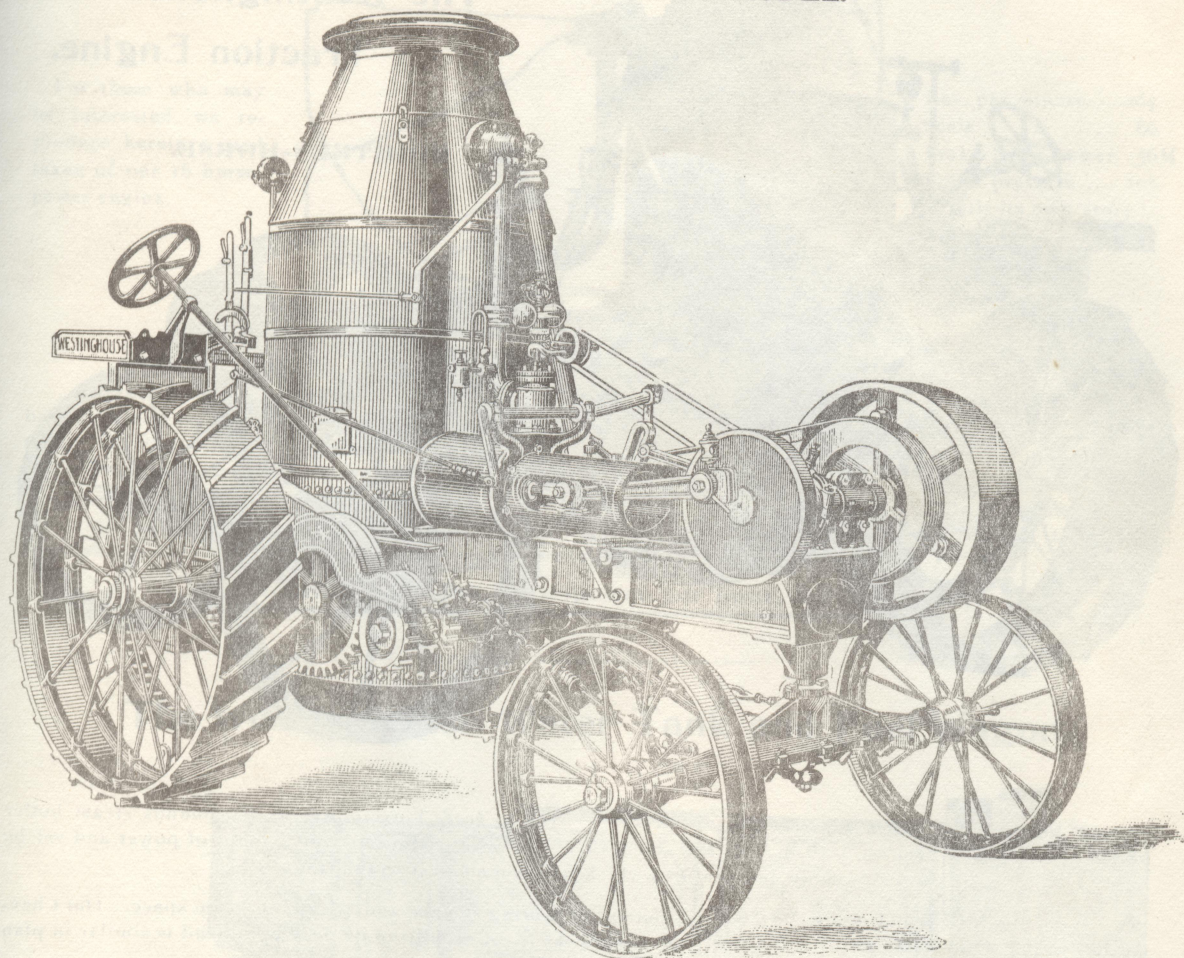


## The Westinghouse Traction Engine.

### FIFTEEN-HORSE, NEW MODEL.



Our **NEW MODEL 15 H. P. TRACTION** Engine illustrated above has already become one of our most popular engines. It possesses many very desirable features and is admirably adapted for running a large size thresher having wind stacker.

