

Attachment for Hydraulic-Presses.

No. 224,696.

Patented Feb. 17, 1880.

Fig:1.

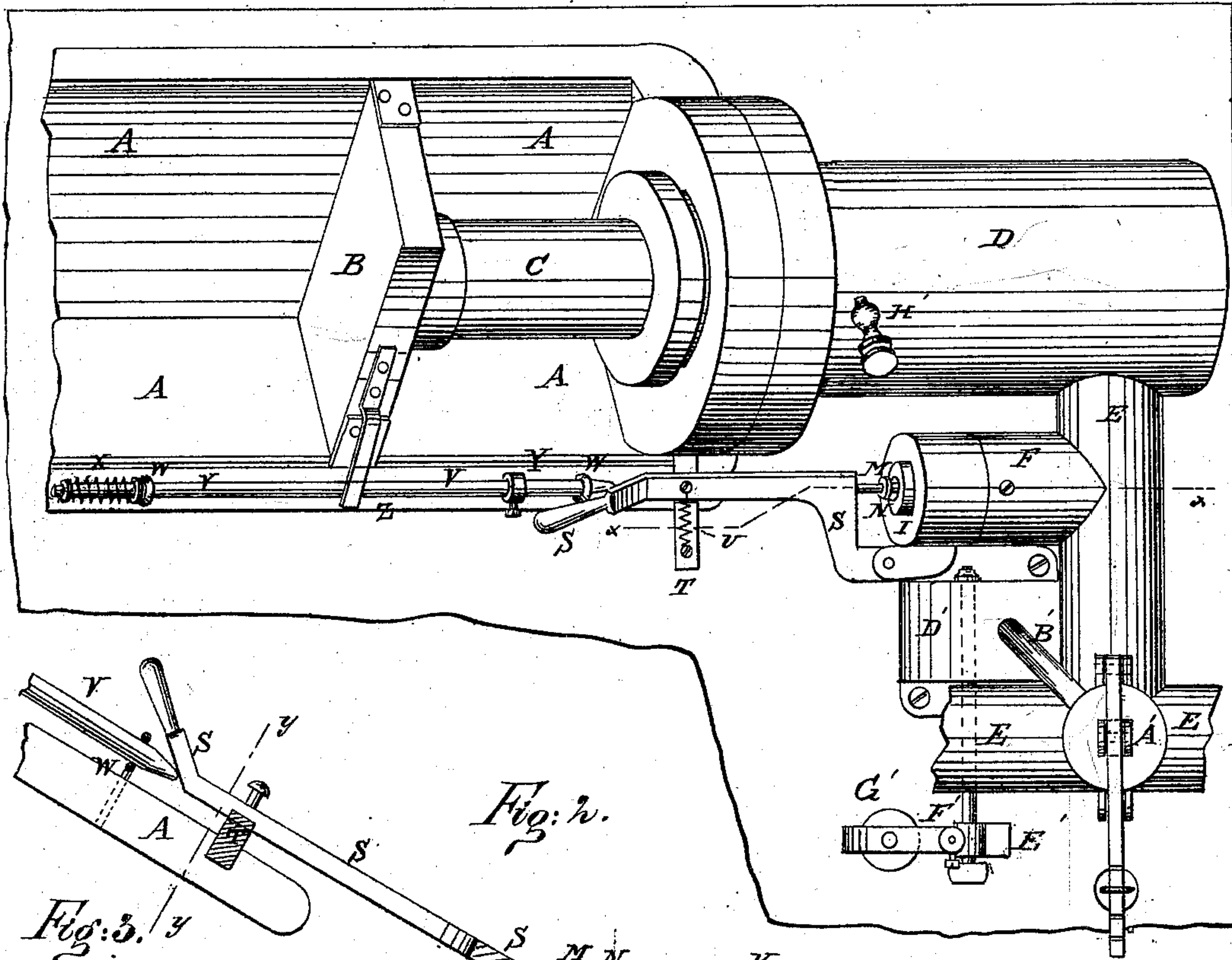


Fig: 2.

