No. 792,044. PATENTED JUNE 13, 1905.

C. H. HUTCHINGS.

MOLDING MACHINE.

APPLICATION FILED JUNE 7, 1904.

3 SHEETS—SHEET 1.

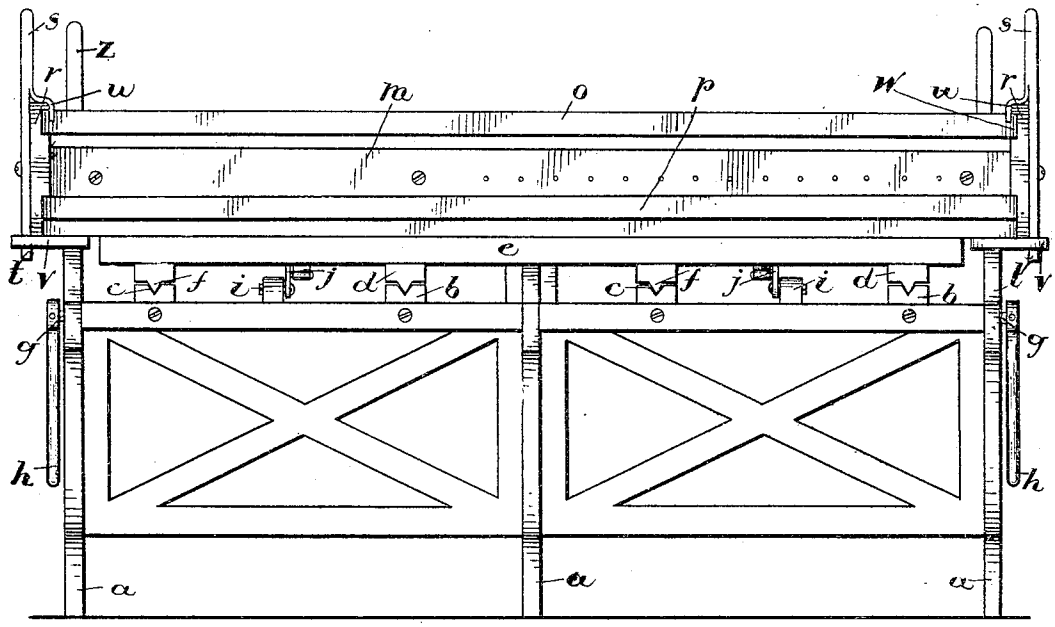


Fig. 1.

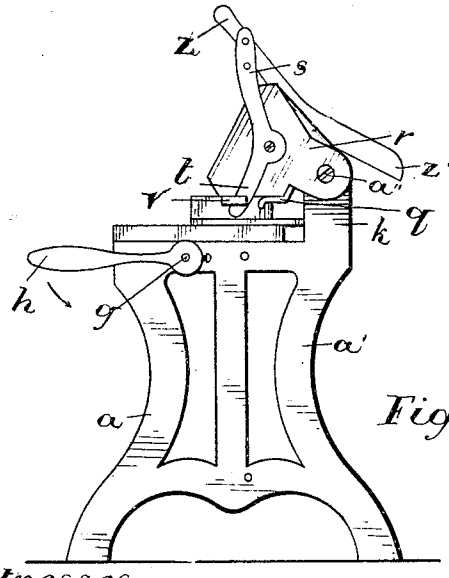


Fig. 3.

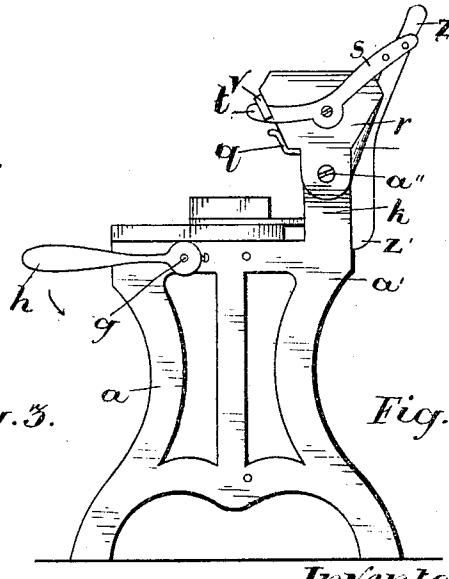


Fig. 2.

