

(No Model.)

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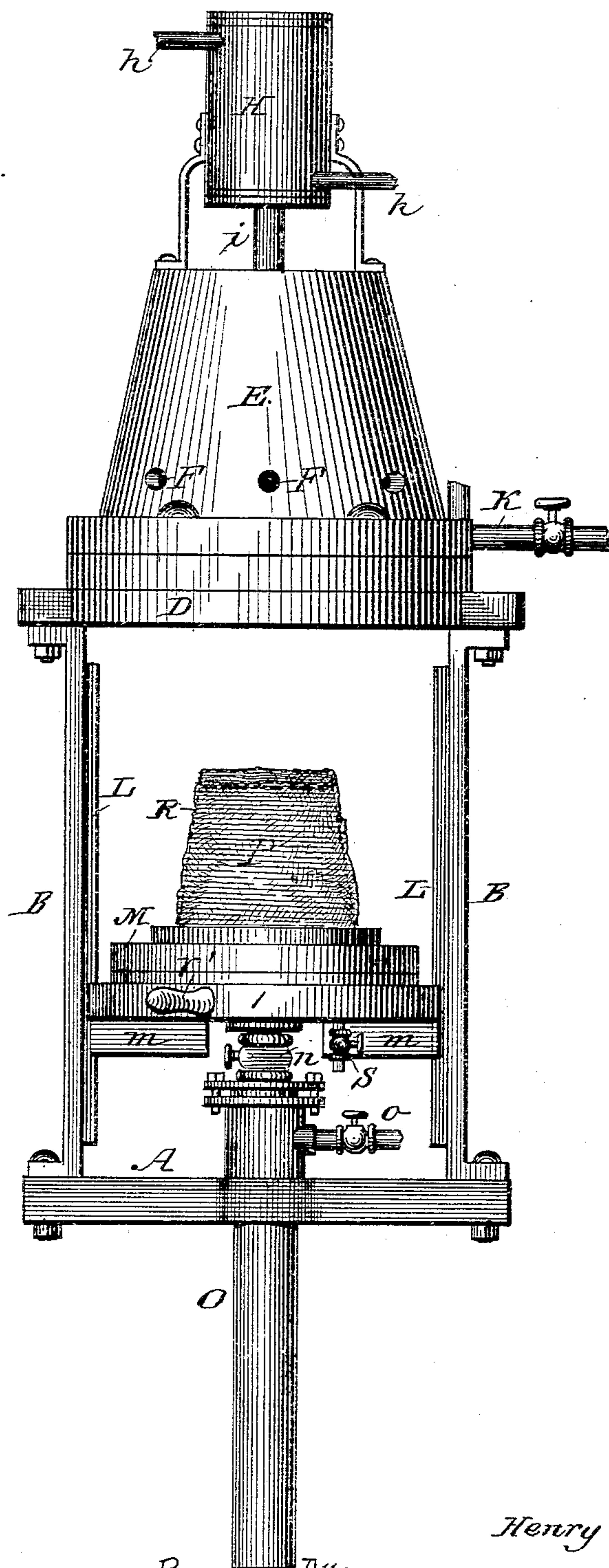
H. P. LANE.

MACHINE FOR MAKING PAPER BUCKETS.

No. 504,730.

Patented Sept. 12, 1893.

*Fig. 1.*



Witnesses

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(No Model.)

