

(No Model.)

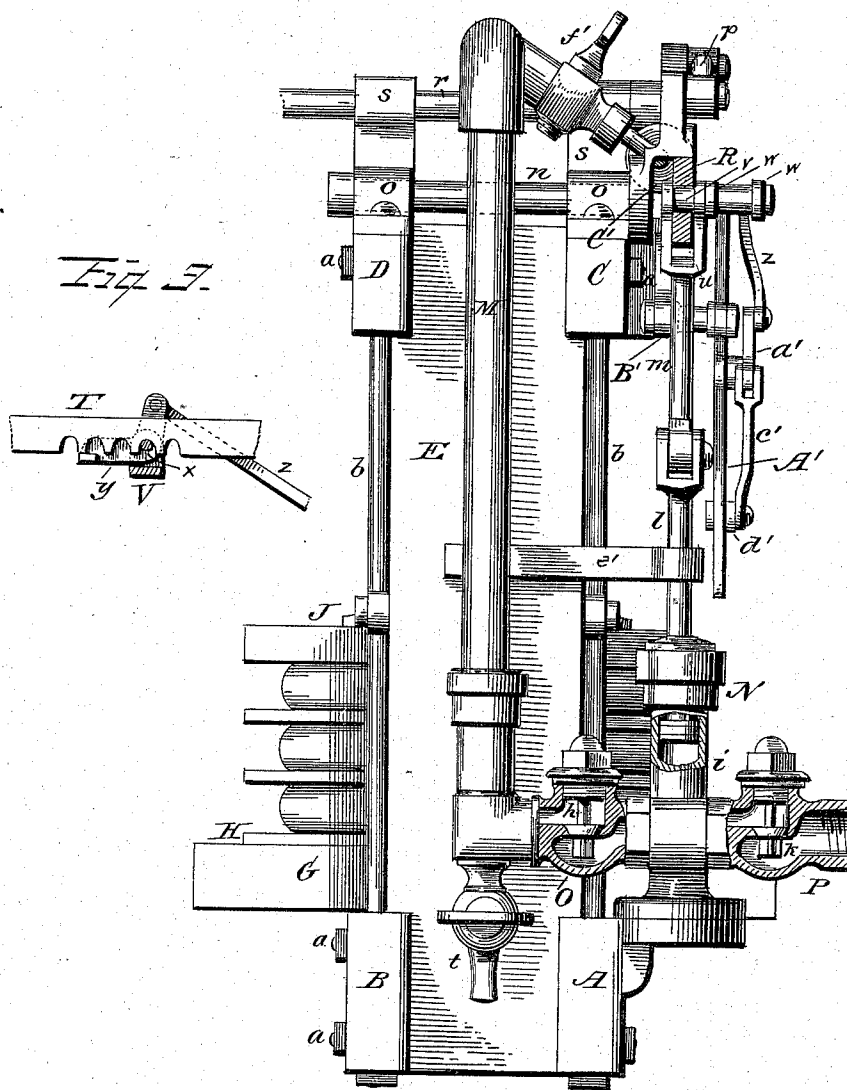
2 Sheets—Sheet 2.

J. S. MILLER.
HYDRAULIC PRESS.

No. 571,493.

Patented Nov. 17, 1896.

Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN S. MILLER, OF GOSHEN, INDIANA.

HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 571,493, dated November 17, 1896.

Application filed April 16, 1896. Serial No. 587,771. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. MILLER, a citizen of the United States, residing at Goshen, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Hydraulic Presses; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has relation to hydraulic presses, and more particularly to that class employed in the manufacture of wine or cider or for other purposes where a hydraulic press of the character to which my invention relates would be found useful, and the object thereof is to provide a simple and effective arrangement of mechanism operated by hydraulic pressure whereby a powerful pressure is obtained which can be readily controlled by the operator or regulated as desired.

The invention consists in a hydraulic press constructed substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings is a perspective view of a hydraulic press constructed in accordance with my invention; Fig. 2, an end view, partly in section; Fig. 3, a detail view of the notched bar and its connections.

In the accompanying drawings, A B represent the two horizontal and parallel beams forming together the bottom of the frame, and C D the upper beams, and between the two sets of beams are suitably connected the standards or uprights E F.

