

(No Model.)

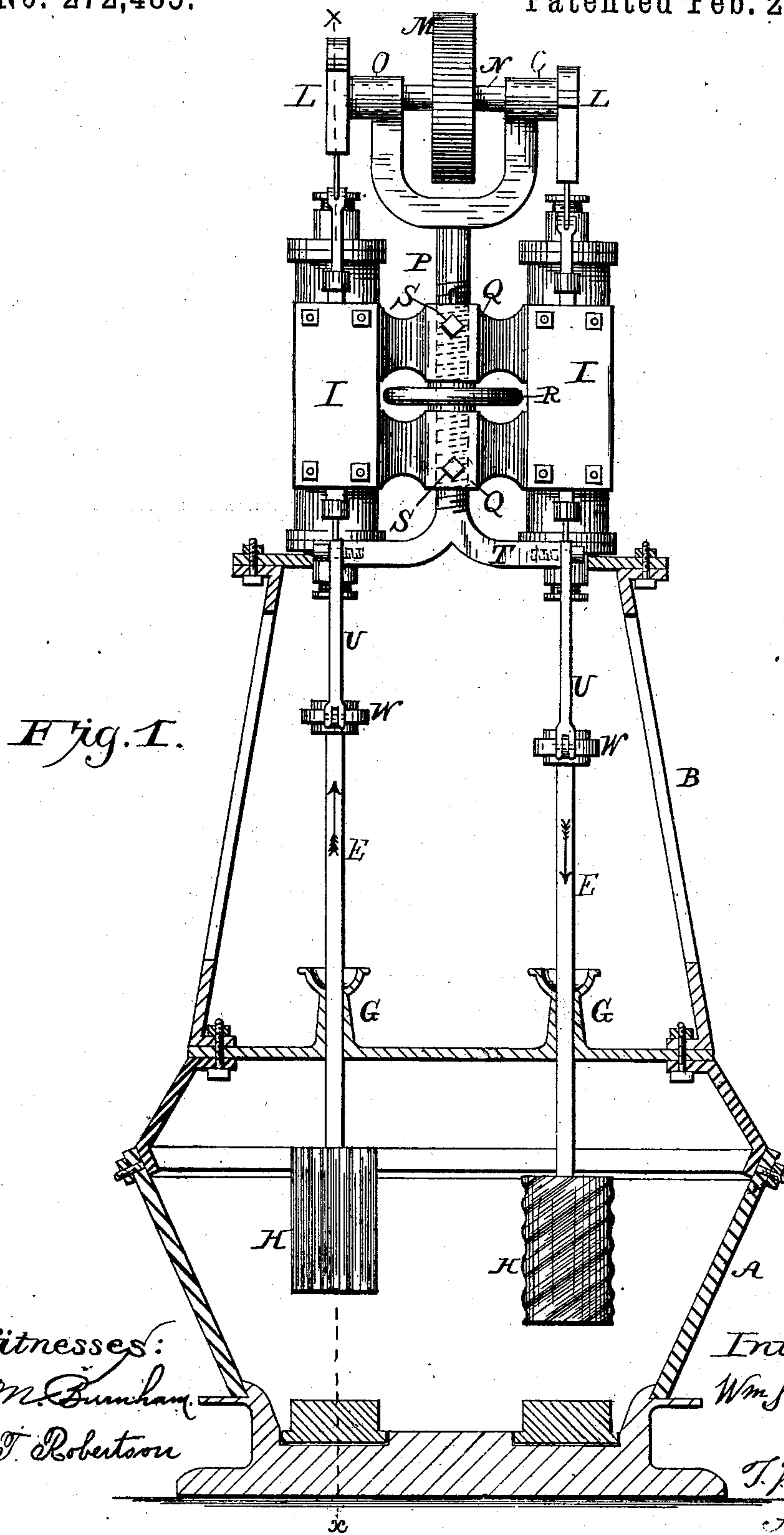
2 Sheets—Sheet 1.

W. S. SHARPNECK.

STEAM POWER STAMP.

No. 272,485.

Patented Feb. 20, 1883.