Fig: 3. / y

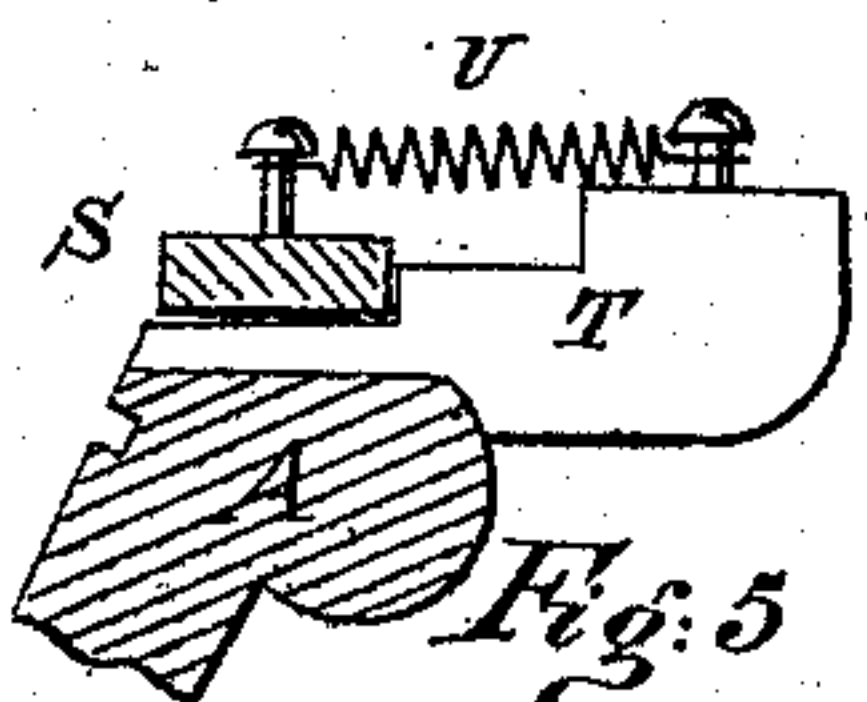
