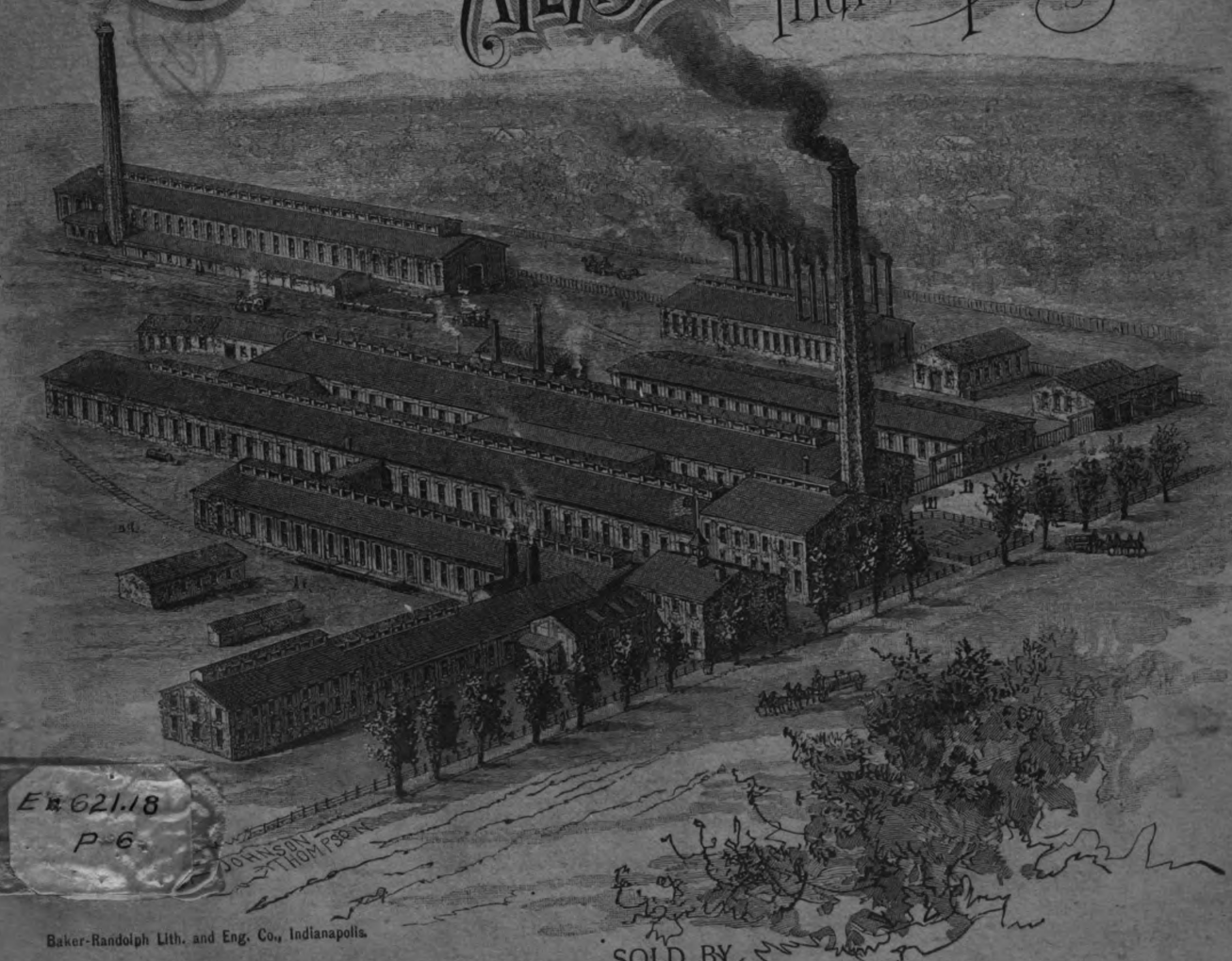
Self-Contained

Steam Engines and Boilers

Atlas Engine Works

Indianapolis, Ind.



Baker-Randolph Lith. and Eng. Co., Indianapolis.

SOLD BY

COOLEY & VATER,

FREIGHTS.

WE make all deliveries F. O. B. our Works, but we are well organized to look after shipments, and will zealously care for the interests of our patrons by obtaining lowest possible freight rates, and diligently tracing cars for prompt arrival at destination.

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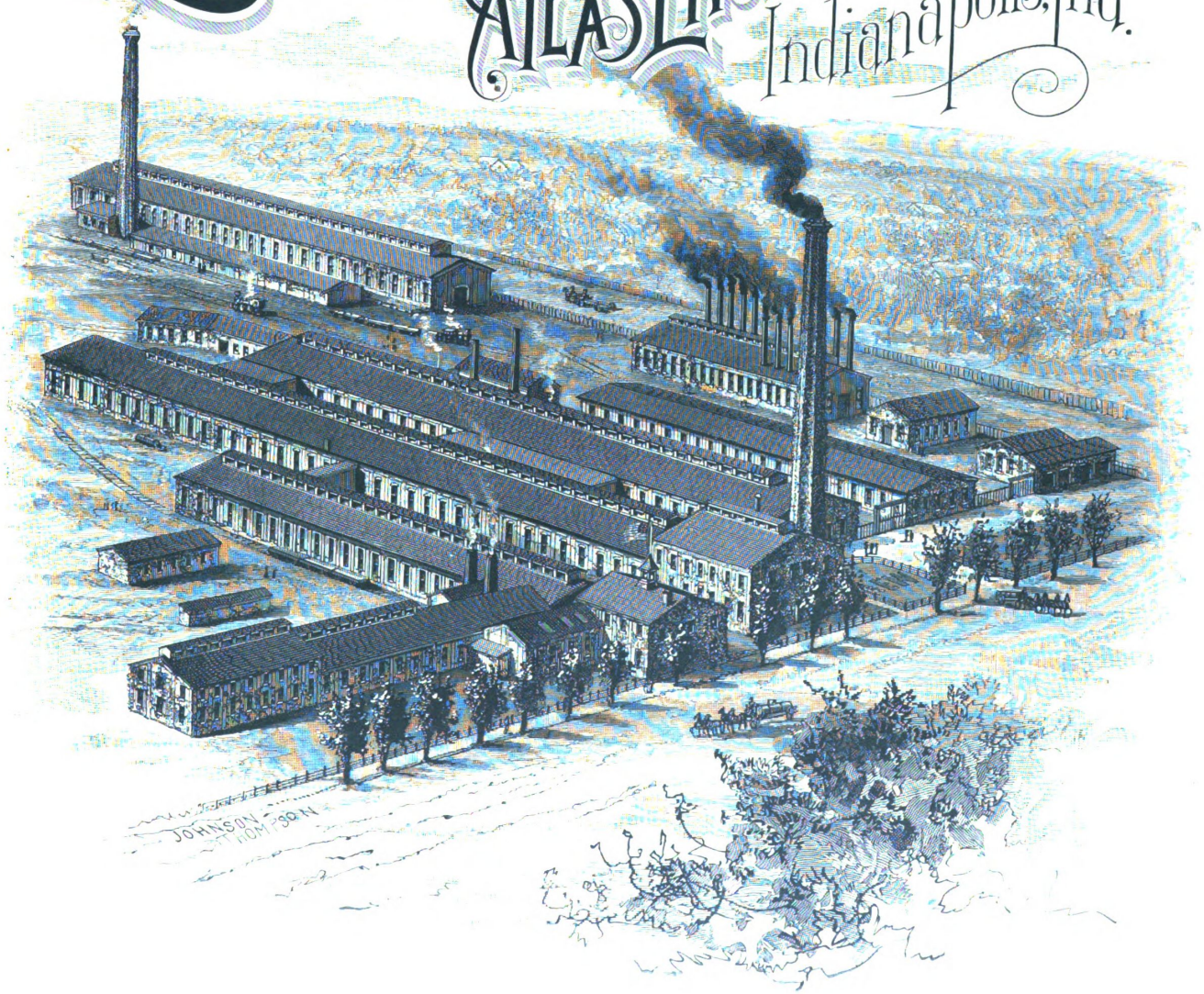


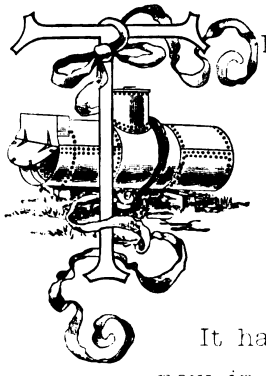
(16183)

ATLAS ENGINE WORKS,

MANUFACTURERS OF

STEAM ENGINES AND BOILERS,

INDIANAPOLIS, IND.



THIS book is published for the express purpose of presenting full information of the SELF-CONTAINED ENGINES AND SUITABLE BOILERS which are manufactured and sold by the ATLAS ENGINE WORKS.

This Company boldly claims that it offers more real value for the money than any other Engine manufacturer in the United States.

It has NINE THOUSAND ENGINES AND EVEN MORE BOILERS now in service, to the owners of which you are urgently referred. A large list of these owners will be gladly furnished upon application.

THEY CAN BE SEEN RUNNING IN ALMOST EVERY TOWN IN THE COUNTRY.

We offer on the following plans:

PLAIN SELF-CONTAINED ENGINES WITH THROTTLING GOVERNORS.

AUTOMATIC SELF-CONTAINED ENGINES WITH BALANCED VALVES.

HORIZONTAL TUBULAR AND LOCOMOTIVE BOILERS.

The plates clearly illustrate the style of the goods.

QUALITY, ECONOMY IN FUEL CONSUMPTION AND PROMPT FULFILLMENT OF CONTRACTS, are the inducements offered.

Right is reserved to change designs at any time it is deemed advisable.

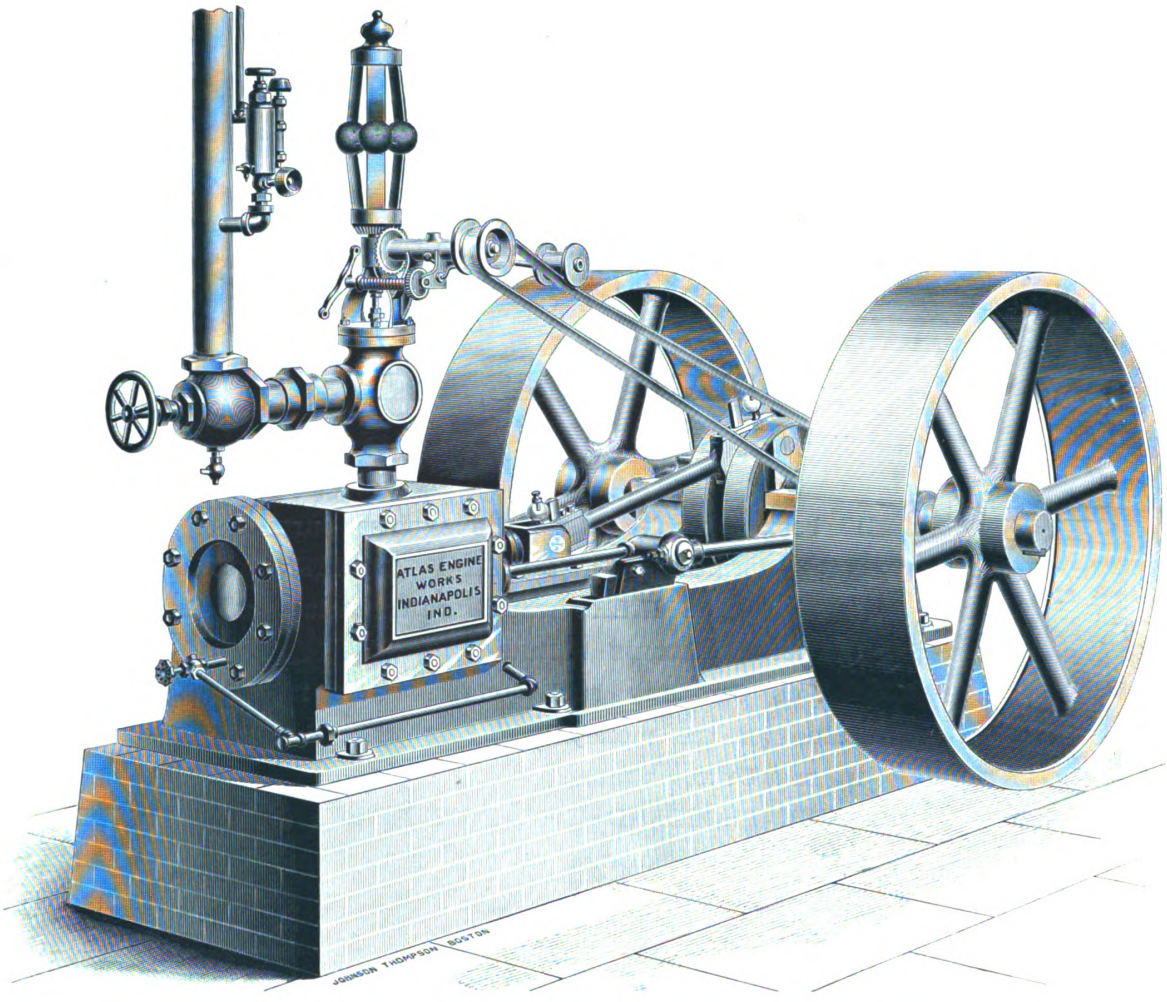
If you need an ENGINE or BOILER, you will study your own interests by carefully investigating the merits of these goods and writing for prices before you purchase.

If in any respect further explanation is needed, do not hesitate to write for fuller statements. Special correspondents are employed who have ample time to take the matter up in detail for your satisfaction.

Respectfully,

ATLAS ENGINE WORKS,

INDIANAPOLIS, IND.



PLAIN SELF-CONTAINED ENGINE. CLASS A.

IN the SELF-CONTAINED ENGINE, illustrated above, the well-known standard of excellence of the Atlas Engine is maintained.

It is very solid, compact and simple. The Bearings and Crank Pins are very liberal. In fact it is without question superior to any other Engine of this class now sold. It differs from our other Engines in that the Self-Contained Engine has two Discs or Cranks and no Outboard Bearing. This last named feature is very attractive to buyers who use their Engines on the floors of buildings, or for some proper reason desire to avoid the foundation work necessary for Outboard Bearings.

As customary with all of our Engine work, Jigs are employed in the construction of these Self-Contained Engines, and all parts are interchangeable; a very desirable thing in case repairs are wanted.

SIMPLE. STRONG. DURABLE. COMPACT.

The Valve Rod, Piston Rod and all Pins are steel.

Attention is called to the liberal use of pig iron in the general design of the Bed; and in fact, the general solidity of all the parts.

It is intended to be without any question the very best Engine of its class offered in the market, and the Company has no hesitation in claiming its merit, and offering it to the trade with full endorsement.

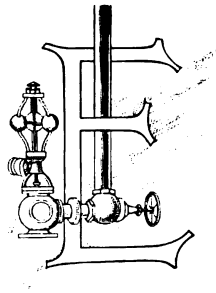
In this book many suggestions are made as to its use in combination with various Boilers; and the Outfits made up of the several sizes are very attractive to purchasers who seek quality rather than low prices.

Your patronage is solicited with confidence of satisfaction and pleasure to those who make use of these goods.

PLAIN SELF-CONTAINED ENGINES. CLASS A.

SPECIFICATIONS.

