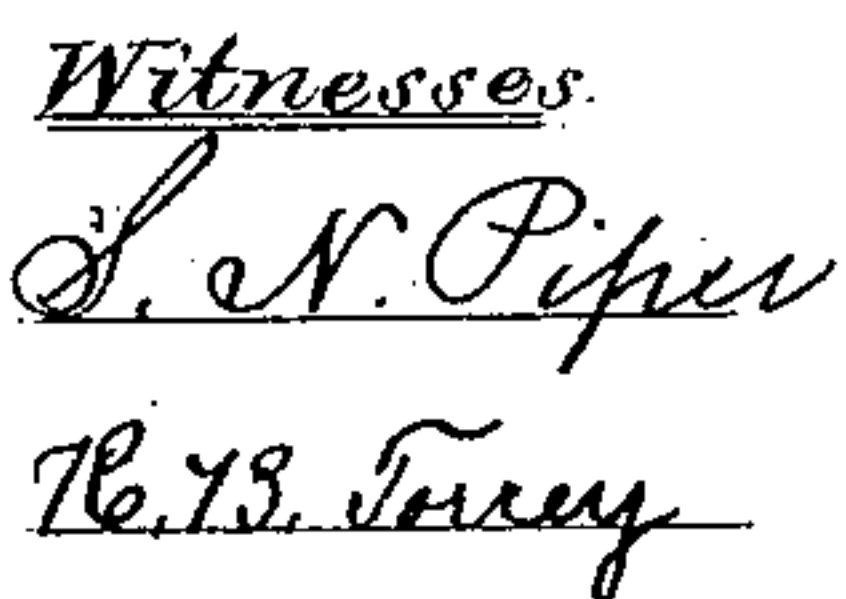


F. E. KEYES.

No. 354,708.

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Inventor.
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UNITED STATES PATENT OFFICE.

FRANK EUGENE KEYES, OF NEWPORT, NEW HAMPSHIRE.

MACHINERY OR PRESS FOR MOLDING PAIL-BODIES.

SPECIFICATION forming part of Letters Patent No. 354,708, dated December 21, 1886.

Application filed October 4, 1886. Serial No. 215,198. (No model.) Patented in Canada October 13, 1886, No. 25,710.

To all whom it may concern:

Be it known that I, FRANK EUGENE KEYES, of Newport, in the county of Sullivan, of the State of New Hampshire, have invented a new and useful Improvement in Machinery or Presses for Molding Pail-Bodies or Various other Matters from Paper-Pulp; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a vertical and transverse section of a machine or press embodying my invention, the nature of which is defined in the claims hereinafter presented. Fig. 2 is a horizontal section, and Fig. 3 is a side elevation, on an enlarged scale, of parts of the tubes E and N, hereinafter described, with the mechanism for moving the tube N downward and upward within the tube E. Fig. 4 is an under side view of the locking mechanism of the foraminous frustum and its base, to be described.

In my improved pail-molding press, hereinafter explained, the stock or pulp is forced or inducted into the mold at the central portion of its crown or upper part, suction being employed below the perforated hollow frustum in order to draw the stock or pulp generally "fiberwise." The said frustum is stationary while the molding of the stock is being performed, and consequently there is little, if any, danger of bursting the water-proof flexible or india-rubber bag or hood that surrounds the frustum.

In Fig. 1 of the drawings, A represents a hollow hood or vessel, in the form, externally, of a conic frustum, or an approximation thereto, it being fastened to and supported on a flat annular base or ring, B, sustained by two or more uprights or legs, B', fixed to a floor, C. Projecting upward from the hood A, and arranged concentrically with the head thereof, are two standards, D, between which, axially, is a vertical tube, E, that, arranged in a stuffing-box, *e'*, supported by the hood A, is fixed to and extends upward and somewhat downward from the head of the water-proof, flexible, elastic, or india-rubber hood F, that surrounds a foraminous metallic hollow frustum, G, fastened to and projecting upward from a circular base, H, having lugs *a a* to slide on guides *b*, projecting inwardly from the posts B'.

From the central part of the base H a tube,

I, extends downward and slides water-tight within a stationary tube, K. A pipe, *c*, provided with a stop-cock, *d*, opens into the tube K, such tube K being closed at its lower end and there provided with a stop-cock, and in practice is somewhat longer than the tube I. The pipe *c* is for the introduction of steam, air, or water under pressure into the tube K, for the purpose of forcing upward the tube I, the base H, and the frustum G after they may have been depressed for removing a pail-body from such frustum.