Witnesses.

H. L. Trimble

L. F. Brock

Inventor.

C. H. Hutchings

by C. H. Riches

his attorney

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3 SHEETS—SHEET 2.

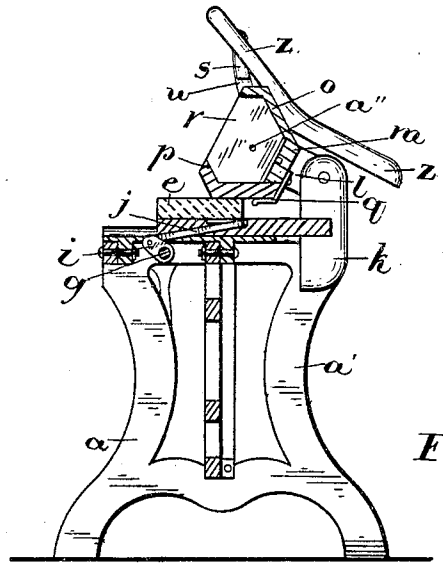


Fig. 4.

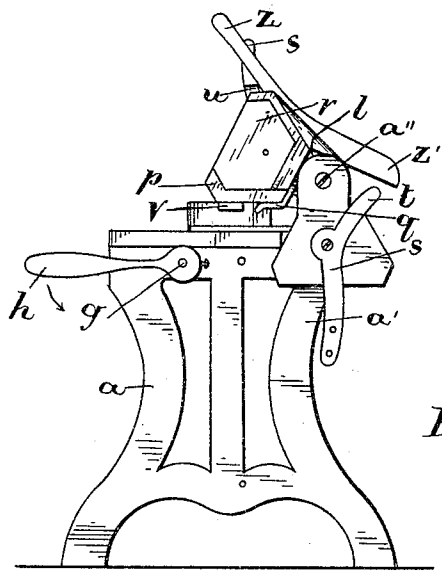


Fig. 5.

Witnesses.
H. L. Trumble.
L. F. Brock.

Inventor.
C. H. Hutchings
by C. H. Riches
his Attorney

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3 SHEETS—SHEET 3.

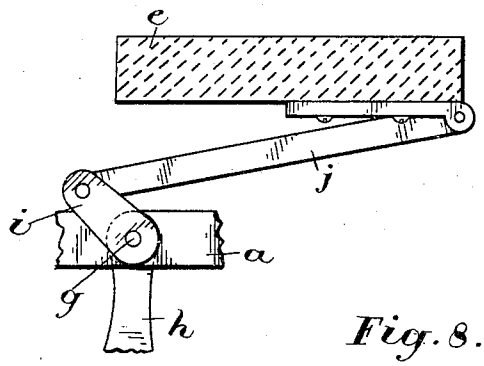


Fig. 8.

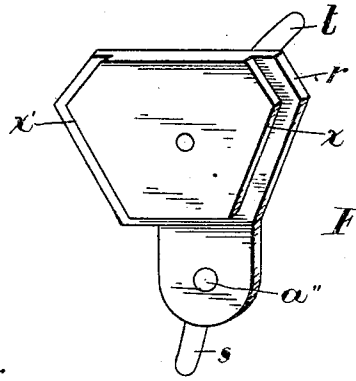


Fig. 6.

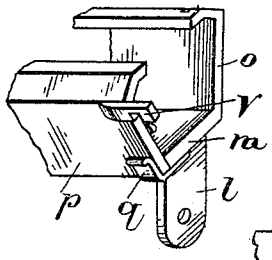


Fig. 9.

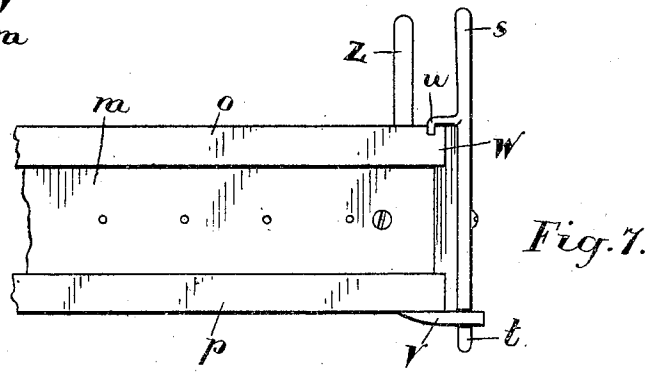


Fig. 7.