The Channel Bar Frame, which is very stiff, supports the engine part and the boiler separately, and it is so arranged that the boiler can readily be removed from the frame in the same manner as with our 11 H. P. Traction Engine. (See page 25 for illustration and description of this feature.)

The cylinder is 8x8, and the throttle is of our balanced type and is located outside the jacket. This engine has developed thirty actual brake horse power at ninety pounds steam pressure, and it gives excellent indicator cards, the lack of back pressure being particularly notable.

The traction wheels are 60 in. diameter and the track is about 10 in. narrower than on the old style 15 H. P. engine. The front wheels have 6 in. wide face.

The mounting of this engine is on springs at the rear axle and there is also a spring at the front axle under the frame. The axles are made of hammered steel, of best material, and both axles are turned and have oil ways on top. The wheels are bored. The intermediate pins are hollow steel and can be removed for repairs.

The boiler is an excellent steamer, and has a deep fire box. The steam pipe is 2 in. and the exhaust pipe is 2½ in. The fly wheel is extra heavy, and is 30 in. in diameter by 8½ in. face. The speed is 280 R. P. M. The weight of this engine without fuel and water, but all complete, with tools and fittings, is about 9,500 pounds, and the weight is well distributed between the front and the rear.

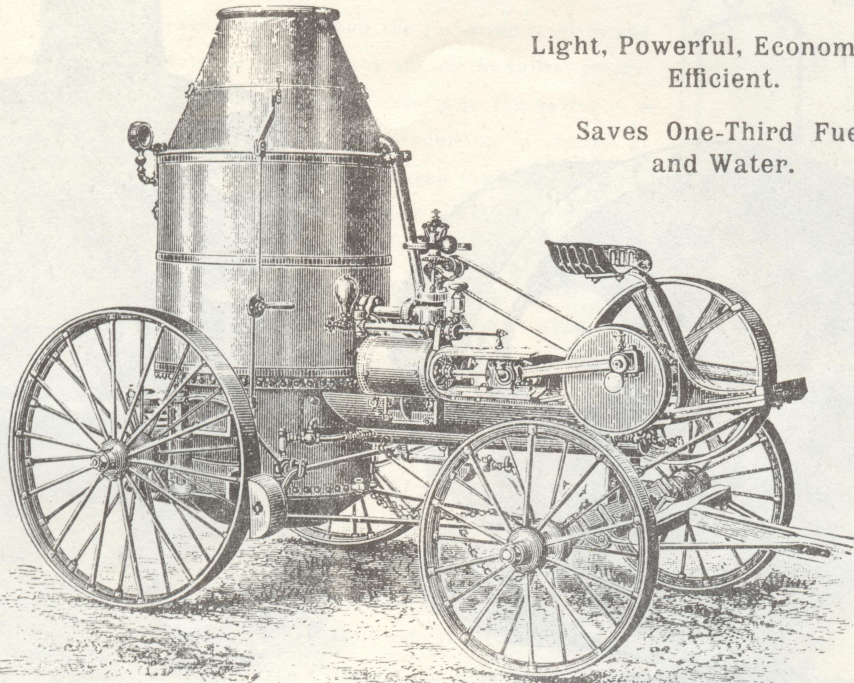
This engine has a locking device on the counter shaft which is operated from foot board of engine by a foot lever placed in a convenient position, so that the engineer can operate it without changing his position on the running board. This locking device locks the compensating gearing on counter shaft, thus driving both traction wheels positively. Removing foot from lever releases the lock, which frees the gearing and makes the compensating gear operative again.



## The Westinghouse Agricultural Engine.

### PORTABLE AND TRACTION.

Adapted to All Purposes on the Farm for Which Power is Required, and Especially Designed for Threshing, Sawing, Grinding, Fodder Cutting, Hay Pressing and Road Work.



Light, Powerful, Economical,  
Efficient.

Saves One-Third Fuel  
and Water.

This engine has been introduced throughout the country, and has a reputation unequalled by any in the market for ECONOMY, EFFICIENCY, DURABILITY and LIGHTNESS.

