

(No Model.)

2 Sheets—Sheet 1.

J. A. WHEELER.
PULP MOLDING MACHINE.

No. 568,389.

Patented Sept. 29, 1896.

Fig. 3.

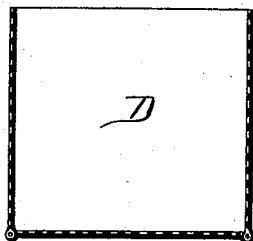


Fig. 1.

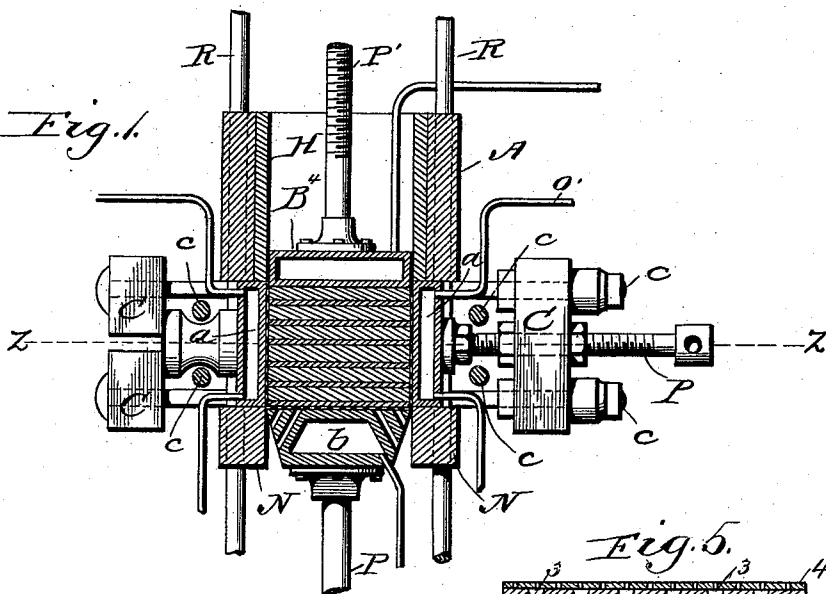
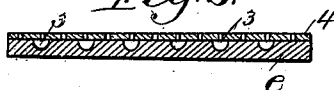


Fig. 5.



WITNESSES:

Wm. L. Hillyard
Van Buren Hillyard.

INVENTOR:

James A. Wheeler
By C. S. Lass
his ATTORNEY

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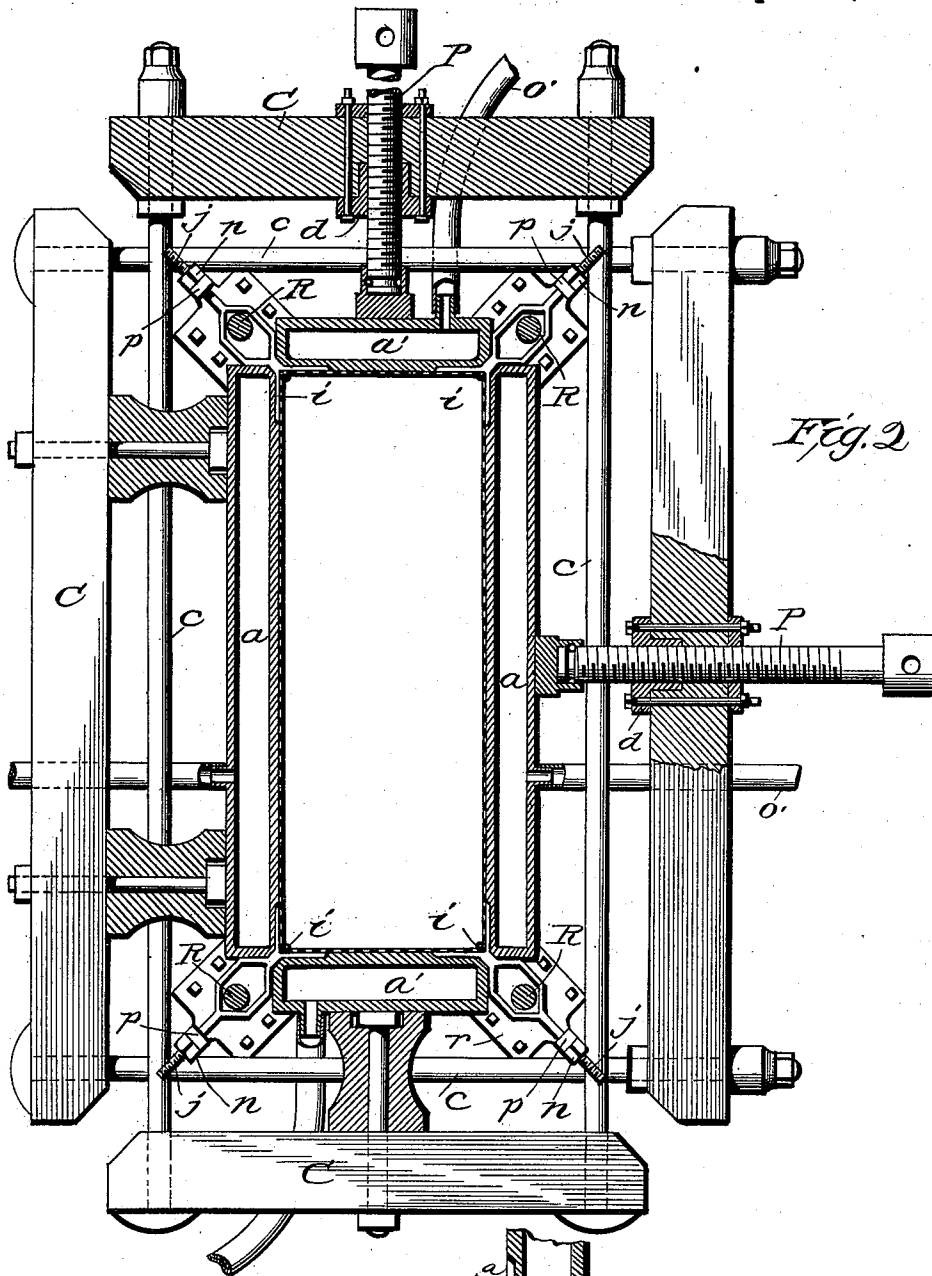
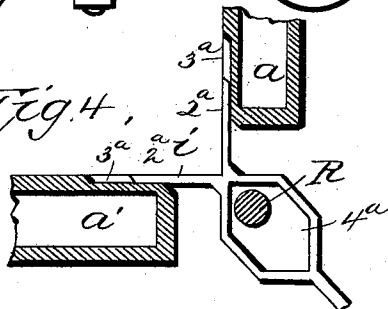