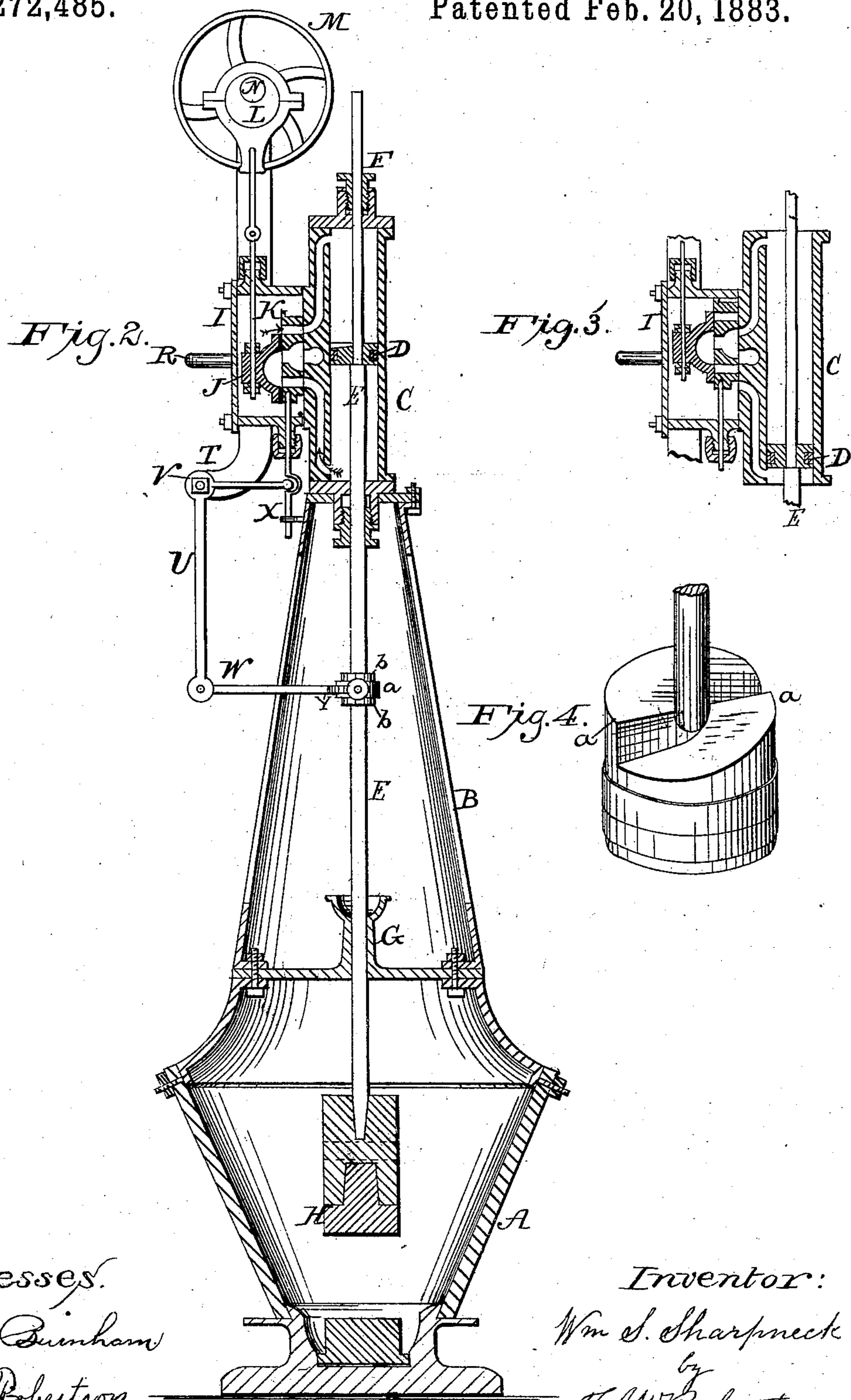
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UNITED STATES PATENT OFFICE.

WILLIAM S. SHARPNECK, OF DENVER, COLORADO, ASSIGNOR OF TWO-THIRDS TO H. N. NICHOLS, OF NORTH PLATTE, NEBRASKA.

STEAM-POWER STAMP.

SPECIFICATION forming part of Letters Patent No. 272,485, dated February 20, 1883.

Application filed October 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. SHARPNECK, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Steam-Power Stamps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in steam or power stamps; and it consists, mainly, in the peculiar arrangement of the valves, and in certain details of construction, as will be more fully hereinafter described, and then pointed out in the claims.

In the accompanying drawings, Figure 1 is a front view, showing a pair of stamps constructed according to my improvement, with the lower part shown in section. Fig. 2 is a vertical section through the line *xx*, Fig. 1; Fig. 3, a sectional view of the valves, &c., in a different position. Fig. 4 is a perspective view of the piston.

A represents the mortar of the machine, which may be made in the usual or any suitable form.

B is a frame rising therefrom and supporting the cylinder C, in which works the piston D on the rod E, that passes through stuffing-boxes F at each end of the cylinder, and through a guide, G, forming part of the frame, into the mortar A, where it is provided with a stamp-head, H, having flutings or corrugations around it, which may either be vertical or inclined, as shown in Fig. 1. The top of the piston-head is formed with two projections, each of which starts from the base of the vertical side of the other, as shown, so as to be vertical on one side and inclined on the other.