Many improvements have been made since its first introduction, with a view to meeting the demand for more perfect machinery, and of correcting any defects which a new engine would naturally develop, but our original design of constructing an engine which should be as light as would be consistent with durability and effective power, which should be economical in the use of fuel and water, and be safe and convenient to handle and operate, has been constantly kept in mind and acted upon to the best of our ability. As a result we are able to offer these engines in the fullest confidence of being able to please and satisfy all who may purchase them. The first engraving represents the plain or portable form of our engine. It is made in four sizes: 4, 6, 10 and 15-horse power. In making these ratings, we have kept within the limit of safety, preferring to underrate rather than to overrate. A material increase over these ratings can be had, with good management, and they may be depended upon as being fully equal to many engines that have higher ratings.

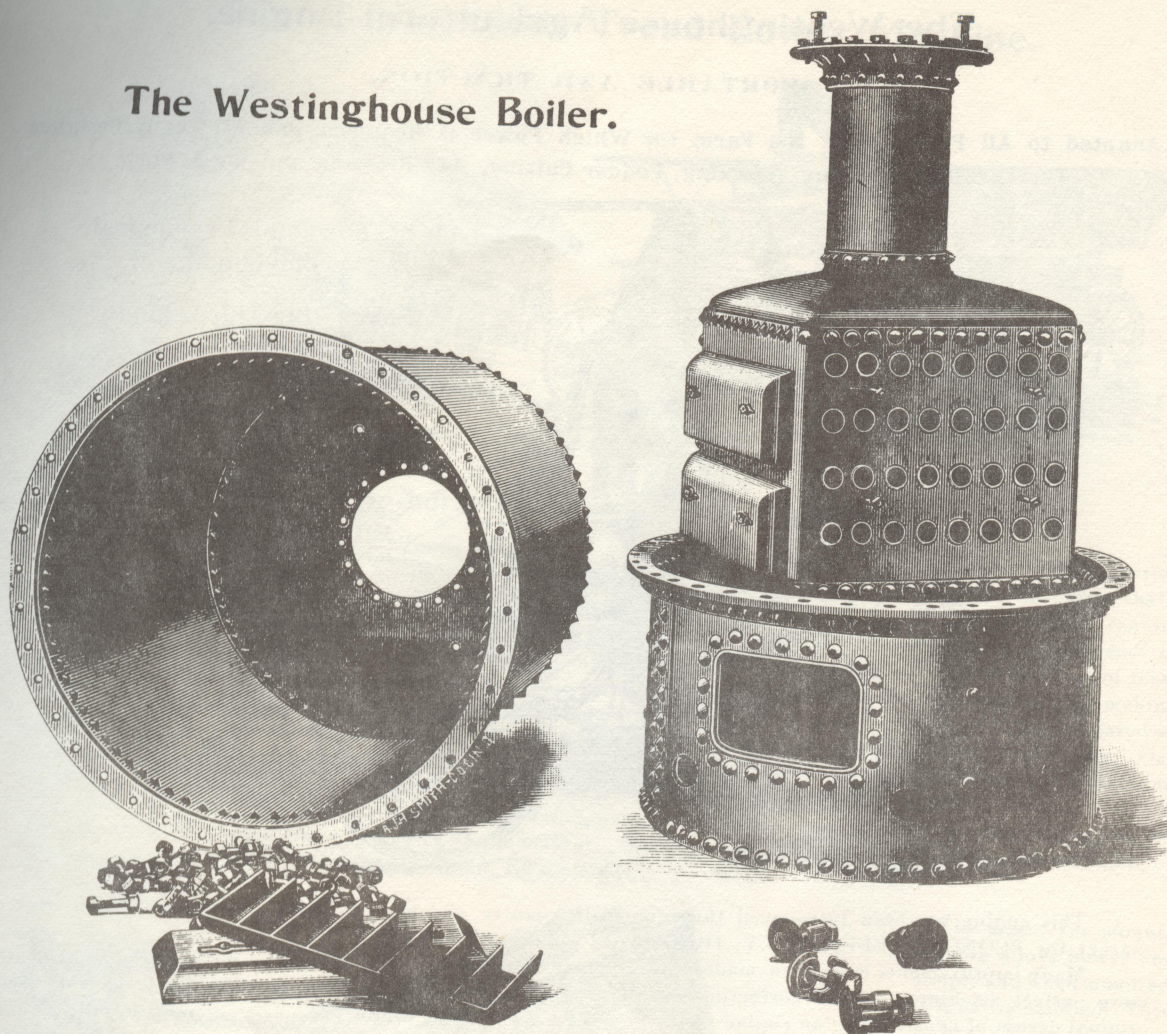
### DIMENSIONS.