Fig. 2

WITNESSES:

Wm. H. Hillyard
Van Buren Hillyard.

Fig. 4



INVENTOR:

James A. Wheeler
By *E. Laess*
his ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES A. WHEELER, OF OSWEGO, NEW YORK.

PULP-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 568,389, dated September 29, 1896.

Application filed April 19, 1894. Serial No. 508,158. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. WHEELER, of Oswego, in the county of Oswego, in the State of New York, have invented new and
5 useful Improvements in Pulp-Molding Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention is designed, chiefly, for molding
10 ing large articles, such as flat tiles, &c., from wood or other fibrous pulp.

The object of the invention is to provide a machine by means of which the pulp can be pressed into the shape of the desired article
15 in an expeditious and effective manner and so as to expel all the liquid from the pulp and thus save time and expense of subsequently drying the molded article by artificial heat, as has hitherto been customary, and
20 which machine shall also be adapted to form embossed ornamentations on the exterior of the article in process of being molded and permit the article to be readily removed from the mold; and to that end the invention consists, essentially, of a machine comprising a
25 hopper for the reception of the pulp to be molded, a mold composed of separate laterally-movable side and end sections, presses moving said mold-sections, a follower in the
30 hopper, and a press operating said follower, all as hereinafter more fully described, and summed up in the claims.

Figure 1 is a vertical transverse section of my invention. Fig. 2 is a horizontal transverse section on line Z Z in Fig. 1 on a larger
35 scale. Fig. 3 is a transverse section of a crate which is employed in connection with the mold when a plurality of tiles are to be molded in one operation of the machine.
40 Fig. 4 is a horizontal sectional view of one of the corners of the mold, showing one of the side and end sections set out for receiving the pulp to be molded. Fig. 5 is a cross-section of one of the plates used for separating the
45 layers of pulp.

Similar letters and figures of reference indicate corresponding parts.

R R designate the vertical rods which tie together the base and head block (not shown)
50 of the main supporting-frame of the machine.

A denotes the outer case or frame of the hopper H, which is firmly secured to the aforesaid rods.

Under the walls of the hopper are openings in which are seated the laterally-movable side
55 and end sections *a a'* of the mold, which sections are supported on the block N, fastened to the rods R R. Said block has an opening vertically through its central portion, and in said opening is the vertically-movable bottom
60 *b* of the mold, which bottom is operated by any suitable means.

B⁴ denotes the follower, which enters the hopper in the operation of molding the pulp. This follower is also operated by a suitable
65 press P'.

For operating the two side sections *a a* and end sections *a' a'* of the mold I prefer to employ a single press for each set, and this I
70 accomplish by extending along each side and end a press-beam C and connecting each set together by tie-rods *c c*.

