No. 713,562. Patented Nov. 11, 1902.

W. D. FRERICHS.

CLAY PRESS.

(Application filed May 27, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

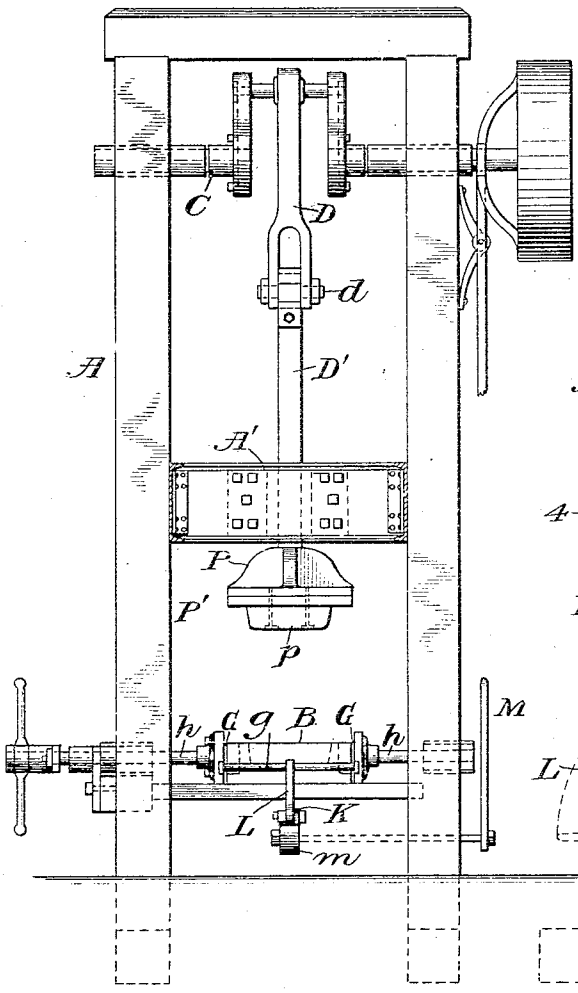
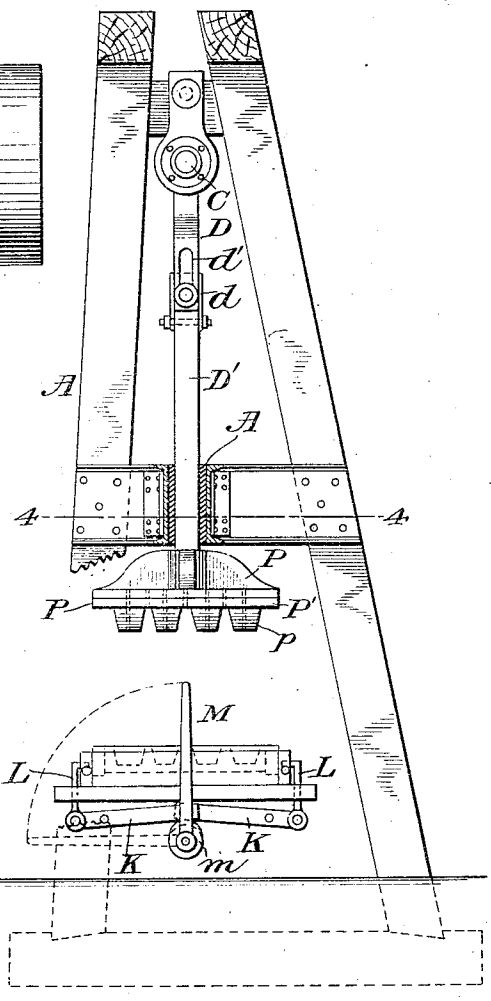


Fig. 2.



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Fig. 3.