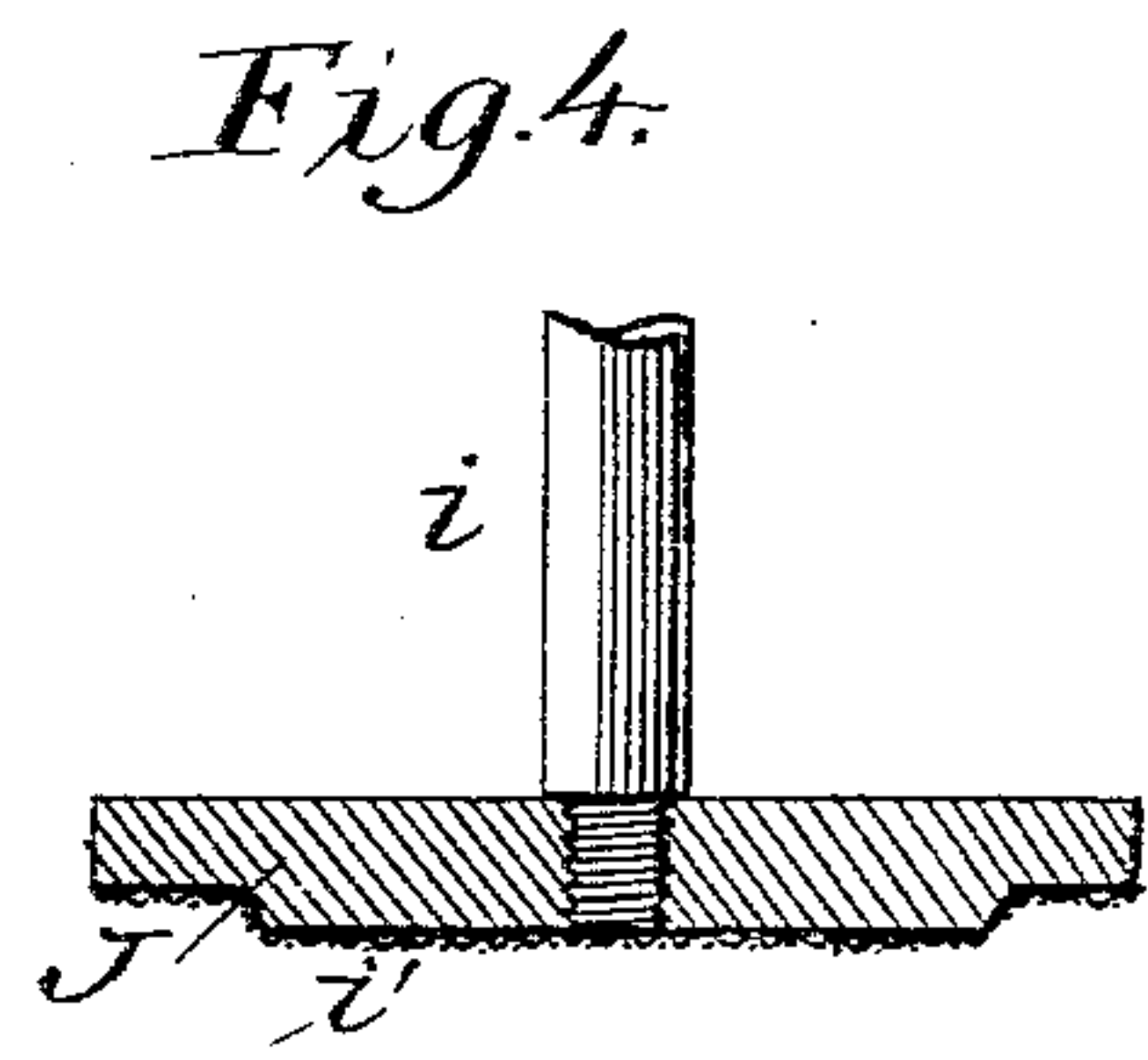
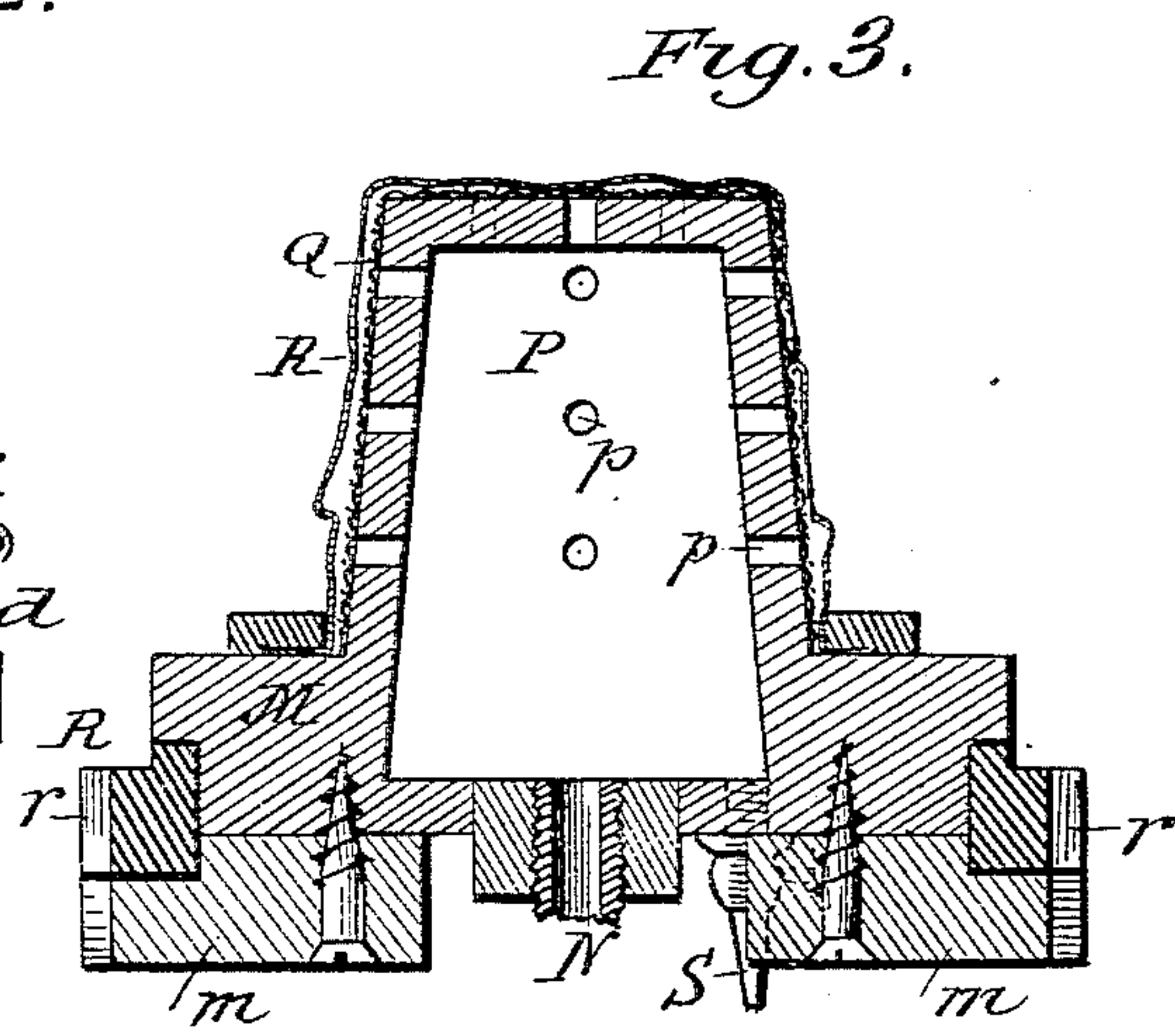
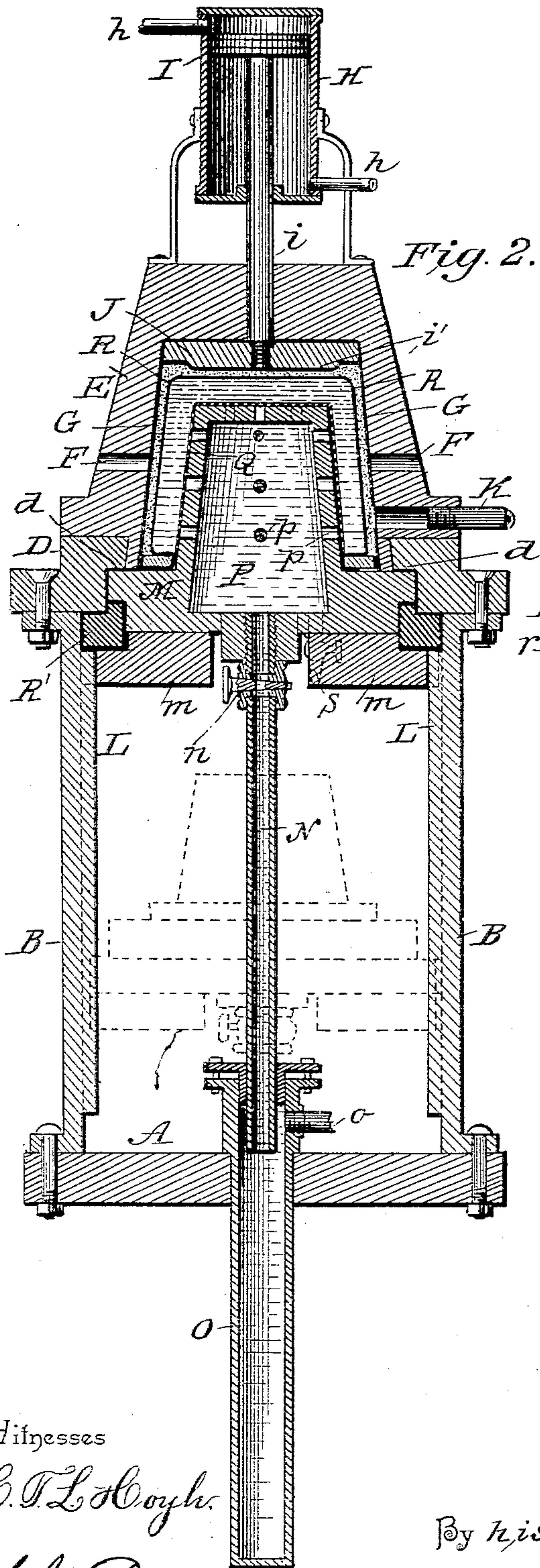
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MACHINE FOR MAKING PAPER BUCKETS.

