

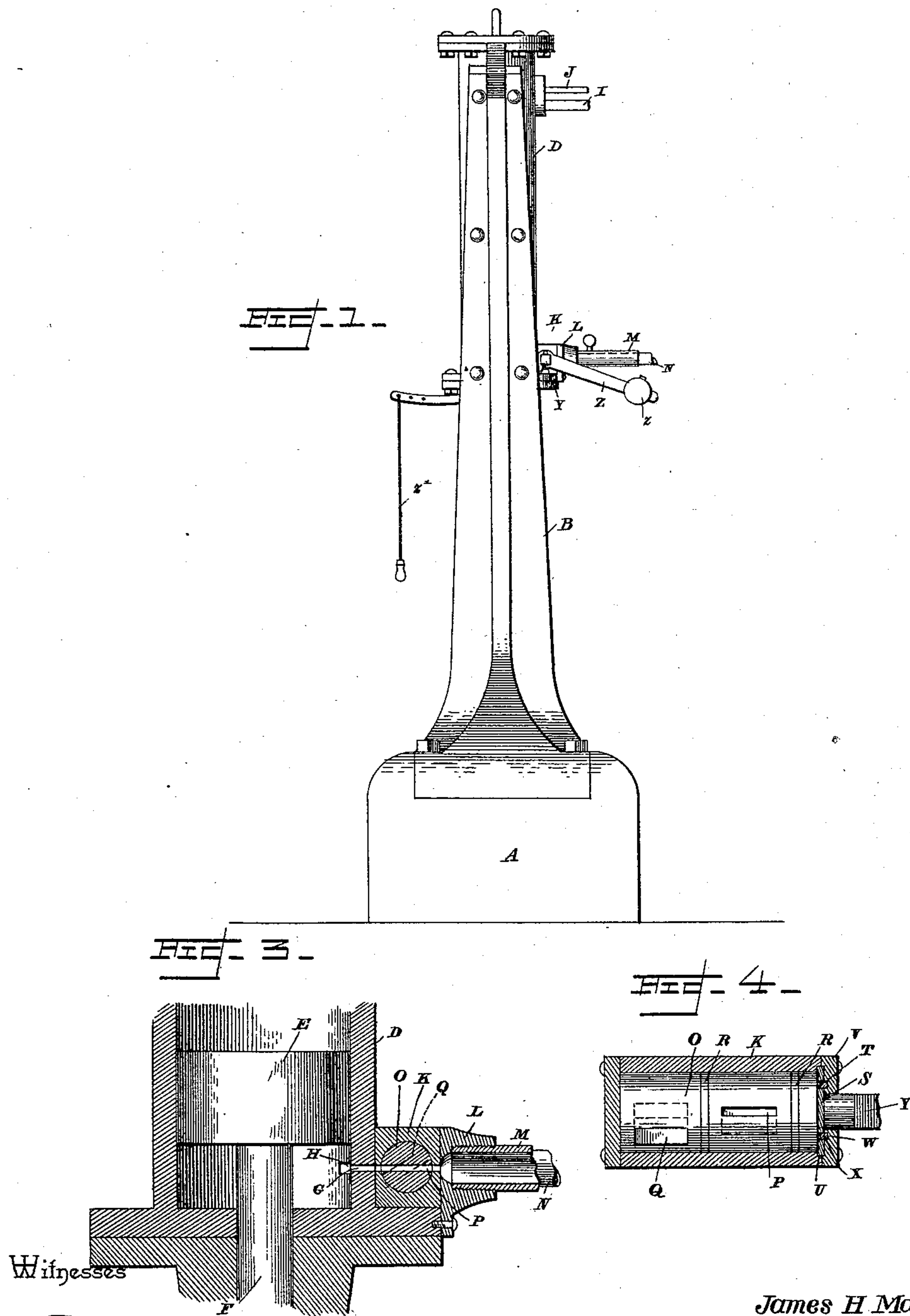
(No Model.)

2 Sheets—Sheet 1.

J. H. MASON.
STEAM DROP PRESS.

No. 488,128.

Patented Dec. 13, 1892.



Witnesses

Inventor

James H. Mason.

Edw. S. Duval Jr.
D. P. Wolhaupter.

By his Attorneys,

C. A. Snow & Co.

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Fig. 2.

