(No Model.)

U. HULL & W. W. McEWAN.

HOT PRESSING MACHINE FOR PAPER PAILS.

No. 471,996. Patented Mar. 29, 1892.

Fig. 1.

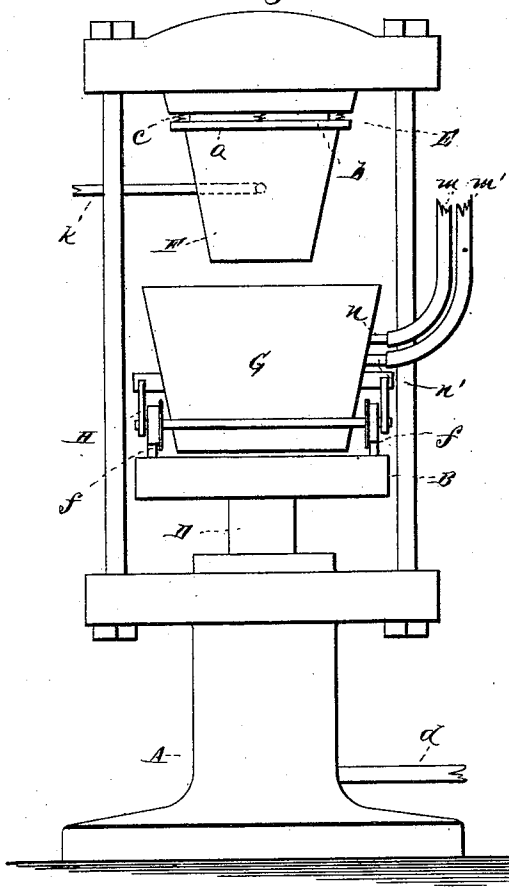


Fig. 2.

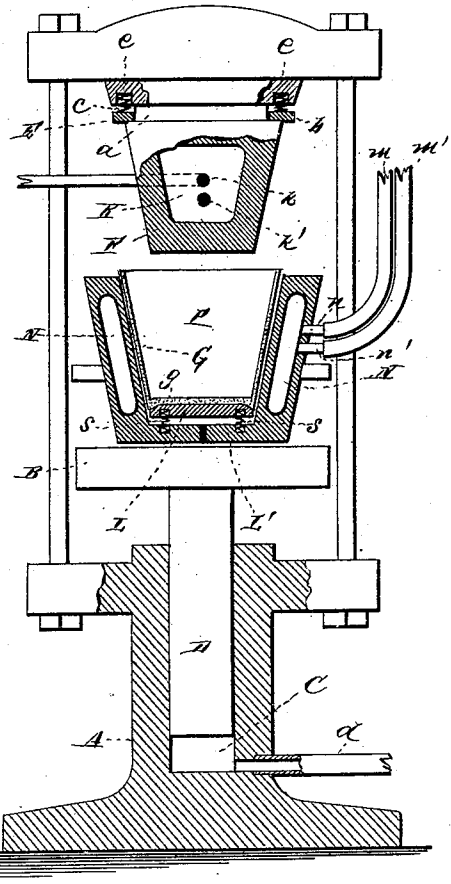
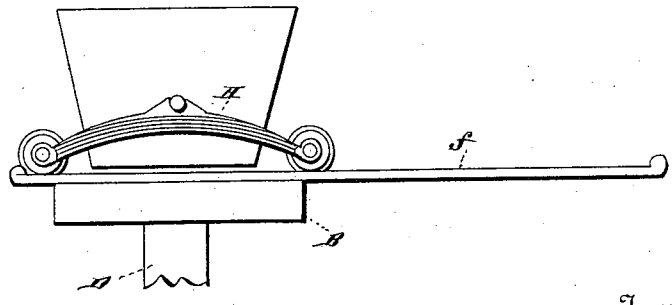


Fig. 3.



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UNITED STATES PATENT OFFICE.

UZAL HULL AND WILLIAM W. McEWAN, OF BELVIDERE, NEW JERSEY, ASSIGNORS TO THE NEW YORK WOOD FIBRE COMPANY, OF SAME PLACE.

HOT-PRESSING MACHINE FOR PAPER PAILS.

SPECIFICATION forming part of Letters Patent No. 471,996, dated March 29, 1892.

Application filed September 17, 1890. Serial No. 365,267. (No model.)

To all whom it may concern:

Be it known that we, UZAL HULL and WILLIAM W. McEWAN, citizens of the United States, and residents of Belvidere, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Hot-Pressing Machines for Paper Pails; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side elevation of the device embodying our invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a detail view showing the track for the socket-die.

