

No. 698,948.

Patented Apr. 29, 1902.

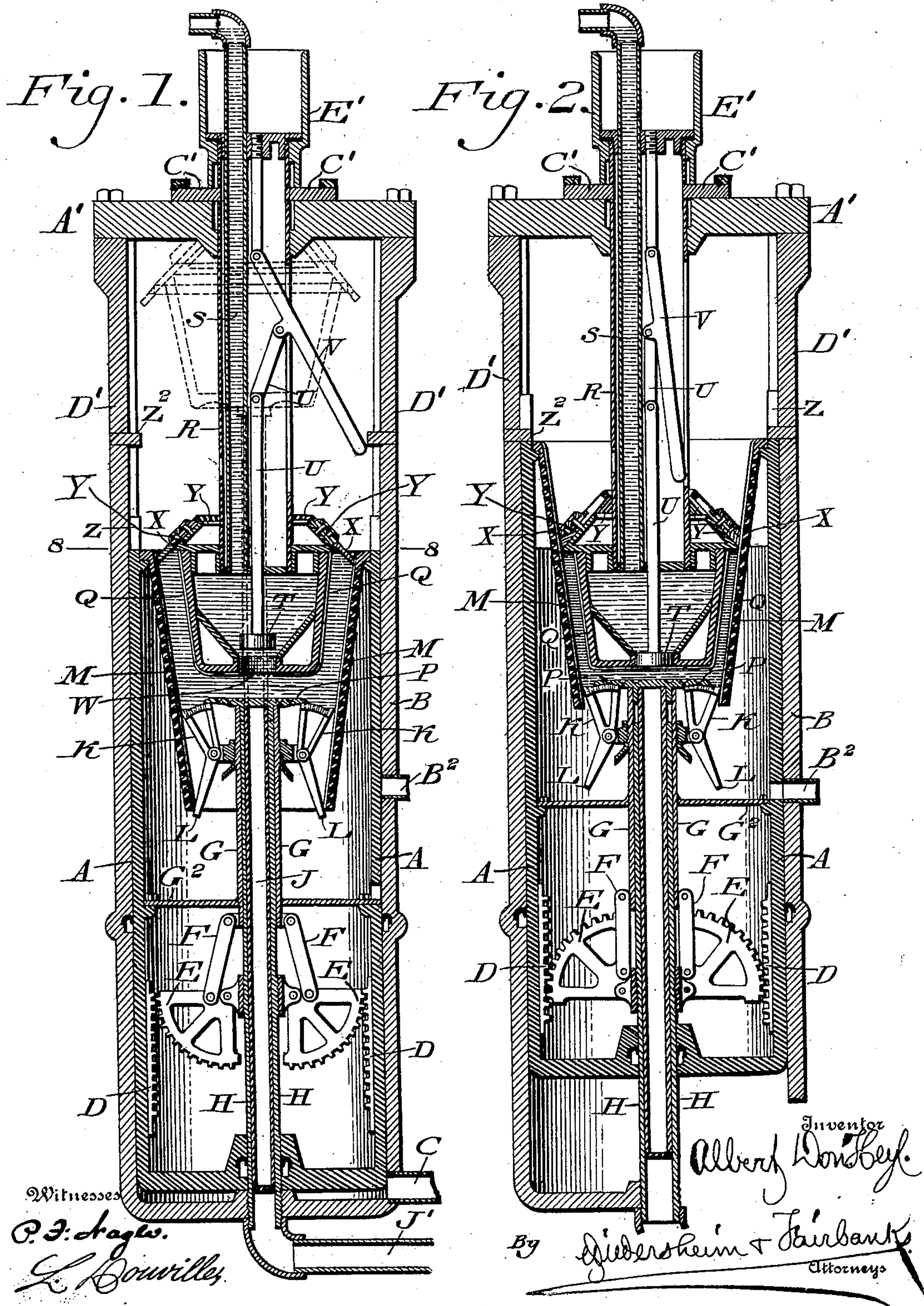
A. D. HEYL.

APPARATUS FOR MAKING PAILS FROM PULP.

(Application filed June 21, 1901.)

(No Model.)

2 Sheets—Sheet 1.



No. 698,948.

Patented Apr. 29, 1902.

