H. A. JAMIESON.

Hat-Pressing Machines.

No. 196,755. Patented Nov. 6, 1877.

Fig: 1.

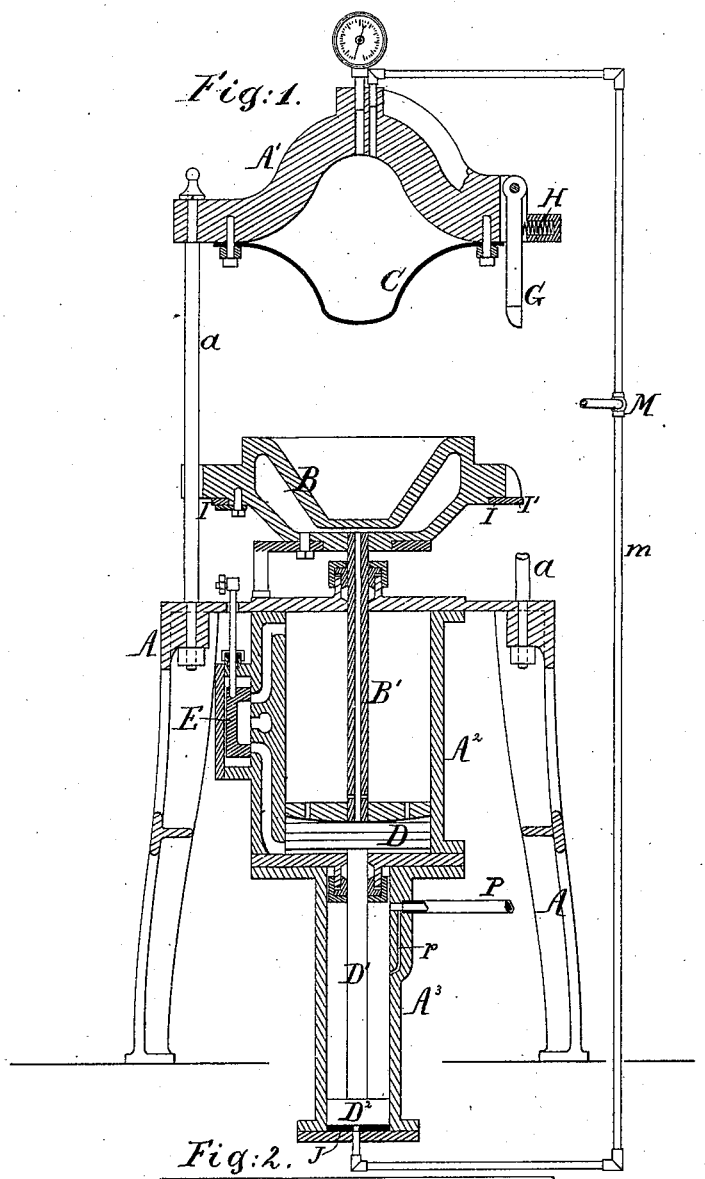
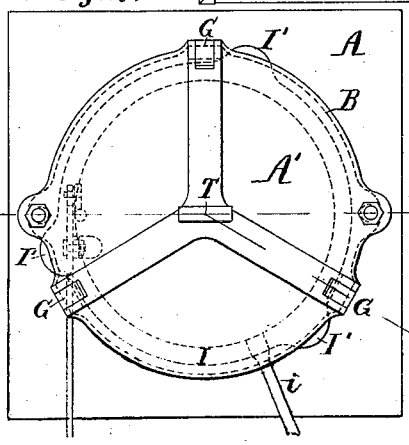


Fig: 2.



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HENRY A. JAMIESON, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND WILLIAM FOSTER, OF SAME PLACE.

IMPROVEMENT IN HAT-PRESSING MACHINES.

Specification forming part of Letters Patent No. **196,755**, dated November 6, 1877; application filed July 31, 1876.

To all whom it may concern:

Be it known that I, HENRY A. JAMIESON, of Brooklyn, Kings county, in the State of New York, have invented certain new and useful Improvements relating to Hat-Pressing Machines, of which the following is a specification:

The invention relates to that class of hat-pressing machines in which the hat previously formed to nearly the right contour is placed in a hollow or female die of the proper form, and subjected to a severe hydraulic pressure transmitted through a flexible diaphragm of vulcanized india-rubber or analogous material. The die being maintained at the proper temperature, the pressure may be continued from a few seconds up to one or more minutes, as the character of the goods may require.