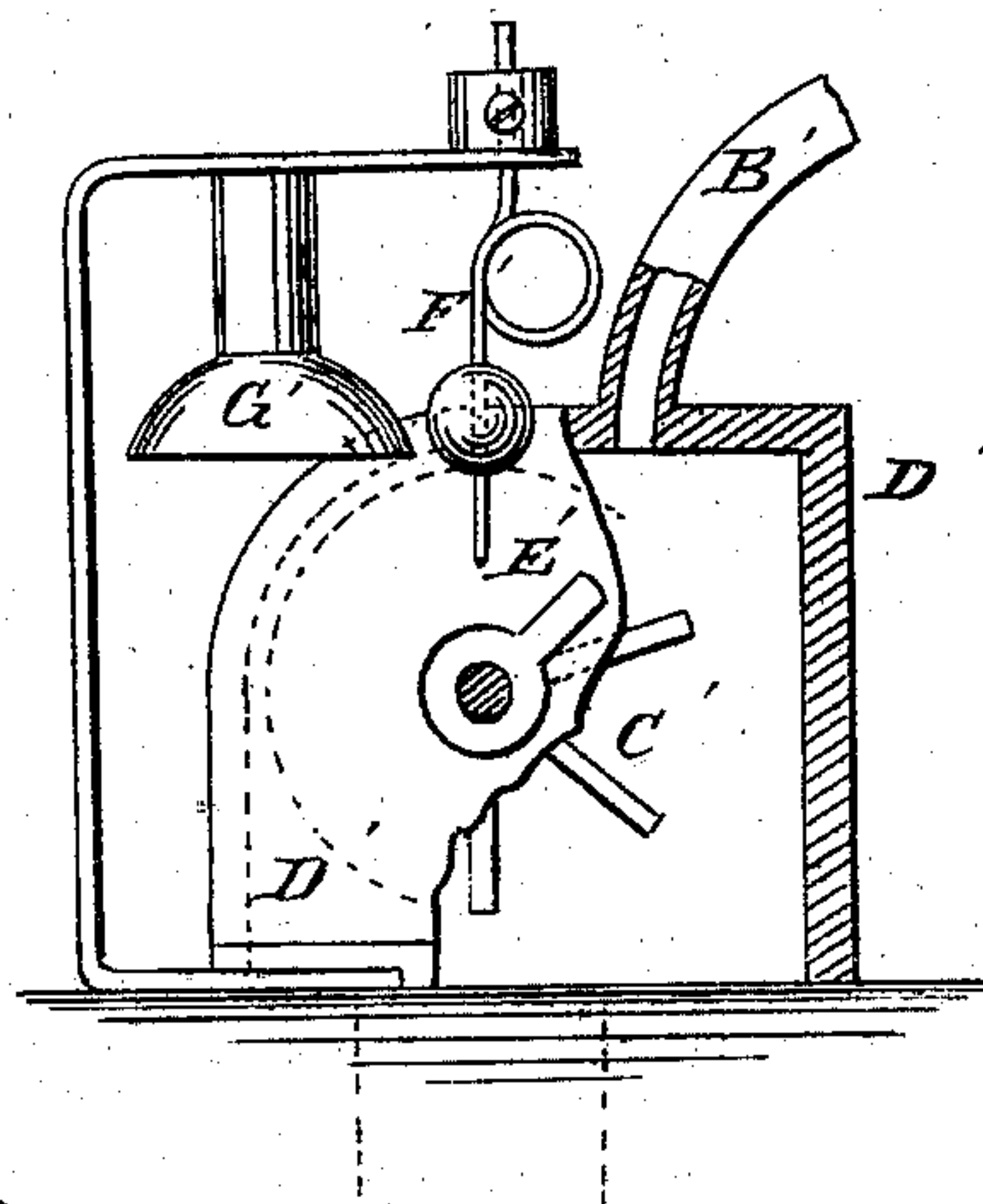
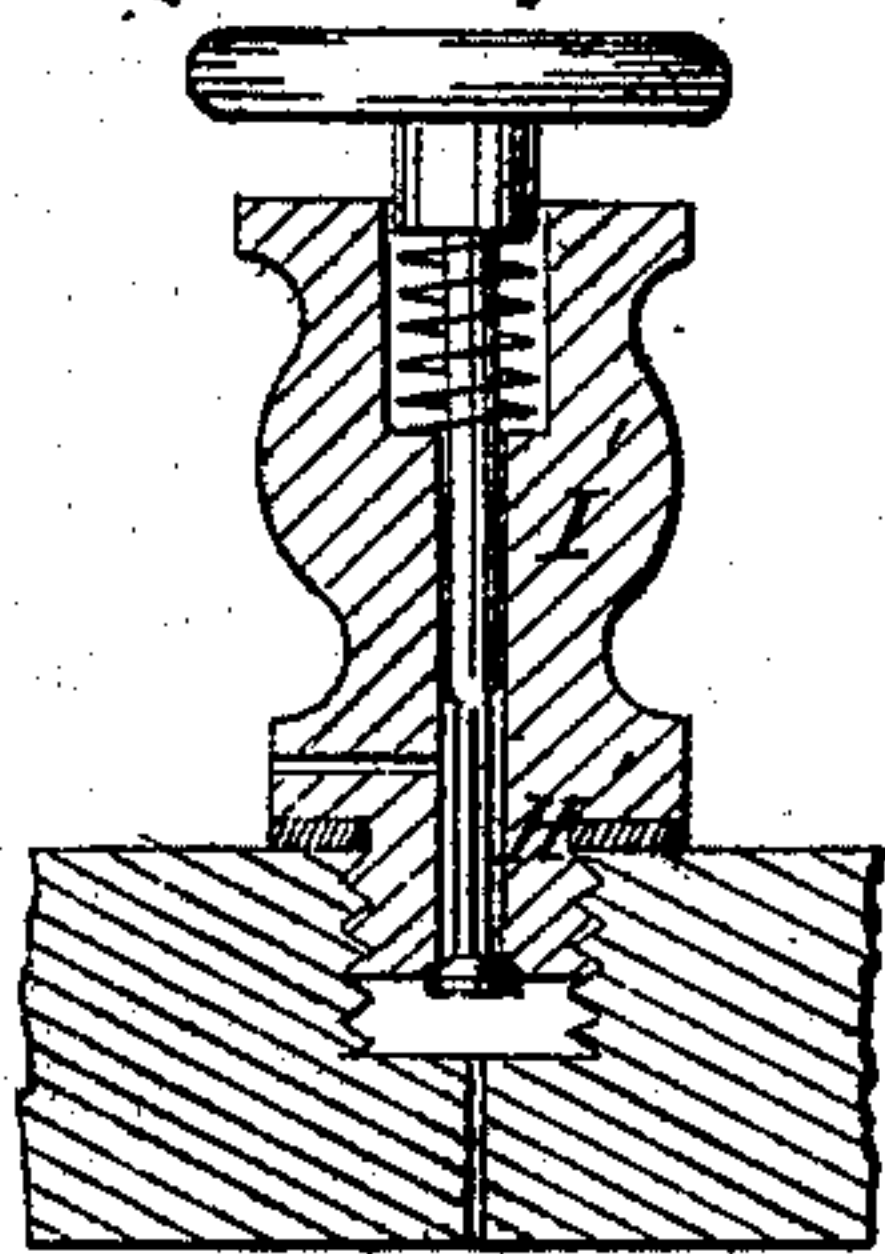