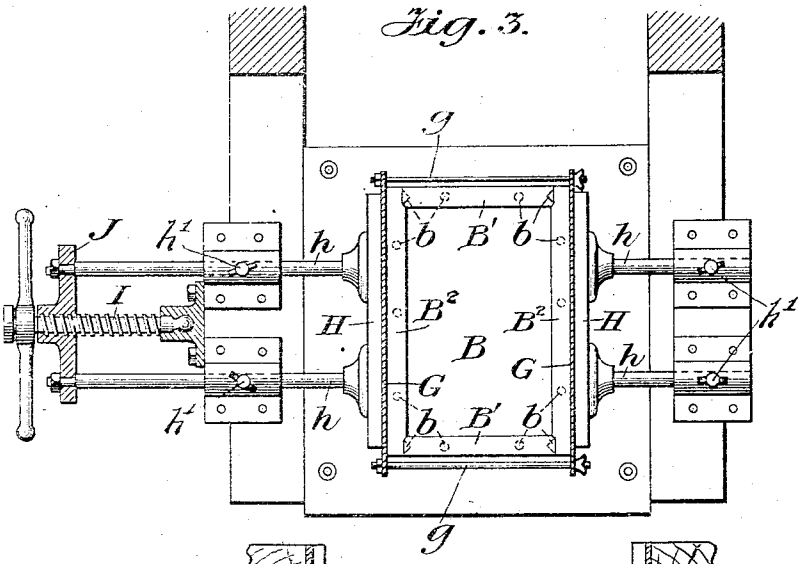


Fig. 4.

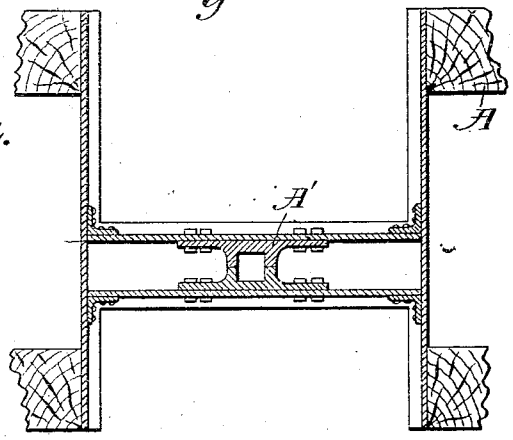


Fig. 6.

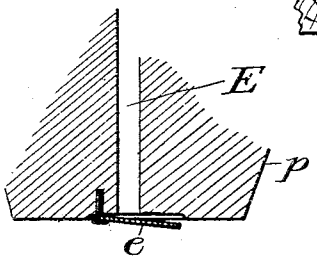
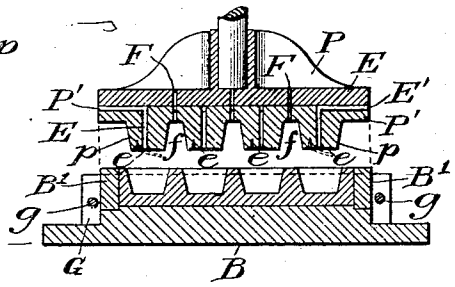


Fig. 5.



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UNITED STATES PATENT OFFICE.

BEST AVAILABLE COPY

WILLIAM D. FRERICHS, OF TOTTENVILLE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ATLANTIC TERRA COTTA COMPANY, OF NEW YORK, N. Y.

CLAY-PRESS.

SPECIFICATION forming part of Letters Patent No. 713,562, dated November 11, 1902.

Application filed May 27, 1901. Serial No. 63,043. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. FRERICHS, a citizen of the United States, and a resident of Tottenville, in the city of New York, borough of Richmond, in the county of Richmond and State of New York, have invented a new and Improved Clay-Press, of which the following is a full, clear, and exact description.

My invention relates to improvements in the method and means employed in manufacturing clay or terra-cotta for architectural purposes whereby presses may be employed for molding the pieces and the cost thereof reduced.

