

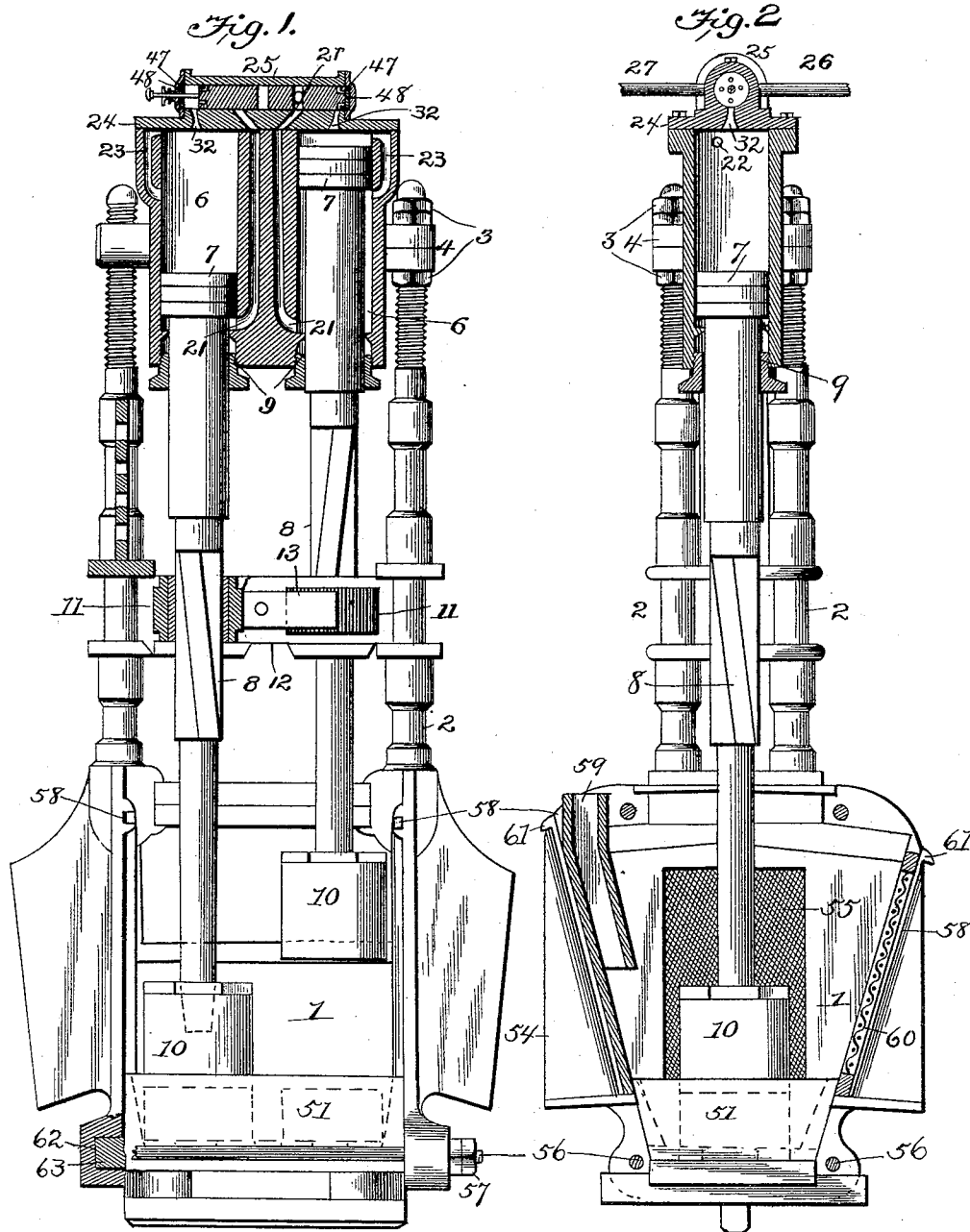
(No Model.)

2 Sheets—Sheet 1.

C. W. TREMAIN.
STEAM STAMP.

No. 480,223.

Patented Aug. 2, 1892.