Fig: 5

Fig: 4.



WITNESSES:

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ATTACHMENT FOR HYDRAULIC PRESSES.

SPECIFICATION forming part of Letters Patent No. 224,696, dated February 17, 1880.

Application filed September 23, 1879.

To all whom it may concern:

Be it known that I, JOSHUA W. JONES, of Harrisburg, Dauphin county, and State of Pennsylvania, have invented a new and useful Improvement in Attachments for Hydraulic Presses, of which the following is a specification.

Figure 1 is a plan view of my improvement. Fig. 2 is a sectional elevation of the improvement, taken through the line *x x*, Fig. 1. Fig. 3 is a section taken through the line *y y*, Fig. 2. Fig. 4 is a side elevation, partly in section, of the alarm apparatus. Fig. 5 is a section of the air-outlet valve.

The object of this invention is to furnish improved attachments for hydraulic presses, so constructed as to close the outlet-valve automatically when the follower has been run back to a fixed point and to sound an alarm when the desired pressure has been attained.

A represents the table; B, the head-block; C, the follower; D, the cylinder, and E the water-inlet pipes. These parts are all constructed in the usual way.

With the inlet-pipe E, near the cylinder D, is connected the outlet-pipe F, which is made with discharge-opening G in its lower side. H is the outlet-valve, which has its seat at the inner end of the outlet-pipe F, and opens inward, so that it may be held firmly to its seat by the pressure of the water. The greater the pressure the more firmly the valve will be held to its seat, thus overcoming the difficulty of preventing leakage at the outlet-valve, and at the same time thereby retaining the pressure obtained in the hydraulic press *ad libitum*.

The stem I of the valve H fits into the bore of the pipe F, and its outer end projects and has a collar, J, secured to it by a set-screw. The valve H is closed by a spiral spring, K, placed upon the outer end of the stem I in a countersink in the outer end of the pipe F. The outer end of the spring K rests against the collar J, so that the tension of the spring K may be regulated by adjusting the collar J. The valve-stem I is perforated longitudinally, and at the inner end of the perforation is formed a seat for the small valve L. The stem M of the valve L fits into and passes through the perforation of the stem I. The outer end of the stem M projects, and to it is attached a

collar, N, for the outer end of the spiral spring O to rest against. The spiral spring O is placed upon the outer part of the stem M in a countersink in the stem I, and its inner end rests against a metal washer, P, placed upon the stem M at the bottom of the countersink in the stem I. In a smaller countersink in the stem I, below the washer P, are placed one or more leather packings, Q, which rest upon the shoulders of the inner countersink of the stem I.