No. 504,730.

Patented Sept. 12, 1893.



Witnesses

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# UNITED STATES PATENT OFFICE.

HENRY P. LANE, OF FRANKLIN, OHIO.

## MACHINE FOR MAKING PAPER BUCKETS.

SPECIFICATION forming part of Letters Patent No. 504,730, dated September 12, 1893.

Application filed August 9, 1892. Serial No. 442,604. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY P. LANE, a citizen of the United States, residing at Franklin, in the county of Warren and State of Ohio, have invented a new and useful Machine for Making Paper Buckets, of which the following is a specification.

This invention relates to paper vessel machines or presses; and it has for its object to provide an improved machine of this character adapted for molding hollow vessels of paper stock in a much more convenient and easy manner than by presses ordinarily employed.

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, and claimed.

In the accompanying drawings:—Figure 1 is a front elevation of a press or molding machine constructed in accordance with this invention, the press being open. Fig. 2 is a vertical longitudinal sectional view of the same, illustrating the press in both of its positions. Fig. 3 is an enlarged detail sectional view of the lower follower die. Fig. 4 is a similar view of the movable chine or bottom plate.

Referring to the accompanying drawings:—A represents the lower frame bar, which by means of suitable supports, is designed to hold the entire machine in position, and from opposite ends of the lower bar A arise the opposite parallel guide frame pieces B to the upper ends of which is fixedly secured the upper die supporting ring D. The said ring D is provided with the inner annular shoulder *d*, and is designed to support thereover the conical female or socket die E, which is of a frusto-conical shape to correspond to the shape of the hollow vessels to be molded therein. The said upper female or socket die E, is provided with a circumferential series of drainage openings F, through which the water and liquid from the paper stock oozes when the same is subjected to pressure in said socket die. The interior bore of said female or socket die D is lined with perforated metal or wire gauze G so that the drainage from the squeezed pulp or stock will be uniform throughout the entire molds and thus

provide vessels, the sides of which are of uniform hardness and density.

Suitably supported above the top of the upper female die E is the upper hydraulic cylinder H, provided with suitable supply and exhaust pipes *h*, and accommodating the vertically moving piston or plunger I, working therein under hydraulic pressure. The said piston or plunger I moves the piston rod *i*, working through the top of the female die E, and carrying upon its lower end within said die the movable flanged chine or bottom plate J, which forms the bottom of the paper vessel formed within the die, and also acts in the capacity of an ejector to relieve the female die of the vessel formed therein. The exposed face of said chine or bottom plate is also covered with a loose covering of wire cloth *j'*, in order that the drainage from the paper stock at the bottom of the vessel will be the same as at the sides for the purpose set forth. It will be readily seen that by admitting water to and from the pipes *h* in the upper cylinder, the said chine or bottom plate can be moved up and down for ejecting the vessel and for withdrawing the said plate into a proper position to form the next vessel. A valved stock or inlet opening K is connected with the upper female or socket die E, and communicates with the interior bore thereof so that the same can be readily filled with the pulp or stock when the various parts of the machine are in proper position.