Witnesses

John D. Smith

Thos E. Robertson

Inventor

Charles W. Tremain

By *his* Attorney

T. J. W. Robertson

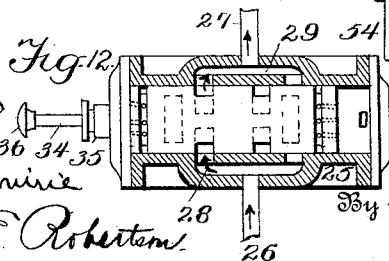
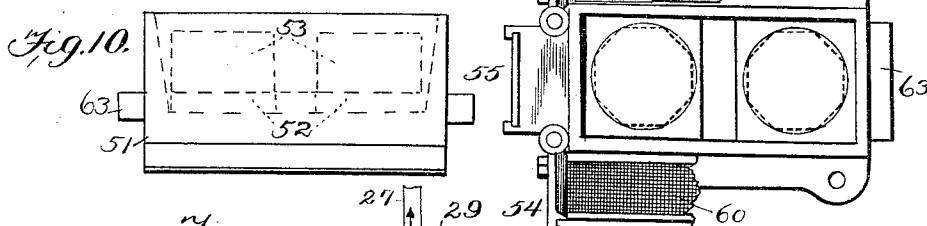
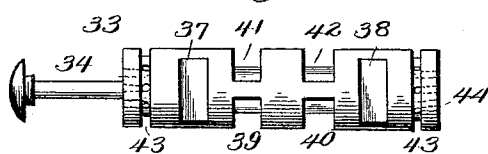
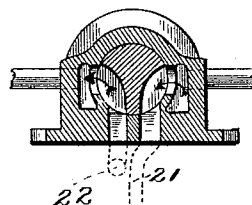
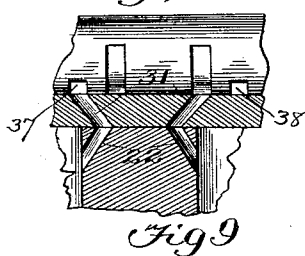
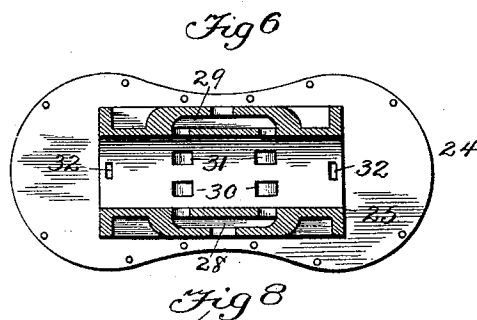
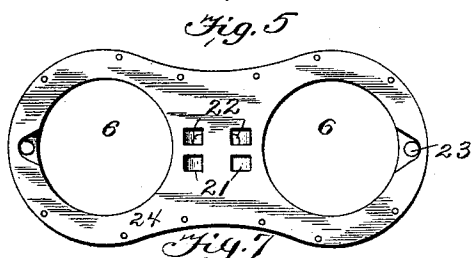
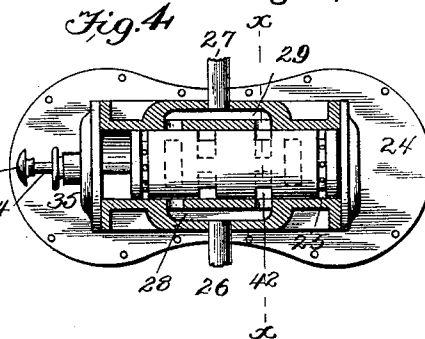
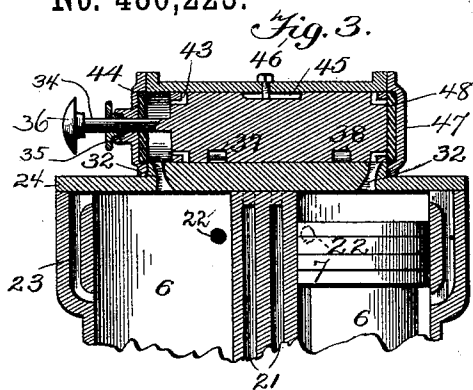
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2 Sheets—Sheet 2.

C. W. TREMAIN.
STEAM STAMP.

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John D. Smith
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Inventor
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By his Attorney
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UNITED STATES PATENT OFFICE.

CHARLES W. TREMAIN, OF PORTLAND, OREGON.

STEAM-STAMP.

SPECIFICATION forming part of Letters Patent No. 480,223, dated August 2, 1892.

Application filed January 23, 1892. Serial No. 419,062. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. TREMAIN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Steam-Stamps, of which the following is a specification, reference being had therein to the accompanying drawings.