ESTIMATE NUMBER.	DIMENSIONS OF CYLINDER. Diameter. Inches.	Stroke. Inches.	Nominal Rated Horse Power.	Standard Revolutions Per Minute.	TWO BAND WHEELS. Diameter. Inches.	Width of Belt. Inches.	Diameter of Main Shaft. Inches.	Diameter of Steam Pipe. Inches.	Diameter of Exhaust Pipe. Inches.	FLOOR SPACE REQUIRED. Approximate. Length. Feet.	Inches.	Width. Feet.	Inches.	Shipping Weight. Pounds Approximate.
7 A	7	10	10	200	40	7	$2\frac{5}{16}$	$1\frac{1}{2}$	2	7	0	3	8	1,800
8 A	8	10	15	200	40	7	$2\frac{5}{16}$	2	$2\frac{1}{2}$	7	0	3	8	1,800
9 A	9	12	20	185	42	9	$3\frac{7}{16}$	2	3	7	9	4	8	3,200
10 A	10	12	25	185	42	9	$3\frac{7}{16}$	$2\frac{1}{2}$	$3\frac{1}{2}$	7	9	4	8	3,200
11 A	11	14	30	170	48	12	$4\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	9	2	5	7	4,500
12 A	12	14	40	170	48	12	$4\frac{1}{2}$	3	4	9	2	5	7	4,500



EACH Engine is furnished with Wrought Iron Main Shaft, Two Band Wheels, Governor, Governor Belt, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Oil Can, Oil Cups, Wrenches and Cylinder Drain Pipes and Valves.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

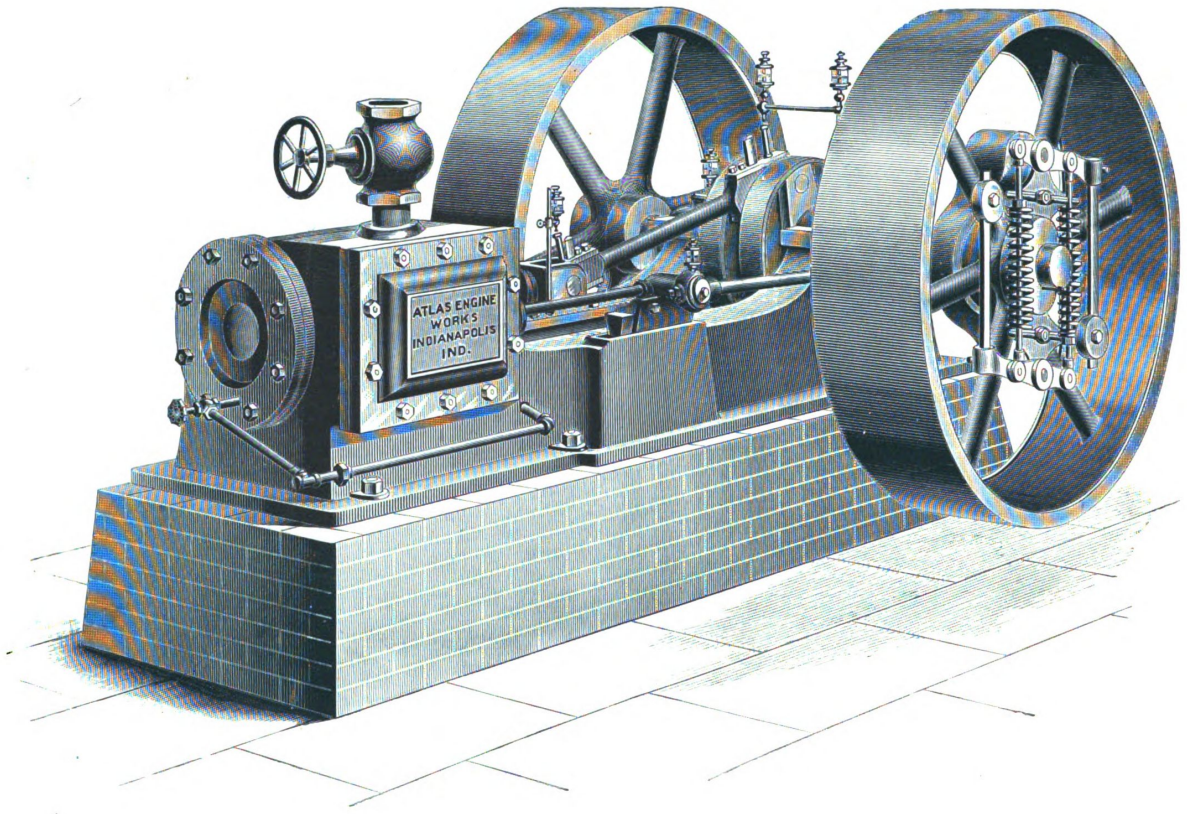
PUT THEM ON THE SCALES AND WEIGH THEM.

NOTE.

Foundation Bolts and Bars will be furnished, if desired, and charged for extra.

For Standard Estimates combining the above list of Engines with suitable Boilers, see pages 34, 38, 42, 44, 48 and 50.

When ordering, READ SUGGESTIONS on page 52.



AUTOMATIC SELF-CONTAINED ENGINE. CLASS B.

OUR AUTOMATIC SELF-CONTAINED ENGINE, presented in the above picture, and specifications on opposite page, is offered to such of our patrons as are in need of perfect regulation for Electric Light or other close work, and those to whom economy in fuel is important.

It is a very solid piece of work, with long Bearings and large Pins, and can be safely run to higher speed than is common to Plain Engines.

ARE YOU CRAMPED FOR SPACE?

It is the same as the Engine shown on page 4, with exception of the Governing Mechanism and the Balanced Valve.

The advantage of this Governor over all others is that it combines in the fewest number of parts the generally accepted best points of other Governors of its type, and adds thereto the feature that the Weights being hung from the center, its dead weight, or inertia, is made to contribute in a very effective manner to the fineness of the regulation of speed.

The Eccentric is hung rigidly, not liable to wear out of line, and yet is under perfect control of the Weights and Springs.

The Main Steam Valve is perfectly balanced; the only friction being its own very light weight. The Balancing Hood is loose on the Seat, and yields promptly to excess steam or water in the Cylinder. The Springs return the Hood to place and the Studs guide it to correct seat.

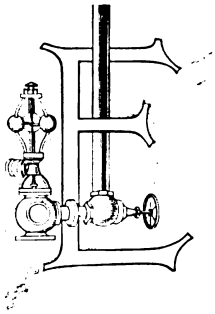
BOLT IT ON THE WALL.

The Engine with its Special Governor and Valve form the most attractive SELF-CONTAINED AUTOMATIC ENGINE in the market—perfect regulation, economy in the use of fuel and a reasonable price being taken into consideration.

AUTOMATIC SELF-CONTAINED ENGINES. CLASS B.

SPECIFICATIONS.

ESTIMATE NUMBER	DIMENSIONS OF CYLINDER.		H. P. at Given Revolutions per Minute with 40 lbs. Mean Effective Pressure.				TWO BAND WHEELS		Diameter of Main Shaft. Inches.	Diameter of Steam Pipe. Inches.	Diameter of Exhaust Pipe. Inches.	FLOOR SP. REQUIRED Approximate.				Shipping Weight.
	Diameter. Inches.	Stroke. Inches.	Indicated Horse Power.	Standard Revs. per Minute.	Indicated Horse Power.	Revs. per Minute.	Diameter. Inches.	Width of Belt. Inches.				Length. Ft.	Length. In.	Width. Ft.	Width. In.	Pounds Approximate.
7 B	7	10	**18**	**240**	21	275	40	7	$2\frac{15}{16}$	$1\frac{1}{2}$	2	7	0	3	8	1,900
8 B	8	10	**24**	**240**	28	275	40	7	$2\frac{15}{16}$	2	$2\frac{1}{2}$	7	0	3	8	1,900
9 B	9	12	**35**	**225**	40	260	42	9	$3\frac{7}{16}$	2	3	7	9	4	8	3,400
10 B	10	12	**43**	**225**	50	260	42	9	$3\frac{7}{16}$	$2\frac{1}{2}$	$3\frac{1}{2}$	7	9	4	8	3,400
11 B	11	14	**53**	**200**	62	230	48	12	$4\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	9	2	5	7	4,800
12 B	12	14	**65**	**200**	74	230	48	12	$4\frac{1}{2}$	3	4	9	2	5	7	4,800



EACH Engine is furnished with Wrought Iron Main Shaft, Two Band Wheels, Automatic Shaft Governor, Balanced Slide Valve, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Bracket Wipe Oilers for Cross Head Pin and Crank Pin, Drip Oiler for Eccentric, and Special Oilers for Main Bearings, Valve Cross Head and Main Cross Head Guide Caps, Oil Can, Wrenches and Cylinder Drain Pipes and Valves.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

Foundation Bolts and Bars will be furnished, if desired, and charged for extra.

Speeds and Horse Power Ratings in Broad Face Type are recommended for best economy results.

For Standard Estimates combining the above list of Engines with suitable Boilers, see pages 35, 39, 43, 45, 49 and 51.

When ordering READ SUGGESTIONS on page 52.

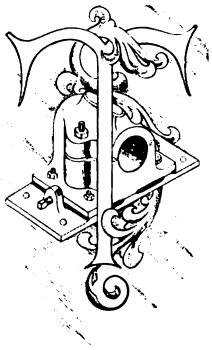
ALL ABOVE THE FLOOR LINE. CAN BE USED UP STAIRS OR DOWN.

SPECIAL FINISH.

When so ordered, AUTOMATIC SELF-CONTAINED ENGINES will be furnished with Automatic Sight Feed Cylinder Lubricator larger than our Standard, One Cylinder Head Finished, Special Cylinder Lagging and the Engine so Painted as to present a handsome appearance.

For such extras additional charges will be made.

General Design.



THE simplicity of the design of the ATLAS ENGINE is one of its strongest points.

The metal is distributed to specially strengthen the parts that bear the strains of power transmission; the thickness of the castings, size and form of the Rods, diameter of Shafts, and Pins, length of the Bearings and webbing of the Frames attest this.

The linear design is handsome and more symmetrical than any other Engine you are considering as adapted to your wants.

Lastly, it is only necessary to weigh it to prove that it is the best value obtainable for the money.

IF YOU ARE NOT A MECHANIC ASK ANY HARD SENSE MAN OF EXPERIENCE HIS OPINION OF THIS ENGINE.

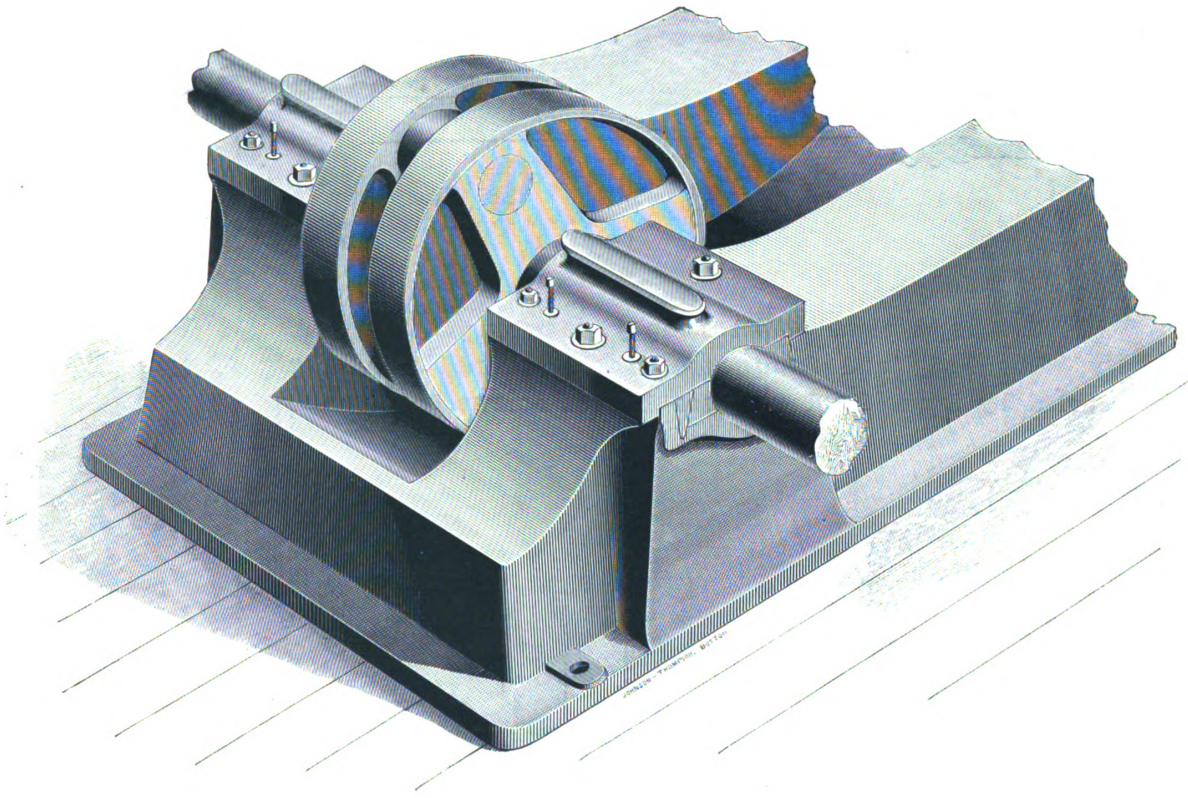
Metals.

Not a pound of scrap iron is melted in our foundry cupolas. The castings are made of the highest grade of pig iron; the Cylinder and Crank are of the choicest brands of Bessemer iron, assuring greatest strength.

The Shaft, Connecting Rod and Eccentric Rod are best wrought iron.

The Valve Rod, Piston Rod, and all Pins, are steel.

The material and workmanship throughout are the best obtainable.



Main Bearing.

TOO much importance can not be attached to the correct design of the Main Bearing of an Engine. Endless trouble is caused by manufacturers trying to cheapen this vital part. It can not be too good.

LOOK AT THE DIMENSIONS OF THE BEARINGS.

The one here presented is offered without fear of criticism.

Our Standard Box is used.

It is a strictly first class piece of work.

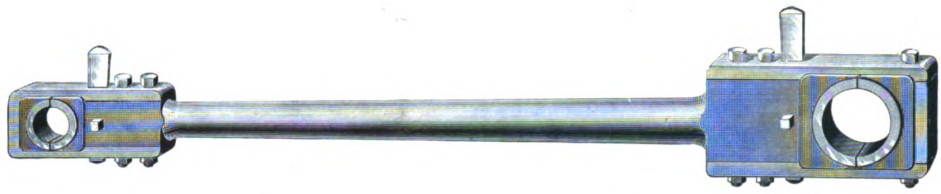
The Wedge adjustment retains a full bearing the entire length of the Quarter Box, and there being but one Quarter Box in each Bearing, it is impossible to depart from true alignment.

SUITABLE FOR ANY KIND OF SERVICE.

Practical men will appreciate the value of this Bearing at first glance.

The babbitt is peaned to place before the Bearing is bored out.

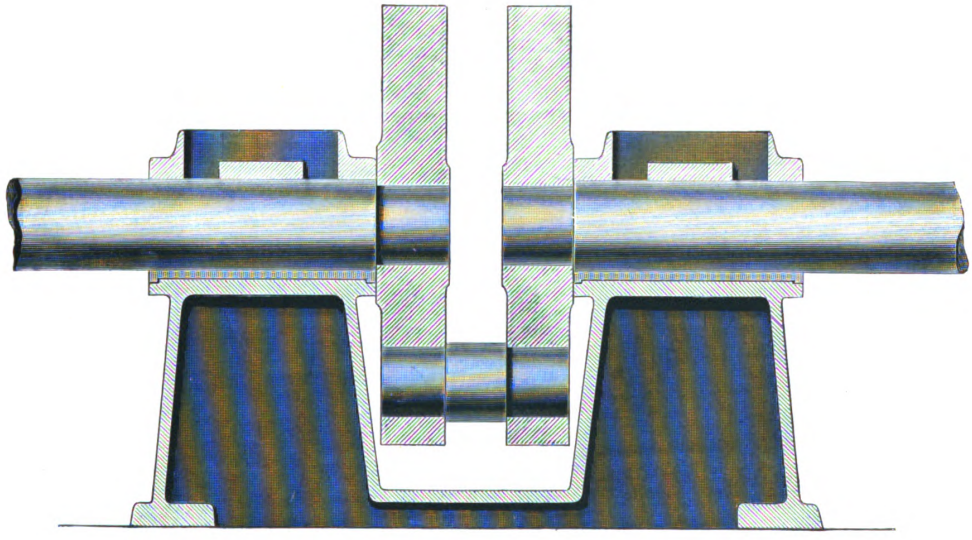
The whole is a rigid solid box.



Connecting Rod.

THE Rod is a plain bolted strap joint wrought iron Rod.

The Body and Straps are of best refined iron; boxes of gun metal, adjusted by keys, fixed in place by set screws.

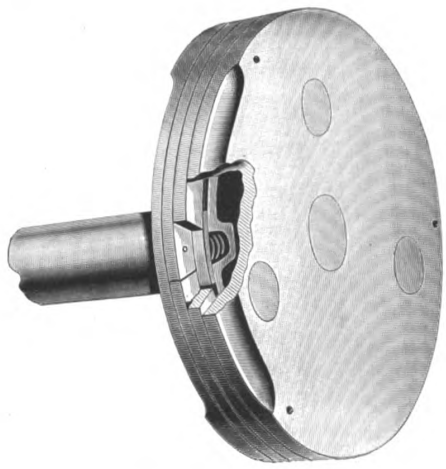


Crank and Shaft.

The manner of insuring true work in the construction of the Crank will be of interest to mechanics, and pleasure is taken in plainly setting forth the methods.

Each Crank is carefully key-seated and forced on to its Shaft by hydraulic pressure. Special machinery is then employed for boring the Crank Pin holes true to the Shafts. Next, by hydraulic pressure, the Pin is forced into the two Discs or Cranks at the same time; one Shaft having been left one sixteenth large. The entire piece of work is now put into a lathe, the finished Shaft placed on true bearings, and the Crank and Shaft left large are allowed to overhang the bearings. The large Shaft is then recentered and turned down to standard size. Thus the Shafts are made as true as if one piece.

The Crank Pin is made of steel with iron center, combining the toughness of iron with the hardness of steel.



PISTON.

THE cut illustrates the Piston.

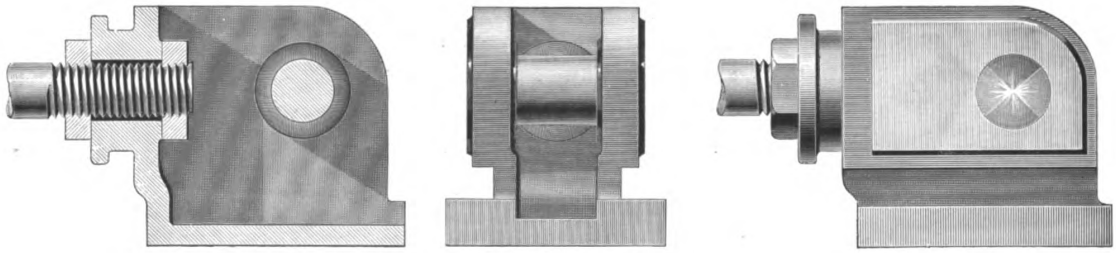
The well known Babbitt & Harris Patent Automatic Spring Packing is used.

The self-adjusting loose Packing Rings are held to a bearing in the bore of the cylinder by German Silver Springs, forming the best known Piston joint.

This form is so generally understood that it scarcely calls for description here.

It is a standard for the majority of high grade Engines, and this Company has much pleasure in recommending it.

OVER 9,000 ENGINES IN DAILY SERVICE. WE REFER TO ANY OF THEM.

