. In designing this machine we had in view the supplying of the market with a small heavy tool rigidly designed in all parts and capable of taking a heavy cut.

This machine while not provided with back gears has a three-step cone pulley, with a 3⅛" face for a 3" belt. The column, saddle, knee and table are all very heavily designed, thus enabling the operator to take heavy cuts with accuracy. The highest grade of material and workmanship are used throughout, and sight feed oilers indicate at all times the amount of oil in the bearings.

This machine is especially adapted for the milling of small parts quickly and accurately, and will prove a profitable investment where small parts are to be manufactured in large quantities. It is also especially adapted for use in automobile garages, repair shops, tool rooms, etc.

TABLE—The table has three slots in the top, cut out of solid metal and has a working surface of 25½" by 8¾". Its entire length, including the oil channels is 30". The quick return of 3 to 1 is operated from the front of the machine. All feed screws are provided with collars graduated in .001. Eight changes of feed are provided ranging from .006 to .064.

The nut for the elevating screw is made from hard bronze, and the knee is provided with ball bearings. The slots in the table are ⅝", and will accommodate a bolt ⅜"x 1¼". The wear in the screw is taken up by means of a threaded collar. The stops are provided with longitudinal and vertical feeds.

SPINDLE—The spindle is made of **high grade hammered crucible steel accurately ground.** The hole through the spindle is 9/16". Spindle has tapered bearings and wear can be taken up by means of the threaded nut at end of journals. Tapered hole in end is No. 9 B. & S. standard. The spindle will make from 62 to 500 R. P. M. The nose of the spindle is 2" with 4½ U. S. standard thread.

DRIVE—The machine is equipped with a three-step cone pulley giving three changes of speed, either to the right or to the left, for 3" belt. **Use Heavy Double Belts.**

EQUIPMENT—The machine is equipped with vise, countershaft, all necessary wrenches, overhanging arm and ⅞" arbor and one No. 5 to No. 9 collet.

VISE—The vise has graduated swivel base with hardened jaws 6" long, 1 5/16" deep, and opens 3¾" and will swivel 360°. Our vise has a graduated swivel base with a screw running its entire length which acts as a support for the rear jaw and prevents breakages. The upper jaw is scraped to a perfect fit on the lower jaw.

COUNTERSHAFT—The countershaft has two clutch pulleys, 10" in diameter, 3¼" face for 3" belt, and should run 125 and 250 R. P. M. The countershaft boxes are equipped with ring oilers.

OVERHANGING ARM—The shaft of the overhanging arm is 2¾" in diameter, made of soild bar steel ground. The arm can be very easily removed or put out of the way when desired. The distance from the center of spindle to the under side of the arm is 5⅛".

FEEDS—Longitudinal, 15"; transverse, 6¼"; vertical adjustment, 12" on screw elevation.

WEIGHT—Weight of machine with countershaft and crated, 1,325 pounds.

