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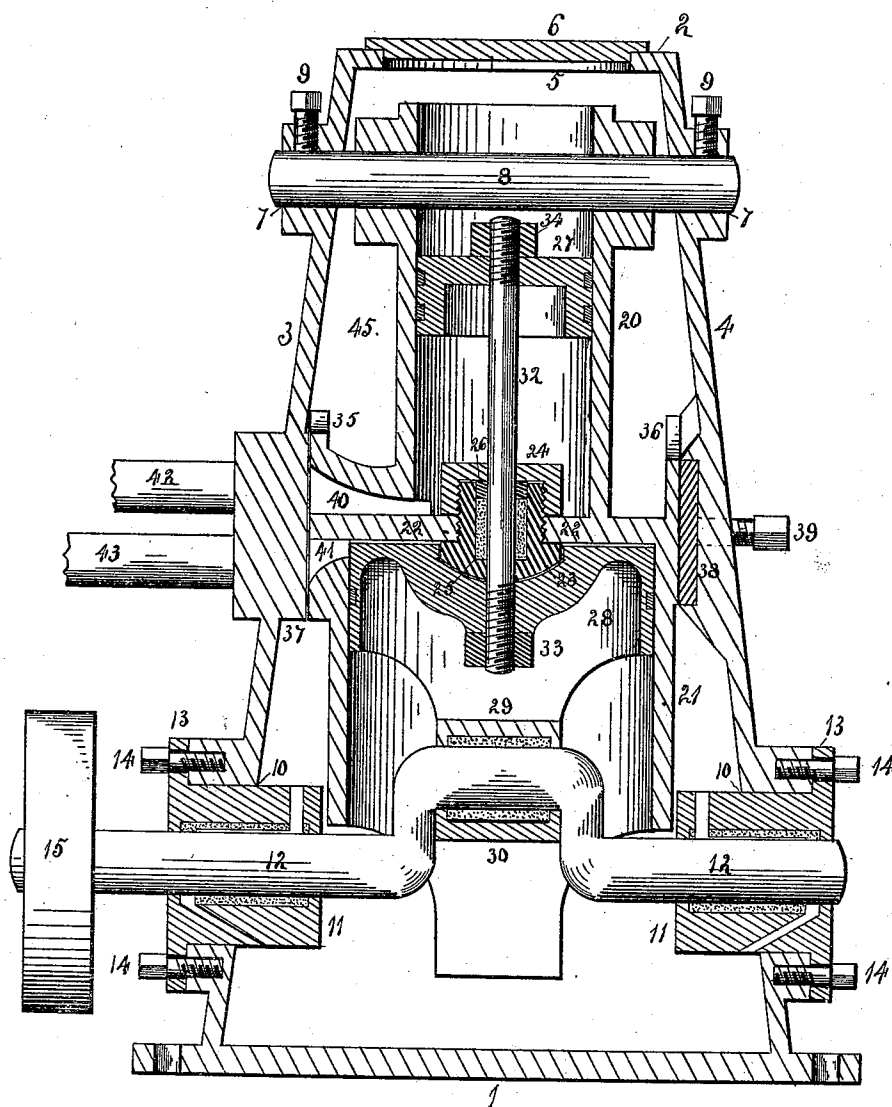
3 Sheets—Sheet 1.

E. E. P. TRUESDELL.
OSCILLATING STEAM ENGINE.

No. 515,180.

Patented Feb. 20, 1894.

Fig. 1.



Witnesses:
A. Davenport
E. Behel.

Inventor:
Eugene E. P. Truesdell
By A. O. Behel.
Atty

(No Model.)