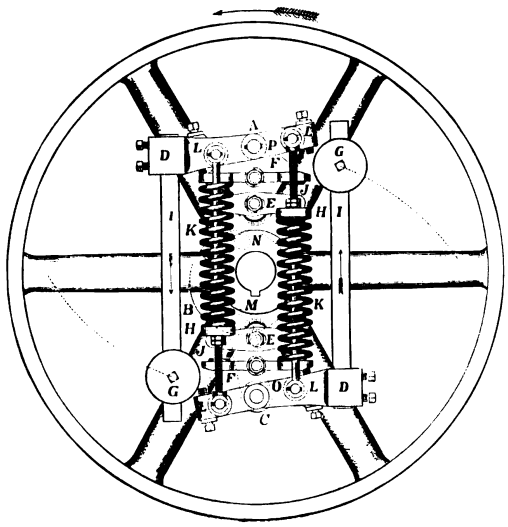


CROSS HEAD.

This part of the Engine is exceptionally good. It is like one solid piece. There are no loose parts.

The Pin is large and made of hammered steel. It is properly fitted to reamed holes, and forced to place by hydraulic pressure and riveted over.

The piston rod passes loosely through the eye of the Cross Head, and is held to place by two well fitted nuts. By means of these nuts and the guide caps, all wear is conveniently taken up and alignment adjusted.



SHAFT GOVERNOR.

IN the line drawing, above, it is designed to convey to the mind of the reader the general principle of the SHAFT GOVERNOR by which the Plain Throttling Engine is reduced to an Automatic Cut-Off Engine; in other words, the appliance that limits the supply of steam to the Engine proportional to the amount of work the Engine is called upon to perform, and at the same time control the motion of the Engine to the least possible variance from a fixed or desired speed.

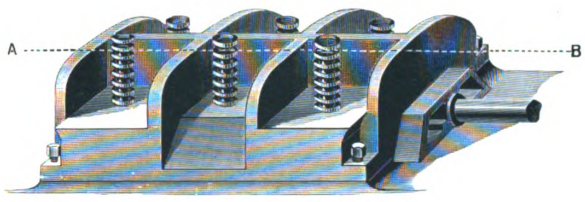
CLOSE REGULATION AND FUEL SAVING RECOMMEND IT.

In the SHAFT GOVERNOR, used on our larger Engines, a Loose or Dead Wheel is an important factor in the fine results of close regulation which those Engines have won. This same principle of inertia is made effective in the Governor offered with the Self-Contained Engines, by means of the manner of hanging the Weights from the center of the Wheel. The Weights and Springs perform the functions usual in Governors of this type.

The attention of engineers is called to the simplicity of the design. No other can show as few parts, and yet the effectiveness of the combined principles embodied are quickly comprehended by the practical man.

Balanced Slide Valve.

FIG.1



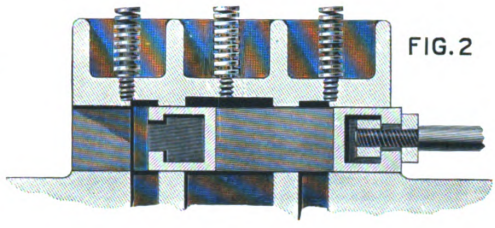
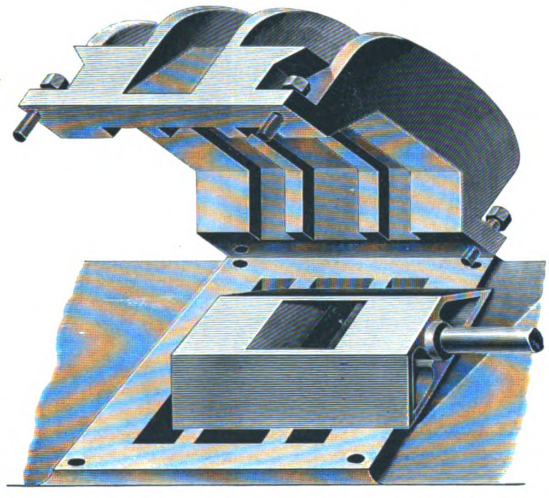


FIG.2

FIG.3



THE above cuts represent the BALANCED SLIDE VALVE of our AUTOMATIC SELF-CONTAINED ENGINE.

Fig. 1 is a perspective view of the Valve and Hood complete. Fig. 2 is a section through the Valve and Hood on the line A B. Fig. 3 is the Valve and Seat with Hood detached.

It is a flat Slide Valve protected from steam pressure by a Hood. The exposed ends, being of equal area, balance each other. The pressure under the Valve through the ports is counterbalanced by recesses of equal area with the ports under the Hood and over the Valve.

The only friction is the weight of a very light Valve.

If ever worn it can easily be refitted by scraping.

To provide for water or excessive pressure in the cylinder, the Hood is set loose on the Seat, and readily yields. The Springs return the Hood to place and the Studs guide it to its correct seat.

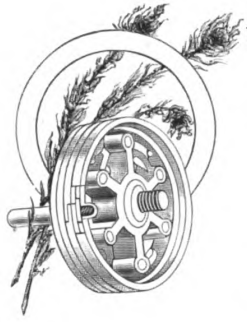
The port action of the Valve is that of any Plain Slide Valve.

The recesses in the Hood over the Valve quicken the opening and closing of the ports.

It possesses all the advantages of a perfectly Balanced Slide Valve in the simplest possible form.

The illustrations show the device clearly.

REPAIRS.



OUR Engines are built on Iron Jigs with Steel Buttons. Thus, parts of one Engine are absolutely INTERCHANGEABLE with those of another, of the same size, without any necessary filing or fitting.

We can deliver Repairs to even the remotest parts of the country SOONER than they can be made at a local shop.

LIST AND NUMBERS OF PARTS.

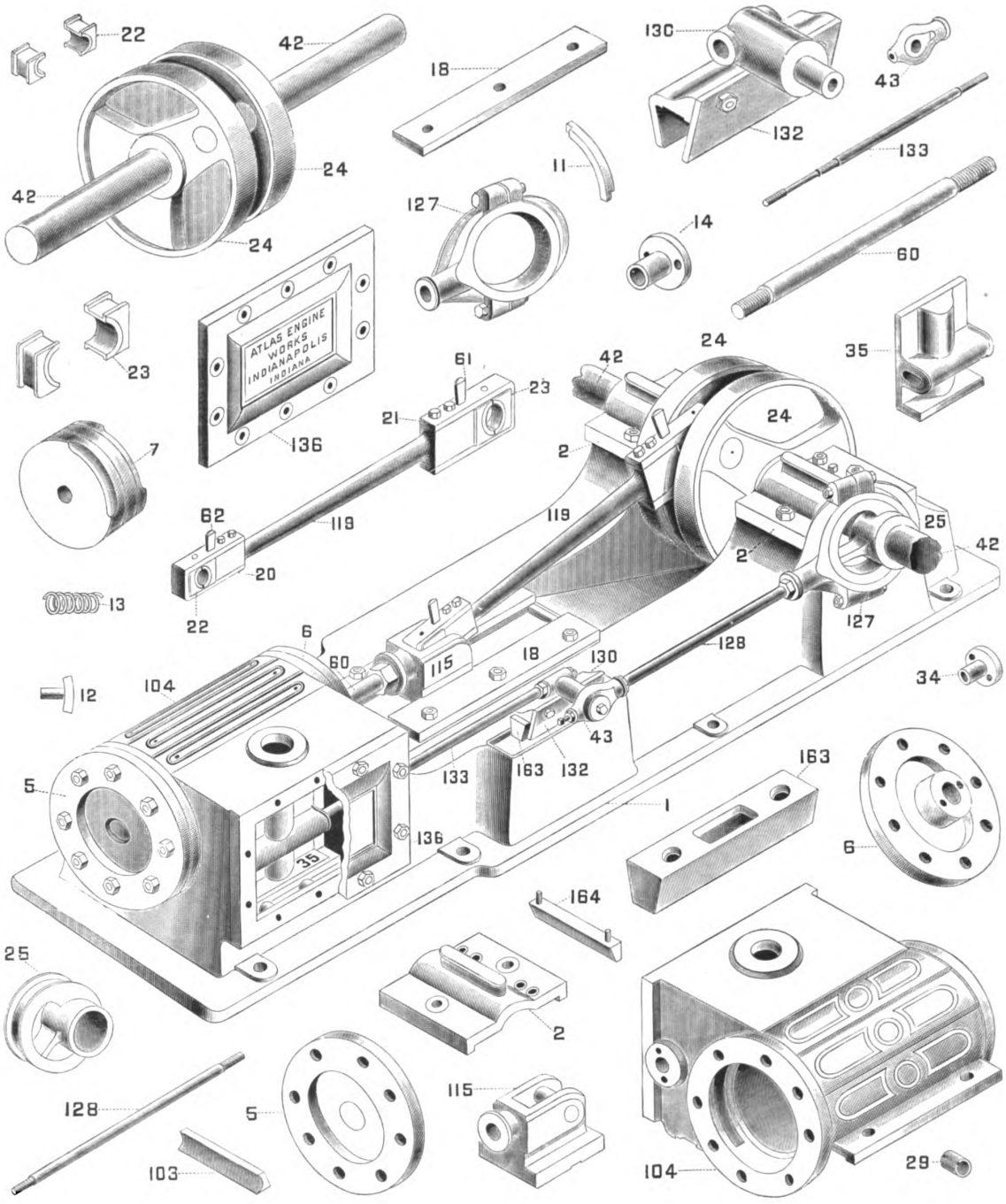
1. Bed Plate.
2. Main Bearing Cap.
5. Cylinder Back Head.
6. Cylinder Front Head.
7. Piston.
11. Piston Packing Ring.
12. Piston Packing Shoe.
13. Piston Packing Spring.
14. Piston Rod Gland.
18. Piston Cross Head Guide Caps.
20. Connecting Rod Strap, cross head end.
21. Connecting Rod Strap, crank end.
22. Connecting Rod Cross Head Boxes.
23. Connecting Rod Crank Pin Boxes.
24. Crank.
25. Eccentric.
29. Eccentric Rod Bushing.
34. Valve Stem Gland.
35. Main Steam Valve.
42. Main Shaft.
43. Eccentric Rod Head.
60. Piston Rod.
61. Connecting Rod Key, crank end.
62. Connecting Rod Key, cross head end.
103. Main Bearing Quarter Box.
104. Cylinder.
115. Piston Cross Head.
119. Connecting Rod.
127. Eccentric Straps.
128. Eccentric Rod.
130. Valve Cross Head.
132. Valve Cross Head Guide Cap.
133. Valve Stem.
136. Steam Chest Cover.
163. Valve Cross Head Guide.
164. Main Bearing Quarter Box Wedge.

ALL PINS ARE STEEL.

See opposite page for illustrations and Numbers of Parts.

Be careful to describe all Repairs wanted by Number, as well as by Name.

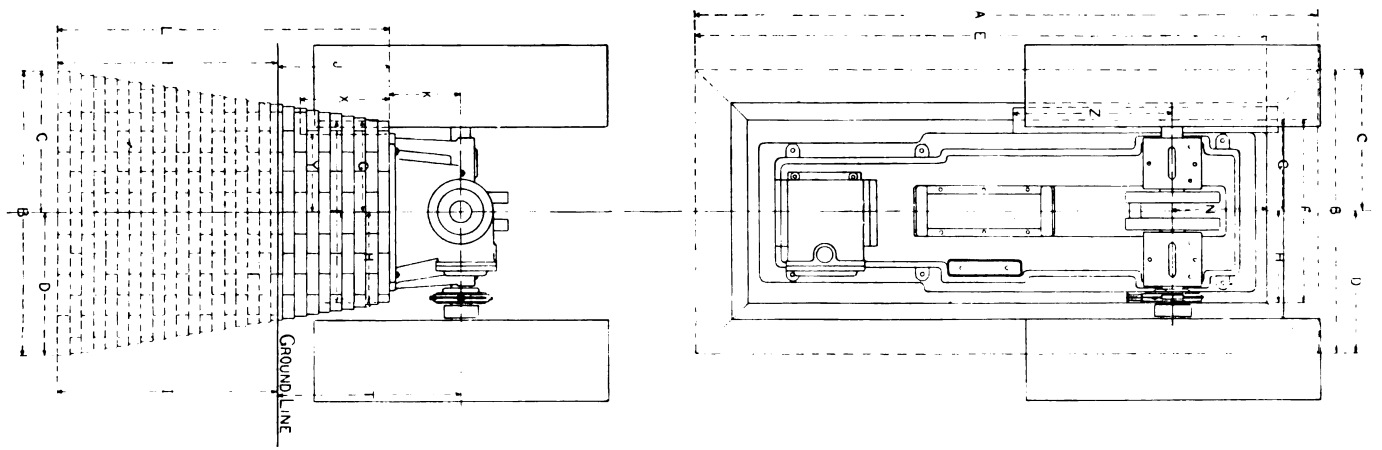
Always give the Number of your Engine.



ALL PARTS ARE INTERCHANGEABLE.

Foundation Plans for Plain and Automatic Self-Contained Engines.

[NOT DRAWN TO SCALE.]



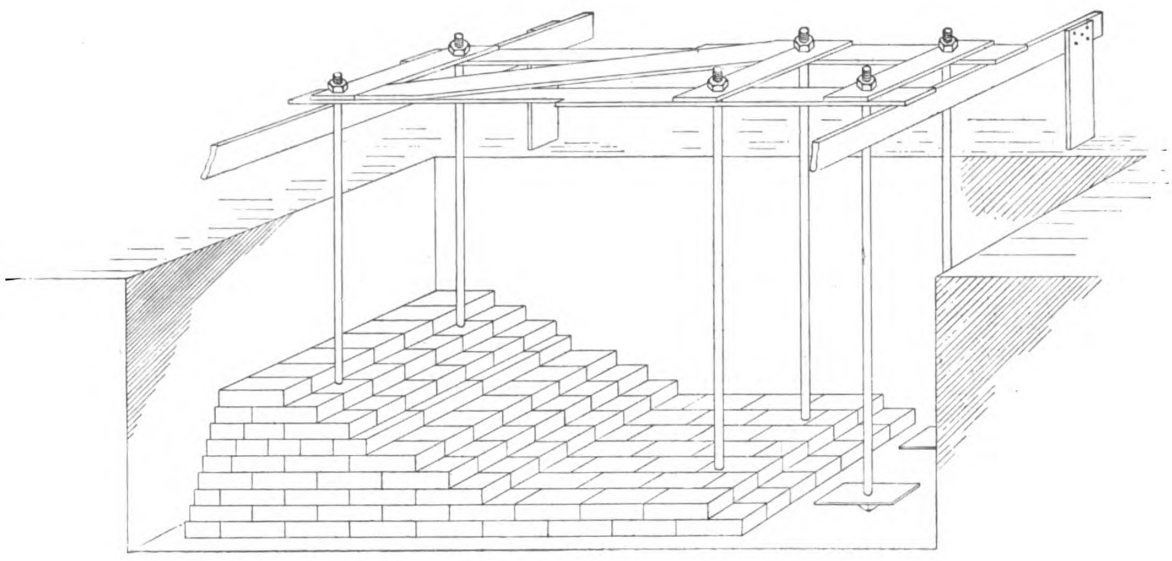
NOTE:—The number of Foundation Bolts, and distances between centers, vary on different size Engines, making it impracticable to show them in the above plan. All other Dimensions are shown.

A complete Working Drawing will be furnished with each Standard Outfit.

We prefer, in all cases, that purchasers depend upon the Drawings furnished with each Outfit.

Dimensions of Foundations for Plain and Automatic Self-Contained Engines.

SIZE.	A		B		C		D		E		F		G	H	I		J	K	L		N	T		X	Y	Z	
	Length of Foundation at Bottom.		Width of Foundation at Bottom.		Center to Side of Foundation at Bottom.		Center to Side of Foundation at Bottom.		Length of Foundation at Top.		Width of Foundation at Top.		Center to Side of Foundation at Top.	Center to Side of Foundation at Top.	Bottom of Foundation to Floor Line.		Floor Line to Top of Foundation.	Top of Foundation to Center of Cylinder.	Bottom to Top of Foundation.		Center of Shaft to End of Top of Foundation.	Bottom of Foundation to Center of Shaft.		Top of Foundation to Bottom of Notch.	Center of Engine to edge of Notch.	Center of Shaft to edge of Notch.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Inches.	Inches.	Ft.	In.	Inches.	Inches.	Ft.	In.	Inches.	Ft.	In.	Inches.	Inches.	Ft.	In.
7 x 10	7	4	3	6½	1	9¼	1	9¼	6	0	2	2½	13¼	13¼	2	4	20	10	4	0	13	4	10	12	11¼	—	10
8 x 10	7	4	3	6½	1	9¼	1	9¼	6	0	2	2½	13¼	13¼	2	4	20	10	4	0	13	4	10	12	11¼	—	10
9 x 12	8	6	4	0	2	0	2	0	7	0	2	6	15	15	2	11½	18½	11½	4	6	15	5	5½	14½	12¾	2	2
10 x 12	8	6	4	0	2	0	2	0	7	0	2	6	15	15	2	11½	18½	11½	4	6	15	5	5½	14½	12¾	2	2
11 x 14	10	6	4	0	2	5	2	5	8	4	2	8	16	16	3	6½	17½	12½	5	0	13	6	0½	19½	13¾	2	8
12 x 14	10	6	4	0	2	5	2	5	8	4	2	8	16	16	3	6½	17½	12½	5	0	13	6	0½	19½	13¾	2	8



Engine Foundation Template.

WE recommend the use of such a device as shown in above cut for placing the FOUNDATION BOLTS in their proper position.