Secured to the inner sides of the opposite frame pieces B are the vertical guide strips L, which terminate short of the upper die ring D, and form guides for the vertically moving follower M. The said follower M is provided upon the under side thereof with the notched guide lugs *m*, which engage the opposite guide strips L, and hold the follower to its place between the frame pieces, and said follower is carried upon the upper end of the elongated hollow plunger N. The said hollow plunger N is open at both ends and moves in the lower elongated water cylinder O, provided near its upper end with the valved pipe *o*, through which water is admitted to the cylinder under pressure to raise the hollow plunger N and the follower upon the upper end of the plunger.



Secured to the top of the follower M and carried thereby is the hollow male or plunger die P, similar in shape to the upper female die but smaller than the interior bore of the latter, so that it may readily enter the same when lifted by the lower hollow plunger. The said male or plunger die P is provided with combined filling and drainage perforations *p* in the sides and top of the same, and is covered by the wire cloth or perforated metal covering Q, in order that there may be an equal distribution of the water under pressure against the flexible imperforate molding or pressing bag R, entirely surrounding the lower movable male or plunger die. After water has been admitted to the lower cylinder O through the valve *o*, the hollow plunger in said cylinder is raised by the pressure of the water, inasmuch as the valve *n* in said plunger is closed and prevents the water from passing therethrough and into the hollow die P, with the interior of which said hollow plunger communicates. The pressure of the water causes the follower to enter and be snugly seated within the flanged seat *d* of the upper die supporting ring D, while the male or plunger die P is held centrally within the female die, and leaves a uniform space entirely around the same. The follower and the male die are held in this position within the upper female die by means of the movable turning locking ring R'. The said locking ring R', loosely encircles the lower portion of the follower M and works in an annular groove formed between the same and the notched guide lugs *m*. The ring R' is also provided with guide notches *r* which correspond with the notches in the lugs *m*, and engage the guide strips L while the follower is moving, and thus serve as a guide for the follower. After the follower has reached the position just described, the notches of said locking ring pass above the upper ends of said guide strips, and by turning the said ring R to the right or left by means of the handle *r'*, the edges of said rings are thrown over the top of said guide strips and hold the follower and male die in position. The stock or pulp is now admitted to the space between the die members through the inlet opening K, as will be readily apparent. The valve *n* in the hollow plunger N is now opened and allows the water under pressure from the cylinder O to pass into the hollow perforated male or plunger die P. The water passes through the perforated die and evenly inflates the rubber or flexible molding bag R, which therefore presses out against the stock

and causes the liquid therein to escape through the drainage openings of the upper female or socket die E and thereby shapes the pail or tub to be formed. The water from the inflated bag and the hollow male die is drawn off through the drainage valve S, opening from the bottom of said die through the follower. By moving the ring R' until the notches thereof align with the guide strips L, the male die may be easily lowered, and by bringing the upper cylinder H into play, the movable chine or bottom plate J is lowered to eject the pail or vessel from the upper form or die.

From the foregoing it is thought that the construction and operation of the herein described paper molding machine will be apparent without further description.

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

1. In a press for hollow vessels, the combination with the frame; of an inverted stationary female die supported on the frame and having drain openings, the movable chine or bottom plate in the female die, a correspondingly shaped hollow male die adapted to move vertically within the frame and into the female die, said male die having combined filling and drainage openings in its top and sides, an imperforate inflatable bag sustained on the male die exteriorly and over its perforations, a valved water cylinder arranged below the male die, a hollow plunger moving in said cylinder and open at both ends, one end of said hollow plunger being fitted to the bottom of the male die and communicating with the interior thereof, and a valve arranged in the hollow plunger near its upper end, substantially as set forth.

2. The combination with a female die and a vertically movable hollow inflatable male die; of a valved water cylinder arranged below the latter die, a hollow plunger moving in the cylinder and open at both ends, one end of said hollow plunger being fitted to and communicating with the interior of said male die, and a valve arranged in the hollow plunger near its upper end, 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.

HENRY P. LANE.

Witnesses:

JOHN A. HALSEY,  
WILLIE KENNEDY.