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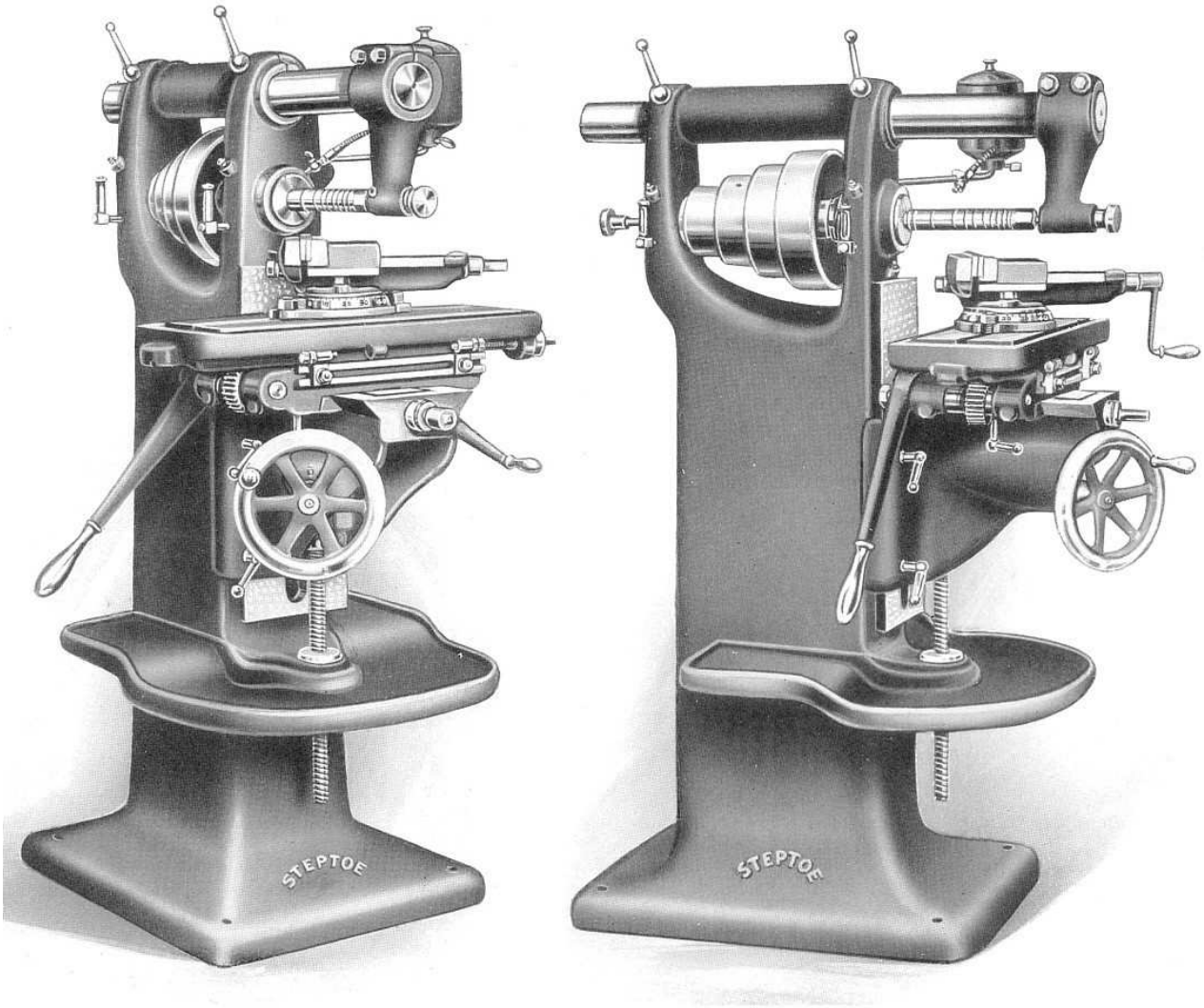


Steptoe No. 1 Hand-Milling Machine.

IN THE building of our Hand Milling Machine, we have behind us our years of experience in the manufacture of machine tools, having been established since 1845, and we have been building iron working machines since that time. We, therefore, know what is necessary to build a good machine, and we have placed in this machine the very highest grade of material and workmanship.

This machine is especially adapted for the milling of small parts and the keyways of shafts. Small parts can be built very much quicker on this machine than on the larger size machines. It is especially adapted for work in tool rooms, automobile garages, technical schools, typewriter, gun and automobile works.

TABLE—The table has one slot in the top cut out of solid metal, and has a working surface of 20" x 6". Its entire length, including the channel, is 24" x 8¼". The longitudinal feed can be operated by means of the hand-lever, or by releasing the lever and engaging the nut, the screw feed can be used. The screw feed is provided with a collar accurately graduated in .001, and is very useful where accuracy is required in feeding the table. The lever feed is used for the rapid milling of small parts. The knee is raised or lowered by means of a screw. The elevating shaft is provided with a hand-wheel, which is always ready for instant use and is provided with a collar graduated in .001.

SPINDLE—The spindle is made of high-grade crucible steel accurately ground. The hole through the spindle is $\frac{9}{16}$".

DRIVE—The machine is equipped with a four-step cone-pulley giving four changes of speed, either to the right or to the left, for 2¼" belt. **Use Heavy Double Belts.**

EQUIPMENT—The machine is equipped with vise, countershaft, all necessary wrenches and overhanging arm.

