

(No Model.)

2 Sheets—Sheet 1.

J. E. BOEGEN.
MOLDING MACHINE FOR FOUNDRY WORK.

No. 532,743.

Patented Jan. 15, 1895.

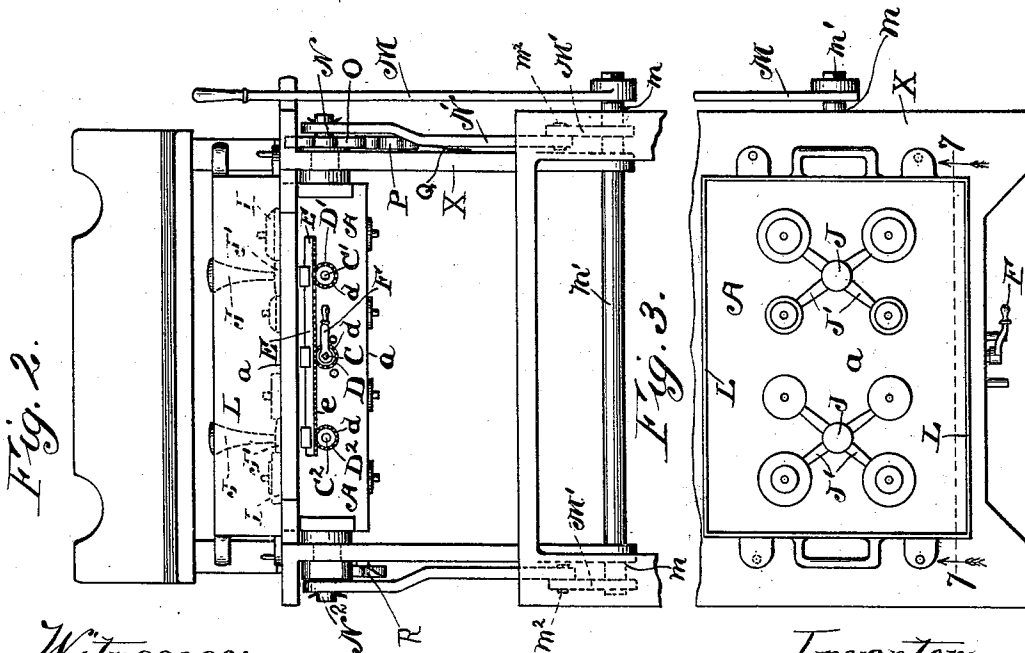
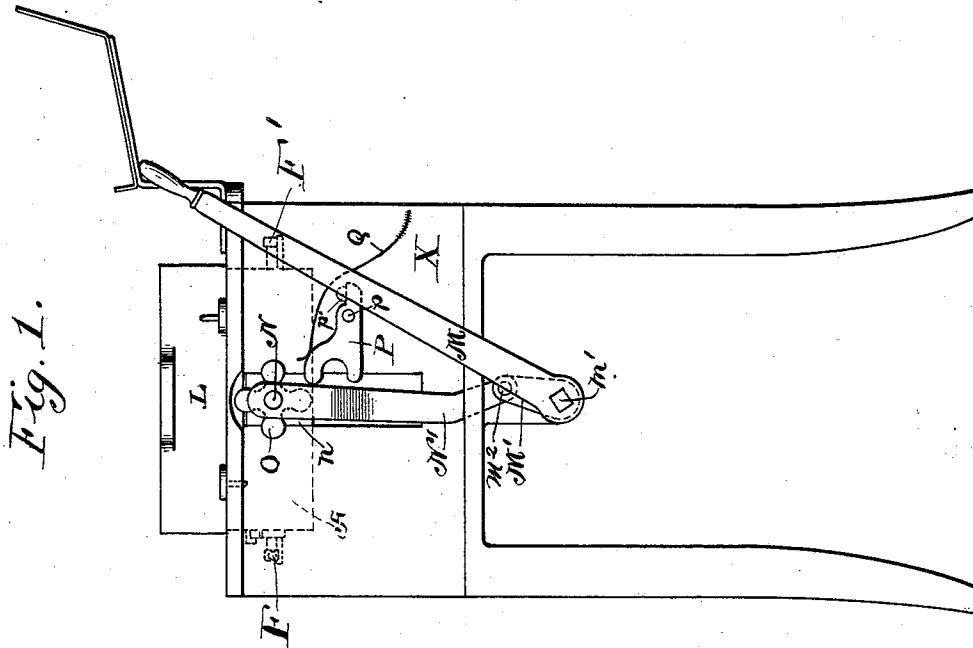