Nominal Rating.	Diameter Cylinder.	Stroke.	Fly Wheel.	Speed.	Weight Portable Engine.	Weight Traction Engine.
4 H. P.	4½ in.	4½ in.	24 in. x 4½ in.	340 R. P. M.	2,560 pounds.	
6 "	5½ in.	7 in.	30 in. x 5½ in.	280 "	4,080 "	5,615 pounds.
10 "	7 in.	7 in.	30 in. x 7½ in.	280 "	4,640 "	7,140 "
11 "	7 in.	7 in.	30 in. x 7½ in.	280 "		7,530 "
12 "	7½ in.	7 in.	30 in. x 7½ in.	280 "		8,940 "
15 "	8 in.	8 in.	30 in. x 8½ in.	280 "		9,540 "
18 "	8½ in.	8 in.	33 in. x 8½ in.	260 "		10,980 "

Above weights are actual — not estimated, as some other manufacturers give. See detailed description on following pages.



## The Westinghouse Boiler.



First impressions obtained from reference to our other engravings are, that the boiler is of the ordinary vertical type. It is, however, in its interior construction and general principle, radically different, as will be seen from the above cut. Instead of vertical fire flues, as in the common vertical boiler, our boiler has **horizontal water tubes** placed in courses, so that each course is crosswise with the course next below and next above, and through these tubes a constant circulation is maintained, aided by the circulation plates shown in above cut.

The boiler is made of two parts, the lower one forming a fire box and containing the tubes, while the upper one is a shell which surrounds the tubes and incloses the water and steam space. The two parts are joined by strongly bolted rings at their intersection, in connection with the vertical smoke tube at the top, and are designed to be taken apart when it is necessary to **clean** the interior of the boiler or to replace or repair the tubes. When the upper section is removed, every **tube** and *all the surfaces which are liable to scale become accessible and may be thoroughly cleaned.* This feature is one of great importance, and is not to be found in any other boiler that we know of. By making use of the facilities thus afforded for cleaning the boiler, it will always retain its steaming qualities, and not be constantly losing, as those do which require the flues to be taken out for cleaning, and that have otherwise inaccessible parts.



**Sectional View,** showing Fire Box, Horizontal Water Tubes, Jacket, Spark Arrester and Exhaust Nozzle. This boiler may be unbolted at AA and BB and the upper shell removed, as shown on page 18, exposing all the tubes for cleaning of scale.

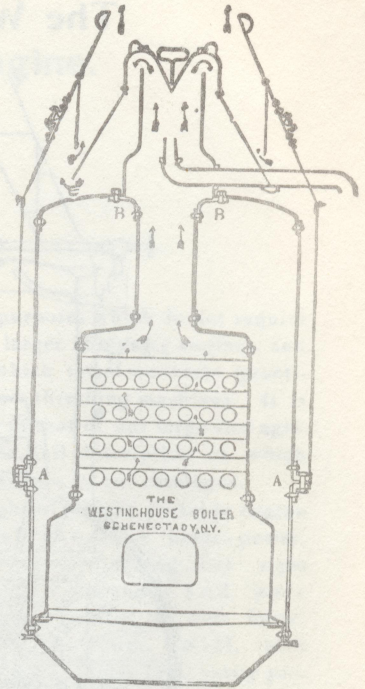
**Jacket.** We *jacket* our boilers with heavy sheet iron, as shown in sectional drawing. The space between the shell and the jacketing receives and holds the waste heat from the furnace, and thereby affords the fullest protection against the action of the atmosphere, which results in the saving of a large amount of fuel, thus favorably affecting the production of steam. It will be found that the temperature in this space between the boiler and the jacket ranges from 300 to 500 degrees Fahrenheit, thus preventing radiation of heat and consequent condensation of steam in the steam spaces of the boiler, and insuring dry steam, an item of great importance. *No other make of boiler has such a jacketing*, but on the contrary others are directly exposed to the outside temperature and cold winds, and hence require more fuel to produce the same results.