The spiral spring O assists to close the valve L, the water-pressure holds it firmly to its seat, and the washers Q prevent any water from being forced out around the stem M by the water-pressure when the valve L is open. When the valve L is open the water escapes through holes in the stem I into the outlet G.

As the valve H has to be opened against an immense water-pressure, it (the valve H) may be relieved by first opening the small valve L and afterward opening the large valve H.

The arrangement of the main and relief valves as to each other and the opening G, and the projection of their stems beyond the part F, economize space and facilitate attachment to said stems of appliances for rotating the valves for the purpose of grinding the latter on their seats in case of leakage or obstruction by foreign matter.

To a support attached to the pipe F or the frame-work of the press is pivoted a lever, S, which is made with a shoulder to rest against the end of the valve-stem M, so that when the lever S is operated the first effect is to open the relief-valve L, and afterward the main valve H. The lever S moves along on arm T, attached to the table A, and is provided with a shoulder or notch to receive and lock the lever S when holding the valves L H open.

The lever S is drawn back when raised out of the notch in the arm T by a spring, *u*, attached to it and to the said arm T. The outer end of the lever S is inclined upward, so that the said lever S may be raised out of the notch in the arm T by the downward movement of the sliding rod V, which slides in keepers W, attached to the table A, and is held up by a spiral spring, X. The lower end of the rod V is beveled off, so that it may more readily raise the lever S when pressed against it. To the sliding rod V is secured a collar, Y, by a set-

screw, so that it may be readily adjusted as required. To the follow-block B is attached an arm, Z, which moves along the rod V as the follow-block B moves up and down.

5 With this construction, when the follow-block B has moved down a sufficient distance to allow the substance to be pressed to be put in the press, the arm Z strikes the collar Y, moves the rod V downward, unlocks the lever S, and
10 allows the valves H L to close. The water then enters the cylinder D and the follower C begins to rise. The lever S is operated by hand to open the valves H L.

When the substance has been put under any
15 desired pressure it is necessary that the water should be shut off and that some kind of an alarm-signal should be given to tell the attendant when to shut off the water. I will now describe a device for giving this alarm.

20 To the inlet-pipe E is attached an ordinary safety-valve, A', which may be set to open at any desired water-pressure. With the safety-valve A' is connected a pipe, B', through which water escapes when the safety-valve A' is opened. C' is a small water-wheel, of any
25 ordinary construction, and which is pivoted in a casing, D', in such a position as to receive the water from the pipe B'. To the projecting end of the journal of the wheel C' is attached
30 an arm or tooth, E', which, as the wheel C' revolves, draws back the hammer F', and thus causes the hammer F' to strike the gong, bell, or other sounding device, G', and sound an alarm. With the upper part of the cylinder
35 D' is connected an air-valve, H', to allow the air which gradually collects in the upper part of the cylinder D and interferes with the operation of the press to be drawn off when required. The valve H' opens inward, so that

it may be held to its seat by the pressure of 40 the water, and has its seat in the inner end of a screw-plug, I', screwed into a screw-hole in the wall of the cylinder D, from which screw-hole an air-passage leads to the interior of the cylinder D. This construction prevents any 45 leakage of water through the valve H' I' when water-pressure is applied to the press.

I do not claim, broadly, a valve and relief-valve combined; but,

Having thus fully described my invention, 50 what I desire to secure by Letters Patent is embraced in the following claims:

1. The main valve A and relief-valve L, combined and connected with the automatically-tripped lever S, that actuates them success- 55 ively as and for the purpose described.

2. The combination, with valves L M, of the hollow stem I, having collar J and spring P, and the rod M, having collar N and spring O, all constructed and arranged as and for the 60 purpose set forth.

3. In a hydraulic press, the combination of a water-wheel, C', having an arm, E', attached to its journal, with the safety-valve A' and the hammer F' of a gong, bell, or other sound- 65 ing device, to sound an alarm when the required pressure has been obtained, substantially as and for the purpose herein set forth.

4. The combination of an air-valve, H', with the cylinder D of a hydraulic press, for draw- 70 ing off the air collected in the upper part of the cylinder, substantially as and for the purposes herein set forth.

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Witnesses:

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