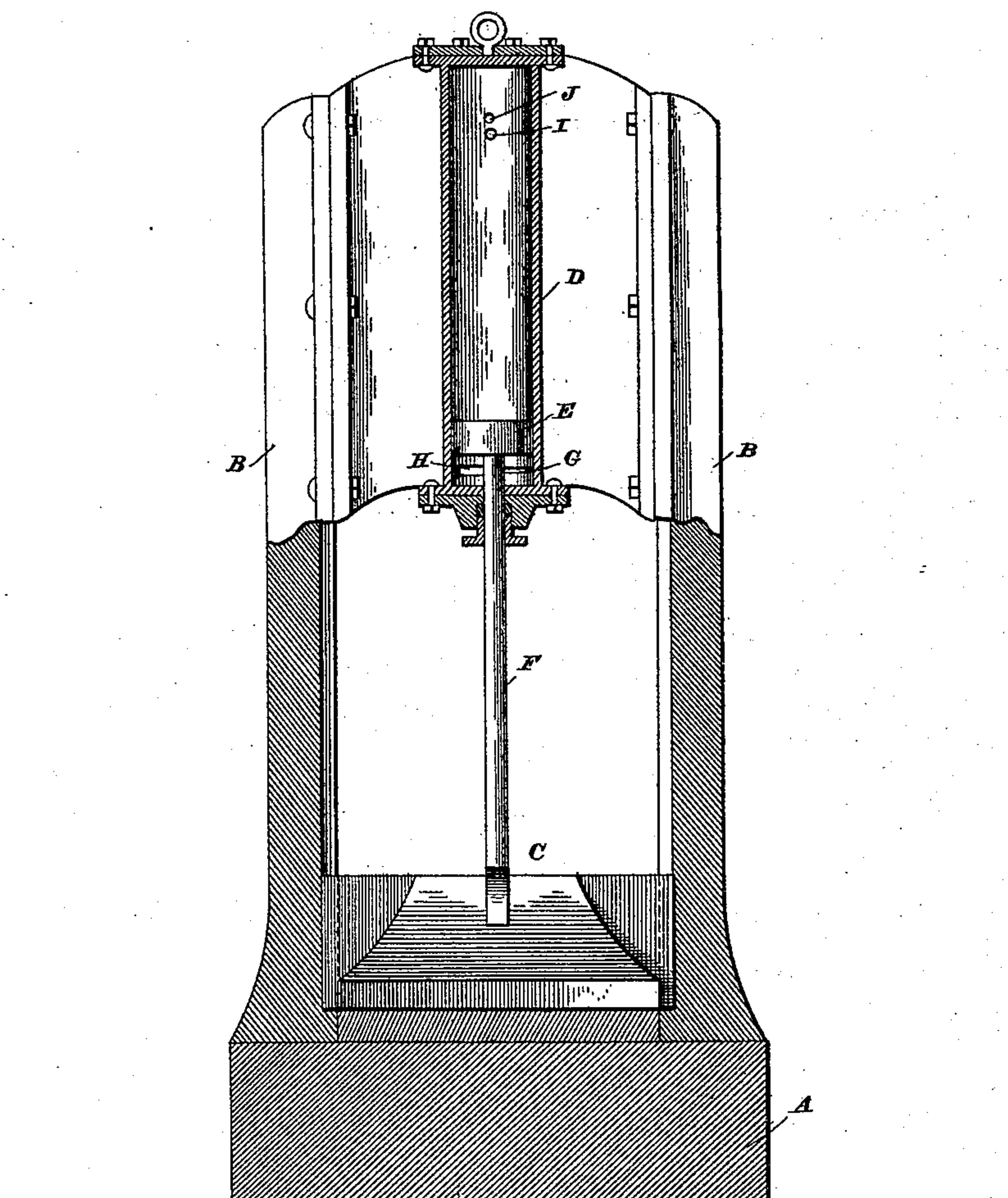
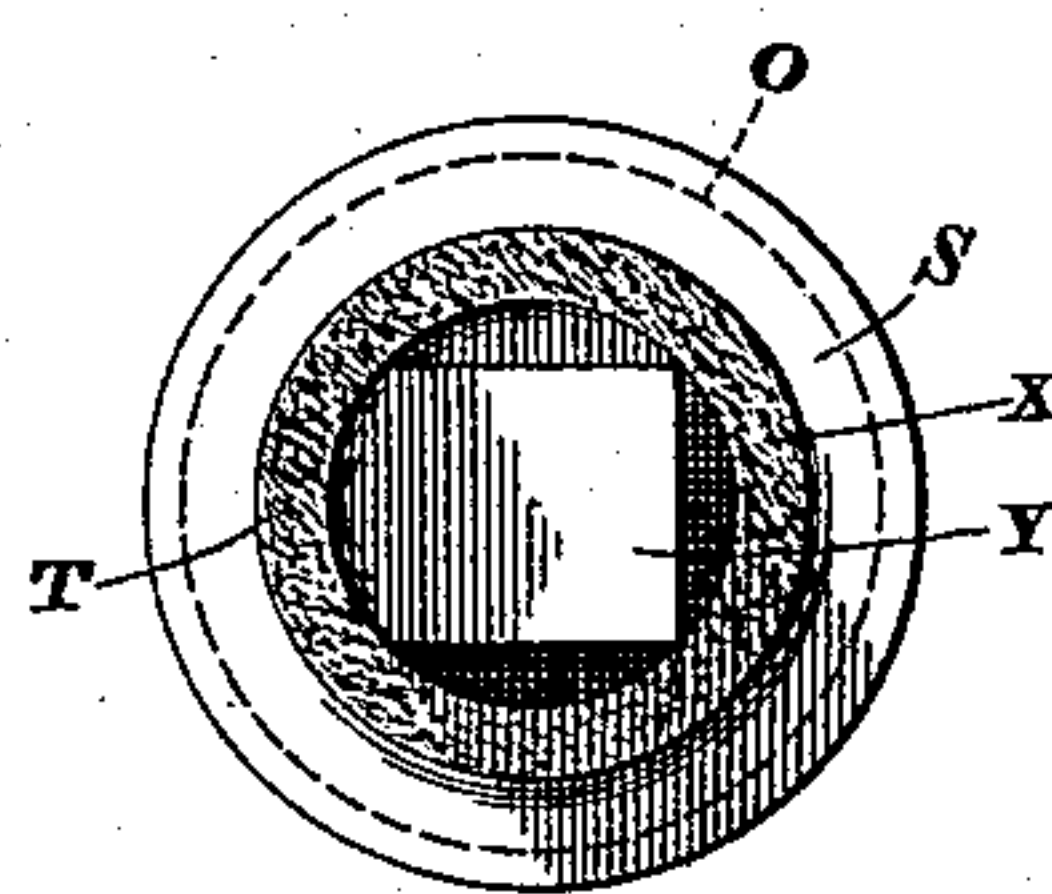