In making large blocks of terra-cotta, which are always made hollow, it is necessary in order to secure proper strength and to comply with the requirements of the building laws to make them with webs or partitions connecting the sides. In molding the clay for the block a mold is employed which has its interior surfaces provided with irregularities of surface corresponding with the pattern desired upon the front or edges of the finished block. The usual procedure has been to build up the walls of the block by hand, forcing the clay into all recesses of the pattern, and shaping it by hand-tools. The partitions are also made of the desired thickness by hand and then inserted within the mold. This procedure involves much hand-labor and time, and thus makes the product comparatively expensive. The object of my present invention is to enable this work to be done by a press, thus decreasing the labor cost.

In the drawings accompanying and forming a part of this specification I have shown a press embodying the features of my invention.

Figure 1 is an elevation of the press. Fig. 2 is a sectional elevation of the press viewed from a point at right angles to that used in Fig. 1. Fig. 3 is a plan and partial section showing the mold and the means for holding it in place. Fig. 4 is a section on the line 4 4 of Fig. 2. Fig. 5 is a sectional elevation through the mold and plunger, showing a block in place as just formed; and Fig. 6 shows the construction of the valve on a larger scale.

The press herein shown is given merely as a form of press which is simple and cheap in construction and not as the only form of press which is available.

In the frame A is journaled a cranked shaft C, which is connected by a rod D with a plunger-rod D', which slides in a guide A' in the frame. To adjust the point of travel of the plunger, the pin *d*, which connects rods D and D', lies in the slot *d'* in the rod D. The shaft C is turned by any suitable means and causes the plunger, which is secured to the lower end of the rod D', to rise and fall. The plunger consists of a head P, to which is secured the plate P', which has projections *p* secured thereto of such size and number as to correspond with the recesses or hollows in the back of the terra-cotta block to be made.

The mold may be of any usual or desired construction. The construction herein shown consists of a bottom plate B and the side and the end plates B^2 and B', which are provided with dowels and recesses, as shown at *b*, so as to secure exact register, and are held together by plates G and rods *g*. The inner faces of plates B, B', and B^2 may have any pattern formed thereon, either in relief or sunken.

The plates B, B', and B^2 are in ordinary practice made of plaster-of-paris, having the desired pattern formed on their inner faces. The plates G and rods *g* serve as a binding-frame to hold securely together and to strengthen the plaster-of-paris plates or slabs, so as to enable them to resist the strain caused by the flow of the clay under the pressure of the plunger. The plates H, preferably of wood, furnish additional backing for the sides. The dowels also serve to bind the parts of the mold together. No backing-plates have been shown at the ends of the mold or outside the plates B', because these being shorter than the other sides are better able to resist the strain than the longer sides B', although if experience with any particular mold should indicate such a thing to be desirable they may also be provided with backing-plates.

To prevent lifting of the mold upon the

withdrawal of the plunger, I have provided means for holding it down, which are as follows: Beneath the mold two levers K are pivoted and are acted upon by a cam or eccentric *m*, to which an operating-lever M is secured. To the outer ends of these levers and outside the ends of the mold are secured hooked links L, the hooks of which are adapted to fit over the rods *g*, by which the mold is held together, or to any other suitable or convenient part of the mold. When the lever M is thrown upward into the position shown by full lines, the mold is securely held down upon the table of the press. I have also shown adjustable stops or plungers *h*, sliding in horizontal guides on the press-table and engaging plates H, which lie against the sides of the mold and hold it in position to properly receive the plunger in its descent. The plungers *h* on one side of the press are shown as acted upon by a cross-head J and screw-rod I to tightly clamp the mold. Set-screws *h'* or other equivalent devices may be employed to bind the plunger-rods *h*.