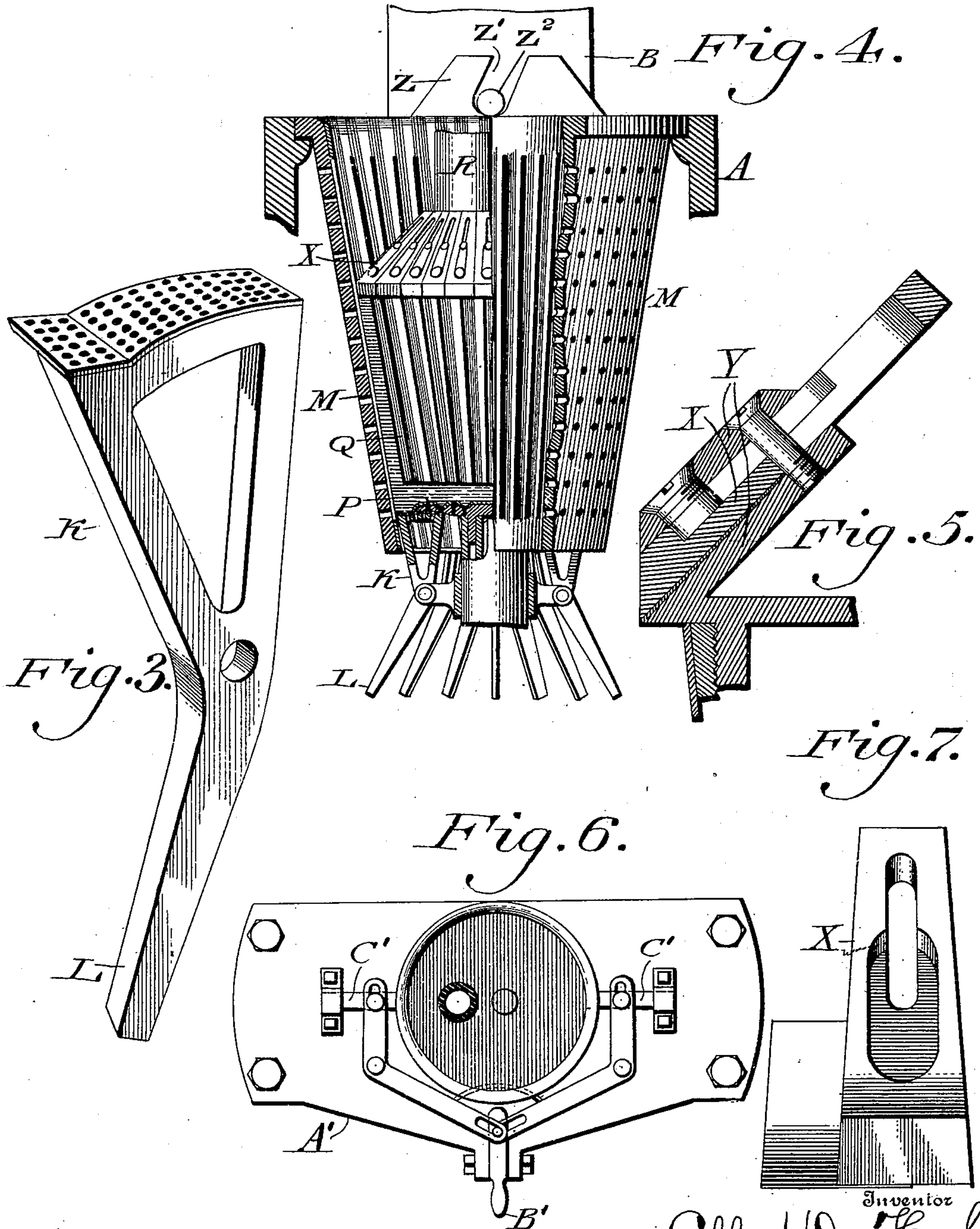
A. D. HEYL.

APPARATUS FOR MAKING PAILS FROM PULP.

(Application filed June 21, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
P. J. Nagle.
L. Bouville.

Inventor
Albert D. Heyl.
By Meiersheim & Fairbank
Attorneys

UNITED STATES PATENT OFFICE.

ALBERT DON HEYL, OF SAGINAW, MICHIGAN.

APPARATUS FOR MAKING PAILS FROM PULP.

SPECIFICATION forming part of Letters Patent No. 698,948, dated April 29, 1902.

Application filed June 21, 1901. Serial No. 65,446. (No model.)

To all whom it may concern:

Be it known that I, ALBERT DON HEYL, a citizen of the United States, residing in the city and county of Saginaw, State of Michigan, have invented a new and useful Improvement in Apparatus for Making Pails from Fibrous Pulp, of which the following is a specification.