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES H. MASON, OF CHICAGO, ILLINOIS.

STEAM DROP-PRESS.

SPECIFICATION forming part of Letters Patent No. 488,128, dated December 13, 1892.

Application filed May 31, 1892. Serial No. 435,041. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MASON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Steam Drop-Press, of which the following is a specification.

This invention relates to steam drop presses or hammers; and it has for its object to provide a press of this character, which is particularly adapted for pressing and stamping ornamental work out of the various metals, and being so constructed and controlled as to produce satisfactory results both by drawing the metal and finally stamping it to the deepest and keenest design.

It is also an essential object of this invention to provide means whereby the drop may be held in any stationary position or raised to its full height and then lowered as slowly or as quickly as the nature of the work demands, either to allow the same to reach the base-die in full force or as softly as desired. By this action the metal can be gently pressed to the form of the die, and then with one or more free drops from any desired height the stamping and pressing may be finished.

With these and many other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a steam drop-press constructed in accordance with this invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is an enlarged vertical longitudinal sectional view in detail of the steam-chest and the lower end of the cylinder. Fig. 4 is a similar transverse sectional view through the steam-chest alone. Fig. 5 is an end view of the rotary valve.

Referring to the accompanying drawings, A represents an ordinary die-base, from which arises the opposite vertical guide-standards B, accommodating the sliding hammer or drop C, working therebetween and over said die-base, as is usual in machines of this character. Suitably secured between the upper ends of said opposite guide-standard B is the ver-

tical steam-cylinder D, within which works the solid piston E, carrying the rod or stem F, which is connected to the hammer or drop C, and under the action of the steam on its piston controls the movement of the hammer or drop. The said steam-cylinder D is provided at its lower end, in one side thereof and below the lower face of the piston, with the narrow elongated steam-port G, and the parallel larger steam-port H, located directly alongside of but spaced from said port G, which conducts the live steam below the piston-head in any proportion desired, according to the rapidity with which it is desired to raise the steam-hammer, while the adjacent exhaust-opening allows the piston to fall at any speed or to remain stationary, according to the option of the operator. The said cylinder D is further provided at a given point at its upper end with a steam-escape-vent port I, which prevents the piston from being driven too high and allows the steam to escape therethrough in case the piston passes that point, thereby relieving the piston from the pressure of the steam and preventing the same from rising but a short distance farther. Directly above said steam-vent opening is located an air-vent opening J, which prevents down-pressure on the piston until the point at which the vent is located is reached, above which point is formed an air chamber or cushion, which obviates the possibility of the piston striking the cylinder-head when raised up.