The plunger, which is shown in detail in Fig. 5, has relief-passages E extending to the face of each one of the projecting sections *p*, and their ends are closed by valves, which will permit access of air to this face, but prevent entrance of clay within said passages. The valves as herein shown consist of small plates *e*, preferably of metal, which are secured loosely to the plunger or are made of spring material, so that they may drop down and permit inlet of air to the mold when the plunger is withdrawn, but will cover the opening to prevent entrance of clay therein when the plunger is pressed into the clay. The means shown as employed for securing these plates consists of a pin or nail, which passes through a hole in each plate and enters the body of the plunger. These passages preferably extend through the lower part or removable section P' of the plunger and then connect with the outer air by grooves, as E', formed in the top surface of said part P'. I have also shown clay-escape openings F, which connect with the bottom parts of the spaces *f* between the projecting sections *p* of the mold, said openings being designed for the escape of any surplus clay. These passages F may connect with horizontally-extending grooves similar to the grooves E', formed for the inlet of air, or extend through the head P.

By reason of the sticky adhesive character of the clay used for making these terra-cotta blocks it has heretofore been found impossible to successfully mold them in a press, as when the plunger was withdrawn the bottom and partitions of the block were removed with the plunger. I have found the use of the valved air-relief passages largely prevents such action and enables the plunger to be withdrawn without destroying or injuring the molded-clay block.

The above or equivalent press is operated as follows to produce blocks for terra-cotta: A suitable mold having been provided and secured in position and the corresponding plunger having been secured to the press an amount of clay sufficient to form the desired block is placed in the mold and the plunger caused to descend. The side surfaces of the projecting sections *p*, it will be noticed, are inclined, so as to act somewhat as a wedge to force the plastic clay against the sides of the mold and into the pattern which may be thereon. The clay is also forced upward into the spaces *f* between the sections *p*, thus forming the partitions. As soon as the plunger strikes the clay the plates *e* close the air-inlet passages. If there is surplus clay, it may escape through the openings F and prevent excessive strain. As soon as the plunger is raised the suction on the bottom of the plunger holds back the valves *e* and admits air beneath the plunger, so that it may rise without lifting the clay with it. The incline or draft given the sides of the plunger also assist in clearing it from the clay.

The number and location of the valved air-passages E and of the relief-passages F may be varied to any extent dictated by expediency or experience, and various other modifications and changes in the apparatus may be made without departing from the spirit of my invention and without exceeding the scope of the claims concluding this specification.

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

1. In a clay-press, the combination of a receptacle for containing the clay, and a plunger, said plunger being provided with a plurality of projecting portions separated from each other, an air-passage leading to the face of each of said portions provided with a resilient flexible plate on its face forming a valve permitting the entrance of air when the plunger is withdrawn, and openings communicating with the spaces between said projections for the discharge of surplus material.

2. In a clay-press, the combination of a receptacle for containing the clay, and a plunger, said plunger being provided with a plurality of projecting portions separated from each other, said projecting portions having inclined or wedge-shaped sides and openings communicating with the spaces between said projections for the discharge of surplus material.

3. In a clay-press the combination of a receptacle for containing the clay, and a plunger, said plunger being provided with a plurality of projecting portions separated from each other, and openings communicating with the spaces between said projections for the discharge of surplus material.

4. In a clay-press the combination of a receptacle for containing the clay, and a plunger, said plunger being provided with a plurality of projecting portions separated from each other, an air-passage leading to the facet

of each of said portions provided with a valve permitting the entrance of air when the plunger is withdrawn, and openings communicating with the spaces between said projections for the discharge of surplus material.

5. In a clay-press the combination with a mold of levers pivoted beneath the mold, means for engaging one end of said levers to move them, and links connected with said levers and adapted to engage the mold to hold it down.

6. A mold for clay-presses comprising plates having pattern-surfaces thereon, and a retaining-frame for said plates having backing-plates adapted to take the spreading strains.

7. A mold for clay-presses comprising separable plates having pattern-surfaces thereon and mutually-interlocking dowel and pin members upon engaging surfaces, and a retaining-frame for said plates having backing members adapted to take the spreading strains.

In testimony whereof I have signed my name to this specification in the presence of the two subscribing witnesses.

WM. D. FRERICHS.

Witnesses:
NORMAN GRANT,
E. D. WRIGHT.