VISE—The vise has graduated swivel base with hardened jaws 6" long, $1\frac{5}{16}$" deep, and opens 3¾".

COUNTERSHAFT—The countershaft has one tight and two loose pulleys 12" in diameter for 3" belt, and should run 250 r. p. m.

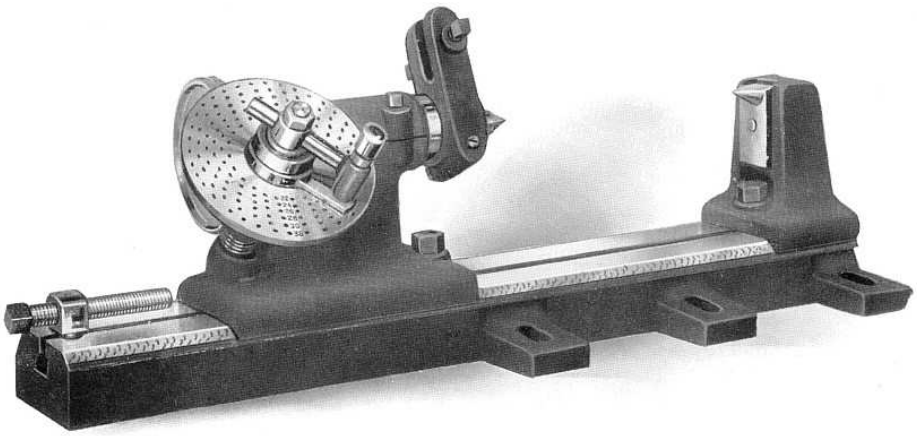
OVERHANGING ARM—The shaft of the overhanging arm is 2¾" in diameter, made of solid bar steel ground. The arm can be very easily removed or put out of the way when desired. The distance from the center of spindle to the under side of the arm is 5⅛".

FEEDS—Longitudinal, 10"; transverse, 6¼"; vertical adjustment, 12".

WEIGHT—Weight of machine with countershaft and crated, 1,325 pounds.

The John Steptoe Shaper Co.

Cincinnati, Ohio.



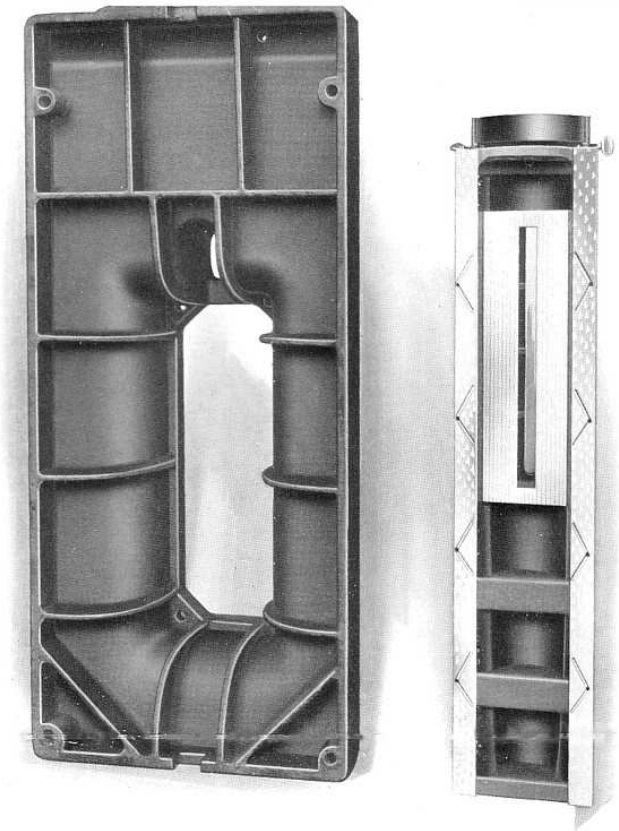
Index Centers.

THE Index Centers represented in the above cut are especially designed for shaper work, but can also be used on milling machine planer or drill press. The entire construction is very heavy and substantial.