**Spark Arrester.** For the purpose of preventing the escape of sparks from the stack we devised and patented the form of top illustrated by our engravings, and, after long continued and the most thorough tests, we have found it the only reliable spark arrester of all the many plans and devices that have been brought to our notice. It does not require a cistern filled with water to catch sparks, nor screens which fill up and stop the draft, but it is *always clear and ready for action*, and requires no adjustment. It is positively safe at all times. A peculiarity of its construction enables the use of a larger exhaust nozzle than even a straight-out pipe requires, and thereby reduces the back pressure upon the engine.

**Steaming Qualities.** Our boilers are good steamers, and fully equal to the sizes of engines connected with them. Their steaming qualities are far ahead of any other agricultural boiler of the same rated horse power. They are quick steamers, and will make steam from cold water to 100 pounds pressure, in from 20 to 30 minutes.

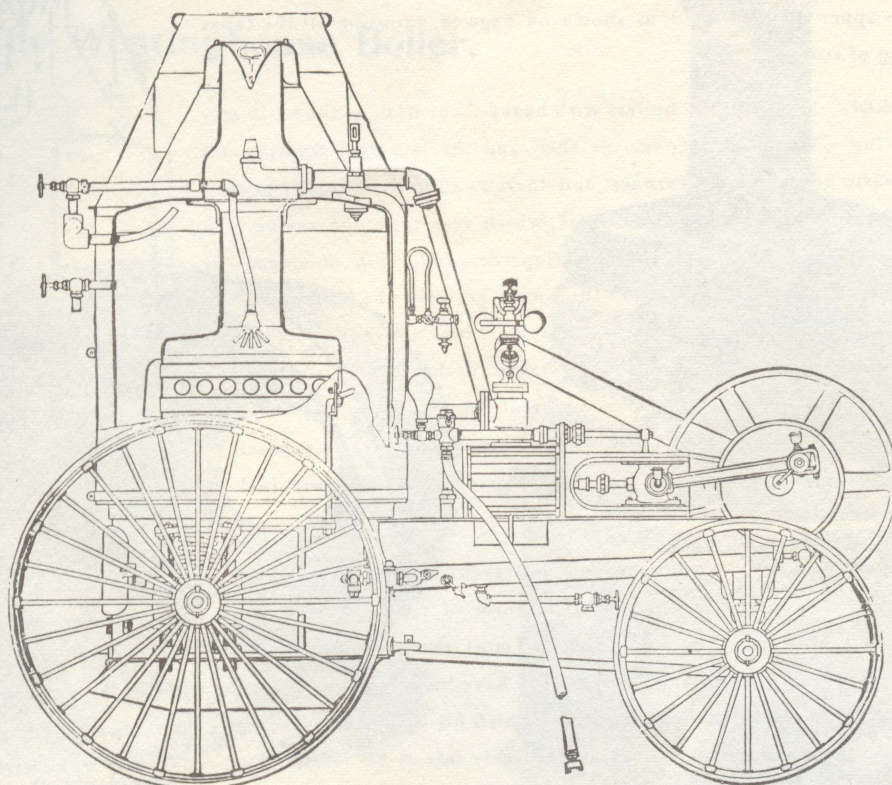
**Economy.** We have abundant testimony to show that the saving with our boilers in consumption of fuel is one-third to one-half over all other agricultural boilers, while the saving of water is about one-third. By reference to the foregoing description, the reason for this saving will be readily comprehended; but it may be well to remind the reader that the fire is internal, the water is directly over and around the fire, and the heat therefrom passes upward in a zigzag manner between the tubes and is reflected against the top of each tube, thus enabling the tube to absorb practically all the heat. In this manner the largest benefit is derived from the fuel consumed.