My invention consists of novel improvements in an apparatus for making pails and similar articles from fibrous pulp, whereby the pails, vessels, utensils, and other articles are given a surface finish while still in the machine which requires no further trimming, sawing, or sanding, the pressed product being ready for dyeing, coating, dipping, or impregnating with whatever materials are necessary for waterproofing.

To the above ends my invention consists of a novel construction of movable members which are adapted to shape the pulp in the desired contour, provision being made for draining any surplus water from the pulp and for automatically imparting the desired movements to the various elements of the machine at the proper intervals.

It further consists of novel details of construction, all as will be hereinafter fully set forth, and particularly pointed out in the claims.

Figure 1 represents a vertical sectional view of an apparatus for making pails, vessels, and other utensils embodying my invention, showing the position the parts assume prior to the first step of manufacture. Fig. 2 represents a vertical sectional view similar to Fig. 1, but showing the parts in the position they assume during the formation of the pail, vessel, or other utensil. Fig. 3 represents, on an enlarged scale, a perspective view of one of the closing heads in detached position. Fig. 4 represents, on an enlarged scale, a sectional view, partly in elevation, showing the positions the members of the mold and the closing heads assume during the formation of the pail, said figure showing also the means for imparting a rotary motion to one of said members. Fig. 5 represents, on an enlarged scale, a sectional view of slides mounted at the base of the sleeve, to be hereinafter referred to. Fig. 6 represents a plan view, partly in section, of the upper portion of the apparatus.

Fig. 7 represents a plan view of a portion of Fig. 5.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates a piston or plunger which is inclosed within the cylinder B, the latter being provided with an inlet C, which leads from a source of hydraulic power, whereby said piston may be raised. On the sides of the piston are the racks D, with which mesh the segmental gears E, which by means of the links F are connected with the sleeve G, the latter encircling the pipe H, which rises from the base of the cylinder or casing B.

J designates a plunger which is fitted within the pipe H and is connected at the bottom with the branch J'.

Mounted on the upper end of the sleeve G are the closing heads K, the same having legs L, which are adapted to be engaged by the exterior shell former or member M of the mold.

Connected with the top of the plunger J is the plate P, adapted to form, in connection with the heads K, the bottom of the pail or other shaped article.

Q designates the inner member or former of the mold, the same being connected with the sleeve R, within which is the feed-pipe S, which leads from a source of supply of pulp or other material of which the pail or shaped articles are made.

T designates a valve which is connected by the toggle U with the lever V, the latter having a bearing in the upper portion of the sleeve R, said valve T having its seat W in the opening at the base of the inner member or former Q of the mold. The upper portion of the cylinder or casing B is cut away front and back, leaving two strips from the top of casing B to plate A'. Fig. 6 is a plan view of it above the line 8. It is here that the valve-lever V and the lock-lever B' are worked and the finished article is removed from the inner member Q. The lever B' separates the bolts C', which lock through the casing R and hold it and the connected inner member Q against upward pressure. The lever V is for opening and closing the valve T, whereby the pulp or material admitted into the member

Q may pass out from the same into the outer member M and then cut off.

X designates slides mounted at the base of the sleeve R and fitted in guides Y at the top of the member Q for closing the top of the spacing-mold existing between the members Q and M.

Rising from the member A is the ear Z, having an inclined slot Z', adapted to receive the stud Z² on the inner side of the casing B, whereby at a proper time when the member rises the slot Z' engages with the stud Z², and thus imparts rotary motion to the member M for purposes to be hereinafter explained.

The operation is as follows: In Fig. 1 I have shown the press open and the valve-plug T raised and the spacing-mold between the members Q and M filled with pulp. The valve-plug T is next seated or moved into the position seen in Fig. 2, and the outer mold member M is raised by hydraulic power into the position seen in Fig. 2, it being apparent that it is conical-shaped and reduces the pulp to a permanent form and at the same time pushes readily inward the heads K and the slides X. The plate P and the heads K also raise and reduce the pulp at the same time. This raise to the plate P and heads K is retarded by the rack and segmental gear to conform to the movement of the outer member M and reduce the pulp evenly all around. The outer member M of the mold has openings there-through and is lined with slit metal or other suitable material, as will be understood from the enlarged view seen in Fig. 4. As the pulp is reduced the water squeezed out is drained from the mold member by means of the slits and openings in the member M. The rotary motion of the member M, as above explained, is utilized to thoroughly drain and smooth off the pulp. The plate P and the heads K are also drilled or provided with openings; but in the present instance are covered with perforated metal to retain the pulp. The varying distance between the heads is closed by the perforated metal extending to the next contiguous head, on which it slides, said head and plate also serving to drain the water from the pulp, as is evident. The slides X (shown in detail in Figs 5 and 7) are arranged with metal extending across to the next slide in the same manner as described with respect to the slides K, these extensions of thin metal closing all voids or open spaces and retaining the pulp when under pressure. The inner member Q is a plane surface covered with slit metal, which when the pressed pulp is removed with a rotary motion by hand prevents suction and smooths out the inside of the pulp form or pail. The water drained from the pulp collects on the plate G² and passes out of the apparatus through the pipe B².