They will swing a diameter of 10″, and will take any length between centers up to 13″. The back center can be raised or lowered for taper work, and both the head stock or tail stock are scraped by hand to a perfect fit on the base. The dial is provided with sector blades, which will be found a great convenience. The worm wheel has 80 teeth driven by a worm with a double thread. It will, therefore, take 40 turns of the handle to make one turn of the spindle.

To find the number of turns required to get a certain gear, divide the number of teeth of the gear desired into 40 turns. For example, if you want to cut a gear of 16 teeth;

1-16 x 40—2½ turns } 2 turns,
½ x 30—15 holes } 15 holes.



Ram and Base.

BASE.—The above illustration shows the exceptionally strong base provided for our machine. A small vibration at the base of the shaper would mean a very large vibration at the tool, and in order to overcome this vibration and chatter marks in the work, we have greatly strengthened our base by means of heavy ribs. We have not only made the walls of our base heavy and exceptionally deep, but we have greatly increased the strength by means of these ribs.

RAM.—The ram as well as the base in a shaper must be made exceptionally strong. We have not depended on the wall of our ram to give it sufficient strength. We have placed in it big strong ribs, as will be seen from the illustration; thus avoiding any possibility of vibration. The cores in our ram are so arranged, that the ways in the ram will always be found absolutely free from sand holes or shrink holes. The bottom side of these ways are surfaced and scraped by hand until an absolute straight surface is assured. Then by means of a hand guage the side and top of the ways are scraped in line with the bottom, thereby insuring that the ram will run in a perfect line when taking a cut.

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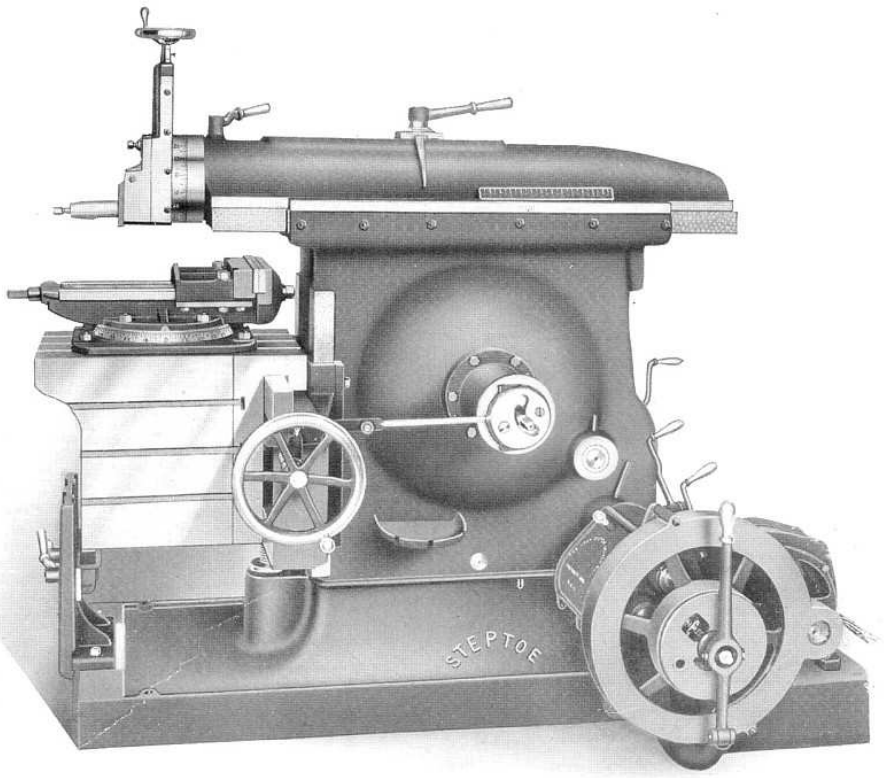

Motor Drive for Steptoe Shapers.

THE INCREASING DEMAND for motor drives, has led us to design a standard construction for all of our crank shapers. The above cut represents our crank shaper driven by means of a constant speed motor, and a clutch gear on the speed box.