We will furnish a drawing from which a Wooden Template can be made like the above.

WILL FURNISH OUR STANDARD PLANS FOR FOUNDATIONS WITHOUT CHARGE.

Materials for Engine Foundations.

ENGINES,	7 x 10	8 x 10	9 x 12	10 x 12	11 x 14	12 x 14
BRICKS,	1,400	1,400	2,000	2,000	3,300	3,300
SAND, bushels	14	14	20	20	33	33
CEMENT, barrels	1¼	1¼	2	2	3⅜	3⅜
LIME, barrels	⅔	⅔	¾	¾	1⅜	1⅜
SULPHUR, pounds	14	14	20	20	30	30

Flange Steel Boilers.

IT is the purpose of this Company to produce only strictly first-class Boilers.

The general design, material and labor are the best.

The question of cost we make entirely secondary to questions of quality, and we do not pretend to compete in price with inferior Boilers.

All plate used in our Boilers is Flange Steel, guaranteed by the makers to be 60,000 pounds tensile strength, and to turn down double cold without fracture.

In Boilers 36 inches diameter and above, all longitudinal seams are double riveted.

Tubes are carefully selected from the best made in this country.

The Bracing exceeds the requirements most approved by modern practice.

The number of Tubes in each Boiler is governed by the most economical use of heating surface for best results, and in no case are the Tubes crowded in to make show of heating surface at the expense of good water circulation or the convenience of cleaning.

The dimensions and thickness of stock are set forth in the Tables of Specifications.

The greater number of buyers of Boilers are unfamiliar with safety requirements, and are compelled to leave the mechanical features to the judgment of others.

The question of first cost is about all that many buyers are called upon to decide as to the desirability of trade.

It is not uncommon practice to use cheap material under various brands and thereby reduce the price sufficiently to attract the buyer's attention.

It is very misleading and frequently the source of disaster.

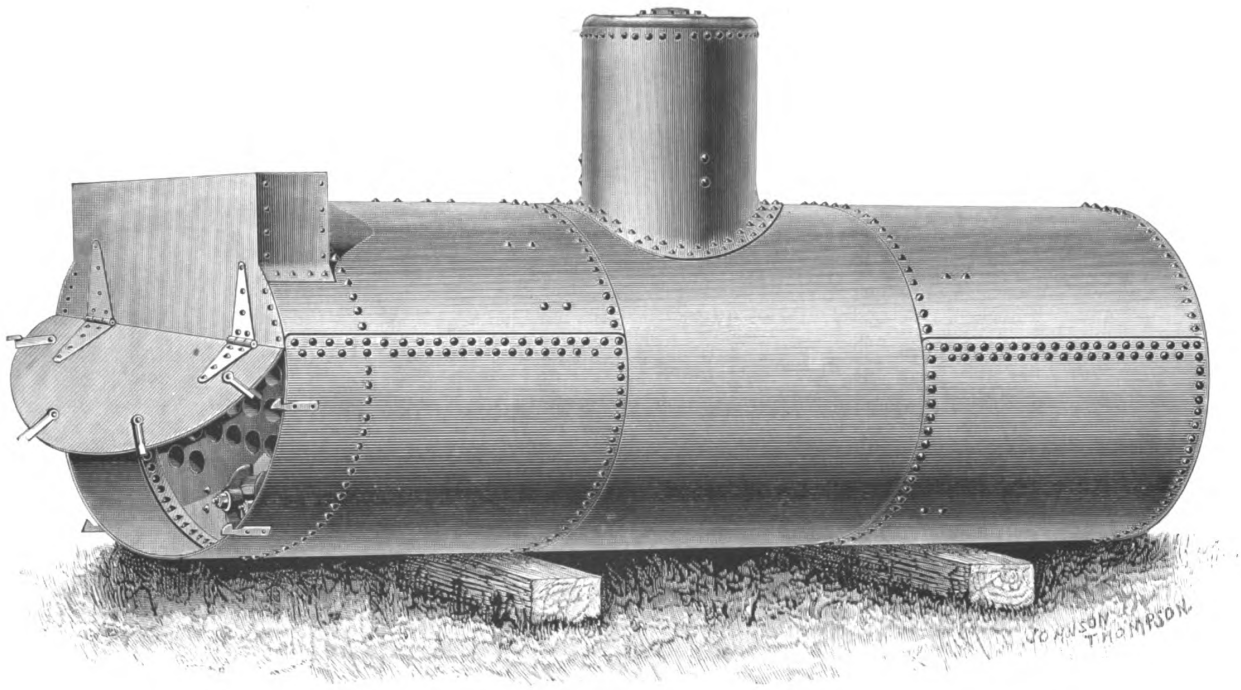
Every purchaser owes to himself and his employes, that every possible provision be made against the dangers incident to the use of steam.

Careful investigation should be made of materials and methods of construction.

We invite the closest possible scrutiny and investigation into the merits of our Standard Line of Boilers.

We are prepared to meet competition in price, based upon equality of material and workmanship.

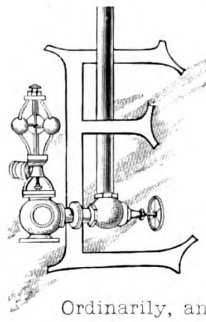
Our Standard Boilers are always carried in stock ready for immediate shipment.



HORIZONTAL FLANGE STEEL TUBULAR BOILER WITH FIXED DOME.

SPECIFICATIONS.

ESTIMATE NUMBER.	Nom'l Rated Horse Power.	SHELL. Diam. In.	SHELL. Lgth. Ft.	Depth of Smoke Box. In.	THICKNESS OF BOILER PLATE. Shell. In.	THICKNESS OF BOILER PLATE. Heads. In.	DOME. Diam In.	DOME. Hght In.	Size of Steam Outlet. In.	TUBES. No	TUBES. Diam. In	TUBES. Lgth. Ft.	Total Heating Surface. Su. Ft.	STACK. Diam. In.	STACK. Lgth. Ft.	SHIPPING WEIGHT. Pounds Approximate. Boiler Only.	Fixtures Only.	Boiler and Fixtures.
15 L	15	36	8	15	1/4	3/8	18	20	2	26	3	8	214	18	30	2,082	1,718	3,800
20 L	20	36	10	15	1/4	3/8	18	20	2	26	3	10	266	18	30	2,530	1,770	4,300
25 L	25	36	12	15	1/4	3/8	18	20	2 1/2	26	3	12	318	18	35	2,970	1,830	4,800
30 L	30	40	12	15	1/4	3/8	20	22	2 1/2	34	3	12	404	20	40	3,441	2,159	5,600
35 L	35	42	12	15	1/4	7/16	20	22	2 1/2	40	3	12	464	22	40	3,760	2,240	6,000
40 L	40	46	12	15	1/4	7/16	24	24	3	42	3	12	491	22	40	4,345	2,355	6,700
45 L	45	48	12	15	9/32	7/16	24	24	3	48	3	12	551	24	40	5,045	2,355	7,400



EACH Boiler is furnished with Dome, Smoke Box Extension, Smoke Head Door and Stack Saddle, Fire Front (Class B), Grate Bars, Bearing Bars, Back Stand, Back Arch Plates, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-Off Cock, Whistle, Smoke Stack and Guy Rods.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

Ordinarily, any of the above Boilers can be shipped in five days from receipt of order.

For Standard Estimates, combining the above list of Boilers with suitable Engines, see pages 34 and 35.

When ordering, READ SUGGESTIONS on page 52.

60,000 POUNDS TENSILE STRENGTH FLANGE STEEL AND NO OTHER IS USED IN OUR BOILERS.

INDEPENDENT DOMES.

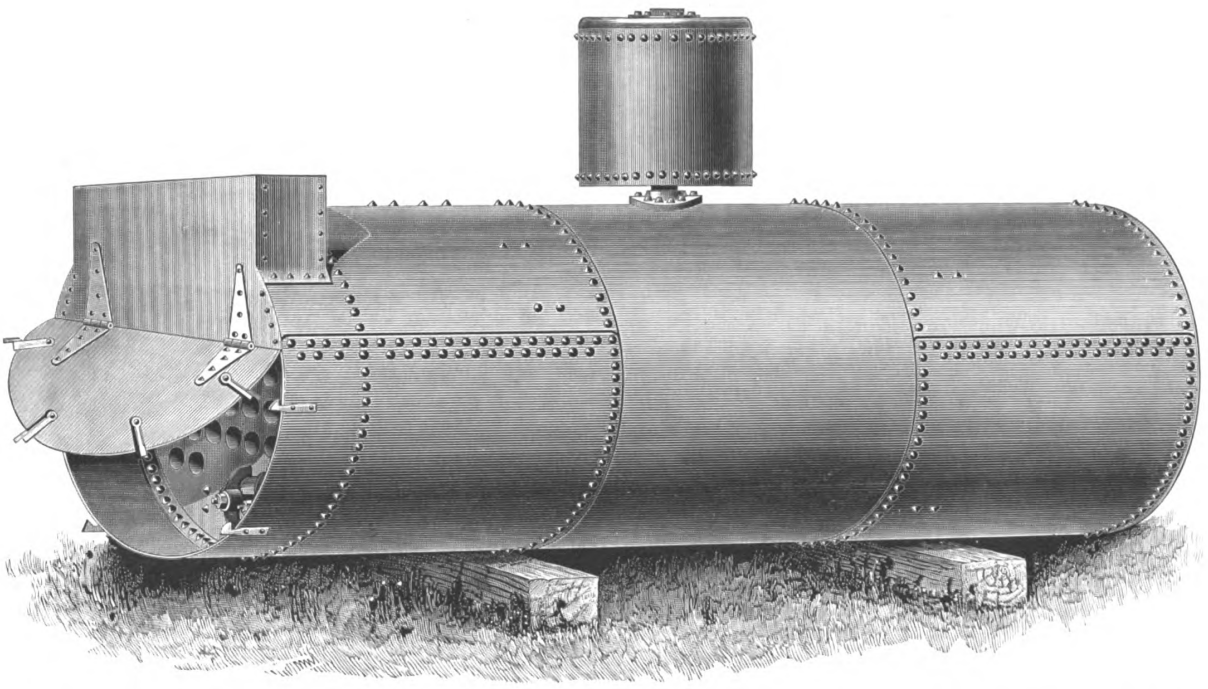
Independent Domes can be substituted for Fixed Domes on any of the above Boilers, if desired, without extra charge.

BOILERS WITHOUT DOMES.

Boilers can be furnished without Domes, if desired.

DRY PIPES.

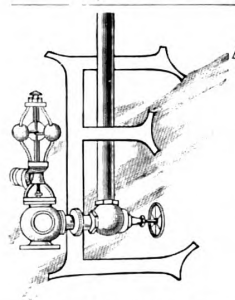
Dry Pipes, if ordered, can be furnished for Boilers without Domes.



HORIZONTAL FLANGE STEEL TUBULAR BOILER WITH INDEPENDENT DOME.

SPECIFICATIONS.

ESTIMATE NUMBER.	Nom'l Rated Horse Power.	SHELL.		Depth of Smoke Box.	THICKNESS OF BOILER PLATE.		DOME.		Size of Steam Outlet.	TUBES.			Total Heating Surface.	STACK.		SHIPPING WEIGHT. Pounds Approximate.		
		Diam.	Lgth.		Shell.	Heads.	Diam.	Hght.		No.	Diam.	Lgth.		Diam.	Lgth.	Boiler Only.	Fixtures Only.	Boiler and Fixtures.
		In.	Ft.	In.	In.	In.	In.	In.	In.		In.	Ft.	Sq. Ft.	In.	Ft.			
55 M	55	52	14	15	$\frac{9}{32}$	$\frac{7}{16}$	28	26	3½	44	3½	14	693	26	40	6,620	2,880	9,500
60 M	60	54	14	15	$\frac{5}{16}$	½	28	26	3½	46	3½	14	721	26	40	7,300	3,000	10,300
70 N	70	54	16	15	$\frac{5}{16}$	½	28	26	3½	40	4	16	817	26	40	8,711	3,089	11,800
75 M	75	60	14	15	$\frac{5}{16}$	½	32	32	4	62	3½	14	940	30	40	9,180	3,420	12,600
85 N	85	60	16	15	$\frac{5}{16}$	½	32	32	4½	52	4	16	1,045	30	40	10,643	3,457	14,100
100 N	100	66	16	15	$\frac{3}{8}$	½	32	32	4½	64	4	16	1,265	36	40	13,294	4,206	17,500
125 N	125	72	16	15	$\frac{3}{8}$	½	32	32	5	82	4	16	1,578	40	40	15,900	4,700	20,600



EACH Boiler is furnished with Dome, Smoke Box Extension, Smoke Head Door and Stack Saddle, Fire Front (Class C), Grate Bars, Bearing Bars, Wings, Back Arch Plates, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-Off Cock, Whistle, Smoke Stack and Guy Rods.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

Ordinarily, any of the above Boilers can be shipped in five days from receipt of order.

For Standard Estimates, combining the above list of Boilers with suitable Engines, see page 35.

When ordering, READ SUGGESTIONS on page 52.

ALL OUR BOILER PLATE IS GUARANTEED BY MAKERS TO TURN DOWN DOUBLE COLD WITHOUT FRACTURE.

FIXED DOMES.

Fixed Domes can be substituted for Independent Domes on any of the above Boilers, if desired, without extra charge.

BOILERS WITHOUT DOMES.

Boilers can be furnished without Domes, if desired.

DRY PIPES.

Dry Pipes, if ordered, can be furnished for Boilers without Domes.

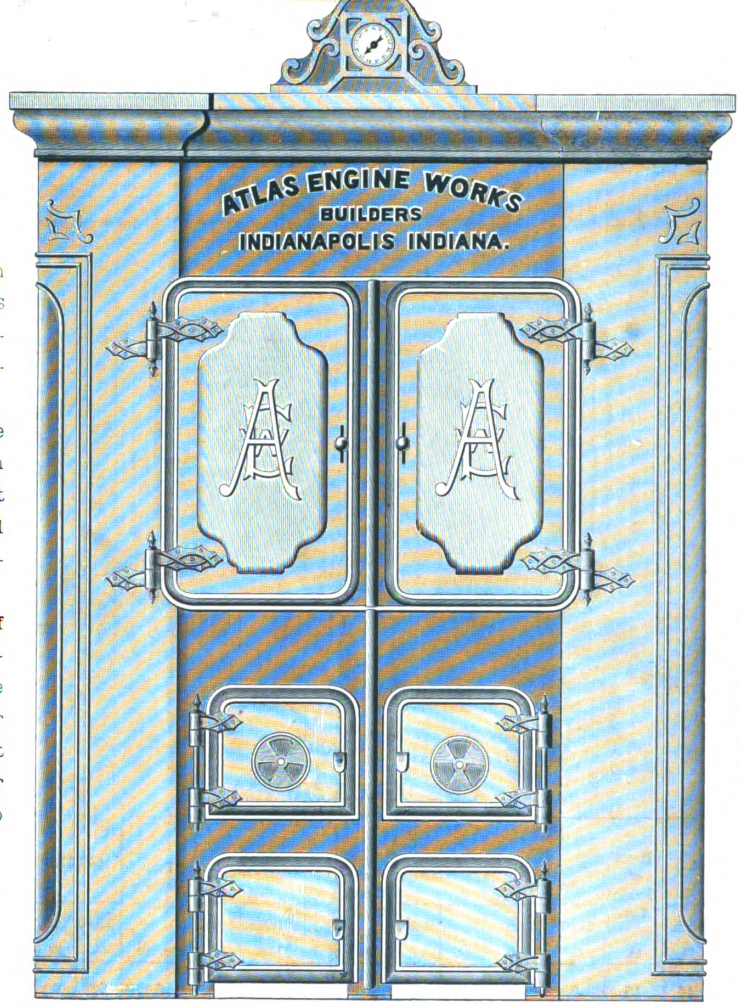
THE six Fronts shown are our STANDARDS and are sufficient in variety to meet the demands of the trade.

The doors are large and of the same size in all Fronts. The weight and thickness of metal are ample for all purposes.

As the majority of buyers avoid unnecessary expense and have no particular desire for a show Front, we select the B FRONT for our STANDARD ESTIMATES, up to and including Boilers 48 inches in diameter.

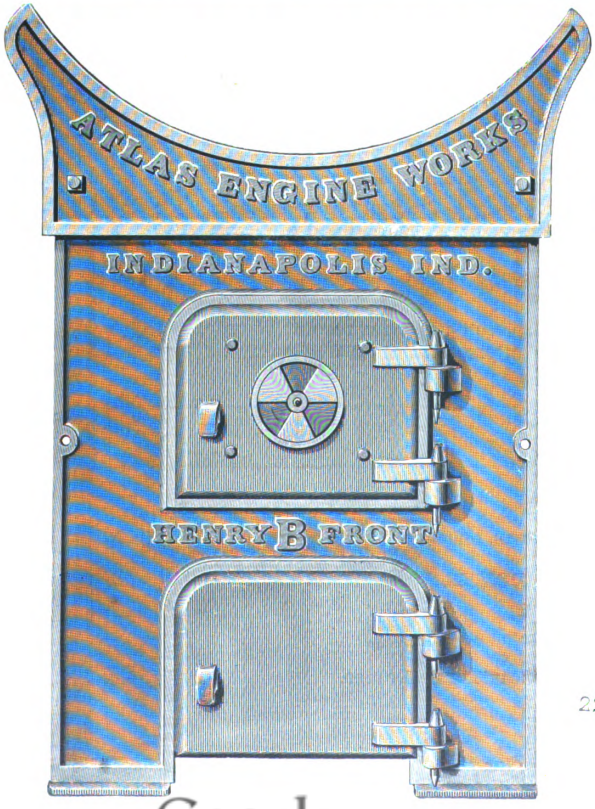
In STANDARD ESTIMATES for larger Boilers we include C FRONTS, and all bids cover these Fronts, unless other are specially mentioned; they are equal to all requirements and we recommend their use.