The several beams and standards or uprights comprise the frame of the press and may be held together and strengthened by brace-rods *a*, which extend horizontally through the beams, and by brace-rods *b*, extending vertically therethrough.

Any suitable construction of frame may be substituted for that shown as would be found best adapted to the purpose, the frame herein described being one of many forms that may be employed.

Upon the lower beams A B of the frame is supported the usual tray or box G, for con-

taining the rack H, of the ordinary construction, a spring-catch *c* being connected to a cross-bar *d* for holding a rack, as shown at I, when said rack is not in use.

The follower J, which may be of any preferred construction, is provided with brackets *e*, which extend out from the side thereof and are provided with grooved guide-rollers *fg* to guide and steady the follower in its vertical movement, each pair of rollers bearing against the opposite sides of the rods *b* at one end of the frame. A plunger K works in a cylinder L, its lower end being unattached to the follower J, but bearing thereon when brought into action, as shown in Fig. 1 of the drawings.

The plunger K tightly fits in the cylinder L and is operated by hydraulic pressure through a pipe M, which pipe communicates with the interior of the cylinder at the top thereof. This pipe extends horizontally at the top of the frame of the press and thence in a downward direction at the end of the frame, where it connects with a pump N, through the medium of a valve *h*, located within a coupling-section O, which connects said pipe with the pump-cylinder.

The pump-cylinder, as shown at *i*, has an extension P, in which is located a valve *k*, and to this extension is coupled the pipe that supplies the water for the operation of the press, the water being taken from any source found desirable.

The piston-rod *l* of the pump is pivotally connected to a pitman *m*, and said pitman in turn is connected with a slotted crank R, which crank is rigidly connected to a horizontal shaft *n*, which has its bearings in boxes *o* upon the beams C D of the frame of the press.

A rod *p* connects the slotted crank R with a crank-wheel S, said wheel being rigidly connected to the end of a horizontal shaft *r*, which has its bearings in boxes *s* upon the beams C D of the frame, and the rod *p*, pivotally connected in any suitable manner to the slotted crank and crank-wheel.

The coupling-section O may be provided with a waste-cock *t* of the usual construction, and the upper end of the pitman *m* is preferably formed with a yoke *u* to embrace the sides of the slotted crank R, a friction-roller

v upon the yoke extending through the slot in the crank, as shown in Fig. 2 of the drawings.

A notched arm T connects at one end with the pitman m through the medium of pivoted links w or by any other means found most desirable, and the free end of the arm is provided with a suitable weight U. When the arm T is down in position, one of the notches therein engages with a pin x , as shown in Fig. 3 of the drawings, and to raise the arm to disengage it from the pin a crank-lever V is provided. This crank-lever is pivotally connected to a suitable bracket y , and a rod z connects said lever with a crank-lever a' , which is pivoted to a downwardly-extending lever-arm A'.

The lever-arm is pivotally connected to the end of a horizontal bar B', which is supported in brackets b' , secured to the beam C of the frame of the press.

To the crank-lever a' is pivoted one end of an arm c' , the lower or opposite end being pivoted to a hand-grasp d' , which in turn is pivoted to the lever-arm A', thereby providing means for raising the notched arm T out of engagement with the pin x , so that said arm may be moved lengthwise to regulate the throw of the pump-piston, the notch of the arm engaging with the pin and the weight at the end of the arm holding said arm in its adjusted position, thereby controlling the extent of throw of the piston of the pump through the medium of the pitman which connects the piston-rod with the slotted crank.

I do not desire to be understood as confining my invention to the means employed for disengaging the notched arm from the pin, as any suitable means may be provided for this purpose in connection with the slotted crank, the notched adjustable arm, the weight thereon, and the pin with which said arm engages.

A suitable guide e' is provided for the piston-rod l , said guide being suitably connected to one of the uprights E of the frame. Connecting with the water-pipe M is a small cylinder C', and the water from said pipe is admitted to the cylinder by means of a suitable cock f' .

A suitable piston-head g' is fitted in the cylinder C' and is connected to one end of a piston-rod h' . This piston-rod is of sufficient length to extend along the top of the frame of the press and has its outer end loosely supported in a suitable bracket D', secured to the beam C.