This improvement relates to that class of steam-stamps in which two stamps are employed, each one of which is raised by the power of the steam as the other falls; and the invention consists in the peculiar construction, arrangement, and combinations of parts, hereinafter more particularly described and then definitely claimed.

In the accompanying drawings, Figure 1 is a vertical nearly-central section of a stamp constructed according to my improvement. Fig. 2 is a central section taken on the line x , Fig. 1. Fig. 3 is a central vertical section of the top of the cylinders and the piston-valve on the same line as in Fig. 1, but on a larger scale. Fig. 4 is a plan of the valve-chest with the lever broken away. Fig. 5 is a plan of the cylinders with the cap-plate removed. Fig. 6 is a plan of the cap-plate covering both cylinders and showing the valve-chest in horizontal section. Fig. 7 is a detail in section, showing part of the valve and two of the ports leading to the cylinder. Fig. 8 is a transverse section of the valve and its chest. Fig. 9 is a reversed plan of the valve detached. Fig. 10 is a side view of the mortar detached. Fig. 11 is a plan of the battery with the other parts removed. Fig. 12 is a similar view to Fig. 4 with the valve in a different position.

Referring now to the details of construction by figures, 1 represents the battery of the stamp, from which rise four standards or rods 2, whose upper ends are threaded to receive nuts 3, between which are the pillow-blocks 4, which form bearings for the cylinders 6. In each of these cylinders is a piston 7, having a stem 8, which works through the stuffing-box 9 and carries on its lower end a stamp 10, fastened thereto in any convenient manner. The central parts of these stems are made of a spiral polygonal form, as shown at 8 in Figs. 1 and 2, and work through

correspondingly-shaped holes in the ratchet-wheels 11, set in a cross-frame or housing 12, supported on the standards 2. Attached to the center of this housing is a spring 13, whose opposite ends engage with the teeth of the ratchet-wheels 11. In the central wall between the cylinders passages 21 are formed, leading from the top of cylinders, as shown in Fig. 5, down to the bottom thereof, as shown in Fig. 1. At the rear of these are shorter passages 22, which communicate with the top of the cylinder, as shown in Figs. 3 and 7. In the outer wall of the cylinders are formed rather longer passages 23, both ends of which terminate in the cylinders, the upper ends being close to the top thereof, while the lower ends are so arranged as to terminate just below the piston when the latter is at its highest point, as shown in Fig. 1. On the top of these cylinders is a cap-plate 24, which carries the valve-chest 25, having pipes for the inlet of steam 26 and the exhaust 27. From these pipes run corresponding passages 28 and 29 in opposite directions toward the center of the valve-chest are two sets of ports 30 and 31, the former communicating with the passages 21 and the latter with the passages 22.

At 32 is shown passages substantially over the centers of the cylinders and entering the valve-chest near its ends.

The valve 33 is provided with a stem 34, working through a stuffing-box 35, and a knob or handle 36, by which the valve may be set in position by hand when starting the stamp. On the under side of the valve are ports 37 and 38 and on the sides are other ports 39, 40, 41, and 42. Each end has an annular groove 43, and the ends are perforated with holes 44, connecting with these annular grooves. At the top is a groove 45, into which a screw 46 passes to keep the valve from turning in its seat. Each head of the valve-chest has a socket 47 to receive a cushion of rubber 48 to act as a bumper to prevent damage.

The battery consists of a mortar 51, having square recesses 52 in its bottom to receive the dies 53, which are octagonal at bottom, four of the sides of which fit in between the walls of the recesses 52, leaving a space in the cor-

ners of the recesses to admit tools to pry out the dies when worn out, so as to replace them with others. Attached to the mortar are the end plates 54, each being furnished with a screen 55, and are secured by bolts 56, passing in front and in rear of the mortar and fastened by nuts 57. Near each edge of the end plates are grooves 58, in which are set the hopper 59 and screen 60, both of which are secured by keys 61 and are so made as to be interchangeable, in order to place the hopper in the most convenient side for operation. Near the bottom of the end plates are grooves 62, which receive projecting ribs 63 on the ends of the mortar, so as to form a firm connection therewith, and thus enable the bolts 56 to securely hold the whole together.

The stamps are made octagonal at top, so that when worn away to about half their depth they can be taken off and reversed, when they can be set in the die-sockets and used in place of worn-out dies, thus utilizing the old worn-out stamps and saving the cost of new dies.