Near the upper part of the tube I is a closure or partition, *c'*, above which is a tubular neck, *d'*, that opens laterally out of the tube I. A hose, *e*, leads from the neck *d'* to another tubular neck, *f*, furnished with a stop-cock, *g*, and leading out of a pipe, *h*, which is to be supposed to communicate with an air-suction pump. Opening out of the neck *f* is a tube, *i*, that also opens out of the bore of the tube E.

At its upper end the tube E is closed and abuts against the lower end of a spiral spring, *k*, arranged in a case on the upper part of the standards D. Above the spring there is screwed into its case a tubular cap or thimble, *l*, to bear against the upper end of the spring and to regulate the pressure of the spring upon the head of the tube E. A rope or chain, *m*, extends upward from the said head and over and partially around a grooved guide-wheel, *n*, and thence downward, and is fastened to a toggle, *o*, from which, at its lower end or part, a stud, *p*, extends and slides freely within a slot or groove, *q*, made lengthwise in a lever, M, which is fulcrumed to a bracket, *r*, fastened to the base B. When the lever hangs downwardly from the bracket, the head of the hood F will be drawn and held up to that of the frustum A. On turning upward the lever the tube E will be free to move downwardly, as occasion may require.

Within the tube E, lengthwise thereof, is a pipe, N, which at its lower end is closed, except in having one or more holes, *s*, leading laterally out of it, just above the closure *t*. The tube N at its upper part is bent laterally at a right angle, and extends through vertical openings or slots in the tube E and standard D. Leading into the tube N is a hose, *u*, that communicates with a pipe, *v*, for supplying the machine with the stock or paper-pulp.

Furthermore, the tubes N and E are provided with means of depressing the tube N within the tube E far enough for the hole or holes *s* to be carried below the head of the hood F.

5 This mechanism may be thus described: There encompass the tube E three rings or collars, *v'*, *w*, and *x*, the two outer ones being fastened to the tube by screws *y*, screwed through them and against the tube. The intermediate collar, *w*, has in it two inclined slots, *z*, in each of which is a friction-wheel, *a'*, that revolves freely on a screw-bolt, *b'*, that goes through a short vertical slot, *c'*, in the tube E and screws into the tube N. A handle, *d'*, projects from 15 the slotted collar *w*, which bears at its top against the bottom of the collar *v'*, and also at its bottom against the top of the collar *x*. On taking hold of the handle *d'* and turning it one way the tube N will be forced downward within 20 the tube E far enough to carry the holes *s* below the head of the hood F. From the collar *x* there is an extension, *e'*, to clasp and slide on a stationary straight guide, *f'*, projecting from one of the standards D.

25 Preparatory to using the machine there is a thin woven cloth bonnet placed upon the frustum G, so as to cover it closely on its top and sides, such bonnet being to prevent the pulp fibers from getting into and choking the holes 30 of the frustum. Surrounding the frustum at its lower part is a flat ring, *h'*, beneath which headed rods *i'* project downward through the base H, through pockets or chambers *k'* therein, there being within such pockets and to the rods spiral springs *l'*, to draw the rods downward. At a proper distance from and underneath these rods are stops *m'*, against which the heads of the rods bring up on the 35 base H and frustum G being depressed to a proper distance for removal of a pail-body from the said frustum. In the further descent of the said base and frustum the bonnet and pail-body will be upheld by the ring and loosened from the frustum, so as to enable them 45 (the said bonnet and pail-body and said ring) to be readily lifted off the frustum.

The base H is provided with mechanism for locking it in its highest position. This mechanism (shown in under side view in Fig. 4) 50 consists of two sectoral cams, *n'*, inclined on their lower surfaces and pivoted to the lugs *a*. From each of them a shank, *o'*, extends, one of such shanks terminating in a handle, *p'*. Both shanks are connected by a rod, *q'*, pivoted to them, so that on taking hold of the 55 handle and moving it so as to turn its sectoral cam the other sectoral cam will be simultaneously and in like manner moved. These cams turn on and off the upper ends of the guides *b*, and when turned on them serve to effect the locking of the base. By turning the cams off the guides the base will be free to be moved downwardly.