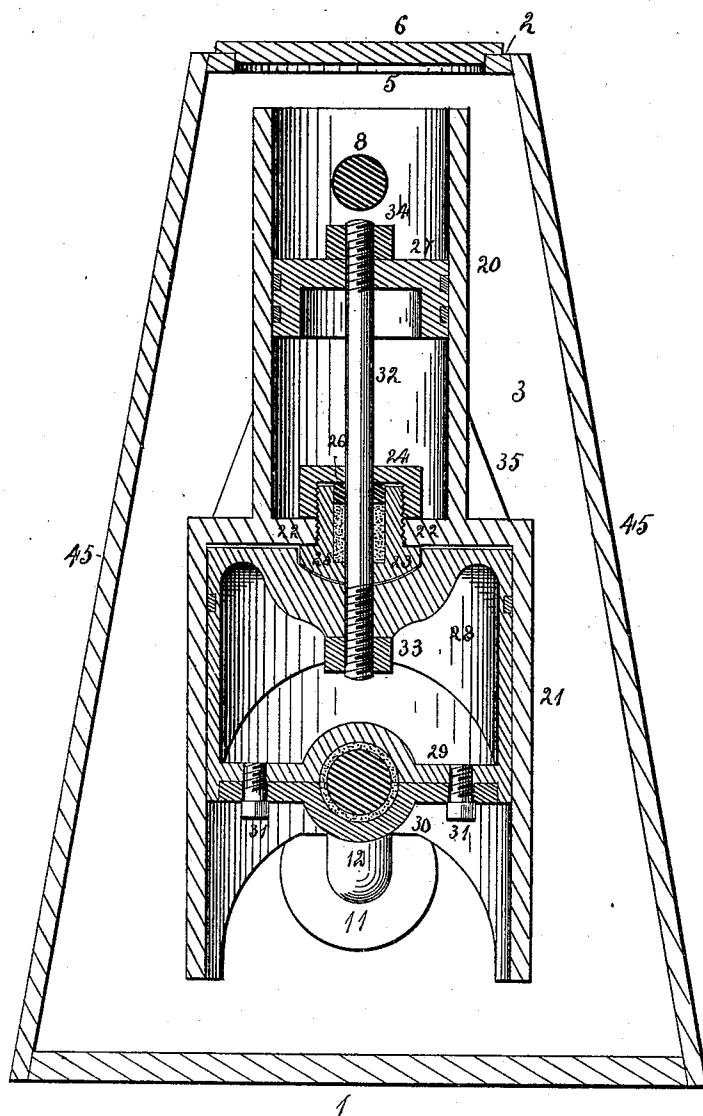
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Fig. 2.



Witnesses:
A. Davenport
& Behel.

Inventor:
Eugene E. P. Truesdell
By A. D. Behel
Att'y.

(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

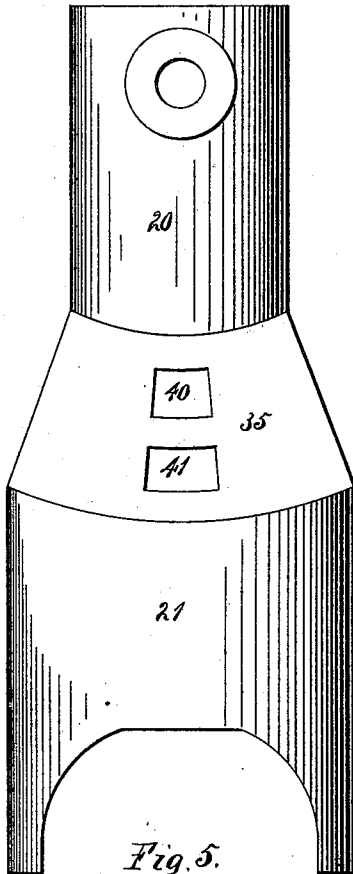


Fig. 4.