**Construction.** We make all our boilers of the best quality of steel for the shell of 60,000 pounds tensile strength, and the fire box and tube sheets of the best fire-box steel, and the **cylindrical form** of all the parts subject to strain gives unusual strength and an additional element of safety. They are set upon springs when applied to mounted engines, every part of them is carefully made, and they are tested under a high steam pressure, both before and after connecting the engine part.





## The Westinghouse Agricultural Engine.



SECTIONAL VIEW.

To more fully illustrate some of the special points wherein we claim advantages to exist in our engine, and not susceptible of being understood from an engraving, we make the following brief description of the most important parts:

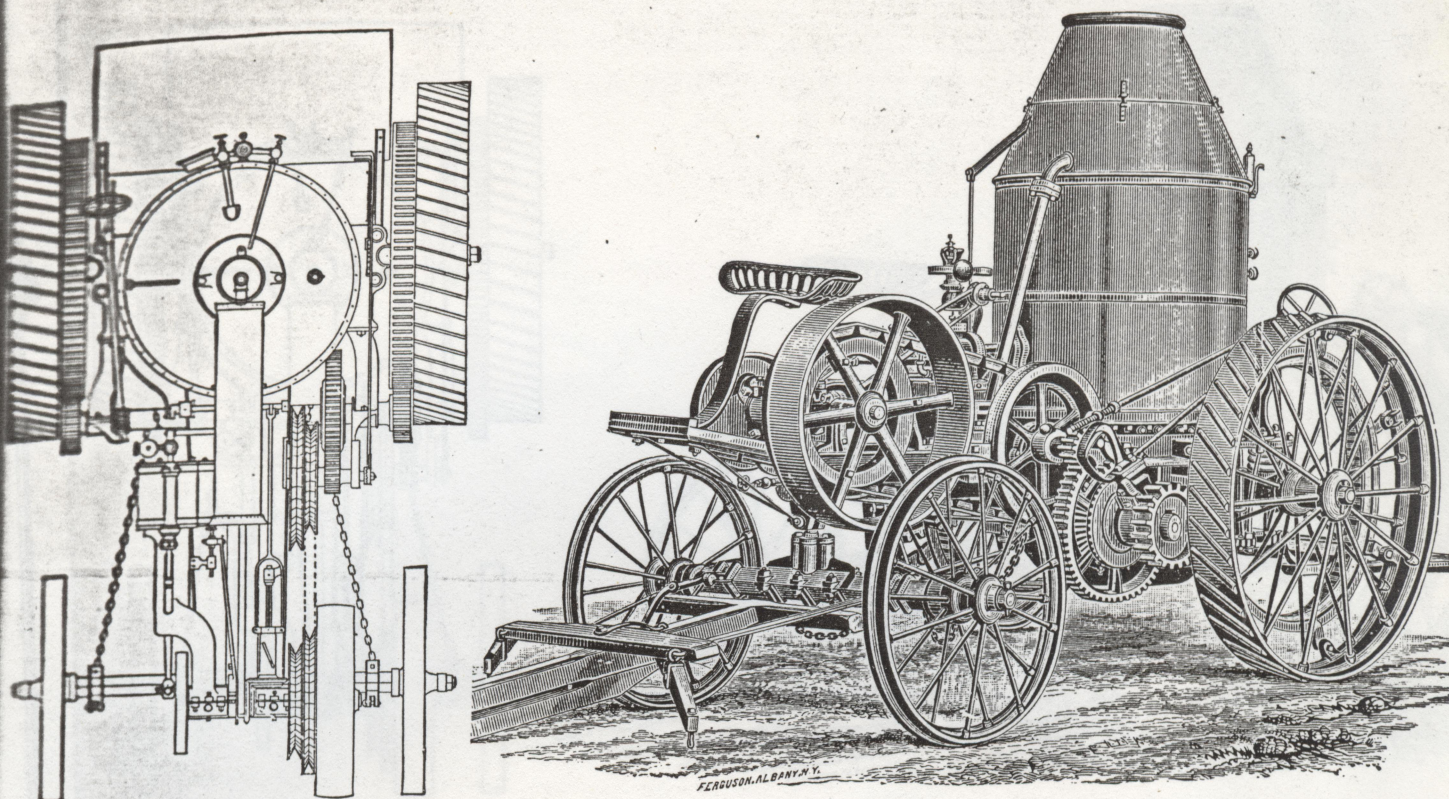
**The Engine.**—Our engravings in this catalogue correctly represent the main points of our engine. It has a short, quick stroke, and for this reason is made lighter than the large, long stroke engines. The bed or frame and boiler are securely bolted together. With portable engines, sizes 4, 6, 10 and 15 H. P., a heater is provided for warming the water by exhaust steam as the former passes from pump into boiler. The cylinder and steam chest and guides are all fitted accurately from templates and are interchangeable. Our new and improved balanced piston valve, which we use in all sizes excepting 4 H. P., is as easily adjusted as the ordinary slide valve, and possesses many features which make it more desirable than the latter. By means of the two relief valves, all liability of breaking engine from starting suddenly when steam pipe is full of water, is avoided. The engine and bed-plate or frame being connected with the lower portion of the boiler, brings the greater part of the weight below the centre and removes all danger of turning over when on difficult roads. This is a matter worthy of consideration, when, as an additional result of such an arrangement, ALL THE WORKING PARTS OF THE ENGINE ARE BROUGHT WITHIN EASY REACH OF THE OPERATOR. Every needed and desirable appliance for rendering the ENGINE EFFICIENT, DURABLE AND CONVENIENT, is furnished with it, including adjustable governor, pop safety valve, steam gauge, injector, whistle, blower, brake (excepting on 4 H. P.), and a full supply of wrenches and fire tools. Every bearing and connection has simple means for taking up lost motion, and, in fact, nothing has been omitted which experience has shown to be desirable.