The ORNAMENTAL FRONT is handsome and suitable for jobs that demand that more attention should be given to appearances.



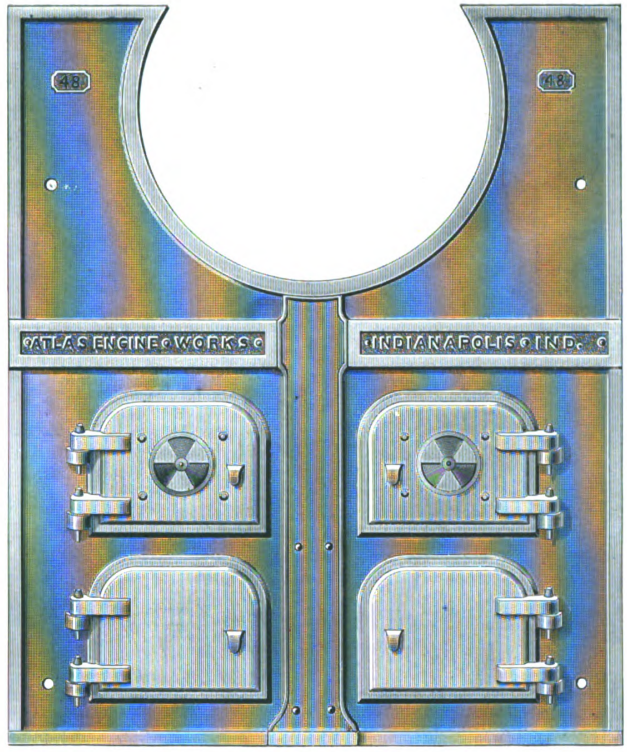
ORNAMENTAL FULL SQUARE FRONT.

OVER 10,000 BOILERS BUILT BY THIS COMPANY ARE NOW DOING SATISFACTORY SERVICE.



THE THREE QUARTER FRONT is too well known to require comment, and in some sections is preferred to all other styles.

The PLAIN FULL SQUARE FRONT takes the place of the Ornamental, where a good substantial flush Front is wanted, and ornamentation is not an object.

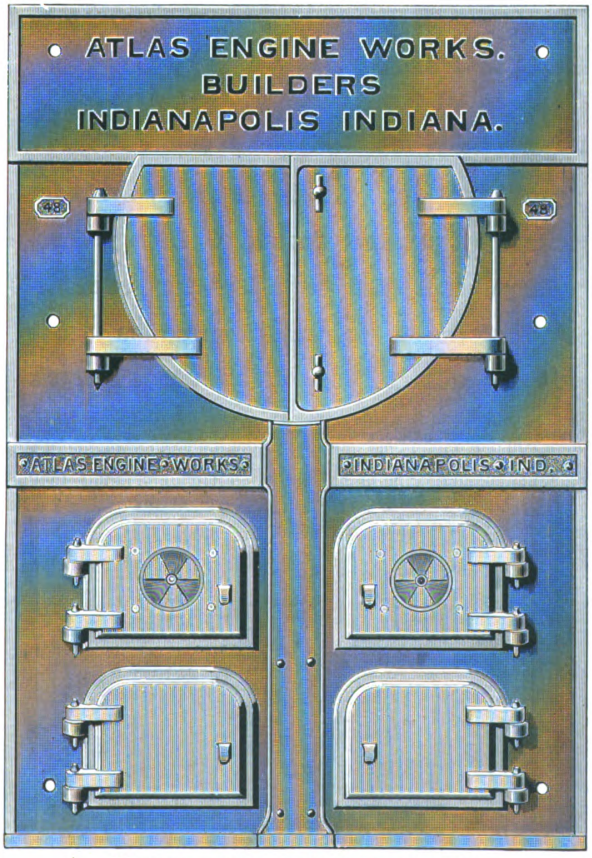


THREE QUARTER FRONT.

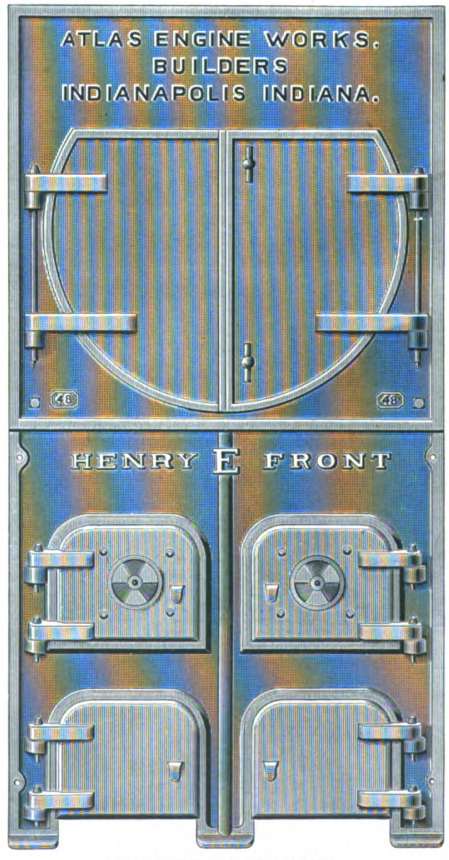
The HENRY E FRONT is made for all sizes up to and including 48 inches; and for the smaller Boilers answers every purpose of a Full Square Front at a moderate cost.

The different sizes are carried in stock for immediate shipment.

WE CARRY THE BOILERS ON HAND READY FOR IMMEDIATE SHIPMENT.

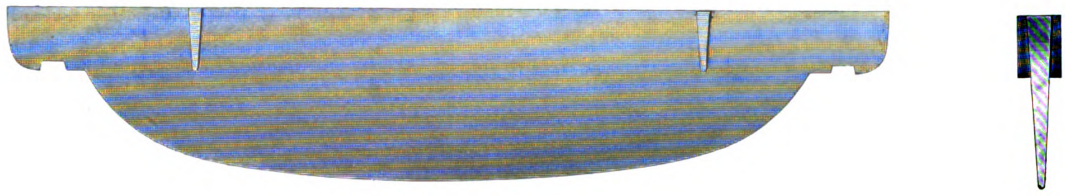


PLAIN FULL SQUARE FRONT.



HENRY E FRONT.

Grate Bars.

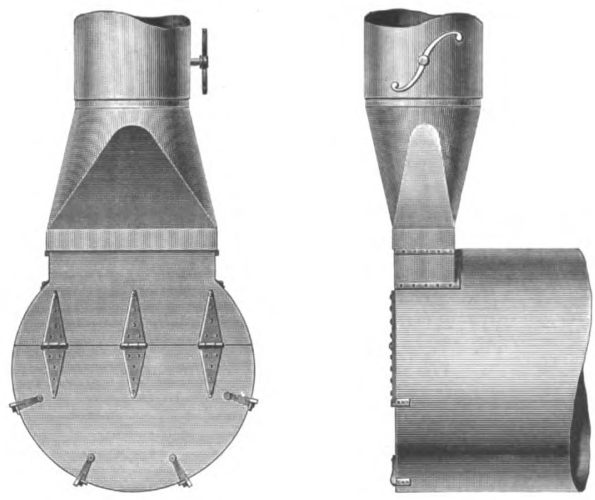


STANDARD GRATE BAR.

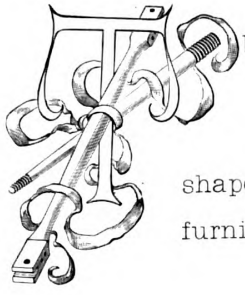
SAW DUST GRATE BAR.

THE short wide Bar is our Standard. It is short, thin and wide, and combines several attractive features. Being thin, the air space is very large and the capacity for combustion exceptionally good. The depth or width provides great strength. The size of it admits of frequent changes. Worn or burnt Bars can be removed from centre to sides of grate surface, and thus secure long service. When new Bars are needed, only small renewal spaces are required, and the expense is slight.

We show also our SAW DUST BAR, which, if preferred, will be furnished in Sets at the same price as the STANDARD BAR.



STANDARD SMOKE CONNECTION.



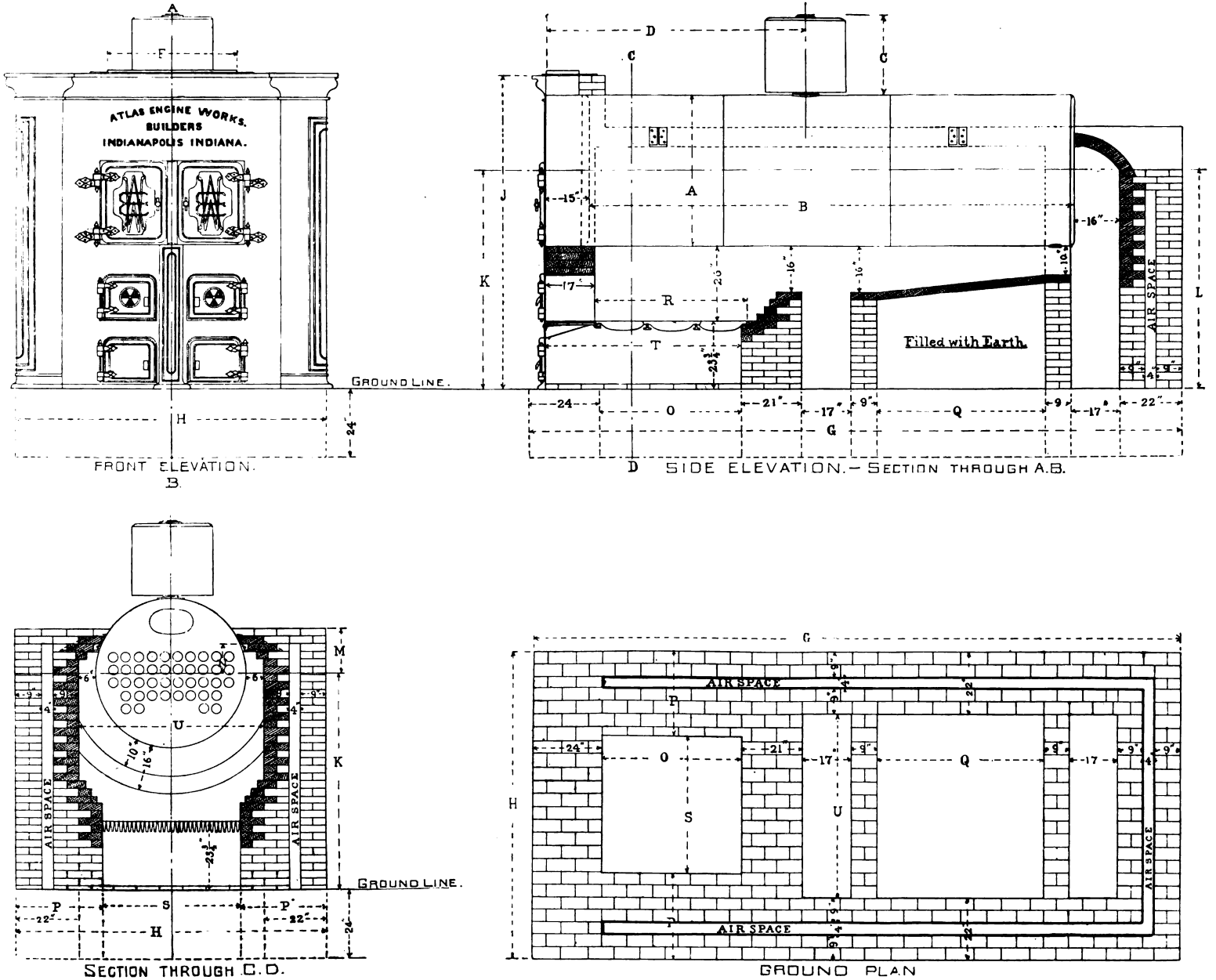
THE cut represents our STANDARD SMOKE CONNECTION and the Style we believe is well adapted to the general demand. Locations sometimes require SPECIAL BREECHING shaped for the place, and in that event, we are prepared to furnish what is needed.

ALL BOILERS ARE TESTED BY BOTH HYDROSTATIC AND STEAM PRESSURE BEFORE SHIPMENT, AND CERTIFICATE OF INSPECTION FURNISHED.

MATERIALS FOR STANDARD SINGLE BOILER SETTINGS.

BOILERS. In.	Ft.	Common Brick.	Fire Brick.	Sand. Bushels.	Cement. Barrels.	Lime. Barrels.	Fire Clay Pounds.
36 x	8	7,600	660	60	7½	3	396
36 x	10	8,600	750	70	8½	3½	450
36 x	12	9,800	820	78	10	4	492
40 x	12	10,000	850	80	10	4	510
42 x	12	10,300	850	83	10½	4¼	510
46 x	12	11,000	960	88	11	4½	576
48 x	12	11,200	1,000	90	11¼	4½	600

BOILERS. In.	Ft.	Common Brick.	Fire Brick.	Sand Bushels	Cement. Barrels.	Lime. Barrels.	Fire Clay Pounds.
52 x	14	12,300	1,160	98	12½	5	696
54 x	14	12,400	1,260	100	12½	5	756
54 x	16	13,200	1,350	106	13¼	5¼	810
60 x	14	12,700	1,260	102	12¾	5¼	756
60 x	16	14,100	1,380	113	14	5½	828
66 x	16	14,850	1,680	119	15	6	1,008
72 x	16	15,250	1,750	122	15¼	6¼	1,050



STANDARD TUBULAR BOILER SETTING WITH ORNAMENTAL FULL SQUARE FRONT.

DIMENSIONS FOR SETTING STANDARD TUBULAR BOILERS WITH HENRY B FRONTS.

[SEE DIAGRAM FOR THIS TABLE ON OPPOSITE PAGE.]

BOILERS.						SETTING.																		FURNACE.									
Nominal Rated Horse Power of Boiler.	Diameter of Boiler.	Length of Boiler.	Top of Boiler to Top of Dome Flange.	Center of Independent Dome to Front of Boiler.		Center of Riveted Dome to Front of Boiler.		Width of Stack Saddle.		Length of Foundation.		Width of Foundation.		Floor Line to Top of Safety Valve.		Height of Walls.		Floor Line to Center of Boiler, Front End.		Floor Line to Center of Boiler, Back End.		Center of Boiler to Top of Walls.	Center of Boiler to Closing in of Side Walls.	Front Wall to Bottom of Bridge Wall.		Thickness of Jams.		Length of Apron.		Length of Furnace.		Width of Furnace.		Length of Ash Pit.		Width of Spot and Back Pits.		No. of Square Feet in Grate Surface.
	A	B	C	D		E		F		G		H		I		J		K		L		M	N	O		P		Q		R		S		T		U		
	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	In.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Sq. Ft.
15	36	8	21	5	10	5	10	1	8	12	4	7	6	10	0	6	7	5	8	5	7	11	6	1	8	2	1	3	6	1	9	3	4	2	5	3	10	5.83
20	36	10	21	7	2	6	6	1	8	14	4	7	6	10	0	6	7	5	8	5	7	11	6	2	5	2	1	4	9	2	6	3	4	3	2	3	10	8.33
25	36	12	21	7	2	6	6	1	8	16	4	7	6	10	4	6	7	5	8	5	7	11	6	2	9	2	1	4	3	2	10	3	4	3	6	3	10	9.44
30	40	12	23	7	2	6	6	2	2	16	4	7	10	10	10	6	10	5	10	5	9	12	7	3	3	2	3	3	9	3	4	3	4	4	0	4	2	11.11
35	42	12	23	7	2	6	6	2	8	16	4	8	0	11	0	6	11	5	11	5	10	12	7	3	7	2	3	3	5	3	8	3	6	4	4	4	4	12.83
40	46	12	25	7	2	6	6	2	8	16	4	8	4	11	7	7	1	6	1	6	0	12	7	4	1	2	5	2	11	4	2	3	6	4	10	4	8	14.55
45	48	12	25	7	2	6	6	3	6	16	4	8	6	11	9	7	2	6	2	6	1	12	7	4	1	2	5	2	11	4	2	3	8	4	10	4	10	15.28

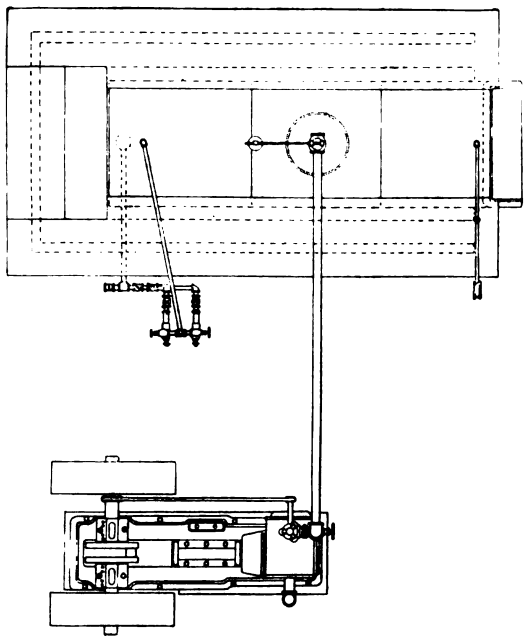
NOTE.—Henry C Fronts or Three Quarter Fronts may be substituted for Henry B Fronts on above Boilers, without change of dimensions for setting. In the 15 and 20 horse power settings the soot pit and first cross wall are to be left out.