I have devised a simple and powerful machine, capable of being conveniently and rapidly operated, in which the pressure is induced on the diaphragm by a single stroke of a sufficiently capacious pump operated by steam. I make the same powerful mechanism which opens and closes the dies induce this action of the pump.

I connect a reservoir, in which there is a supply of water at a sufficient height, so that it serves as a means for insuring an equable initial pressure in the apparatus. I provide a rubber seat or base to the pump-cylinder, so that when the piston thereof is depressed to its lowest position it makes a water-tight contact therewith, and serves to guard against leakage during the period while the apparatus is out of use. I so connect and arrange the parts that the admission of steam to induce the pressure also admits steam to the die-carrier, and the releasing of the pressure allows the steam and any condensed water which may be formed to escape from the die-carrier. I provide peculiar and efficient means for locking the die-seat to that part of the press which carries the diaphragm, and for liberating these parts again when required.

The following is a description of what I consider the best means of carrying out the invention, the accompanying drawings forming a part of this specification.

Figure 1 is a vertical section, and Fig. 2 a plan view. The lower portion of Fig. 1 is a plane section through the axis on the line S T U in Fig. 2. The upper portion of Fig. 1 is not throughout in one plane, but is on the line S T U′ in Fig. 2.

Similar letters of reference indicate like parts in both the figures.

A is a fixed frame-work, and A^1 a portion thereof, which is supported at a higher level, by means of stout posts or guides *a*. A^2 is a large vertical cylinder, and A^3 a smaller one of about equal length therewith in line below.

B is the pot or movable bed which receives the die, (not represented,) and is capable of sliding up and down, being guided by the rods *a*. B′ is a tubular extension reaching down from the pot B, through a stuffing-box, into the cylinder A^2, where it rests on a piston, D, which is subject to the action of steam admitted and discharged through ports represented as controlled by the valve E, operated by hand, at will. The lower end of the tube B′ is formed in an open-work ring or frame, which nearly or quite fills the cylinder, and holds the tube centrally in the cylinder.

C is an india-rubber diaphragm, strongly secured at the edge.

G G G are stout T-shaped hooks or engaging means, stoutly hinged to the upper head A^1, which is ribbed or re-enforced to afford sufficient strength at those points. The lower T-shaped ends of these hooks G are beveled, and adapted to engage automatically with correspondingly beveled parts on the pot B. A spring, H, is provided to press each of the hooks G gently inward.

I is a ring mounted in a suitable circular rabbet on the under side of the pot B, and formed with swells I′. On turning the ring I I′, by means of the handle *i*, the swells I′ press outward the hooks G in opposition to the springs H, and thereby liberate the pot B, allowing the latter to sink when required.

The operation of the parts now described is as follows: A proper die (not represented) being placed in the pot B, and the die and the adjacent parts being assumed to have been subjected to sufficient treatment to have become properly heated, a hat is placed in the die, and the valve E is raised. This admits steam be-

low the piston D, and it is raised to the top of the cylinder A^2, correspondingly lifting the pot B. Near the last part of the upward movement the hooks G are deflected outward by the beveled surfaces, and at or before the close of the upward movement they snap in again by the force of the springs H, thus uniting the die firmly and strongly with the head A^1. Next, a quantity of water is forced through the pipe *m* into the space above the diaphragm C, and the hat is pressed. Next, the pressure being taken off, and the piston D being again brought up under the tube B′ to support the weight of the pot B and its connections, the ring I is turned by the handle *i*, and the hooks G thereby disengaged. Now, the shifting of the valve E to lower the piston D will lower the pot B to its original position, and allow the finished hat to be removed, and a new one to be introduced.

I will now describe the means by which the water-pressure is put on and let off, and the initial pressure made self-regulating, as also the means for limiting the pressure when goods are treated for which the maximum pressure of the machine would be too severe.

