

1,061,440.

Patented May 13, 1913.
2 SHEETS—SHEET 1.

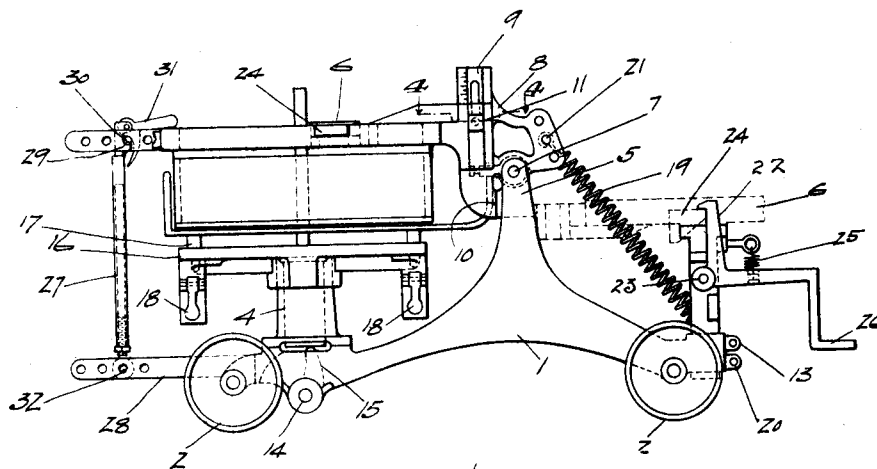


FIG. 1.

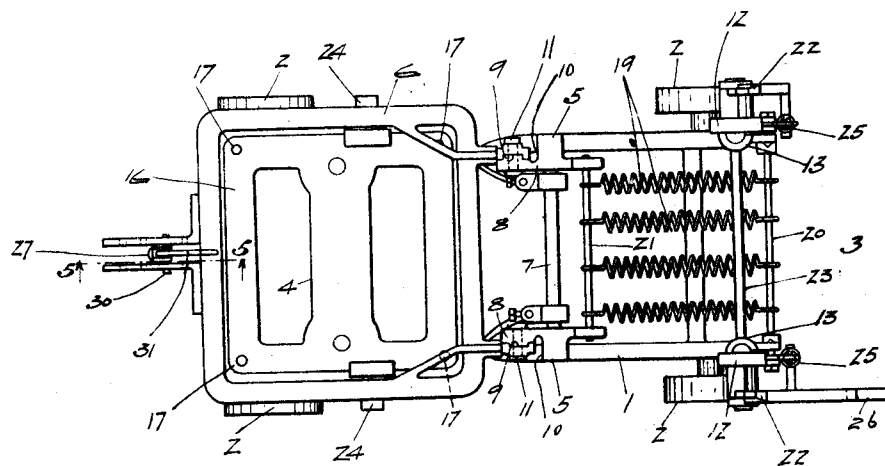
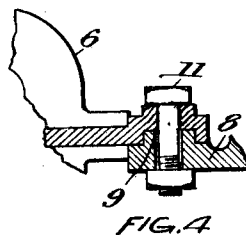


FIG. 2.



WITNESSES:

Robert M. See
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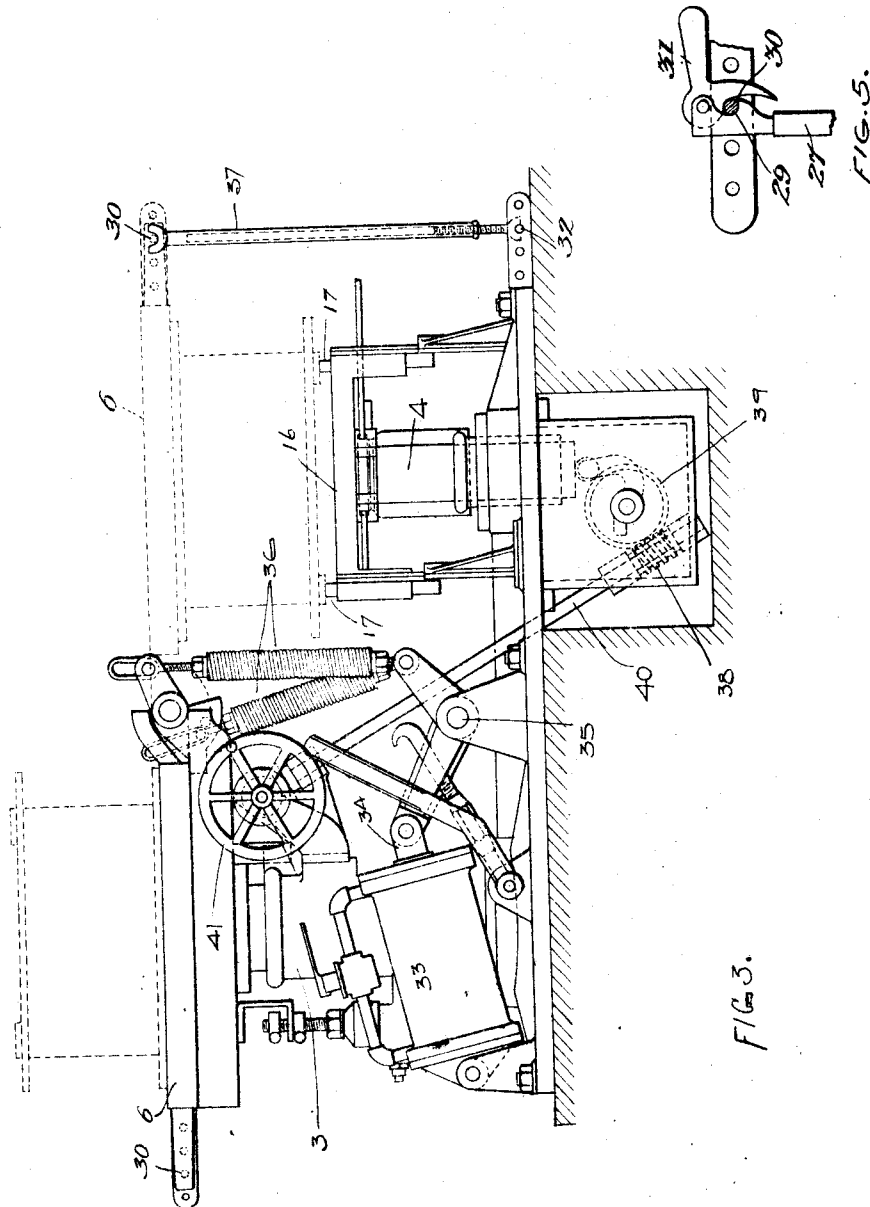
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MOLD MAKING MACHINE.
APPLICATION FILED OCT. 19, 1910.

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WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY R. ATWATER, OF CLEVELAND, OHIO, ASSIGNOR TO THE OSBORN MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

MOLD-MAKING MACHINE.

1,061,440.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed October 19, 1910. Serial No. 587,815.

To all whom it may concern:

Be it known that I, HARRY R. ATWATER, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Mold-Making Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The type of mold-making machine, to which the present invention relates, is known as the "rock over", wherein an oscillatory carrier for the pattern plate is provided, so that the mold may be filled in one position of said carrier, and then turned over in reverse position upon a suitable parting stand. Such stand, in the preferred form of construction illustrated, is vertically reciprocable, so as to draw the mold away from the pattern, although it may be arranged to raise the pattern-carrier and pattern, instead. In the type of machine referred to, furthermore, it is customary to employ resilient means, generally in the form of tension springs connected to the oscillatory pattern-carrier, whereby the movement of the latter may be facilitated, it being understood that a considerable weight is attached thereto when the mold is filled.

The object of the present invention is the provision of a mold-making machine of the kind described, wherein resilient means of greater tension may be employed, thus correspondingly lightening the operator's task, as also to provide means for preserving the carrier and attached pattern plate in exact horizontal alinement during the drawing of the mold, or in other words, the parting of such mold from the pattern.

To the accomplishment of these and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—Figure 1 is a side elevation of a mold-making machine embodying my several improvements; Fig.

2 is a plan view of the same; while Fig. 3 is a side elevational view of another design of rock over mold-making machine wherein I have incorporated the present invention in slightly modified form; Fig. 4 is a horizontal section on the line 4—4 in Fig. 1; and Fig. 5 is a vertical section on the line 5—5 in Fig. 2.

The machine to which my present improvements are shown as applied in Figs. 1 and 2, is in general the same as that shown in U. S. Patent No. 937,036 issued to me under date Oct. 19, 1909. In such machine the frame 1 which is preferably mounted on low wheels or rollers 2 to permit of its movement about, includes the mold filling and parting stands 3 and 4 above referred to, between which, upon two laterally spaced standards 5 that are integral, or rigid, with the frame-work of the machine, is oscillatorily mounted the carrier, or pattern-plate holder 6. This pattern-plate holder, however, is not directly pivotally attached to the shaft 7 in such standards, which forms, more exactly speaking, the support therefor, but is rather adjustably secured in a secondary frame 8 that is thus supported on the shaft and formed with guide-ways 9 so disposed as to lie vertically when said frame is positioned in contact with a stop 10 provided to limit its movement toward the parting stand. The pattern-plate holder, then, is mounted upon said guide-ways so as to be in effect vertically adjustable with respect to said parting stand in such position of the frame, set screws 11 or like means being provided in conjunction with the guide-ways to secure said plate holder in any such vertical position as may be desired.