Located over the live and exhaust steam ports G and H, respectively, and secured to the bottom of the cylinder D is the live and exhaust steam chest K, one end of which, inclosed by the end cover L, is provided with the live-steam pipe M and the exhaust-pipe N, side by side and in line with their respective corresponding ports in the other end of the steam-chest and the bottom of the cylinder D and are designed to conduct the steam to and from the cylinder, as required. The steam-chest or valve-casing snugly accommodates the rotary steam-regulating valve O. The said steam-valve O is cylindrical in shape and is provided transversely through the body thereof with the steam-passage P, corresponding to and in alignment with the correspond-

ing port G in the cylinder and inlet M in the front end of the steam-chest. The valve O is also provided with an enlarged exhaust-opening, a passage Q of the same size as those in the cylinder and steam-chest corresponding therewith, and said exhaust-passage Q is located in said valve to one side of the steam-passage P and is disposed at a sharp angle to said steam-passage and at such a degree that one of said passages is in use immediately after the other, so that the action of the piston can be regulated to any extent, and by such disposition of the passages and ports spaced from and at angles to each other that in no case can there be any confusion or waste of steam or resisting action. Suitable packing-rings R are placed in the periphery of said valve to insure steadiness and remove wear from the same. The stem end of the valve O is provided with an annular blank flange S, which is provided in its outer face with a circular groove or recess T. The said flange is designed to be seated in and work within the annular recess U, formed in one side of the steam-chest body. An inclosing side or cap V fits over said flange and is secured to the side of the steam-chest body, and thus holds the said flange within its seat and the rotary valve within the steam-chest. The said inclosing cap V is provided with a circular groove or recess W, corresponding to and registering with the outer face of the flange S, forming an inclosed ring or groove which accommodates the packing X. A steam-tight joint is thus effectually provided for the blank end of the valve, while at the same time by the packing-joint the same is allowed a free rotary movement, by means of which the valve may be easily controlled and operated. The valve-stem Y extends through the inclosing cap or side V and receives the controlling-lever Z, keyed thereon and provided upon one arm thereof with an adjustable weight z, by means of which the valve normally cuts off the supply of steam, while to the opposite end of the operating-lever Z is connected the pull cord or chain z', which allows the operator to fully control both the ingress and egress of steam in any portion desired to and from the cylinder.

It will now be readily apparent that by means of the lever the steam may be admitted in any proportion desired, either to hold the drop in any position stationary or raised to its full height, and then lowered as slowly or as quickly as necessary, or to raise the drop from any point at pleasure. It may also be observed at this point that the packing and joint at the blank or stem end of the rotary valve obviates the objections to and disadvantages of nearly all the methods of packing the glands of steam-chests. Such packings are generally of such a gripping or tightening nature as to require considerable force to operate the valve both for the reception and expulsion of steam, which force is objectionable to the free and easy manipulation

of the valve as is provided for by this invention.

The construction, operation, and advantages of the herein-described steam drop-press are thought to be apparent without further description.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a steam drop-press, the combination of the piston-cylinder provided at its lower end with a reduced steam and an enlarged exhaust port side by side, a steam-escape-vent port located at a point near the top thereof, and an air-vent directly above the steam-vent, a supplemental steam-chest or valve-casing secured to said cylinder and having corresponding ports registering with the cylinder-ports, a rotary valve mounted in said chest or casing and provided with separated reduced steam and enlarged exhaust passages disposed at an angle to each other and adapted to alternately register, with their respective ports opening into said cylinder, and a removal-cap inclosing the valve at one end within the casing, substantially as set forth.

2. In a steam drop-press, the combination, with the cylinder having a reduced steam and an enlarged exhaust port at its lower end and side by side, of a supplemental steam-chest or valve-casing secured to said cylinder over said ports and provided with an annular or circular recess in the side or body thereof, a rotary valve provided with separate transverse steam and exhaust passages disposed at an angle to each other, an end annular flange taking and working in said circular recess in the body of said casing, and means for controlling said valve, substantially as set forth.

3. The combination, with the cylinder having a steam and exhaust port side by side and located at the bottom thereof, of a supplemental steam-chest inclosing said ports and provided with a circular recess or seat in one side of the body thereof, a rotary valve provided with separated transverse steam and exhaust passages disposed at an angle to each other and with an end annular flange taking and working in said circular recess and having a circular groove in the outer face thereof, an inclosing side or cap fitting over said flange and secured to the body of said chest and provided with a circular groove registering with said flange-groove, packing inserted in said registering grooves, and means for controlling said valve, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES H. MASON.

Witnesses:

ROBERT L. DAVIS,
G. E. KEASEL.