Fig. 3.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

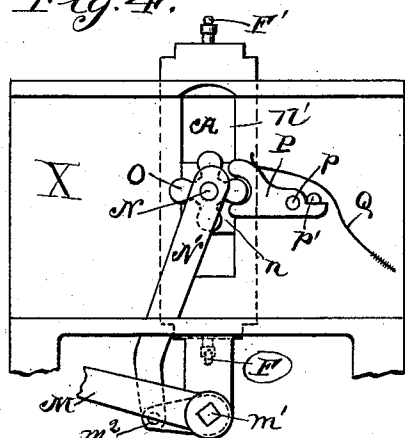


Fig. 5.

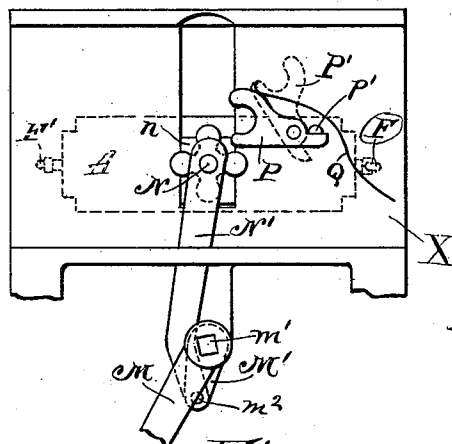


Fig. 6.

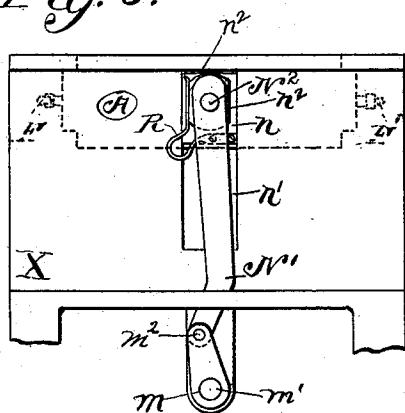


Fig. 7.

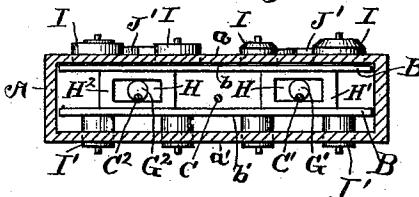


Fig. 8.

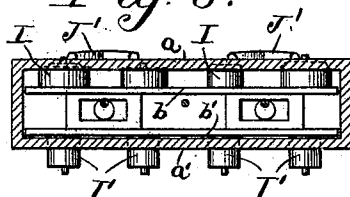


Fig. 9.

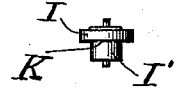
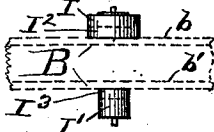


Fig. 10.



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UNITED STATES PATENT OFFICE.

JOHN E. BOEGEN, OF CHICAGO, ILLINOIS.

MOLDING-MACHINE FOR FOUNDRY-WORK.

SPECIFICATION forming part of Letters Patent No. 532,743, dated January 15, 1895.

Application filed July 3, 1893. Serial No. 479,438. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. BOEGEN, residing at Chicago, county of Cook, and State of Illinois, have invented a certain new and useful Improved Molding-Machine for Foundry-Work, of which the following, in connection with the drawings accompanying and forming a part hereof, is a full and complete description, sufficient to enable those skilled in the art to which it appertains to make and use the same.

The object of my invention is to obtain a molding machine on which patterns of the ordinary kind employed in making moldings in sand for casting purposes can be attached and when so attached such molds can be more expeditiously made by such patterns than when such machine or a like one is not used.