The filling stand 3, upon which the mold is designed to rest pending the filling and stamping of the sand therein, comprises a pair of plungers each with a small rest or head 12 on its upper end, such plungers being adjustably secured in suitable split collars 13 or the like that form a part of the frame. The parting stand 4 on the other hand, comprises a plunger adapted to be vertically reciprocated by means of a rock-shaft 14 bearing a cam 15, such plunger being provided with a platform-like head 16 upon which laterally spaced, depressible members 17 are arranged so as to be depressed by the mold bottom during the placing of the mold in position preparatory to

freeing the same from the pattern embedded in the top of the material with which the flask of the mold is rammed. Such members 17 are thereupon secured against further depression, as by clamps 18, so as to support, in other words, the mold in exactly the position it is left when the pattern-plate carrier is turned over.

5 Springs 19 preferably four in number, connected at one end to a bar 20 transversely disposed of the filling stand and at the other end to a bar 21 similarly transversely secured in the secondary frame 8, tend to maintain the pattern plate holder in a more or less vertical position; in other words, they relieve, or counterbalance, the weight of the mold in both of the horizontal positions of the holder or carriage. In order that such springs may be of proper assistance in thus swinging the carrier after the mold has been filled, they will obviously require to be considerably stronger than to counterbalance the unloaded carrier. This, however entails considerable annoyance in the filling operation, for the reason that the carrier tends to rise therefrom, while similarly in the parting operation, the carrier will tend to fly up, the moment it is relieved from the weight of the attached mold, thus endangering the impression of the pattern, as will be obvious. It has also been found that while the mold is still attached to the carrier in the parting position, the strain upon the pattern-carrier support, owing to the leverage of the carrier is very considerable, sufficient in fact to distort the carrier and machine frame more or less, especially in machines designed for handling heavy work; so that the outer portion of the carrier may lie a trifle below the horizontal plane in which it should be maintained. Thus, despite the construction of the parting stand whereby a very exact leveling of the mold would ordinarily be obtained, difficulty may nevertheless arise from this distortion of the carrier frame.

It is in order to overcome the several difficulties just referred to that the present improvements have been designed, such improvements consisting in the first place, in the provision of latch means for retaining the pattern plate carrier in position upon the filling stand against the excessive tension of the springs 19.

55 In the preferred construction illustrated, two catches 22, 22 respectively mounted on the ends of, an oscillatory shaft 23 on the plungers constituting the filling stand 3, are provided, such catches being adapted to engage with suitable lugs 24 on the corresponding sides of the pattern plate holder. Springs 25, connected with said catches, serve normally to effect their engagement upon the simple depression of the holder into its filling position, while an extension

26 on one of the catches constitutes a treadle, so that the operator may release the holder while still having his hands free to assist in completely turning the same over. In the second place, I provide in conjunction with the parting stand, a combined strut and retaining member 27 conveniently fashioned out of a section of pipe and pivotally attached at its lower end to an extension 28 of the machine frame. The upper end of this member is provided with a notch 29 adapted to engage with a transverse pin 30, or equivalent element on the pattern plate holder; as also with a hook-like clamp 31, that is adapted thereupon to be drawn down over such pin 30, thus securing the frame against either downward or upward movement. The location of pin 30, as also of the pivot pin 32, attaching the member 27 to the frame extension 28, may be varied to correspond with different sized flasks; a series of holes being provided to receive the pin in each case; while the length of the member 27 is likewise adapted to be adjusted to correspond with the adjusted height of the pattern-plate holder by being made of two sections, one damped or threaded within the other as will be readily understood. The object, of course, is to maintain such holder in a perfectly horizontal position despite the weight of the attached mold the parting stand being then adjustable, by virtue of its construction, to the bottom of the mold as it is supported from the horizontally disposed holder. Upon detaching the mold from the holder, the latter is held against movement under the tension of the springs 19, until the operator has time to lower the mold safely away from the pattern; then at his leisure he releases pin 30 from the clamp 31, and restores the pattern-plate holder to its filling position, where it is secured by catches 22. It will be understood that this last described device need not of necessity combine both of the functions which it is thus seen to fulfil; in other words, in the case of a machine designed for light work it may not be found necessary to sustain the pattern carrier, and the member 27 may be simply used, much as the catch on the parting stand side, to prevent said carrier from movement until the operator is ready. So, conversely, in machines of the type illustrated in my co-pending application filed July 28, 1909, Serial No. 509,989, where power means are provided for oscillating the pattern carrier (such power means operating through the springs so that the latter are not under tension until it is started to oscillate the carrier), it may not be necessary to use the retaining feature but merely the strut feature of such member. It is particularly in the handling of heavier molds for which this power machine is especially designed that