Witnesses.
H. L. Pimble.
L. S. Brock.

Inventor.
C. H. Hutchings
by C. H. Riebe
his attorney.

No. 792,044. Patented June 13, 1905.

UNITED STATES PATENT OFFICE.

CHARLES H. HUTCHINGS, OF TORONTO, CANADA, ASSIGNOR OF TWO-THIRDS TO PHILIP W. STANHOPE, OF TORONTO, ONTARIO, CANADA.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 792,044, dated June 13, 1905.

Application filed June 7, 1904. Serial No. 211,562.

To all whom it may concern:

Be it known that I, CHARLES HENRY HUTCHINGS, of the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Molding-Machines; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a machine for molding cementing and siliceous substances intimately mixed together in a dry state and then slightly moistened to cause their adhesion when tamped or pressed into a homogeneous mass. Owing to the granular nature of the mixture, it is necessary to handle the molded block with the greatest of care during its delivery from the molding-machine and its transportation to the hardening or seasoning room.

In my former patent, No. 714,184, dated November 25, 1902, I have shown and described a molding-machine in which the mold-box or flask was rigidly maintained in an upright position and fitted with a removable follow-board upon which the molded block was removed. During the operation of that machine it was necessary to exercise more than ordinary care and skill in the removal of the molded block from the mold-box or flask, and often under the most careful conditions the homogeneity of the molded mixture was frequently shattered and the block rendered useless for the purpose for which it was intended.

The object of the present invention is to articulatingly connect the mold-box or flask to the frame of the machine, so that it can be maintained in an upright position during the molding of the material and then turned into a position at substantially right angles thereto to deliver the molded block to a movable carriage positioned to receive it.

For a full understanding of the invention reference is to be had to the following description and to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine. Fig. 2 is an end elevation showing the mold in the upright position. Fig. 3 is a similar view to Fig. 2, showing the mold in its upset position. Fig. 4 is a transverse sectional view of the machine with the mold in the position shown in Fig. 3. Fig. 5 is a similar view to Fig. 3 with the clamping-lever and end plates for the mold released from engagement with the fixed and detachable sides. Fig. 6 is a detail view of one of the end plates and operating-levers. Fig. 7 is a plan view of the top of a section of the mold, showing the clamping members for locking the end plates and fixed and detachable sides together. Fig. 8 is a sectional view showing the carriage and carriage-operating mechanism, and Fig. 9 is a view of a section of the mold.

Like letters of reference refer to like parts throughout the specification and drawings.

Stationarily mounted upon the top of the frame *a* are four transversely-disposed rails *b*, each having a V-shaped groove *c*, and mounted upon the rails *b* are the carriage-slides *d*, having V-shaped tongues *f* to enter the grooves *c* and prevent their lateral displacement from the rails. Journaled in the ends of the frame *a* is a longitudinally-disposed shaft *g*, located below the rails *b* and fitted at each end with a lever *h*, by means of which it is actuated, and mounted upon the shaft *g* intermediate its ends are cranks *i*, connected by links *j* to the carriage *e*. During the operation of the levers *h* the shaft *g* is rotated to cause the cranks *i* and links *j* to move the carriage either toward the back or front of the carriage-bed—that is to say, if the levers *h* are moved in the direction indicated by arrow the shaft *g* and the cranks *i* will execute a corresponding movement and cause the links to draw the carriage toward the front of the machine, while the reverse movement will cause them to move it toward the back of the machine. Projecting upwardly from the top of the standards *a'* are vertical arms *k*, to which are hinged the downward extensions *l* of the mold-box, which is shown to consist of a bottom plate *m*, integrally formed with or permanently connected to the downward extensions *l*, and a side plate *o*, integrally formed with or permanently con-