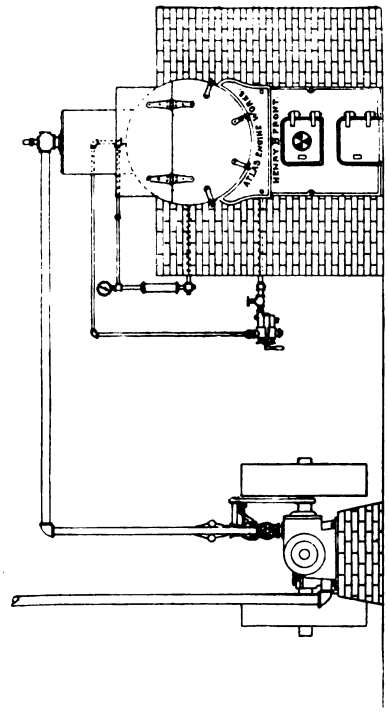
See Combined Table for Setting Materials, page 25.

DIRECTIONS FOR SETTING.

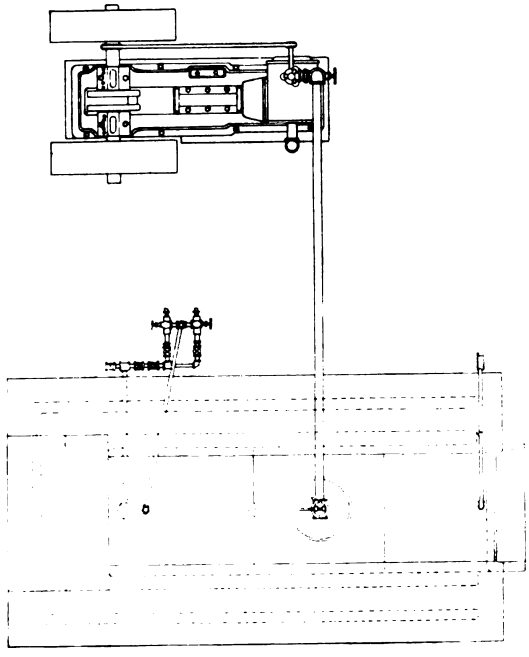
AKE the excavation for the foundation according to the drawings sent with each Boiler or according to the Table above. Set the Boiler in place and block it up three or four inches higher than it is to remain. Carry the back cross wall, back stand wall, and side walls up to the proper height, and place the back stand on its wall. Allow the work to stand a sufficient time for the walls to settle and harden, say six or eight days. When the walls are dry, let the Boiler down, rest the back end on back stand, and front end on fire front. Remove the blocking and complete the walls. The smoke box should project nine inches beyond the front wall. The fire front brick lining will then lap the front head three and one-half inches, protecting it from the fire. The side walls draw in to the Boiler at distance (N) above the center of the Boiler. The space between the cross walls should be filled with earth and one layer of bricks placed on top so as to form an apron from the soot pit to back pit. This keeps the heat near the Boiler. Between the outside and inside walls there is an air space of four inches. This allows the inside walls to expand and contract without injury to the outside walls. The walls should have headers run from wall to wall every two feet, but not tied together. The furnace fire brick should be laid so that they may be repaired at any time without interfering with the main walls. Economy in fuel is promoted by covering the Boiler and dome. Asbestos is recommended. The back pit is covered by fire brick supported by arch plates. These bear against a piece of two inch angle iron on the back head of Boiler, and the other ends rest on the back wall. The back arches can be removed without disturbing the walls, if occasion requires it.

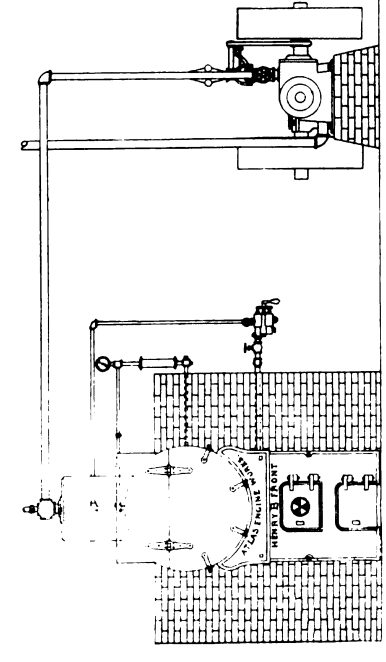
WHEN OTHER THAN SINGLE BOILER SETTINGS ARE WANTED, WRITE US FOR OTHER PLANS.



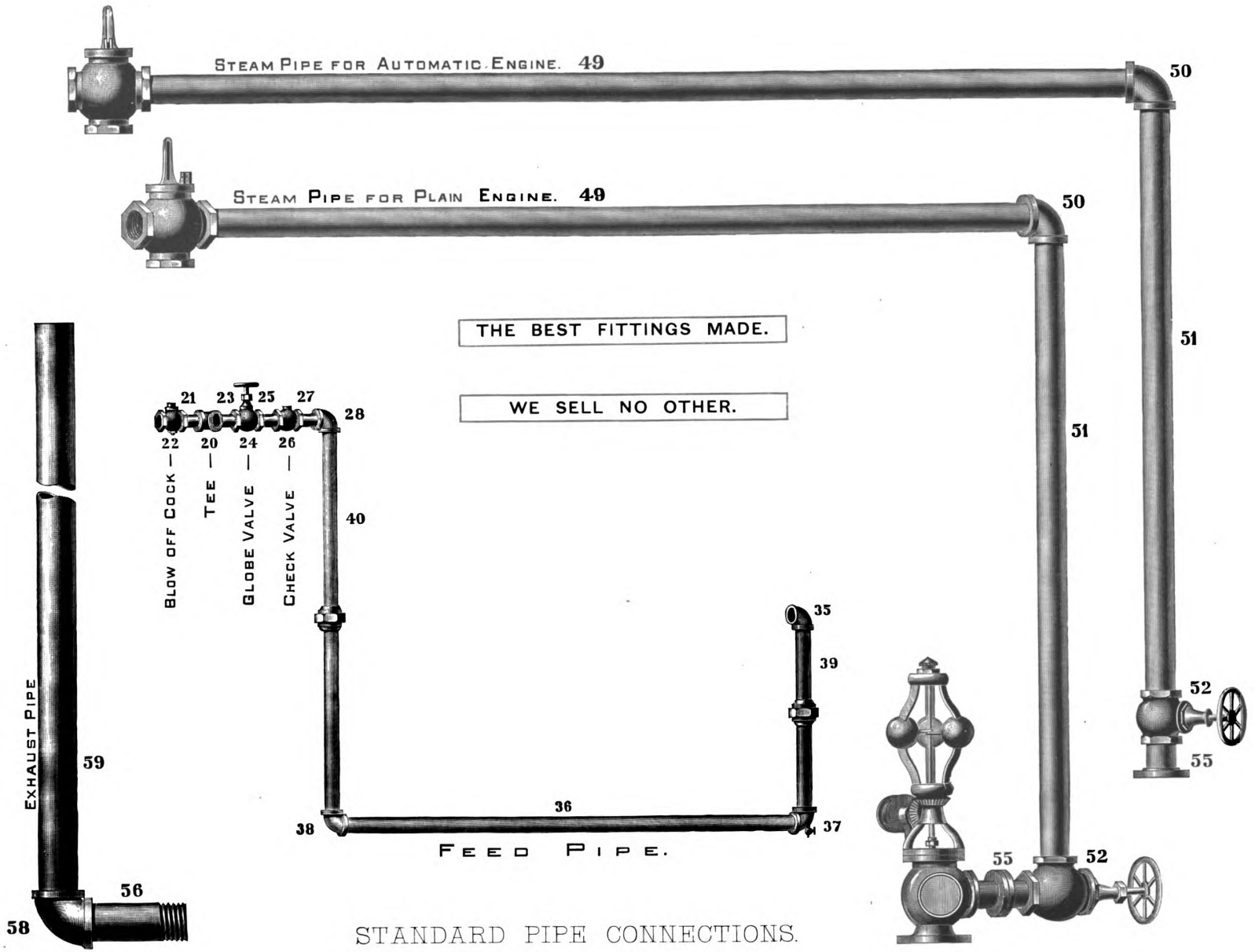


LEFT HAND SETTING.





RIGHT HAND SETTING.



STANDARD PIPE CONNECTIONS.

Combinations of Plain Self-Contained Engines with Horizontal Tubular Boilers.

SPECIFICATIONS.

ESTIMATE NUMBER.	PLAIN SELF-CONTAINED ENGINE. Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Nominal Rated Horse Power.	Standard Revolutions per Minute.	HORIZONTAL TUBULAR BOILER. Diameter of Shell. Inches.	Length of Tubes. Feet.	Nominal Rated Horse Power.	Distance Between Center of Engine and Center of Boiler. Feet.	Shipping Weight. Pounds Approximate.
7 A L	7	10	10	200	36	8	15	9	5,800
8 A L	8	10	15	200	36	8	15	9	5,900
9 A L	9	12	20	185	36	10	20	9	7,800
10 A L	10	12	25	185	36	12	25	9	8,400
11 A L	11	14	30	170	42	12	35	9	11,000
12 A L	12	14	40	170	48	12	45	10	12,500

STANDARD Estimates, described above, include: PLAIN SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Governor, Governor Belt, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Oil Can, Oil Cups, Wrenches and Cylinder Drain Pipes and Valves.

HORIZONTAL TUBULAR BOILER with Dome, Smoke Box Extension, Smoke Head Door and Stack Saddle, Fire Front, (Class B), Grate Bars, Bearing Bars, Back Stand, Back Arch Plates, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, and not exceeding thirty-five feet of Discharge Pipe, Steam Pipe connecting Engine and Boiler, and fifteen feet of Exhaust Pipe.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

Foundation Bolts and Bars for Engines will be furnished, if desired, and charged for extra.

Independent Domes can be substituted for Fixed Domes on any of the above Boilers, if desired, without extra charge.

Boilers can be furnished without Domes, if desired.

Dry Pipes, if ordered, can be furnished for Boilers without Domes.

For full dimensions of Engines, see page 5, and for Boilers, page 20.

When ordering, READ SUGGESTIONS on page 52.

COMBINATIONS OF AUTOMATIC SELF-CONTAINED ENGINES WITH HORIZONTAL TUBULAR BOILERS.

SPECIFICATIONS.

ESTIMATE NUMBER.	AUTOMATIC SELF-CONTAINED ENGINE.				HORIZONTAL TUBULAR BOILER.			Distance Between Center of Engine and Center of Boiler. Feet.	Shipping Weight. Pounds Approximate.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Indicated Horse Power.	Standard Revolutions per Minute.	Diameter of Shell. Inches.	Length of Tubes. Feet.	Nominal Rated Horse Power.		
7 B L	7	10	18	240	36	10	20	9	6,400
8 B L	8	10	24	240	36	12	25	9	7,000
9 B L	9	12	35	225	42	12	35	9	9,700
10 B L	10	12	43	225	48	12	45	10	11,200
11 B M	11	14	53	200	54	14	60	10	15,500
12 B M	12	14	65	200	60	14	75	11	18,000

STANDARD Estimates, described above, include: AUTOMATIC SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Automatic Shaft Governor, Balanced Slide Valve, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Bracket Wipe Oilers for Cross Head Pin and Crank Pin, Drip Oiler for Eccentric, and Special Oilers for Main Bearings, Valve Cross Head and Main Cross Head Guide Caps, Oil Can, Wrenches and Cylinder Drain Pipes and Valves.

HORIZONTAL TUBULAR BOILER with Dome, Smoke Box Extension, Smoke Head Door and Stack Saddle, Fire Front, Grate Bars, Bearing Bars, Back Arch Plates, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, and not exceeding thirty-five feet of Discharge Pipe, Steam Pipe connecting Engine and Boiler, and fifteen feet of Exhaust Pipe.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

Foundation Bolts and Bars for Engines will be furnished, if desired, and charged for extra.

The Fire Fronts furnished with Boilers, ranging in diameter from 36 inches to 48 inches, will be Class B Fronts, and with Boilers 52 inches and greater in diameter, Class C Fronts.

With Boilers from 36 inches to 48 inches in diameter, Back Stands will be furnished. On larger sizes, Cast Wings will be riveted on the shells of the Boilers, for their support.

Boilers 52 inches, and greater, in diameter will be furnished with Independent Domes, unless otherwise ordered.

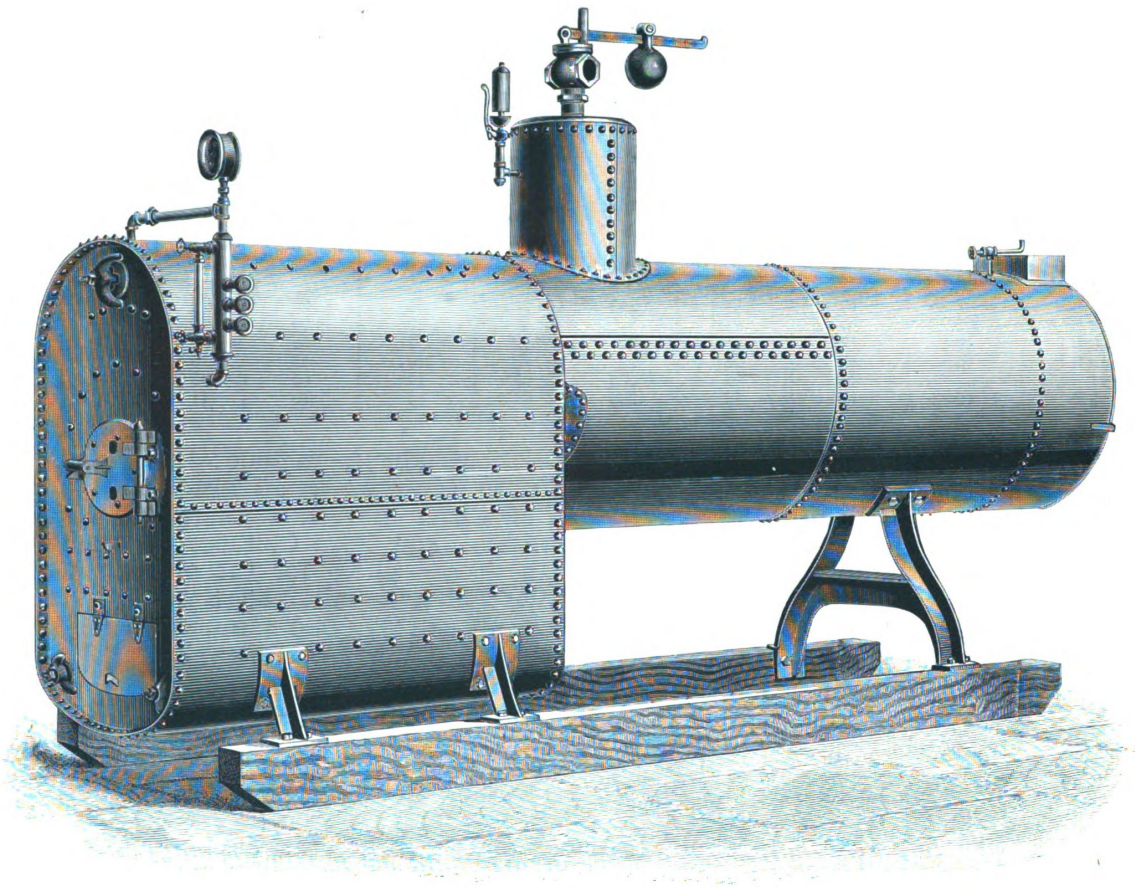
Independent Domes can be substituted for Fixed Domes on any of the above Boilers, if desired, without extra charge.

Boilers can be furnished without Domes, if desired.

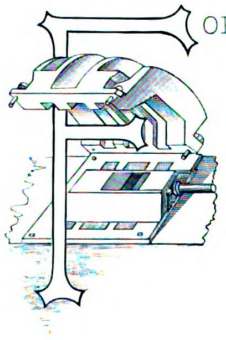
Dry Pipes, if ordered, can be furnished for Boilers without Domes.

For full dimensions of Engines, see page 7, and for Boilers, pages 20 and 21.

When ordering, READ SUGGESTIONS on page 52.



Locomotive Flange Steel Boiler with Fixed Dome.



FOR many years this Company has given very special attention to Locomotive types of Boilers, with the view of combining good workmanship and material with the best design of dimensions for the best results in steaming and fuel economy.

SAFETY.

The illustration and table of specifications present the latest results of this long experience.

ECONOMY.

A careful comparison with the standards of other well known manufacturers of this class of work will convince the searcher after truth that the liberal dimensions of Fire Boxes, length of Barrels and Tubes, all combine to produce a Boiler larger than the greater number offered by others and averaging better in proportions than any other Boilers of similar form made by any one.

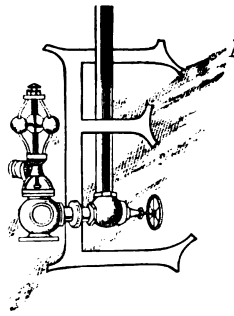
DURABILITY.

Quality of Plate, Tubes, Stay Bolts, Rivets and Bracing are kept sacred, and cost is made entirely secondary to safety and reliability.

LOCOMOTIVE FLANGE STEEL BOILERS WITH FIXED DOMES.

SPECIFICATIONS.