The operation is as follows: Supposing the valve is in the position shown in Figs. 3 and 4, steam enters at 26 (see Fig. 4) and passes to the right in the passage 28, enters the port 42, and passes down to the right-hand cylinder through the right-hand passage 21 and raises the piston until it reaches the position shown in Fig. 3, when it has closed the port 22, but allows communication between the space in the cylinder on the opposite sides of the piston through the passage 23, so that live steam passes from below the piston to the space above the top thereof, and, passing through the port 32 into the annular groove 43 and the holes 44, acts upon and moves the valve to the opposite position, as shown in Fig. 12, when the port 38 opens communication between the ports 21 and 22 and the steam from the bottom of the cylinder enters the top of the cylinder, and, acting expansively, forces the piston downward, as the top surface of the piston has much more area than the bottom. While the right-hand piston is being driven down the other piston is being raised by steam entering through the left-hand end of the inlet-passage 28 and passing through the port 41 into the valve 33, down through the left-hand passage 21 to the bottom of the left-hand cylinder, thus raising the piston on that side. The exhaust of the steam above the piston is then going on through the left-hand passage 22 out through the left-hand end of the exhaust-passage 29. As soon as the left-hand cylinder rises past the passage 22 the exhaust is shut off and the steam enters the left-hand passage 32, and, passing into the annular groove 43 and through the holes 44, acts on the end of the valve and drives it to the opposite position, as shown in Fig. 4, when the entire operation is repeated as before. From this it will be seen that in place of using two valves, as heretofore practiced with this class of stamp, I

only use one valve for both cylinders, thus economizing in first cost, making the parts lighter, reducing them in number, lessening the friction, and economizing in repairs, besides making the entire apparatus more convenient and less likely to get out of repair.

Some of the features shown herein relating to the construction of the mortar and stamp are partially shown in my application, Serial No. 396,861, and my patent, No. 469,187, dated February 16, 1892, and are not here claimed, but are shown and claimed in a separate application to be hereafter filed as a division of this.

What I claim as new is—

1. The combination, with two cylinders and their pistons, of a single valve controlling the inlet and exhaust steam of both cylinders and the steam from one cylinder moving the valve to admit steam to the other cylinder, substantially as described.

2. The combination, with two cylinders and their pistons, of a single valve operated by the direct pressure of the steam controlling the inlet and exhaust steam of both cylinders and the steam from one cylinder moving the valve to admit steam to the other, substantially as described.

3. The combination, with two cylinders and their pistons, of a single-piston valve having the ends of its chest communicating with both cylinders and operated by the direct action of the steam on its ends and controlling the inlet and exhaust steam of both cylinders, substantially as described.

4. The combination, with two cylinders and their pistons, of a cap-plate covering both cylinders and carrying a valve-chest and a valve governing the inlet and exhaust of both cylinders and said cap having passages 32 to admit steam to the ends of the chest to operate the valve, substantially as described.

5. The combination, with a piston and valve, of a cylinder in which the piston works, having a passage 23, terminating at the top of the cylinder, and a passage 32 in the cap to permit steam from the cylinder to operate the valve, substantially as described.

6. The combination, with two cylinders having passages 21 and 22 and pistons working in said cylinders, of a reciprocating valve having ports 37, 38, 39, 40, 41, and 42, communicating with said passages 21 and 22, and a valve-chest in which said valve reciprocates, having suitable inlet and exhaust passages, substantially as described.

7. The combination, with two cylinders having passages 21, 22, and 23 and pistons working in said cylinders, of a valve having ports 37, 38, 39, 40, 41, and 42, communicating with said passages 21 and 22, and a valve-chest in which said valve works and communicating at its opposite ends with the passages 23 to admit steam to operate said valve, substantially as described.

8. The combination, with two cylinders having passages 21, 22, and 23 and pistons work-

ing in said cylinders, of a valve having the
annular groove 43, holes 44, and the ports 37,
38, 39, 40, 41, and 42, communicating with said
passages 21 and 22, a cap-plate covering said
5 cylinder having openings 32, and a valve-chest
on said cap-plate communicating with the
passages 21 and 22, and suitable inlet and ex-
haust passages, substantially as described.

In testimony whereof I affix my signature, in
presence of two witnesses, this 23d day of Jan- 10
uary, 1892.

CHARLES W. TREMAIN.

Witnesses:

S. BRASHEARS,

THOS. E. ROBERTSON.