In the use of my machine, as will be hereinafter seen, the molding of the patterns in the flask is done in substantially the same manner as has been heretofore done, excepting that both the drag and the cope of the flask is placed in the same manner on the machine and used in substantially the same way instead of the cope being placed on the drag.

In the drawings referred to, Figure 1 is a side elevation of a machine embodying my invention, with a flask thereon; Fig. 2, a front elevation thereof; Fig. 3, a top plan view; Fig. 4, a side elevation, viewed in the same manner as in Fig. 1, but with the several movable parts of the machine in a different position; Fig. 5, a side elevation viewed from the same position as Figs. 1 and 4, but with the several movable parts in a still different position; Fig. 6, a side elevation viewed from the same position as Figs. 1, 4 and 5, but with the several movable parts in a still different position and in suitable position to place a second flask and one different from the one illustrated in Figs. 1, 2 and 3, on the machine; Fig. 7, a cross sectional view on line 7—7 of Fig. 3, showing the movable base or platen as it may be termed, on which the flask is placed, with the patterns above such base or platen and in position to extend into the flask in the manner and to the extent illustrated in Figs. 1 and 2, and Fig. 8, a cross-sectional view on the same line and viewed in the same direction as Fig. 7 but with the patterns thereon below the upper face or platen or base on

which the flasks rest. Fig. 9 is an elevation of a portion of the pattern illustrated in the preceding figures as the same is ordinarily constructed, and Fig. 10 is a view of the portion of the pattern illustrated in Fig. 9, showing the addition required to such portion of the pattern to properly place the same on and attach to a machine embodying my invention, when such machine is designed to embody all the objects and inventions sought and made by me, with the movable base to which such portion of the pattern is attached indicated by dotted lines.

The same letter of reference is employed by me to indicate a given part where more than one view thereof is illustrated in the several figures of the drawings.

X is the frame of the machine.

A is a movable and reversible bed on one of the faces of which, as say face *a*, the portion of the pattern designed to be molded in the drag of the flask is attached; and to the other of the faces whereof, as say face *a'* the portion of the pattern designed to be molded in the cope is attached.

Faces *a*, *a'* of movable and reversible bed, A, may be a plane table or platen, without break or hole therein, and the several portions of the pattern designed to be molded in the drag and cope, respectively, may be rigidly secured to such respective faces; in which case the flask forming the cope and the flask forming the drag will have to be elevated off the bed or platen A, and patterns secured thereon in substantially the same manner as the cope is now lifted off the drag in making a mold for foundry work; but, in order that the molds may be more rapidly made than could be done if the flasks were necessarily lifted off the bed or platen A in the manner last described, I prefer to so construct the bed or platen A, that the several portions of the pattern may be moved relatively therewith and thereby withdrawn from the flask after such flask has been properly filled with sand and the mold thereby made and before such flask is removed from such bed or platen; and the manner in which such result is accomplished is by making the bed, A, hollow, as is clearly illustrated in Figs. 7 and 8, and in placing within such bed a frame or plate B to the faces *b b'* whereof, the portions of the pattern are

secured, and to provide holes in the respective beds or faces a , a' of bed or platen A, through which holes the portion of the patterns extending into the flasks can be extended, or retracted as desired, in the work of the machine, (such holes corresponding in outline with the outline of the patterns or portion of the patterns passing therethrough); with means for moving such frame B, so as to thereby project or withdraw the several portions of the patterns.

A very suitable mechanism for projecting or withdrawing the portions of the pattern, that is, for producing movement of frame B, is illustrated in Figs. 2, 7 and 8 and consists of rotatively mounted shafts, C, C', C² having respectively the respective gear wheels D, D', D² rigidly secured thereon, the teeth d , whereof intermesh with corresponding teeth e , e , in longitudinally movable rack E handles F, F' secured to shaft C (either rigidly or removably as preferred) so that the shaft C can be rotated by either one of such handles; eccentrics G' and G²; rigidly secured on shafts C', C² respectively, and blocks H' H², having respectively holes H, therein, in which the eccentrics are respectively placed, and to which blocks the plates forming in connection therewith the frame B are secured.