ESTIMATE NUMBER.	Nominal Rated Horse Power.	SHELL.			FIRE BOX			DOME.		TUBES.			Total Heating Surface	STACK.		SHIPPING WEIGHT. Pounds Approximate.		
		Diam.	Length Over All		Length.	Width.	Height.	Diam.	Height	No.	Diam.	Length.		Diam.	Length.	Boiler Only.	Fixtures Only.	Boiler and Fixtures.
		Inches.	Ft.	In.	Inches.	Inches.	Inches.	Inches.	Inches.		Inches.	Ft.	In.	Sq. Ft.	Inches.	Feet.			
10 P	10	28	9	5	30	23	36	15	16	25	2½	5	6	127	10	15	2,518	382	2,900
15 P	15	32	11	0	42	27	40	15	16	34	2½	6	0	188	12	15	3,448	552	4,000
20 P	20	34	12	8	48	29	45	16	18	40	2½	7	0	251	12	20	5,030	670	5,700
25 P	25	36	14	0	52	32	48	18	20	45	2½	8	0	315	14	25	5,975	825	6,800
30 P	30	40	15	2	54	36	48	20	22	49	2½	9	0	376	18	35	6,497	1,203	7,700
40 P	40	42	16	4	54	37	60	20	22	62	2½	10	0	510	20	40	8,540	1,360	9,900



EACH Boiler, on skids, is furnished with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

For Standard Estimates, combining the above list of Boilers with suitable Engines, see pages 38 to 51.

When ordering, READ SUGGESTIONS on page 52.

INDEPENDENT DOMES.

Independent Domes can be substituted for Fixed Domes on any of the above Boilers, if desired, without extra charge.

BOILERS WITHOUT DOMES.

Boilers can be furnished without Domes, if desired.

DRY PIPES.

Dry Pipes, if ordered, can be furnished for Boilers without Domes.

MOUNTED ON WHEELS.

Any of the above Boilers can be mounted on Wheels, when so ordered.

COMBINATIONS OF PLAIN SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

DETACHED PORTABLE OUTFITS. CLASS A P.

SPECIFICATIONS.

ESTIMATE NUMBER.	PLAIN SELF-CONTAINED ENGINE.				LOCOMOTIVE BOILER.				Distance Between Center of Engine and Center of Boiler. Feet.	Shipping Weight. Pounds Approximate.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Nominal Rated Horse Power.	Standard Revolutions per Minute.	Diameter of Shell. Inches.	Length Over All. Feet.	Inches.	Nominal Rated Horse Power.		
7 A P	7	10	10	200	28	9	5	10	7	5,000
8 A P	8	10	15	200	32	11	0	15	7	6,200
9 A P	9	12	20	185	34	12	8	20	7	9,400
10 A P	10	12	25	185	36	14	0	25	8	10,600
11 A P	11	14	30	170	40	15	2	30	8	12,800
12 A P	12	14	40	170	42	16	4	40	8	15,100

STANDARD Estimates, as described above, include: PLAIN SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Governor, Governor Belt, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Oil Can, Oil Cups, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, and not exceeding thirty-five feet of Discharge Pipe, Steam Pipe connecting Engine and Boiler, and fifteen feet of Exhaust Pipe.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

Foundation Bolts and Bars for Engines will be furnished, if desired, and charged for extra.

For full dimensions of Engines, see page 5, and for Boilers, page 37.

When ordering, READ SUGGESTIONS on page 52.

COMBINATIONS OF AUTOMATIC SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

DETACHED PORTABLE OUTFITS. CLASS B P.

SPECIFICATIONS.

ESTIMATE NUMBER.	AUTOMATIC SELF-CONTAINED ENGINE.				LOCOMOTIVE BOILER.				Distance Between Center of Engine and Center of Boiler. Feet.	Shipping Weight. Pounds Approximate.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Indicated Horse Power.	Standard Revolutions per Minute.	Diameter of Shell. Inches.	Length Over All. Feet.	Inches.	Nominal Rated Horse Power.		
7 B P	7	10	18	240	34	12	8	20	7	7,800
8 B P	8	10	24	240	36	14	0	25	7	8,900
9 B P	9	12	30	225	40	15	2	30	8	11,400
10 B P	10	12	40	225	42	16	4	40	8	13,600

STANDARD Estimates, described above, include: AUTOMATIC SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Automatic Shaft Governor, Balanced Slide Valve, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Bracket Wipe Oilers for Cross Head Pin and Crank Pin, Drip Oiler for Eccentric, and Special Oilers for Main Bearings, Valve Cross Head and Main Cross Head Guide Caps, Oil Can, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, and not exceeding thirty-five feet of Discharge Pipe, Steam Pipe connecting Engine and Boiler, and fifteen feet of Exhaust Pipe.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

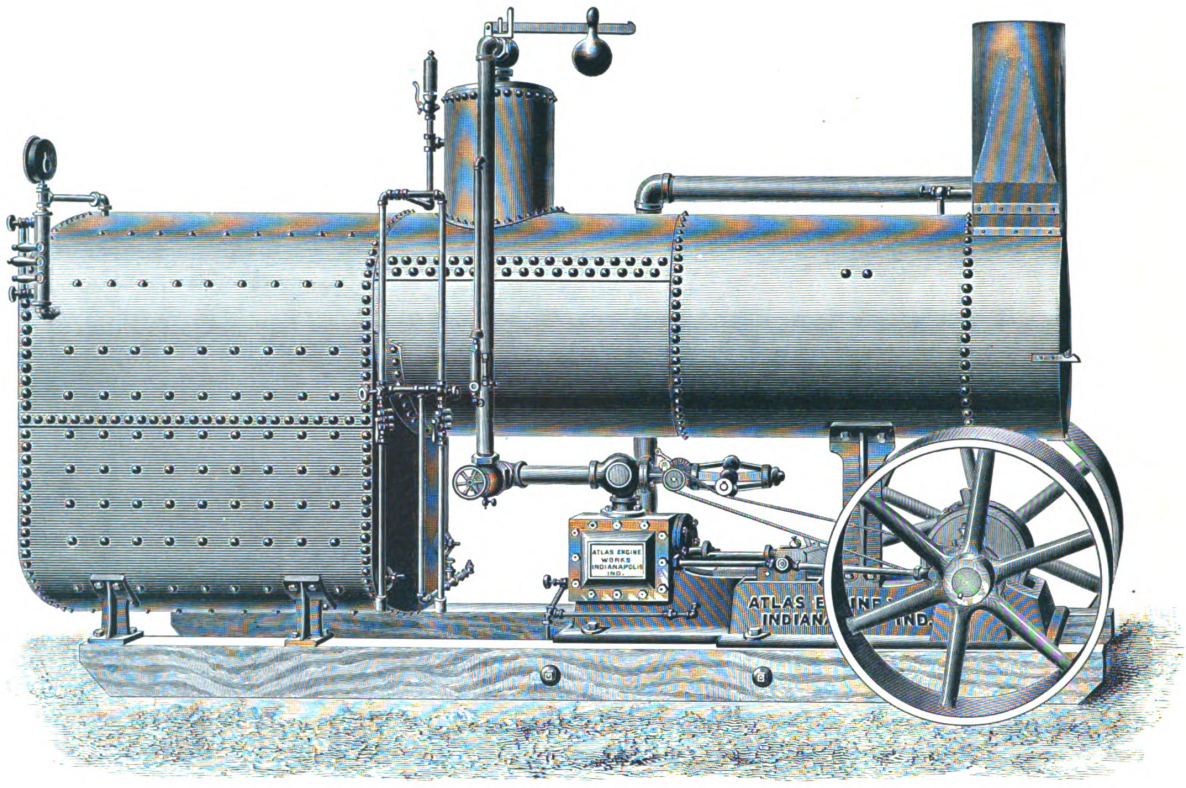
NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

Foundation Bolts and Bars for Engines will be furnished, if desired, and charged for extra.

For full dimensions of Engines, see page 7, and for Boilers, page 37.

When ordering, READ SUGGESTIONS on page 52.



SELF-CONTAINED UNDER OUTFIT. ON SKIDS.

TO meet the wants of the many classes of users of power, it is necessary in offering Engines, to combine them with Boilers for Complete Outfits. To this end, much care has been taken to select suitable Boilers to produce the best results for the various conditions and circumstances under which buyers labor.

The Outfit, shown above, has proven very attractive to those who find it profitable to occasionally change location, or to those establishing Power Plants in localities where brick work for Engine foundations and Boiler settings is seriously expensive or difficult to procure.

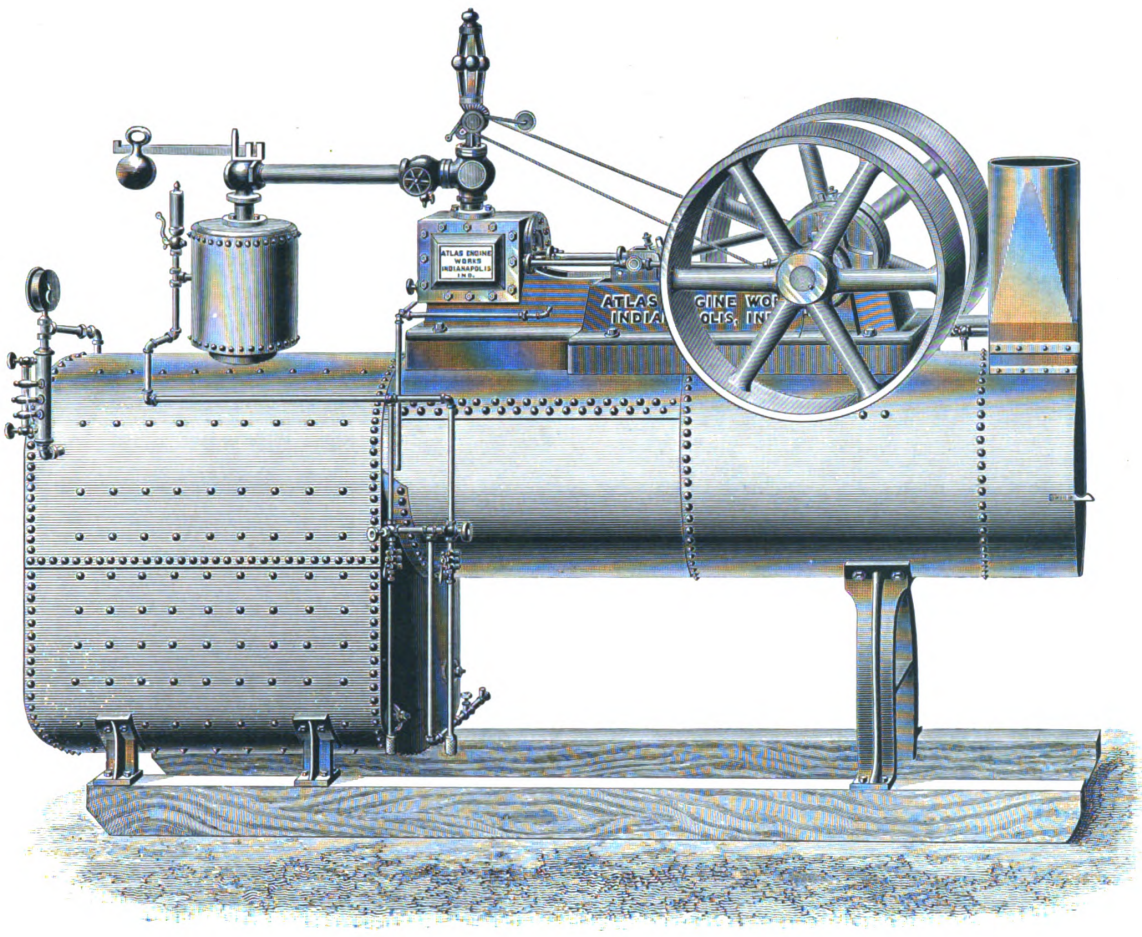
A MARVEL OF SIMPLICITY AND COMPACTNESS.

The bulk of the Engine weight is brought down low.

It forms a very compact and rigid Outfit, and is not liable to move about when working under a heavy load.

The attendance or care of the Engine is very convenient.

This Outfit can be furnished either PLAIN or AUTOMATIC.



SELF-CONTAINED OVER OUTFIT. ON SKIDS.

THIS is a twin Outfit to the one shown on preceding page except the Engine, by brackets, is attached to the top of the barrel of the Boiler. It has the same general points of excellence as its mate, and by many, the high mounting is preferred to dropping the Engine low beneath the Boiler.

The Boiler is constructed of the best Flange Steel Plate, of 60,000 pounds tensile strength, the Tubes are the best obtainable, the Braces and Stay Bolts are of the best Refined Iron, and their arrangement is according to the most approved modern practice.

STAPLE AS WHEAT COTTON OR CORN.

The Company is prepared to furnish either Outfit, in accordance with the preference of the customer.

This Outfit can be furnished either PLAIN or AUTOMATIC.

COMBINATIONS OF PLAIN SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

SELF-CONTAINED OVER OUTFITS, ON SKIDS. CLASS A S.

SPECIFICATIONS.

ESTIMATE NUMBER.	PLAIN SELF-CONTAINED ENGINE.				LOCOMOTIVE BOILER.				Shipping Weight.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Nominal Rated Horse Power.	Standard Revolutions Per Minute.	Diameter of Shell. Inches.	Length Over All. Feet.	Inches.	Nominal Rated Horse Power.	Pounds Approximate.
7 A S	7	10	10	200	28	9	5	10	5,200
8 A S	8	10	15	200	32	11	0	15	6,400
9 A S	9	12	20	185	34	12	8	20	9,700
10 A S	10	12	25	185	36	14	0	25	10,900
11 A S	11	14	30	170	40	15	2	30	13,200
12 A S	12	14	40	170	42	16	4	40	15,500

STANDARD Estimates, described above, include: PLAIN SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Governor, Governor Belt, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Oil Can, Oil Cups, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, Steam Pipe connecting Engine and Boiler, and Exhaust Pipe.

Engine is fixed on top over the barrel of the Boiler. Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

For full dimensions of Engines, see page 5, and for Boilers, page 37.

For illustration of these Outfits, see page 41.

When ordering, READ SUGGESTIONS on page 52.

COMBINATIONS OF AUTOMATIC SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

SELF-CONTAINED UNDER OUTFITS, ON SKIDS. CLASS B R.

SPECIFICATIONS.

ESTIMATE NUMBER.	AUTOMATIC SELF-CONTAINED ENGINE.				LOCOMOTIVE BOILER.				Shipping Weight. Pounds Approximate.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Indicated Horse Power.	Standard Revolutions per Minute.	Diameter of Shell. Inches.	Length Over All. Feet.	Inches.	Nominal Rated Horse Power.	
7 B R	7	10	18	240	34	12	8	20	7,800
8 B R	8	10	24	240	36	14	0	25	8,900
9 B R	9	12	30	225	40	15	2	30	11,400
10 B R	10	12	40	225	42	16	4	40	13,600

STANDARD Estimates, described above, include: AUTOMATIC SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Automatic Shaft Governor, Balanced Slide Valve, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Bracket Wipe Oilers for Cross Head Pin and Crank Pin, Drip Oiler for Eccentric, and Special Oilers for Main Bearings, Valve Cross Head and Main Cross Head Guide Caps, Oil Can, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, Steam Pipe connecting Engine and Boiler, and Exhaust Pipe.

Engine is fixed on the skids under the barrel of the Boiler.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

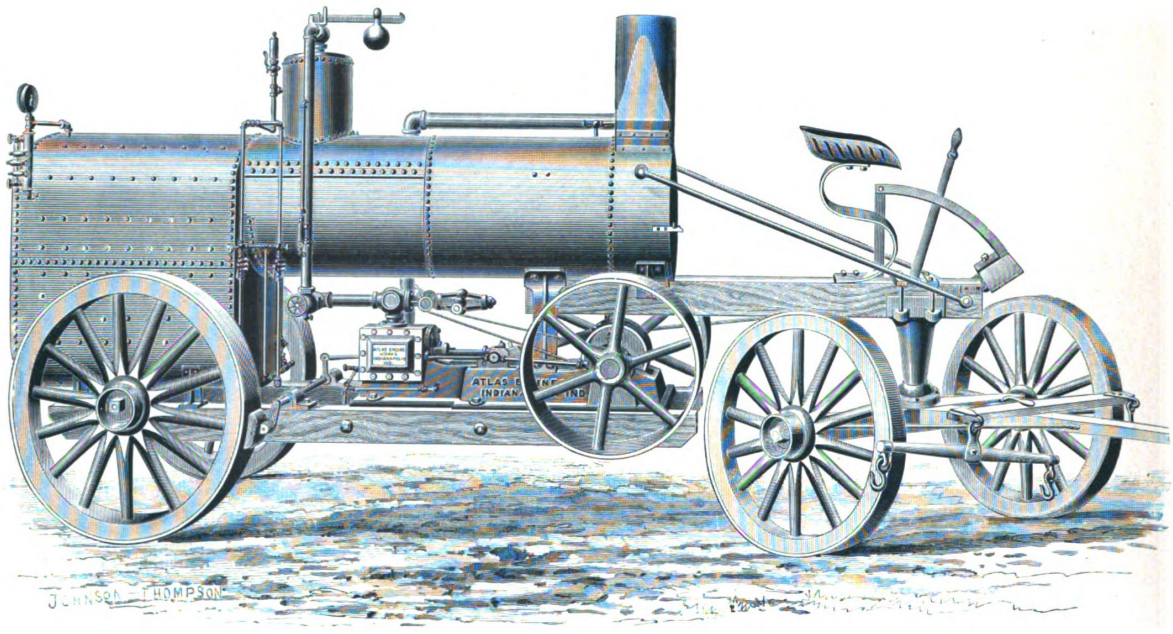
NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

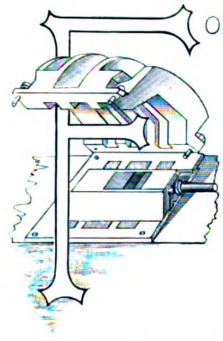
For full dimensions of Engines, see page 7, and for Boilers, page 37.