All the shaft bearings in our machines are equipped with bushings which can be readily removed and replaced at any time, should it become necessary, and ring oilers are also provided for these bearings, to avoid the possibility of the shaft getting hot and cutting. Spiral oil channels are chased the entire length of the bearing, to insure the proper distribution of the oil. The bull gear bearing in our machine is equipped with a chain oiler, thereby affording constant lubrication. We have reduced the wear on all parts of our shaper to a minimum, and we place in our machines the best material and workmanship that money can buy. That is the reason that STEPTOES SHAPERS are "just a little better."

CONSTRUCTION:—The method of construction is so simple that the illustration almost explains itself; a small pinion on the motor shaft, drives into a clutch gear on the speed box shaft, which in turn operates the speed box, through which the speed changes are secured. By means of this clutch, the machine can be stopped or started without stopping the motor. This will be found a decided advantage, as it enables the operator to stop the machine instantly at any desired point, and avoids waiting until the motor has stopped before any work can be removed from the machine, or measurements taken. It also avoids the time lost in starting the motor.

SPEED BOX:—A complete description of our speed box will be found in our speed box circular. We have relieved the driving shaft of all the strain from the belt, by means of a bushing which extends from the column of the shaper into the speed box. This bushing in itself, would be sufficient to relieve the driving shaft of any strain, but in addition to that, we call your attention to the substantial support which extends from the base of the shaper to the bottom of the speed box. In designing our speed box, we have reduced the wear to a minimum. We have no gears running idle on shafts, and we therefore avoid the wear on the hole in these gears, and the noise caused by such wear. The only time our gears are in mesh is when they are working, and the wear on the teeth of these gears is therefore reduced to a minimum. All the shaft bearings are equipped with ring oilers, thereby keeping the bearings constantly flooded in oil, and avoiding the possibility of their getting hot and cutting. Four changes of speed are secured by means of the levers shown, and the machine can be stopped by shifting either lever to a central position.

CLUTCH GEAR:—The clutch which operates the driving gear on the speed box, is one of the most powerful clutches on the market. Its simplicity of construction avoids the possibility of its getting out of order. One pound pressure on the lever, will produce 128 pounds pressure on the clutch ring. It will therefore be seen that the clutch can be operated without any difficulty. All of the clutch mechanism is fully enclosed, thereby avoiding any danger to the operator while the machine is running.

MOTOR:—A constant or variable speed motor may be used, but we advocate the use of a constant speed motor, as all the speed changes necessary can be secured through the Speed Box. The speed of the motor should be from 1,000 to 1,200 R. P. M. The motor is set on the base of the machine, thereby avoiding the possibility of any vibration, and consequent chatter marks on the work.

THE JOHN STEPTOE SHAPER CO.

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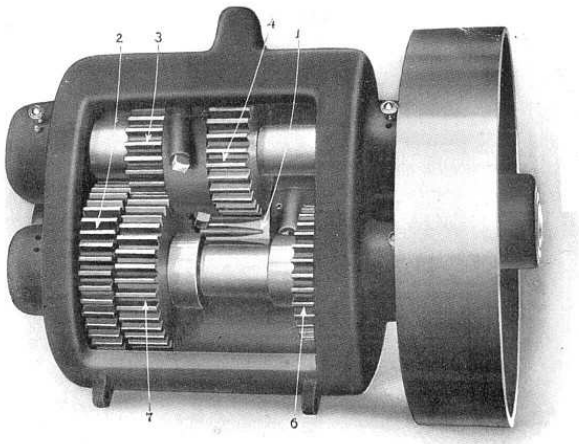


Speed Box for Steptoe Shapers.

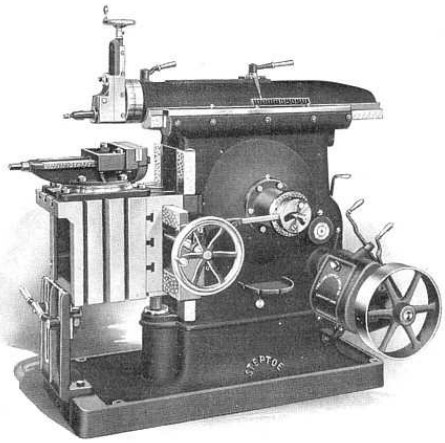
THE demand for increased output, resulted in the production of high speed steel and the demand for a still greater production, resulted in the designing of machinery, to secure increased power by single belt drives, thus avoiding the necessity of shifting belts for securing speed changes and permitting the use of wider belts.