distortion of the carrier and machine frame is apt to occur. Such power machine is illustrated in Fig. 3 of the drawings where the parting stand 4, filling stand 3, and pattern plate carrier 6 are identified with the same reference characters as in the preceding description. The power means in this case consists specifically of a cylinder 33, the piston rod 34 in which is adapted to oscillate a rock shaft 35 to put under tension suitable springs 36, and thereby pull over the pattern-plate holder, or carrier frame 6. With the exception of those noted, however, the other general features of the machine are not of present interest, and hence need not be described. Attention is called, however, to the use here, instead of a member 27 having both supporting and retaining means, of a simple detachable strut 37, which is adapted to be inserted in position to engage with the carrier frame in its parting position and support the same so as to prevent distortion thereof by reason of the heavy weight attached to it. Since the tension of the springs 36 is relieved after the turning over of the carrier, by suitable operation of rock-shaft 35, there is no disposition present on the part of such frame to swing back prematurely. Another feature to which attention is desired in connection with this power machine is the use of a worm 38 and worm gear 39 for raising and lowering the parting stand, in place of the cam 15 utilized for the purpose in the previously described form of machine. The operative connections of such gear clearly appear in Fig. 3, as also the shaft 40 that carries the worm, such shaft inclining at an angle so as to bring the hand wheel 41 on its upper end into a position conveniently adjacent to the operator's station.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a machine of the character described, the combination of a stand; an oscillatorily supported pattern carrier adapted in one position to rest upon said stand, said carrier being adapted to receive the flask to be filled; springs connected with said carrier and adapted to raise the same with a flask when unfilled but not when filled; an automatically operative catch mounted on said stand and adapted to secure said carrier in position thereon against the action of said springs; resilient means rendering said catch thus operative; and a treadle for releasing said catch.

2. In a machine of the character de-

scribed, the combination of a filling stand and a parting stand; a carrier for the pattern and flask oscillatorily supported on a transverse axis between said stands and adapted in one position to rest upon said filling stand and in another position to extend horizontally over said parting stand with such flask resting thereon; resilient means connected with said carrier and adapted to raise the same with a flask when unfilled but not when filled; a strut adapted to engage the outer, or free, end of said carrier and support the same in its horizontal position over the parting stand; and retaining means adapted to detachably secure said carrier in such other position upon said filling stand against the action of said resilient means.

3. In a machine of the character described, the combination of a filling stand and a parting stand, the latter being vertically reciprocable to withdraw the mold from the pattern; a member oscillatorily supported on a transverse axis between said stands; a pattern carrier adjustably secured to said member and adapted in one position to rest upon said filling stand and in another position to extend horizontally over said parting stand; means tending to raise said carrier from such positions; and catches respectively adapted to detachably secure said carrier in each of said positions, the catch associated with the parting stand being vertically adjustable to correspond with the adjusted position of said carrier on said member.

4. In a machine of the character described, the combination of a filling stand and a parting stand, the latter being vertically reciprocable to withdraw the mold from the pattern; a member oscillatorily supported on a transverse axis between said stands; a carrier for the pattern and flask adjustably secured to said member and adapted in one position to rest upon said filling stand and in another position to extend horizontally over said parting stand with such flask resting thereon; resilient means connected with said carrier tending to raise the same with a flask when unfilled but not when filled; and catches respectively adapted to detachably secure said carrier in each of said positions, the catch associated with the parting stand being vertically adjustable to correspond with the adjusted position of said carrier on said member.

5. In a machine of the character described, the combination of a filling stand and a parting stand, the latter being vertically reciprocable to withdraw the mold from the pattern; a member oscillatorily supported on a transverse axis between said stands; a pattern carrier adjustably secured to said member and adapted in one position to rest upon said filling stand and in an-

other position to extend horizontally over said parting stand; and an adjustable strut adapted to engage said carrier and support the same in such last-named position.

- 5 6. In a machine of the character described, the combination of a filling stand and a parting stand, the latter being vertically reciprocable to withdraw the mold from the pattern; a carrier for the pattern
10 oscillatorily supported on a transverse axis between said stands, and adapted in one position to rest upon said filling stand and in another position to extend horizontally over said parting stand; and a strut adapt-

ed to engage the free end of said carrier 15 and support the same in such last-named position, said strut being adjustable transversely of the axis of oscillation of said carrier so as to be adapted to thus engage the free end of the same at different distances 20 from such axis.

Signed by me this 12th day of October, 1910.

HARRY R. ATWATER.

Attested by—

ANNA L. GILL,
JNO. F. OBERLIN.