I represents the steam-chest, in which work two valves, J K, the former being operated by an eccentric, L, driven by a pulley, M, mounted on a shaft, N, journaled in the bearings O in the forked standard P, which slides in guides Q Q, cast between the two steam-chests I. The standard P has a thread cut on it for a portion of its length, and a hand-wheel, R, (having a female thread to fit the thread of the standard,) works on said standard between the guides Q Q, as shown, by turning which the standard and the parts it carries can be

raised and lowered as desired, and when in the desired position secured there by set-screws S S, which pass into a groove in the standard, and thus prevent its turning in the guides. The lower end of the standard is provided with an extension, T, on each side, to which the elbow-lever U is secured by a bolt, V. This elbow-lever has its long arm connected to the stamp-rod by a pitman, W, and its short arm is connected, as shown, to the rod X of valve K, the arrangement being such that when the stamp is down at or near its lowest point the valve K assumes the position shown in Fig. 3, thus cutting off the steam admitted by the valve J, and allowing steam to enter at the opposite end of the cylinder from which the valve J was admitting it. The pitman W is forked at Y, so as to embrace the collar *a*, which works loosely on the stamp-rod between two collars, *b b*, which are firmly fastened on the rod by set-screws.

The operation is as follows: The mortar being supplied with materials to be operated on and steam admitted to the chest I, motion is given to the valve J by means of the band-wheel and eccentric, admitting steam, as shown by the arrow, thus driving the stamp downward, and as the steam acts on the vertical sides of the projections on the piston the latter and its rod are turned, thus giving a turning motion to the stamp-head below, so as to give a grinding as well as a crushing blow. The motion of this valve being continued, steam is admitted and discharged in the usual manner so long as a sufficient quantity of the material is in the mortar; but should there be a deficiency, so as to allow the stamp-head to descend so far as to nearly strike the bottom of the mortar, then the valve K is made to assume the position shown in Fig. 3 by its connection with the stamp-rod, and admits and exhausts steam as shown in said figure, thus forming a cushion of steam to prevent damaging the stamp-head and the die in the bottom of the mortar. By the peculiar arrangement of the elbow-lever U and the pitman W, the valve K is moved in the same direction at each end of the piston's stroke.

The flutes on the stamp-head act in two ways: They serve when arranged spirally to assist in giving a rotation to the stamp-head.

as it passes through the water, and they also act to some extent in stirring up the contents of the mortar.

The pulley M may be driven by any suitable means, such as a band from a line-shaft where it is convenient; but I sometimes impart rotary motion to the shaft N by a small independent engine, in which case a fly-wheel may be substituted for the pulley M.

As the stamp-head and die wear away, the necessity for the adjustment of the valves becomes apparent, for as the head wears it will not of course strike as low down, and the valve will require adjustment to overcome this change of stroke.

I have referred to the use of steam; but it is evident that the piston might be used with hot or compressed air or gas, should it be found more convenient in some situations. It is also evident that a crank or cam may be used in lieu of the eccentric.

I am aware of Patent No. 187,947, in which a movable valve-seat is provided; but in that construction the said valve-seat is adapted to cut off the supply of steam admitted by the distribution-valve to one port, while it allows the exhaust from the other port to continue. In other words, the said movable seat has a very limited movement, which is only intended to cut off the supply of steam at one end of the cylinder and permit the exhaust at the other, and is not constructed or adapted to admit steam to the opposite end of the cylinder to cushion the piston, as is the case in my improvement.

I am aware, also, of Patents Nos. 148,273 and 223,474, and such arrangements and constructions are not sought to be covered in this application.

I am also aware that various spiral devices have been employed to change the position of plungers in rock-drills and the like, and such devices have generally been made to operate on the upstroke or at the end of the upstroke through the medium of other devices or means. In my construction the upper surface of the piston-head is provided with two inclines, which serve to affect the hammer H on the downstroke only to give a grinding blow.

What I claim as new is—

1. The combination, with a steam-cylinder and piston, of two valves, each acting independently of the other, the motion of one being derived from the piston by mechanism, substantially as described, constructed to move the valve in the same direction at each end of the piston's stroke, and the other valve operated in the usual manner, as set forth.

2. The combination, with a power-stamp, of two valves, each acting independently of the other, constructed and arranged to allow the first to admit steam to operate the piston, and the second to cut off the steam admitted by the first and admit steam at the opposite end, to cushion the piston when the stamp descends too far, substantially as described.

3. The combination, with a power-stamp, of two valves, J H, in the same chest, the eccentric L, and suitable connections between said valves and eccentric, the stamp-rod E, pitman W, elbow-lever U, and rod X, whereby the valve K is moved in the same direction at each end of the piston's stroke, substantially as and for the purpose specified.

4. The combination, with a power-stamp, of two valves working in the same steam-chest, one forming a seat for the other, and devices for operating them, constructed and arranged to adjust both valves and the operating devices simultaneously lengthwise of the cylinder, and devices for holding the adjustment during the motion of the valves, substantially as and for the purpose specified.

5. The combination, with a power-stamp, of two valves working in the same steam-chest, and one forming a seat for the other, a standard moving in a guide and provided with means for adjustment, the shaft M, eccentric L, mounted on said standard, connections between the eccentric and one valve, and the lever U, also mounted on the standard and connected to the other valve, substantially as and for the purpose specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 27th day of October, 1882.

WILLIAM S. SHARPNECK.

Witnesses:

T. J. W. ROBERTSON,
F. O. MCCLEARY.