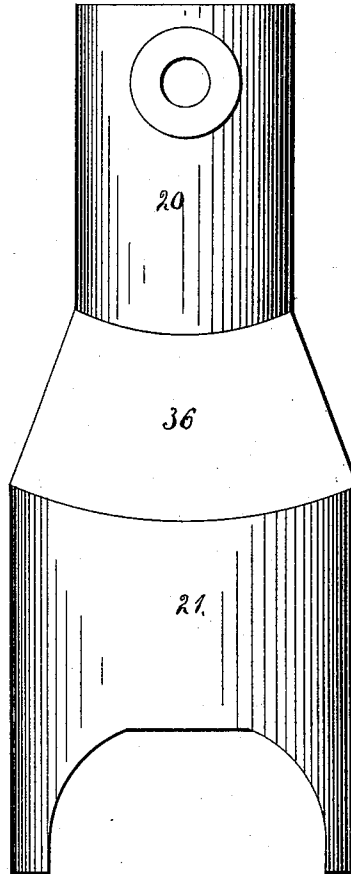


Fig. 5.

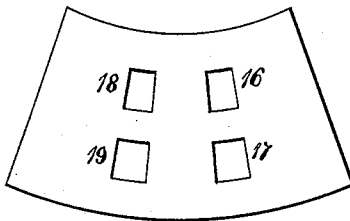


Fig. 6.

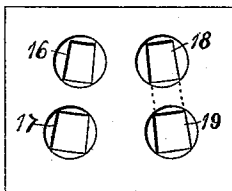


Fig. 7.

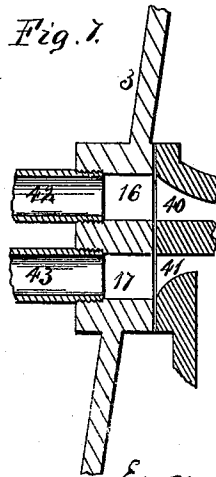
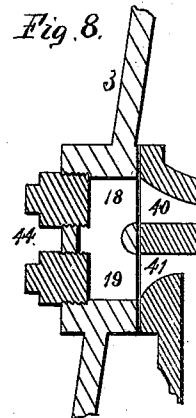


Fig. 8.



Witnesses:
Grace Clark.
E. Behl.

Inventor:
Eugene E. P. Truesdell
By A. O. Behl
Atty.

UNITED STATES PATENT OFFICE.

EUGENE E. P. TRUESDELL, OF BELVIDERE, ILLINOIS.

OSCILLATING STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 515,180, dated February 20, 1894.

Application filed September 22, 1893. Serial No. 486,188. (No model.)

To all whom it may concern:

Be it known that I, EUGENE E. P. TRUESDELL, a citizen of the United States, residing at Belvidere, in the county of Boone and State of Illinois, have invented certain new and useful Improvements in Oscillating Steam-Engines, of which the following is a specification.

The object of this invention is to produce an oscillating steam engine having a combined high and low pressure cylinder, taking steam on each side of a central partition or division wall, the cylinders having open ends, and in the location of the ports and other details of construction.

In the accompanying drawings, Figure 1, is a vertical lengthwise central section showing my improvements. Fig. 2, is a vertical transverse section. Figs. 3 and 4 are elevations of the cylinders; Figs. 5 and 6 inside and outside representations of the ports in the casing. Figs. 7 and 8 are sections of the ports in the casing and in the cylinders.

The casing of the engine consists of a bottom 1, top 2, connected by sides 3 and 4. The top 2, has a central opening 5, closed by a cover or lid 6. The sides are each provided with openings 7, in which is located a shaft 8, held in place by set screws 9. Openings 10, are formed in the sides near the base and bushings 11, supporting the crank shaft 12, are centrally perforated and provided with flanges 13, through which screws 14, pass into the body of the casing. These bushings are babbitted and provided with oil holes. The crank shaft 12, has a pulley 15, attached to one end, its center portion bent in crank form. The sides 3, are provided with a steam supply port 16, an exhaust port 17, and ports 18 and 19, having the web connecting them cut away in the center forming a communication between the high and low pressure cylinders. The cylinders are composed of high pressure cylinder 20, and low pressure cylinder 21, having a center division wall 22, separating them which is centrally perforated and provided with a stuffing box, consisting of a lower section 23, having screw thread connection with the division wall, and a cap 24, having a screw thread connection with the lower section, packing 25, is placed in a recess formed in the lower section and a ring 26, is placed within the recess against the packing