For illustration of these Outfits, see page 40.

When ordering, READ SUGGESTIONS on page 52.



Self-Contained Under Outfit. On Wheels.



FOR convenience in transporting any distance, or over rough or mountainous country, the Engine and Boiler shown above, mounted on Wheels, is as good an Outfit as can be put together for the purpose.

No expense or trouble is spared to make the Wheel feature perfect.

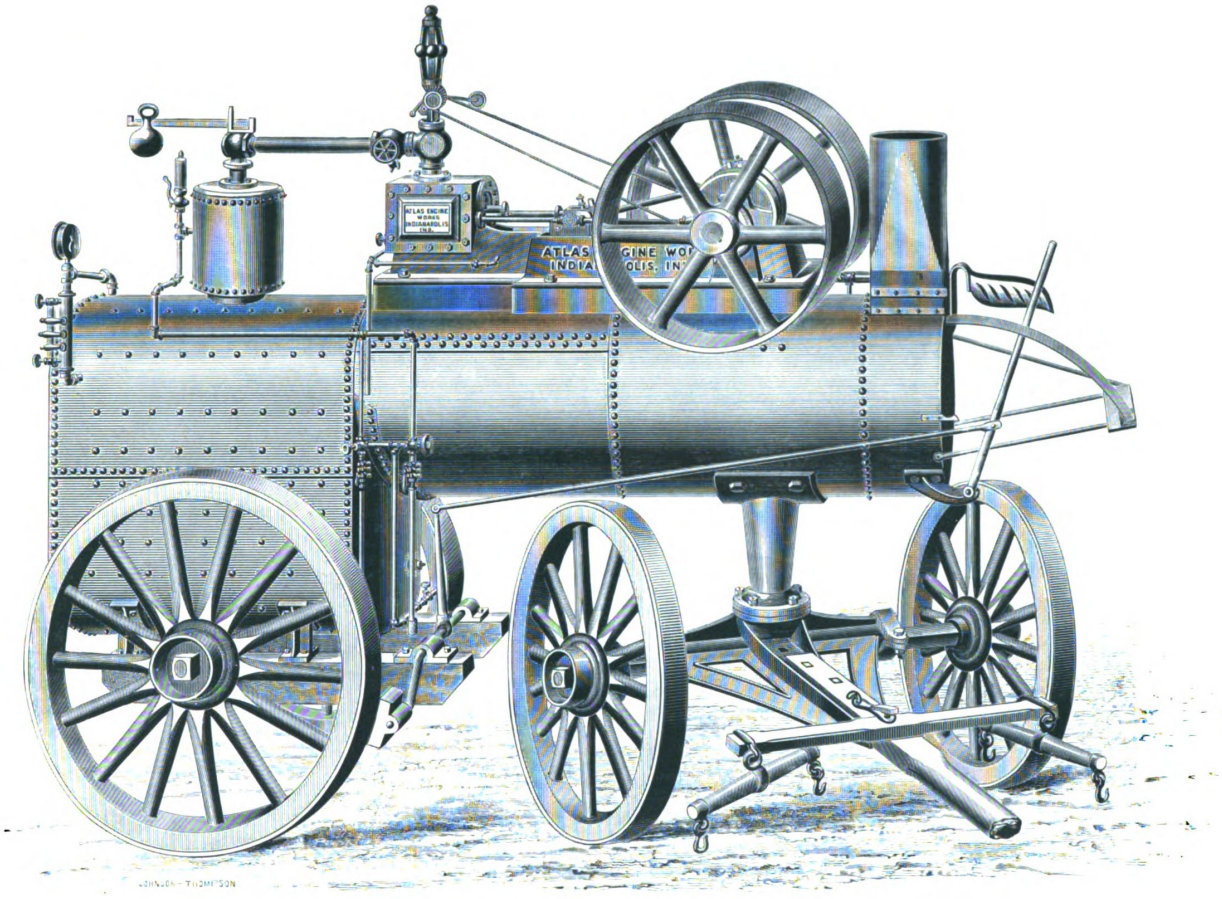
The Wheels are designed for great strength and endurance—made specially for the purpose. The tread is broad and the tire of homogeneous steel.

SUITED TO ALL PURPOSES.

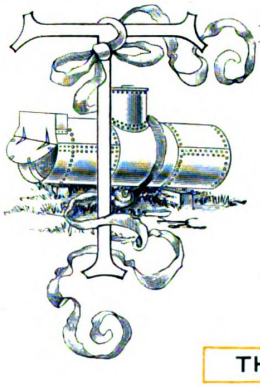
Each Outfit is furnished with Tongue, Double Tree and Neck Yoke.

If the Outfit seems to meet the wants of the reader, the Company stands ready to put its usual guaranty upon it, and has no hesitation in recommending it as in all respects equal to other standard machinery sold from its Works.

This Outfit can be furnished either PLAIN or AUTOMATIC.



SELF-CONTAINED OVER OUTFIT. ON WHEELS.



THE SELF-CONTAINED OVER OUTFIT is the same machinery in all respects as that illustrated and described on the opposite page, with exception that the Engine is mounted on the top of the Boiler.

It is carefully fixed in place by steam tight bolts.

It forms a very handsome and attractive Steam Plant designed to burn either wood or coal.

THE BEST PORTABLE ENGINE IN THE WORLD.

Many buyers prefer this style to any other, and it is earnestly recommended with full confidence that the engineer will soon be proud of the fine steaming capacity of the Boiler and the easy care of the Engine.

This Outfit can be furnished either PLAIN or AUTOMATIC.

Combinations of Plain Self-Contained Engines with Locomotive Boilers.

Self-Contained Under Outfits, on Wheels. Class A T.

SPECIFICATIONS.

ESTIMATE NUMBER.	PLAIN SELF-CONTAINED ENGINE.				LOCOMOTIVE BOILER.				Shipping Weight.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Nominal Rated Horse Power.	Standard Revolutions per Minute.	Diameter of Shell. Inches.	Length Over All Feet.	Inches	Nominal Rated Horse Power.	Pounds Approximate.
7 A T	7	10	10	200	28	9	5	10	6,500
8 A T	8	10	15	200	32	11	0	15	7,800
9 A T	9	12	20	185	34	12	8	20	11,200
10 A T	10	12	25	185	36	14	0	25	12,800
11 A T	11	14	30	170	40	15	2	30	15,200
12 A T	12	14	40	170	42	16	4	40	17,700

STANDARD Estimates, described above, include: PLAIN SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Governor, Governor Belt, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Oil Can, Oil Cups, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, Steam Pipe connecting Engine and Boiler, and Exhaust Pipe.

Engine is fixed on the skids under the barrel of the Boiler, and the entire Outfit is mounted on Wheels.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

For full dimensions of Engines, see page 5, and for Boilers, page 37.

For illustration of these Outfits, see page 46.

When ordering, READ SUGGESTIONS on page 52.

COMBINATIONS OF AUTOMATIC SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

SELF-CONTAINED UNDER OUTFITS, ON WHEELS. CLASS B T.

SPECIFICATIONS.

ESTIMATE NUMBER.	AUTOMATIC SELF-CONTAINED ENGINE.				LOCOMOTIVE BOILER.				Shipping Weight.
	Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Indicated Horse Power.	Standard Revolutions per Minute.	Diameter of Shell. Inches.	Length Over All. Feet.	Length Over All. Inches	Nominal Rated Horse Power.	Pounds Approximate.
7 B T	7	10	18	240	34	12	8	20	9,800
8 B T	8	10	24	240	36	14	0	25	11,400
9 B T	9	12	30	225	40	15	2	30	14,000
10 B T	10	12	40	225	42	16	4	40	16,500

STANDARD Estimates, described above, include: AUTOMATIC SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Band Wheels, Automatic Shaft Governor, Balanced Slide Valve, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Bracket Wipe Oilers for Cross Head Pin and Crank Pin, Drip Oiler for Eccentric, and Special Oilers for Main Bearings, Valve Cross Head and Main Cross Head Guide Caps, Oil Can, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, Steam Pipe connecting Engine and Boiler, and Exhaust Pipe.

Engine is fixed on the skids under the barrel of the Boiler, and the entire Outfit is mounted on Wheels.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

For full dimensions of Engines, see page 7, and for Boilers, page 37.

For illustration of these Outfits, see page 46.

When ordering, READ SUGGESTIONS on page 52.

COMBINATIONS OF PLAIN SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

SELF-CONTAINED OVER OUTFITS, ON WHEELS. CLASS A U.

SPECIFICATIONS.

ESTIMATE NUMBER	PLAIN SELF-CONTAINED ENGINE				LOCOMOTIVE BOILER.				Shipping Weight.
	Diameter of Cylinder. Inches.	Length of Stroke Inches.	Nominal Rated Horse Power.	Standard Revolutions per Minute	Diameter of Shell. Inches.	Length Over All Feet.	Inches	Nominal Rated Horse Power.	Pounds Approximate
7 A U	7	10	10	200	28	9	5	10	6,700
8 A U	8	10	15	200	32	11	0	15	8,000
9 A U	9	12	20	185	34	12	8	20	11,500
10 A U	10	12	25	185	36	14	0	25	13,000
11 A U	11	14	30	170	40	15	2	30	15,600
12 A U	12	14	40	170	42	16	4	40	18,100

STANDARD Estimates described above, include Plain Self-Contained Engine with Wrought Iron Main Shaft, Two Band Wheels, Governor, Governor Belt, Stop Valve, Automatic Sight Feed Cylinder Lubricator and Connections, Oil Can, Oil Cups, Wrenches and Cylinder Drain Pipes and Valves.

Locomotive Boiler, on skids, with Dome, Grate bars, Safety Valve, Steam Gage and Siphon Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, Steam Pipe connecting Engine and Boiler, and Exhaust Pipe.

Engine is fitted on top, over the barrel of the Boiler, and the entire Outfit is mounted on Wheels.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used, each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

For full dimensions of Engines, see page 5, and for Boilers page 37.

For illustration of these Outfits, see page 47.

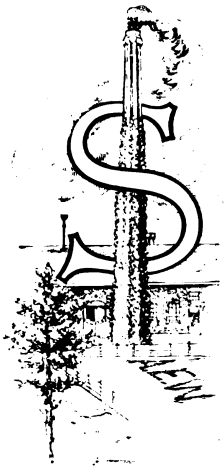
When ordering, READ SUGGESTIONS on page 52.

COMBINATIONS OF AUTOMATIC SELF-CONTAINED ENGINES WITH LOCOMOTIVE BOILERS.

SELF-CONTAINED OVER OUTFITS, ON WHEELS. CLASS B U.

SPECIFICATIONS.

ESTIMATE NUMBER.	AUTOMATIC SELF-CONTAINED ENGINE. Diameter of Cylinder. Inches.	Length of Stroke. Inches.	Indicated Horse Power.	Standard Revolutions per Minute.	LOCOMOTIVE BOILER. Diameter of Shell. Inches.	Length Over All. Feet.	Inches.	Nominal Rated Horse Power.	Shipping Weight. Pounds. Approximate.
7 B U	7	10	18	240	34	12	8	20	10,000
8 B U	8	10	24	240	36	14	0	25	11,600
9 B U	9	12	30	225	40	15	2	30	14,300
10 B U	10	12	40	225	42	16	4	40	16,800



STANDARD Outfits described above, include: AUTOMATIC SELF-CONTAINED ENGINE with Wrought Iron Main Shaft, Two Hand Wheels, Automatic Shaft Governor, Balanced Slide Valve, Stop Valve, Automatic Sight Feed Cylinder Indicator and Connections, Bracket Wipe Oilers for Cross Head Pin and Crank Pin, Drip Oiler for Eccentric, and Special Oilers for Main Bearings, Valve Cross Head and Main Cross Head Guide Caps, Oil Can, Wrenches and Cylinder Drain Pipes and Valves.

LOCOMOTIVE BOILER, on skids, with Dome, Grate Bars, Safety Valve, Steam Gage and Siphon, Glass Water Gage and Gage Cocks, Check Valve, Stop Valve, Blow-off Cock, Whistle, Smoke Stack and Guy Rods.

Two Injectors with Connections to Boiler, Steam Pipe connecting Engine and Boiler, and Exhaust Pipe.

Engine is fixed on top, over the barrel of the Boiler, and the entire Outfit is mounted on Wheels.

Delivered on cars at our Works in Indianapolis.

Everything furnished with the above Outfits is particularly mentioned in the Specifications. Anything else ordered will be charged for extra.

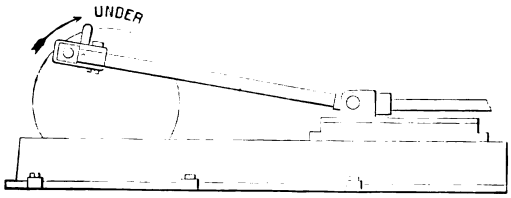
NOTE.

The Two Injectors furnished with these Engine and Boiler Outfits are so arranged that either or both may be used; each being of ample capacity to feed the proper size Boiler to generate steam for the Engine, leaving one Injector free to be used in case of accident or increased demand upon the Boiler.

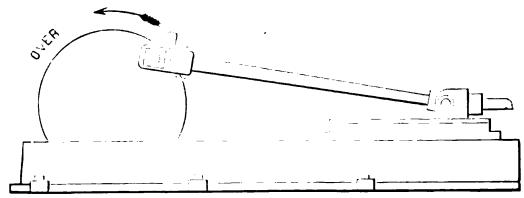
For full dimensions of Engines, see page 7, and for Boilers, page 67.

For illustration of these Outfits, see page 47.

When ordering, READ SUGGESTIONS on page 52.



RUNNING UNDER.



RUNNING OVER.

SUGGESTIONS.

IN writing for prices be careful to state whether Engine and Boiler are both wanted, and ALWAYS refer to Number of Estimate, in addition to giving size of Engine and Boiler. For example, if a price is wanted upon a 25 horse power, or 10 x 12 Plain Engine and the 36 x 12 Tubular Boiler, with All Fixtures, mention Estimate 10 A L, or if Engine without Boiler is wanted, refer to Estimate 10 A.

Prices given will always include complete list of trimmings mentioned in the Estimates.

The pictures on this page illustrate the difference between Under and Over Motion, and purchasers are requested to state definitely which Motion they want, when orders are sent in.

AN IMMEDIATE SHIPMENT IS SOMETIMES ABSOLUTELY NECESSARY.
WE CAN MAKE IT.

The greater number of Engine purchasers prefer to furnish their own Foundation Bolts and Bars, and for that reason they are not included in the Standard Estimates and weights of Outfits. Be particular to mention them, if they are wanted.

When more than one Boiler is ordered for the same job, be careful to state whether each Boiler is to be set in a separate furnace, or if several Boilers are to be set together without dividing walls. The first is called an Independent Setting, and the second a Battery Setting.

Our Product.

PLAIN SELF-CONTAINED ENGINES. Sizes from 7 in. to 12 in. diameter of Cylinder. Designed for economical power. Simple. Strong. Durable. Compact. Best Engine of its class in the world. Will fit into many places where a side crank Engine would be inconvenient.

Write for Special Descriptive Catalogue.

AUTOMATIC SELF-CONTAINED ENGINES. Sizes from 7 in. to 12 in. diameter of Cylinder. The very Engine for Electric Light Plants. Valve carefully balanced. Close regulation and fuel saving recommend it. All above the floor line. Can be used up stairs or down. A marvel of simplicity and compactness. Are you cramped for space? This Engine will fit the corner.

Write for Special Descriptive Catalogue.

PLAIN SLIDE VALVE ENGINES. Sizes from 7 in. to 18 in. diameter of Cylinder. Staple as wheat, cotton or corn. Suited to all purposes. The perfection of Slide Valve Engines.

Write for Special Descriptive Catalogue.

AUTOMATIC BALANCED SINGLE VALVE ENGINES. Sizes from 7 in. to 18 in. diameter of Cylinder. First in quality, perfect in uniformity of speed, great in saving of fuel. Unequalled for driving Electric Dynamos. No intricate parts. Any engineer of ordinary ability can run it. Is fuel scarce and high priced? This Engine will save you money.

Write for Special Descriptive Catalogue.

PLAIN HEAVY DUTY ENGINES. Sizes from 18 in. to 24 in. diameter of Cylinder. Valve carefully balanced. Broad and strong in every part. Designed specially to withstand the sudden shocks of heavy power transmission. Are your power demands particularly exacting? This Engine will perform the service.

Write for Special Descriptive Catalogue.

AUTOMATIC HEAVY DUTY ENGINES. Sizes from 18 in. to 24 in. diameter of Cylinder. Valve carefully balanced. All wearing surfaces exceptionally large. Highest attainable economy with Single Valve. Absolute regulation under changes of load and Boiler pressure. Built for hard work and continuous running. Heavy. Strong. Durable.

Write for Special Descriptive Catalogue.

HORIZONTAL TUBULAR AND LOCOMOTIVE FLANGE STEEL BOILERS. Sizes from 10 horse power up. Not a pound of shell steel in any of them. Every plate is Flange Steel and guaranteed by makers to turn down double cold without fracture. Tubes are selected from the best made in this country. Workmanship is worthy of the high grade of material. No better Boilers obtainable.

Write for Special Descriptive Catalogue.

WRITE FOR LIST OF THE OWNERS OF ATLAS ENGINES NOW RUNNING IN EVERY STATE IN THE UNION.