As will be readily understood by inspection of Figs. 7 and 8, when the shafts C' C² are rotated by rotation of shaft C and consequent longitudinal movement of rack E (see Fig. 2), through either one of the handles F, F', blocks H' H² with the plates forming in connection therewith frame B are moved from the position in which such plates are illustrated in Fig. 7 into the position or substantially so in which they are illustrated in Fig. 8, and thereby the portion I of the patterns which extend above face a in Figs. 1, 2, 3 and 7 of the drawings are retracted to below such face and at the same time portion I' of the patterns is extended beyond face a' of the bed or platen as illustrated in Fig. 8 of the drawings.

J is a sprue and J' is a raised or elevated portion of face a of the bed or platen A designed to form in the mold a corresponding passage or way to that ordinarily formed by the gate to which patterns are usually secured and hence such raised part J' is by me termed a gate although the same is not secured to the patterns or any part thereof when the patterns are made movable, that is retractible or extensible in the manner last above described.

A, Fig. 9 is a dotted line indicating where a pattern may be divided into two parts for the purpose of being attached to the respective faces b , b' of frame B and I², I³, Fig. 10 illustrate parts to be added to the respective portions of the pattern illustrated in Fig. 9, the depths of such parts corresponding respectively with the respective thicknesses of faces a , a' of the bed or platen A, in order that the portions I, I' of the pattern may re-

spectively extend the proper distance above the bed or platen and into the flask, when the flask is placed thereover and filled with sand in the ordinary way.

In the use of this machine, it is designed that where a flask, as flask L Figs. 1, 2 and 3 has been placed on one of the faces, as face a of the bed or platen, the sprues J, J, respectively placed in position and the flask filled with sand and a mold thereby made, and after the respective portions, I, I' of the pattern have been withdrawn from the sand, by being retracted in the manner hereinbefore set forth, below the face a of the platen, and after such flask with the mold so contained therein has been lifted therefrom, that the bed A may be quickly and readily turned so that the face a' may be brought uppermost and a second flask placed thereon and a mold made therein. For this reason the respective portions I, I' of the pattern are arranged, see Figs. 7 and 8, with reference to the faces a , a' of bed A, so that when portion I, I' of the pattern are retracted, portions I', I' thereof are extended and vice versa, and means which are about to be described are provided for turning such bed or plate.

M is a handle secured at m to rotatable shaft m' .

M' M' are arms rigidly secured to shaft m' .

N N² are projections extending from the respective ends of the frame or platen or bed A through and rotatable in the respective blocks n n and constitute pivots or shafts on which the frame bed or platen A turns.

n' n' are slots in the side of the frame X in which the respective blocks n n are placed and adapted to slide or be slid.

N' N' are, respectively, connecting links extending from projections N N², respectively, to the respective arms M' M' to which they are secured by means of the pivots or pins m^2 m^2 , respectively. As handle M is turned on fulcrum m thereby turning the shaft m' and arms M' M', the links N' N' will respectively lower the projections constituting the pivot or shafts N N² respectively and the frame, bed or platen A to which they are secured.

To place the frame, bed or platen A back in its initial position, the handle M is returned to its initial position. In order to mold both the drag and the cope, it is necessary that the frame bed or platen A be turned half round in the lowering and raising thereof by means of the handle M as last described and to insure such rotation the following devices are provided:

O is a gear wheel having four teeth thereon, rigidly secured to the projection or pivot N or to one end of the frame, bed or platen A; and P is a lever having two teeth thereon fulcrumed at p to frame X, so that the teeth thereof will intermesh with the teeth of wheel O as such wheel is lowered. Lever P is rotatable in one direction on fulcrum p , as indicated by the dotted lines lettered P' in Fig. 5. Such lever P is not rotatable in the

other direction—rotation thereof, from its initial position, being prevented by stop p' .

Q is a spring yieldingly holding lever P in its initial position and so that the teeth thereof will intermesh with the teeth of wheel O.

The operation of this portion of the device is as follows: When the frame, bed or platen A is lowered by handle M, and connecting mechanism hereinbefore described, the teeth of wheel O intermeshing with teeth of lever P, such frame, bed or platen is thereby and in unison with wheel O turned one half way round, and as such frame, bed or platen A is again raised, the teeth of wheel O coming in contact with the teeth of the lever P, such lever is turned on its fulcrum p and the frame, bed or platen A is not rotated, so that when such frame, bed or platen is returned to its extreme upward position, the upper face thereof will be the face which was, before the lowering and raising last described, the lower face thereof. As soon as the wheel O has passed by the toothed end of lever P, such lever will be returned to its initial position by spring Q.