65 In operating with the machine, after the foraminous frustum G has been bonneted and forced upward within the hood F, the tube N is to be depressed within such hood, in order

to enable the space within the hood and about the frustum G to be charged with the paper-pulp. On a sufficient amount of the pulp having been introduced into the said space the 70 tube N is to be raised, so as to stop the further flow of the pulp into the space. Next, the handle M is to be turned upward, and steam or air or water under pressure is to be let into the space surrounding the hood F, which may 75 be done by means of a pipe, *r'*, provided with a stop-cock, *s'*, and leading from a force-pump or steam-boiler, such pipe opening into the stationary hood A, such hood having at its lower part a drainage-cock, *u'*, and in its upper part 80 an air-escape cock, *v'*. The pressure within the hood A will crowd the hood F upon the mass of pulp, so as to firmly condense it upon the bonnet and drive the surplus water through the frustum G. At the same time suction 85 through the pipes *e* and *i* is to be produced, so as to draw air and water from the hood G. The mass of pulp having been condensed into the form of a pail-body, the cocks *g* and *s'* are to be closed and the cocks *u'* and *v'* opened, 90 and the pipe *i* disconnected from the pipe E. Next, the base H is to be unlocked and is to be depressed sufficiently for withdrawing the foraminous frustum G and the made pail-body 95 from the hood F, and to enable the pail-body to be removed, with the bonnet, from such frustum. After such may have been accomplished and the frustum bonneted, the said frustum and the base H are to be forced upward to their highest positions relatively to the hoods F and 100 A, and the base is to be locked.

I do not claim, broadly, the foraminous frustum, its supporting-base, the flexible or elastic hood, and the surrounding inelastic hood, arranged as described, such being common to 105 various other machines for making pail-bodies or other like articles from paper-pulp.

I claim—

1. The combination of the inelastic hood A, provided with the stuffing-box *x'*, with the 110 contractile hood F, encompassing the foraminous frustum G, and provided with the upright pipe E, going through the said stuffing-box and furnished with the pulp-inductor N, arranged within the said pipe E, and having 115 mechanism for operating it (the said inductor) for the discharge of pulp through and from it into the upper part or crown of the hood F, all being substantially as set forth.

2. The combination of the inelastic hood A, 120 provided with the standards D and the stuffing-box *x'*, extending upward from it, (the said hood,) as represented, with the contractile hood F, encompassing the foraminous frustum G, and provided with the upright pipe E, going through the said stuffing-box and furnished with the pulp-inductor N, arranged 125 within the said pipe E, and having mechanism for operating it (the said inductor) for the discharge of pulp through and from it into the 130 upper part or crown of the hood F, all being substantially as set forth.

3. The combination of the inelastic hood A,

provided with the standards D and the stuffing-box x' , extending upward from it, (the said hood,) as represented, with the contractile hood F, encompassing the foraminous frustum G, and provided with the upright pipe E, going through the said stuffing-box, and having mechanism for raising it (the said pipe) and allowing it to descend, as specified, and with the pulp-inductor N, arranged within the said pipe E, and having mechanism for operating it (the said inductor) for the discharge of pulp through and from it into the upper part or crown of the hood F, all being substantially as set forth.

4. The combination of the stationary pipe v and the hose u with the pulp-inductor N, the hood A, provided with the standards D and the stuffing-box x' , extending upward from the said hood, as represented, the contractile hood F, encompassing the foraminous frustum G, and provided with the upright pipe E, going through the said stuffing-box, and having within it (the said pipe) the said pulp-inductor N, all being substantially as set forth.

5. The combination of the hose e with suction-apparatus pipe h , and the foraminous frustum G and its base H, provided with the guide-pipes I and K and the induct c , and arranged to operate with the elastic hood F and inelastic hood A, substantially as set forth.

6. The combination of the ring h' and its rods i' and springs l' with the foraminous frustum G, its supporting and movable base H, and with the stationary stops m' , all arranged substantially as set forth.

7. The combination of the two hose e and i with the suction-apparatus pipe h , the foraminous frustum G and its base H, the guide-pipes I and K, and the induct c , the elastic hood F and inelastic hood A, and the pipes E and N thereof, all being arranged substantially and to operate as represented.

FRANK EUGENE KEYES.

Witnesses:

R. H. EDDY,
R. B. TORREY.