In order to meet this demand for increased production, we have designed speed box illustrated above, enabling the use of a wide, extra heavy double belt, to produce increased power.

Gears can be shifted a great deal quicker than the belts on a cone-pulley, and will be shifted oftener by the operator on account of the ease with which it can be done. The operator of a machine naturally does not like to shift belts, but with a gear box where the speed changes can be so easily secured, it will naturally be done as often as necessary, and the increased cost of the machine with a gear box, will soon be returned to the purchaser many times, on account of the increased production secured.

In our gear box we have no clutches to get out of order, and we have no tumbler gears to make a noise. Our gears are cut accurately, and the shaft centers are secured by means of jigs, and as a consequence, we have gears running as silently as it is possible to make gears run.

We have reduced the wear in our speed box to a minimum. As a consequence, it will last as long as the machine itself, and be as satisfactory for wearing qualities as a cone-pulley, with the advantage of securing speed changes quickly and easily, thereby insuring an increased production, and a profitable investment for the purchaser.



CONSTRUCTION — In designing our speed box, we have kept before us that simplicity of design which we have carried throughout our entire shaper. We use only seven gears and secure four changes of speed. These gears are made of steel, cut from the solid bar, and each gear is cut with a special cutter, made for exactly the number of teeth in each gear, thereby insuring perfect contact, and reducing the amount of wear and noise to a minimum. We have no clutches to get out of order; we have no gears running idle on the shaft in mesh, and we thereby avoid the noise incident to the wear on the hole in these gears. Where clutches are used, you have gears running idle on the shaft, and as soon as the shaft or the hole in the gear wears, you have a rattling gear. The only time that our gear wears, is when it is actually doing work. When one gear is shifted in and working, the other gear is shifted out of mesh, and as they are all keyed to the shaft, we do not have any wear on the holes in our gears at all

SHAFT BEARINGS—All of the shaft bearings in this gear box are bored by means of special jigs. We thereby insure these shafts coming in the same relation to each other in every box that we build, and as a consequence our gears on the inside will fit perfectly in every box. All of the shaft bearings are equipped with ring oilers, thereby keeping the bearings constantly flooded in oil. The shafts are turned with spiral oil grooves the entire length of the bearing, thereby insuring the proper distribution of the oil, and avoiding the possibility of the shaft getting hot and cutting.

SPEED CHANGES—Four changes of speed are secured. The speeds are arranged in geometrical progression, and are secured as follows:

In its present position, as shown in the cut, gear No. 5 is in mesh with gear No. 6, giving one speed. By shifting gear No. 4 into gear No. 6, gives the second speed; by shifting gear No. 1 into gear No. 2 gives the third speed, and by shifting gear No. 3 into gear No. 7 gives the fourth speed.

The pulley on the speed box is 14 inches in diameter, with 3¼-inch face, and should make 400 R. P. M.

By shifting either lever to a central position, the gears are disengaged, thereby stopping the machine. It is impossible to strip the teeth of these gears, as the gears are so arranged that they cannot be locked. One gear is shifted out of mesh before the other is engaged.

Every precaution has been taken against the possibility of breakages, and the details of construction have been given the most thorough consideration to reduce the wear to a minimum, and we believe that the only repairs that will be necessary will be such as may have been caused by the wear on the teeth of the gears through constant operation.