When the frame, bed or platen A has been returned to its extreme upward position, as last above described, a flask can then be placed on the machine and the portion I' I' of the patterns extending above a' can be molded therein, in the same manner as portions I I of the patterns had previously been molded in a flask as hereinbefore described. After the portions I' I' of the pattern are molded, such portions are withdrawn or retracted from the mold by turning handle F or handle F'. The flask is then removed and the frame, bed or platen A again lowered and raised, (and thereby turned,) and a new flask placed on the machine and the operation of molding portions I I of the pattern repeated.

R is a spring secured at one end to sliding block n in which projection or pivot N^2 is journaled with the other and free end thereof pressing against the projection or pivot N^2 , and when the faces $a a'$ are horizontal pressing against flattened portion n^2 of such projection or pivot and so tending to hold the frame, bed or platen in position with the faces $a a'$ thereof horizontal after such frame, bed or platen has been rotated or turned in the lowering thereof and while being raised into the extreme upward position thereof. Such spring and such flattened portion of the shaft are not essential in the construction of large machines as the mere weight of frame, bed or platen A will prevent its rotation or turning while being moved upward.

Where the spring R is used, when it and the flattened portion n^2 of the pivot N^2 are adjacent, such spring will by pressing against the flattened portion n^2 maintain the face thereof in a plane parallel with the face of the spring R and such flattened portion n^2 and spring R are so related to each other and to the faces $a a'$ of frame, bed or platen A that when the spring R and flattened portion n^2

are in contact, such faces $a a'$ are in a horizontal plane.

It will not of course be understood that I intend to confine my invention to a device embodying the particular means herein set forth and illustrated for retracting and extending the patterns in the frame, bed or platen A; for raising or lowering such frame, bed or platen; or for turning the same half round in the lowering and raising thereof.

It will be seen on inspection of the drawings, particularly Fig. 1, that the connecting pivot or pin m^2 passes over or beyond the line connecting projection or pivot N and shaft m' ; that is to say passes over the center, as it is called, when the handle M is thrown upward and backward so as to elevate the platen A to its extreme upward position, and that thereby such platen, frame or bed A is locked in place so that the platen will not be moved or jarred out of place in the placing of the flask thereon and the making of the mold therein.

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

1. In a molding machine for foundry work, the combination of a frame, a movable and rotatable platen mounted on the frame, such platen having more than one face adapted to be brought into a horizontal position, a gate secured to one of the faces of the platen, portions of a divided pattern also secured to the respective faces of the platen, means for lowering and raising such platen and mechanism engaging with such platen in the downward and upward movement thereof whereby the platen is automatically turned so that the several faces thereof will be consecutively brought into position in the frame to have a flask placed thereon and a mold of the portion of the pattern thereon extending into the flask made therein; substantially as described.

2. In a molding machine for foundry work, the combination of a frame, a movable and rotatable hollow platen mounted on the frame, such platen having parallel faces adapted to be brought into a horizontal position, movable plates mounted within the hollow platen and to which the portions of a divided pattern can be secured, holes in the respective faces of the hollow platen, and means for changing the relative distance between the respective faces of the plates and hollow platen, whereby one or the other portions of divided patterns will extend through the holes therefor, means for lowering and raising the hollow platen and means for automatically turning the hollow platen in its downward movement so that flasks can be alternately placed on the respective faces thereof; substantially as described.

3. The combination of a movable and reversible hollow platen, a movable frame or plate within the hollow platen, divided pat-

terns secured to the respective faces of the movable frame or plate, holes in the movable and reversible platen corresponding with the divided patterns, means for moving the movable frame or plate so that the patterns can
5 be made to alternately extend through the holes therefor, means for raising and lowering the movable and reversible platen, and mechanism adapted to engage with such

platen in its upward and downward movement and thereby automatically turn the hollow platen so that its sides shall alternately be uppermost in the raising and lowering thereof; substantially as described.

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