It will be understood from the foregoing that Fig. 2 shows the pulp reduced, and to eject the pulp the following steps are necessary: The bolts C' are drawn back, whereby

the inner member Q can be readily raised by sliding upwardly the sleeve or casing R, to which it is attached, this raising of the casing R being effected by the hydraulic pressure applied to the plunger J through the medium of the pipe J'. If we assume the plunger J to be rising, nothing is holding down the member Q, since the bolts C' are drawn, so that the plate P, the pressed pulp, and the member Q and their adjuncts all move upwardly until they reach the cross-plate A', which pushes readily down the slides, and the bolts C' slip in suitable holes or recesses, whereupon the inner member Q is held suspended between the arms D', rising from the casing B to support the overhead mechanism. The plunger and plate drop back into place as the pressure in the pipe J' is exhausted, and the pressed pulp is taken off of the inner member Q by rotary motion by hand. It will thus be apparent from the foregoing that the pressed pulp having been removed the machine is ready to be reset to make another pail or utensil.

It will be apparent that when the bolts C' are shot back nothing prevents the inner mold member Q from dropping, which it does, the last few inches of the descent being cushioned by the cushioning chamber or device E' at the upper portion of the machine. As soon as the inner member Q settles down to a certain position within the outer member M the same bolts C' are snapped into the desired position in the casing R, whereby the apparatus is locked and the operation of forming another vessel or utensil is repeated.

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

1. In an apparatus for manufacturing pails and other vessels from pulp, the combination of an inner and outer former, and means for imparting a rotary movement to one of said formers.

2. In an apparatus for pressing pails and other vessels from pulp, the combination of inner and outer formers, the outer former being provided with a slit-metal lining or covering, and means for imparting a rotary movement to said outer former.

3. In an apparatus for pressing pails and other vessels from pulp, the combination of inner and outer mold members or formers, said outer member being provided with a slit-metal lining or covering.

4. In an apparatus for pressing pails and other vessels from pulp, an inside former or member provided with a slit-metal covering or lining, an outside member and means for actuating said members.

5. The combination of an inner and an outer mold member or former, means for imparting a rotary movement to one of said formers, means for permitting the introduction of pulp into the space between said formers, a valve for controlling the flow of pulp to said space, and mechanism for operating said formers.

6. The combination of a casing, a piston

therein, an outer former supported by said piston, an inner former of lesser diameter, a casing upon which said inner former is supported, a cushioning device for regulating the descent of said inner former and means for raising said inner former and the pressed pulp, whereby the latter can be readily removed.

7. The combination of an outer casing, a piston therein, racks on the inside of said piston, toothed segments adapted to coact with said racks, an inner and an outer former and devices operated by said segments and racks for completing the formation of the pail.

8. In an apparatus for making pails, an inner mold, means for locking the latter in its lower position, an outer mold, means for raising the latter, a plurality of pivotal heads, a plate adapted to coact with said heads, a series of slides located above the inner or upper mold, and means for raising the latter prior to disengaging the pulp therefrom.

9. In an apparatus for making pails, an inner mold adapted to receive pulp, a valved opening therein, a lower or outer mold, a pis-

ton supporting the latter, a casing supporting said inner mold, a cushioning device for the upper part of said casing, and means for locking said casing in its upper and lower positions.

10. In an apparatus for making pails, a cylinder, a piston therein, means for raising said piston, an outer mold carried by said piston, a plate located transversely of said piston for catching water drained from the pulp, a stationary pipe extending longitudinally of said cylinder, segments on said pipe, racks carried by said piston and meshing with said segments, a plunger in said pipe, a plate carried by said plunger, a series of pivotal heads surrounding said plate, means for moving said heads inwardly during compression of the pulp, an inner mold, a casing supporting the latter, means for raising said casing, and means for locking the latter in its upper and lower positions.

ALBERT DON HEYL.

Witnesses:

WILLIAM F. PAINE,
NATHAN S. WOOD.