This invention has relation to the manufacture of paper pails, tubs, &c.; and it consists in the construction and novel combinations of devices for hot-pressing hereinafter set forth. In articles of this character it is essential that they possess sufficient hardness and density to enable them to withstand rough usage; and the object of the invention is to provide a means for condensing and hardening the bottom portion, especially of such articles where said bottom portion has been formed from pulp material.

In the accompanying drawings, the letter A designates the base of the press, which is provided with a follower B, which, in the construction illustrated, is designed to be operated by hydraulic pressure, such as is ordinarily employed in hydraulic presses, although other power may be used.

C designates the piston-socket in the base, and D the piston-column carrying the follower. The pipe which conveys the water into and from the socket C is indicated at *d*. A suitable distance above the base is the press-head E, from which projects downward the hollow male die F, having the contour of the interior of the pail and illustrated in the form of a frustum of a cone. The upper portion of the male die is reduced annularly, as shown, forming a shoulder *a*. On this shoulder, and of less thickness than the height of the reduced portion, rests an annular discharge-ring *b*, of greater diameter than said die. A series of springs *c* are interposed between said ring and the under surface of the press-head, their upper portions being seated in sockets in the latter. These springs have considerable power, but not enough to resist the pressure of the follower. Steam supply and exhaust pipes *k* and *k'* lead into the chamber K of the die F, in order that this die may be heated.

G represents the lower die, which is of socket form, its interior corresponding in contour to the exterior form of the upper die. The lower die is carried upon the upper face of the follower B, and is usually provided with a spring-truck H, which moves upon a track *f*, with which said follower is provided. The sustaining-bars of said truck are designed to have some elasticity, in order to raise the lower surface of the socket-die a little above the upper surface of the follower when the pressure is off, while allowing said follower to rise in contact with said lower surface of the socket-die when the pressing action is taking place.

In the socket-die is a false bottom or movable disk L, which is held a little above the true bottom L' of said die by means of springs *s*, which are seated in recesses *g*, made in the bottom and disk or in either. These springs *s* have considerable power, but not enough to resist the force of the press, this bottom piece or disk having a diameter about equal to or a little less than that of the interior chamber of the socket-die at its lower portion, and on its upper face conforms to the desired shape of the pail-bottom. Owing to the amount of pressure employed, as hereinafter referred to, the pail-form will stick or adhere to the walls of the chamber, and it is evident that such adherence will be greatest at the sides of the chamber. For this reason the springs are arranged toward the margin of the disk or false bottom, or circumferentially, as shown, in order that they may exert their lifting force at the points where the greatest adherence occurs.

The side wall of the socket-die is recessed or chambered, as indicated at N, and communicating with this recess or chamber are the steam supply and exhaust pipes *n* and *n'*,

which serve for heating the die. These pipes are designed to be provided with flexible portions *m* and *m'*, whereby the socket-die is allowed motion back and forth to facilitate feeding the pail-form to the press and discharging the same after pressure.

The operation is as follows: The pail-form indicated at P having been dampened, is fed into the socket-die, which is drawn forward on the truck for this purpose. Said truck is then moved back with said socket-die under the male die and the follower is caused to rise with said socket-die, which is centered automatically by the action of the upper die as it becomes inserted into the socket-die. A pressure of several tons is exerted, and the follower is then lowered, allowing the socket-die to descend. The spring-bottom of the latter pressing the pail upward, loosens it from the socket-die, so that it can be readily removed therefrom. Through the bottom of the socket-die is provided an aperture *t* for the admission of air and to allow the false bottom to be reached if it should become fast or fail in its upward movement.

The spring ring or annulus on the upper die is designed to press downward against the upper edge of the pail, in order to loosen it from said upper die in case it should tend to adhere thereto.

The object of the hot press is to give the pail firmness and solidity, especially condensing and hardening its bottom portion.

Having described this invention, what we claim, and desire to secure by Letters Patent, is—

1. In a press for hollow vessels of paper-stock, the combination, with the press-head, of the hollow frusto-conical male die projecting downwardly therefrom, said die having at its upper end an annularly-reduced portion forming a shoulder on said die, an annular discharging-ring resting upon said shoulder, and springs interposed between said ring and the under surface of the press-head, substantially as specified.

2. In a press for hollow vessels, the combination, with the male die, of a female die provided with a yielding support and having chambered side walls, a perforated bottom, and a spring-supported false bottom resting upon said perforated bottom, substantially as specified.

3. In a press for hollow vessels, the combination, with the follower and the socket-die, of the track supported on the follower and the spring-truck carrying said socket-die, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

UZAL HULL.
WILLIAM W. McEWAN.

Witnesses:
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