A strong piston-rod, D^1, extends downward from the piston D, and carries a small piston, D^2, which fits in the cylinder A^3. The pipe *m* communicates from the top of A^1 to the bottom of the cylinder A^3. The point of its communication with the interior of the cylinder A^3 is guarded by a thick plate or bed of rubber, J, adapted to receive and absorb the force of the piston D^2 when it descends too rapidly, and also to form a water-tight joint therewith. The pistons D and D^2, as also the place of passage of the piston-rod D^1, being understood to be tightly packed, it follows that the ascent of the piston D, to carry up the die and its pot B, draws a quantity of water from a space above the diaphragm C. After the die-carrier B has been engaged with the hooks G the movement of the valve is made, which was not before described, and was not necessary to merely lift and lower the pot B. The valve E is depressed, and steam is thereby admitted above the piston D, driving it down, and with it carrying the piston D^2, and forcing the water below the latter up through the pipe *m* into the space above the diaphragm C, to induce the intense pressure there required. In this condition the hollow interior of the tube B′ conducts the steam freely at full pressure into the hollow interior of the die-carrier B. The valve E is held in this position so long as the pressure is required, and then is again shifted, exhausting the steam from above the piston D, and admitting it below, causing it to rise into contact with the tube B′, and take the weight of the pot, when all will be in condition for the moving of the ring I and the lowering of the pot B and its connections, as before described.

During the whole period while the pressure above the piston D is shut off the steam from the interior of the die-carrier B, and all the water of condensation which may have collected therein, is free to flow down through the tube B′ and rest upon the upper face of the piston D, ready to be thrown out through the ports on the next elevation of the latter.

Changes of temperature, leakage, and other causes may induce variations in the quantity of water in the pipe *m* and its connections.

I provide a paper, P, connected with a reservoir at a moderate elevation, (not represented,) and having a branch, *p*, as shown. At each depression of the piston D^2 the water from that reservoir enters through the passages P *p*, and, with the elevation of the piston D^2, is again driven out or returned to the reservoir. When the piston D^2 is in its highest position the passage *p* puts the space below the piston in communication with the same elevated reservoir. While thus conditioned, water from the pipe P and its connections may flow out to the reservoir, or may flow in from the reservoir, if a deficiency obtains.

In practice, the flow is usually inward to replace leakages and other losses, and is sufficient at each movement to insure a uniform and firm bearing of the diaphragm C against the interior of the hat, preparatory to the severe pressure which is soon after applied by the descent of the pistons.

I have inserted a stop, M, in the pipe *m*, and have placed a pressure-gage on the top of the part A^1.

In treating some kinds of goods the pressure due to the powerful descent of the piston D^2 and its connections is liable to injure the texture of the hat. The operator, on finding that such is the case, can watch the gage at each impression, and can prevent the pressure rising too high by temporarily closing the cock M at the right moment.

Many of the details of my apparatus may be modified by any good mechanic without sacrificing all the advantages of the invention. Thus, for example, the die may be made a fixed and inseparable part of the die-carrier, and in such case the heat of the steam will be conveyed more perfectly thereto. The casting A′ may be made less dome-like, or even it may be depressed in the center, so as to approximate to the form of the interior of the diaphragm. The pipe *m* may be made considerably larger, and the valve M may be equipped with an automatic device, closing it instantly when the pressure tends to exceed the desired maximum.

Some of the features of the invention may be used without the others. Thus, the piston D and its connections may operate the water without necessarily operating the die, the latter being moved by other means; or the piston may work the die, and may admit and discharge the steam, without necessarily working the water. Even the dies may open and close by moving the upper, instead of the lower, die.

Inasmuch as there are no valves in connec-

tion with the piston D^2, it may be more proper to term the latter a "water-piston" than a "pump-piston."

I claim as my invention—

1. The connections P *p*, leading water to and from a suitable reservoir, in combination with the water-piston D^2 and its inclosing-cylinder and with the flexible diaphragm C, its casing A, and the die-pot B and its connections, as and for the purposes herein specified.

2. In combination with the steam-piston D, water-piston D^2, press A^1 B C, and connection-pipe *m*, the rubber seat at the base of the cylinder A^3, and surrounding the junction therewith of the water-passage *m*, as and for the purposes herein specified.

3. The tubular connection B′, extending from the die-pot B, operated as specified, and communicating between the interior of the die-pot and the interior of the steam-cylinder A^2, in combination with the steam-piston D and steam-controlling means E, as and for the purposes herein specified.

4. In combination with the top A, diaphragm C, and die-pot B, the engaging-hooks G and the adjacent engaging surfaces of the die-pot B, constructed and arranged as shown.

5. In combination with the top A, diaphragm C, die-pot B, and hooks G, the liberating-ring I, with inclined projections for throwing the hooks out of action, as specified.

In testimony whereof I have hereunto set my hand this 28th day of July, 1876, in the presence of two subscribing witnesses.

HENRY A. JAMIESON.

Witnesses:

A. HENRY GENTNER,

CHAS. C. STETSON.