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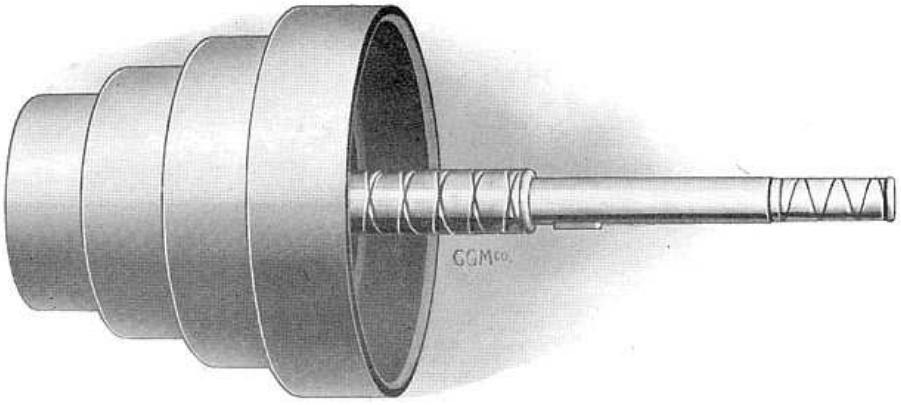
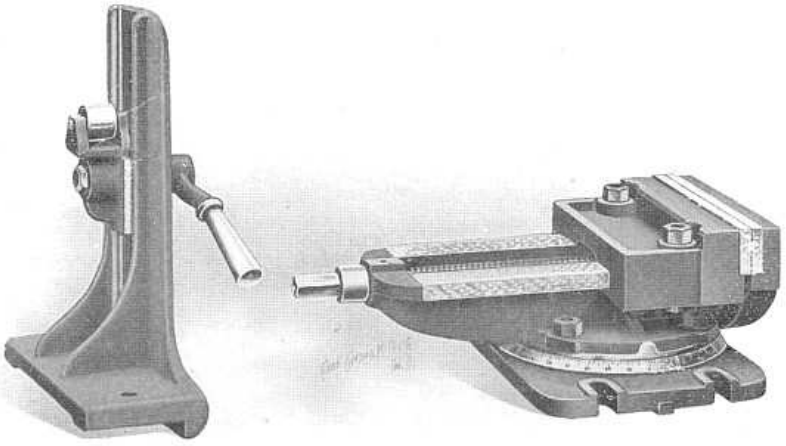


DRIVING SHAFTS—In order to secure perfect lubrication, we found that it would be necessary to provide a means by which the oil would be carried over the entire bearing after it is carried to the shaft by the ring oilers. We have therefore turned a spiral oil groove in the shaft as shown above. The oil which is carried to the shaft is carried in both directions by means of these spiral oil channels, and when it arrives at the straight oil groove at the end it runs off into an oil channel, cut in the cast iron bushing, and back into the oil well from which it started. The oil in these bearings is therefore used over and over again. All shaft bearings are therefore kept cool and we thereby avoid the possibility of cutting. It would be readily seen that this method of lubrication is the best that can be made, thereby adding to the life of the machine and avoiding the possibility of any trouble with the shafts bearings.



VISE—The Vise which we place on our machine is of very substantial construction, made to withstand the most severe strains which are necessary in shaper work. Every detail is given the most careful attention. A tongue is provided at the bottom to fit the slot in the table. The slot in the table being planed out by the machine itself insures the Vise being in line with the Ram of the shaper. The Vise bottom is graduated at an angle so that it can be readily seen by the operator of the machine. The Vise body is very firmly held to the base by means of four bolts and will therefore not move under heavy cuts. The sliding jaw is scraped by hand to a perfect fit on the body, and is held in position on the body by means of a slot on each side. In tightening work in a Vise the sliding jaw has a tendency to raise thereby causing inaccuracy in the work. To overcome this difficulty we have provided two special bolts to pull this jaw with the work, against the body of the Vise after the work has been fastened. Thereby insuring accuracy for any work done in the Vise. As will readily be seen there are no parts to get out of order or break on our Vise.

TABLE SUPPORT—Simplicity of design is our constant aim, as with simplicity we secure durability and a minimum amount of Breakage. Our Table Support is very simple in design and has nothing on it which can get out of order. The body has ways planed in it for the Roller Bracket to slide on. This bracket can be very quickly adjusted by pushing the lever, which loosens it, and fastened by pulling it. It is bolted on the base of the machine directly under the cut, where it is most needed, and the Roller rolls on a planed surface under the table.

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