nected to the bottom plate m, and a removable side plate p, detachably connected to the bottom plate m at the front of the mold-box by hook-shaped clamps q, projecting forwardly from the under side of the bottom plate m. To rigidly lock the removable side plate p to the bottom plate m when the parts are in their assembled condition, the end plates r for the mold-box are fitted with clamping-levers s, having clamping-hooks t and u to engage, respectively, the hook-shaped arms v, projecting endwise from the removable side plate p, and the clamping-cams w, formed on the back surface of the side plate o. The clamping-levers s are fulcrumed to the outer faces of the end plates r, and when the clamping-hooks t and u are brought into engagement with the hook-shaped arms and clamps the end plates are forced tightly against the ends of the side plates o and p and the removable side plate is drawn tightly into position against the adjacent stops x on the inner faces of the end plates r, which are also fitted with stops x' to engage the side plate o and hold the end plates immovable when locked by the clamping-levers. Attached to the mold-box are handles z, with projections z' extending below the bottom of the mold-box to engage the frame a when the mold-box is in its upright position to limit its motion and to hold it an upright position while the material is being molded.

The operation of the invention is as follows: In molding a block the mold-box is placed in an upright position with the projections z' engaging the back of the frame a to rigidly hold it in such a position until the molding operation has been completed. The removable side plate p is then placed in position upon the clamps q and the end plates r positioned against the end and bottom plates. The clamping-levers are then actuated to engage the hook-shaped arms and cams to draw the component parts of the mold-box rigidly together. The levers h are then actuated to position the carriage e where it will be engaged by the removable side plate p when the mold-box is upset. The material is then placed in the mold-box and tamped or pressed to the required shape and density, and the mold-box is then turned into an upset position, so that the removable plate p will rest upon the carriage e. The clamping-levers s are then actuated to disengage the clamping-hooks from the hook-shaped arms and cams, and the end plates are then rotated upon their pivots a'', so as to drop below and be entirely clear of contact with the end and bottom plates of the mold-box. The levers h are then actuated to draw the carriage with the removable side plate p, with its load, away from the mold-box and toward the front of the machine without shattering or destroying its homogeneity, so that when it is moved forward sufficiently to clear the mold-box the removable side plate and its load can be raised from the carriage and transported to the place where it is to season and harden.

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

1. The combination of the main frame, a mold consisting of a fixed bottom and side articulatingly connected to the main frame and arranged to be maintained in an upright position to receive the material for the block and to be overturned to deliver the molded block, a removable side detachably connected to the bottom opposite the fixed side, rotatable end sides for the mold, means for locking the end sides and the removable and fixed sides together, a carriage to receive the removable side with the molded contents when the mold has been overturned and means for actuating the carriage.

2. The combination of the main frame, a mold consisting of a fixed bottom and side articulatingly connected to the main frame and arranged to be maintained in an upright position to receive the material for the block and to be overturned to deliver the molded block, a removable side detachably connected to the bottom opposite the fixed side, rotatable end sides for the mold, means for locking the end sides and the removable and fixed sides together, a carriage to receive the removable side with the molded contents when the mold has been overturned, means for actuating the carriage, and stops connected to the mold to engage the main frame when the mold is in its upright position.

3. In a molding-machine the combination of the main frame, a mold oscillatingly mounted therein consisting of a fixed bottom and a fixed side therefor, a removable side detachably connected to the bottom, end plates pivoted to the bottom and arranged to abut against the ends of the fixed and removable sides, clamping-levers fulcrumed to the outer faces of the end plates and clamping members carried by the removable and fixed sides adapted to be engaged by the clamping-levers when actuated to draw the parts together, a carriage movably mounted upon the main frame adapted to be engaged by the removable side of the mold when upset, an operating-shaft, levers for actuating the shaft and an intermediate means between the shaft and carriage whereby the carriage is moved by the actuation of the shaft.

4. In a molding-machine the combination of the main frame, a mold oscillatingly mounted therein consisting of a fixed bottom and a fixed side therefor, a removable side detachably connected to the bottom, end plates pivoted to the bottom and arranged to abut against the ends of the fixed and removable sides, clamping-levers fulcrumed to the outer faces of the end plates and clamping members carried by the removable and fixed sides adapted to be engaged by the clamping-levers when actuated

to draw the parts together, a carriage movably mounted upon the main frame adapted to be engaged by the removable side of the mold when upset, an operating-shaft, levers for actuating the shaft and an intermediate means between the shaft and carriage whereby the carriage is moved by the actuation of the shaft consisting of cranks rigidly fixed on the shaft, and links connected to the cranks and to the carriage.

Toronto, February 9, 1904.

C. H. HUTCHINGS.

In presence of—
C. H. RICHES,
L. F. BROCK.