A spiral spring E' encircles a portion of the rod h' , and said rod connects with the sliding bar B' by means of the bracket y , which bracket, as previously stated, has connected to it the pivoted crank-lever V.

Any suitable spring-actuated piston-rod may be substituted for that shown, or any arrangement of spring may be employed to bring the piston-head back to its normal position when released.

In operation the notched arm T should be so adjusted as to have the notch nearest to the weighted end of the arm engaging with the pin x , so that the roller v upon the upper end of the pitman m will be at the extremity of the slot in the crank R, to the left thereof, thereby giving to the piston of the pump the full sweep. The cock f' , which forms a connection between the pipe M and cylinder C', is opened and water admitted into the cylinder and moves the piston g' as the pressure of the water increases. This action of the piston or piston-head g' moves the rod h' and carries with it the sliding bar B', which action moves the upper end of the pitman m near the center of the slot in the crank R and along the slot until the action of the piston of the pump is stopped. If pressure in cylinder C' decreases, the spiral spring E', when of sufficient force to overcome the decreased pressure, will force the piston-rod h' back in the direction of the arrow in Fig. 1 of the drawings, which will carry with it the sliding bar B' and its connections and thereby putting the pump again into action. A screw-regulating device or nut F' is provided at the end of the piston-rod h' , so that the spring E' may be regulated to increase or diminish its tension, and when the tension of the spring is increased the pump is held in motion at a higher pressure. When automatic regulation of the piston of the pump is not desired, the regulation can be controlled by hand through the lever-arm A' and its connection hereinbefore described, but in order to provide for this hand regulation it is necessary to shut off the flow of water to the cylinder C' by closing the cock f' . It will therefore be seen that the action of the piston of the pump may be controlled automatically or by hand, as desired, thereby forming a perfect regulation of the action of the pump to operate the follower J of the press.

Of course it will be understood that the water introduced into the cylinder L through the pipe M will operate the plunger K, as is common in hydraulic presses, and further description thereof is deemed unnecessary.

A perfectly-operating press, when constructed in accordance with my invention, is obtained that will possess the requisite power and be capable of regulation to adapt it to the various uses to which such a press may be applied.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydraulic press, the combination with a suitable pump, of a regulating device therefor, consisting of a slotted crank, the piston of the pump connecting with the slotted crank, a notched and weighted regulating-arm, a pin with which the notches engage, means for connecting the arm with the piston of the pump, and means for adjusting the arm, substantially as and for the purpose set forth.
2. In a hydraulic press, a suitable pump, a

slotted crank a pitman connecting with the pump-piston and with the slot in the crank, a notched and weighted regulating-arm connecting with the pitman, a pin for holding said arm in its adjusted position, and means for raising the arm out of engagement therewith, substantially as and for the purpose specified.

3. In a hydraulic press, a suitable pump, a slotted crank, a pitman connecting the piston of the pump with said crank, a notched and weighted arm, a pin for holding the arm in its adjusted position, a pivoted crank-lever, and a lever-arm connecting therewith for operating it to raise the notched arm out of engagement with the pin, substantially as and for the purpose set forth.

4. In a hydraulic press, a suitable pump, a slotted crank a pitman connecting the pump-piston with the crank, said pitman terminating in a yoke at its upper end with roller which engages the slot in the crank, a notched and weighted regulating-arm connecting with the pitman by pivoted links, a pin with which the notches in the arm engage, a pivoted crank-lever for raising the arm, and means

for operating the crank-lever, consisting of a depending lever-arm pivotally connecting at its upper end with the notched arm and suitably connecting with the crank-lever, substantially as and for the purpose specified.

5. In a hydraulic press, a suitable pump, a slotted crank, a pitman connecting the pump-piston with the crank, a notched and weighted adjustable arm connecting with the pitman, means for holding the arm in its adjusted position, a cylinder communicating with the water-pipe of the pump, a cock for controlling the supply of water to the cylinder, a spring-actuated piston connecting with the cylinder, and a slidable bar, and means for connecting said bar with the piston whereby the two will move simultaneously, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN S. MILLER.

Witnesses:

E. S. TRAYER,
L. BURR WHIPPY.