Our 4, 6, 10 and 15 H. P. Portable and our 6 H. P. Traction Engines are furnished with one injector and with pump and heater.

Our 11, 12, 15 and 18 H. P. Traction Engines are furnished with two injectors, but without pump and heater.



# THE WESTINGHOUSE TRACTION ENGINE.



## THE WESTINGHOUSE TRACTION ENGINE.

### THE WESTINGHOUSE TRACTION ENGINE.

6, 10, and 15 HORSE-POWER.

The engravings on the preceding page illustrate quite fully the plan employed for applying traction to our engine. It consists of large and strong Driving Wheels, Open Cog Main Gear Wheels, A Three Pinion Compensating or Differential Gear, and our improved Friction Belt Attachment. In the Friction Belt we claim to have made a decided improvement, and extended use has proven its efficiency. The following advantages result from it, viz.: The belt is of V shape, and runs upon pulleys with corresponding grooves. The pulleys are so arranged that they may be drawn apart by a tightener, and as much strain given to the belt as the work may require. The power communicated from the engine is therefore dependent upon the friction of the belt, and any unusual obstruction encountered while traveling will cause the belt to slip, and thereby prevent breaking up the gear-work; and it also affords the means for starting gradually and of getting out of difficult places. These features will receive ready appreciation from any one who has had experience with tight geared engines. When the belt is released by the tightener, the driven pulley may be brought in contact with a brake of the most powerful kind. Another important advantage gained by the use of the belt, is that of using two sizes or cone pulleys, by which means a change of speed can be quickly made. On smooth and level roads a fast speed may be had, and on rough or hilly roads, where more power and less speed is desired, the required change can be made. The two speed plan is adopted on the Ten and Fifteen Horse sizes. For the Six Horse size, only one size of pulley is used, furnishing speed in proportion to the lighter power. All of these engines are provided with a simple and reliable reversing apparatus, and are so arranged that the handling may be performed by one person upon the fireman's platform. A steering apparatus may also be applied to any engine, although we do not recommend its use while running upon public highways. It is better and safer to depend upon a team to guide. The weights of the several sizes (6-horse, 5,700 pounds; 10-horse, 6,700 pounds; 15-horse, 9,800 pounds, with water in) is so much less than the average run of engines that this of itself should commend them, when it is considered that weak bridges and soft ground are frequently encountered. Also the form of boiler we use makes it entirely safe in going up or down hill without carrying an excessive amount of water. The above-named points, in connection with general features explained under the head of plain engines and common to both, we believe sufficient to entitle them to the most careful consideration.