compressing it when the cap is turned down in position. The lower section and cap are each provided with a central opening through which the rod connecting the pistons passes. Within the high pressure cylinder is located a piston 27, having a recess in its under face which receives the cap 24, when the piston is down. A piston 28, is placed within the low pressure cylinder, and has a recess in its upper face which receives the head portion of the lower section of the stuffing box when the piston is at the upward end of its stroke. The lower portion of this piston 28, has a cross bar 29, its center portion produced in semi-box form within which is received the crank portion of the crank shaft, and a cap 30, secured to the cross bar 29, by set screws 31, forms a connection between the crank shaft and lower piston. The upper end of each of the pistons is provided with a screw-threaded opening and a piston rod 32, has its ends screw-threaded one end turned through the opening in the lower cylinder receiving a nut 33, on its end, the other end of the shaft receiving the upper piston and a nut 34, holds it in position.

The combined cylinders have flat wearing surfaces 35, and 36 the former moving in contact with the surfaces 37, on the inside of the side 3, of the casing, and the wearing surface 36, moving in contact with the adjustable plate 38, located in a recess formed in the side 4, of the casing and set screws 39, present the plate to the cylinder and act as guides for the cylinder.

The high pressure cylinder 20, has a port 40, opening into its lower end, and the low pressure cylinder a port 41, opening into its upper end.

The combined cylinder is suspended upon the shaft 8, as shown at Figs. 1 and 2.

A steam supply pipe 42, is connected with the port 16, an exhaust pipe 43, with the port 17, and plugs 44, are inserted in the ports 18 and 19.

The pistons are placed in position in the cylinders and the cylinders connected to the crank shaft as shown in the drawings, and when the cylinders are on the dead center either up or down the ports 40 and 41, of the cylinders will stand between the ports in the casing. After the crank has passed the dead center say in its upward direction, the port

40, of the high pressure cylinder will begin to open into the steam supply port 16, allowing steam to the under face of piston 27, which will cause the piston to rise and when the crank has reached the upper dead center, the port 40, will be between the ports 16, and 18, of the casing, and upon the descent of the crank the port of the high pressure cylinder will open into the ports 18, and 19, communicating with the upper face of the low pressure piston 28, and as the crank shaft revolves the ports will fully open, and upon the crank reaching its lowest position the ports of the cylinder will again be brought between the ports of the casing, and the steam will have exhausted from the high pressure cylinder into the low pressure cylinder. Upon the crank again raising, steam will be admitted to the high pressure cylinder and the steam in the low pressure cylinder will exhaust through the port 17, in the casing. As the movement of the pistons rotates the crank shaft, the shaft in turn oscillates the cylinders upon their pivotal support, bringing the ports of the cylinders into communication with the ports in the casing.

End plates 45, are secured to the casing in any suitable manner.

It is intended to run the engine in oil, but it can be run by oiling the bearings in the usual manner.

I claim as my invention—

1. In an oscillating steam engine, the com-

bination of a suitable casing, a crank shaft, high and low pressure cylinders arranged tandem having a pivotal connection with the casing, a steam supply port for the high pressure cylinder, an exhaust port for the low pressure cylinder, a port connecting the two cylinders, and pistons for each cylinder having a connection with the crank shaft.

2. In an oscillating steam engine, the combination of a suitable casing, a crank shaft, high and low pressure cylinders having a pivotal connection with the casing and having a center partition provided with a stuffing box, the opposite ends of the cylinders being open, a piston for each cylinder having a piston rod connection and a connection with the crank shaft, a steam supply support for the high pressure cylinder, an exhaust port for the low pressure cylinder and a port connecting the two cylinders.

3. In an oscillating steam engine, the combination of a suitable casing, a crank shaft, high and low pressure cylinders provided with ports on one side, the casing provided with a steam supply port, a steam exhaust port and a port forming a communication between the high and low pressure cylinders, a piston for each cylinder having a connection with the crank shaft.

EUGENE E. P. TRUESDELL.

Witnesses:

R. O. BEHEL,
E. BEHEL.