Between one of the beams of each set and adjacent mold-section I interpose a suitable
75 press, such as a screw P, working in a nut *d*, secured to the beam, which screw bears on the exterior of the mold-section and drawing the opposite beam C against the exterior of the mold-section adjacent thereto, as represented in Figs. 1 and 2 of the drawings.
80

The described mold-sections may be formed hollow and provided with pipes or hose *o'*, by which to conduct either hot air or steam to the interior of said sections for the purpose
85 of heating the same during the process of pressing the pulp into shape.

D designates a perforated sheet-metal crate or case, in which the tiles are pressed in a
90 tier by interposing between the layers of pulp flat plates *e e*, Fig. 5, which may be provided with small channels in their surfaces for carrying away the expressed liquid which escapes through perforations in the side and end sections of the mold.

The side and end walls of the crate are
95 hinged to the bottom of the crate to allow said walls to be swung away from the compressed tier of tiles after the same has been removed from the machine and also to allow said walls to yield laterally to the downward pressure of
100

the follower, said crate being filled with the layers of pulp and intervening plates *e e* before being introduced into the press. After the crate is in proper position the follower
 5 descends, and the pressure exerted thereby upon the pulp causes the sides of the crate to yield outward. The side and end sections of the mold *a* and *a'* are then forced inward, carrying the sides of the crate into a normal
 10 position, thereby subjecting the layers of pulp to side and end pressure. The afore-said plates *e e* may be formed of either wood or metal and are to be provided with grooves
 15 3 3 in their upper surfaces for the purpose of carrying away the liquid expressed from the pulp. A finely-perforated sheet of brass 4 is placed upon each plate to prevent the pulp being pressed into the grooves 3.

To prevent the pulp from escaping through the corners of the mold when the side and end sections *a a'* thereof are set out for receiving the pulp to be molded, I employ separate corner sections *i*, having outward-projecting screw-threaded stems *j*, passing through rigid
 25 posts *p*, rising from stationary base-plates *r*, as shown in Figs. 2 and 4 of the drawings.

The outer end of the stem *j* is provided with a nut *n*. By screwing up the nut against the post *p* the corner section is drawn outward
 30 to follow the outward movement of the side and end sections *a a'*. In forcing the side and end sections *a a'* inward to compress the sides and ends of the molded pulp the nuts *n* are to be loosened sufficiently to allow the
 35 corner sections to follow the inward movement of the side and end sections.

The corner sections *i* have right-angularly disposed wings 2^a 2^a, which fit in depressions 3^a 3^a in the inner sides of the sections *a* and
 40 *a'*, so as to form a close joint therewith and prevent wasting of the pulp. The open frames 4^a between the wings and the threaded stems *j* receive the corner-posts and admit of the pressure being applied to the said corner
 45 sections at an angle of thirty degrees to the wings 2^a, so that each wing will have an even pressure applied thereto.

It is desirable to first apply downward pressure to the pulp and subsequently the side
 50 pressure, as by this process the liquid is more

effectually expelled from the pulp and a more perfect finish imparted to the molded article.

What I claim as my invention is—

1. A pulp-molding machine comprising in its organization a mold formed of a movable
 55 top, bottom, side, end, and corner sections, independent means for pressing the top and the bottom together, parallel rods exterior to the end sections connected at their ends by
 60 press-beams, one press-beam having a rigid bearing against one side section and a pressure-screw mounted in the other beam and having a bearing against the opposite side section to equalize the pressure on both side
 65 sections, parallel rods exterior to the side sections connected at their ends by pressure-beams, one beam having a rigid bearing against an end section, the other provided with a pressure-screw to bear against the op-
 70 posite end section, and a perforated crate having movable side and end walls and located within the mold, the sides and ends of the crate movable laterally with the side and end sections of the mold, substantially as described.

2. The herein-specified pulp-molding machine comprising a mold formed by hollow top, bottom, side, and end sections, and corner sections, independent means for heating the hollow sections, presses, one for the top
 80 the other for the bottom section, horizontally-disposed side and end rods and pressure-beams connected as described, a side and end pressure-beam bearing rigidly against, respectively, a side and an end section of the mold,
 85 and a pressure-applying screw for the respective opposite side and end pressure-beams to bear against the opposite side and end mold-sections, whereby the pressure is equalized, and a crate placed within the mold and
 90 having movable side and end walls to move with the side and end mold-sections when the latter are pressed inward, substantially as specified.

In testimony whereof I have hereunto
 95 signed my name this 22d day of March, 1894.

JAMES A. WHEELER. [L. S.]

Witnesses:

J. J. LAASS,

C. L. BENDIXON.