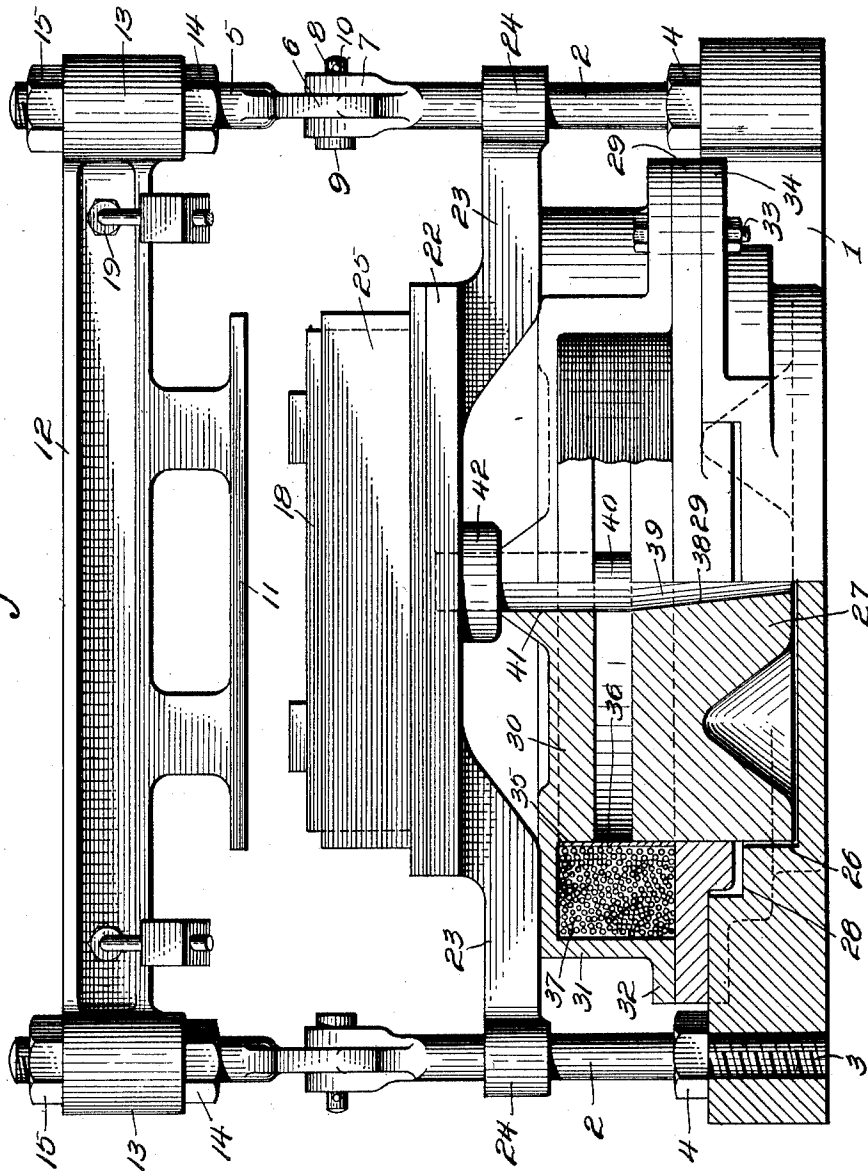


1,009,803.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



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MOLDING MACHINE.

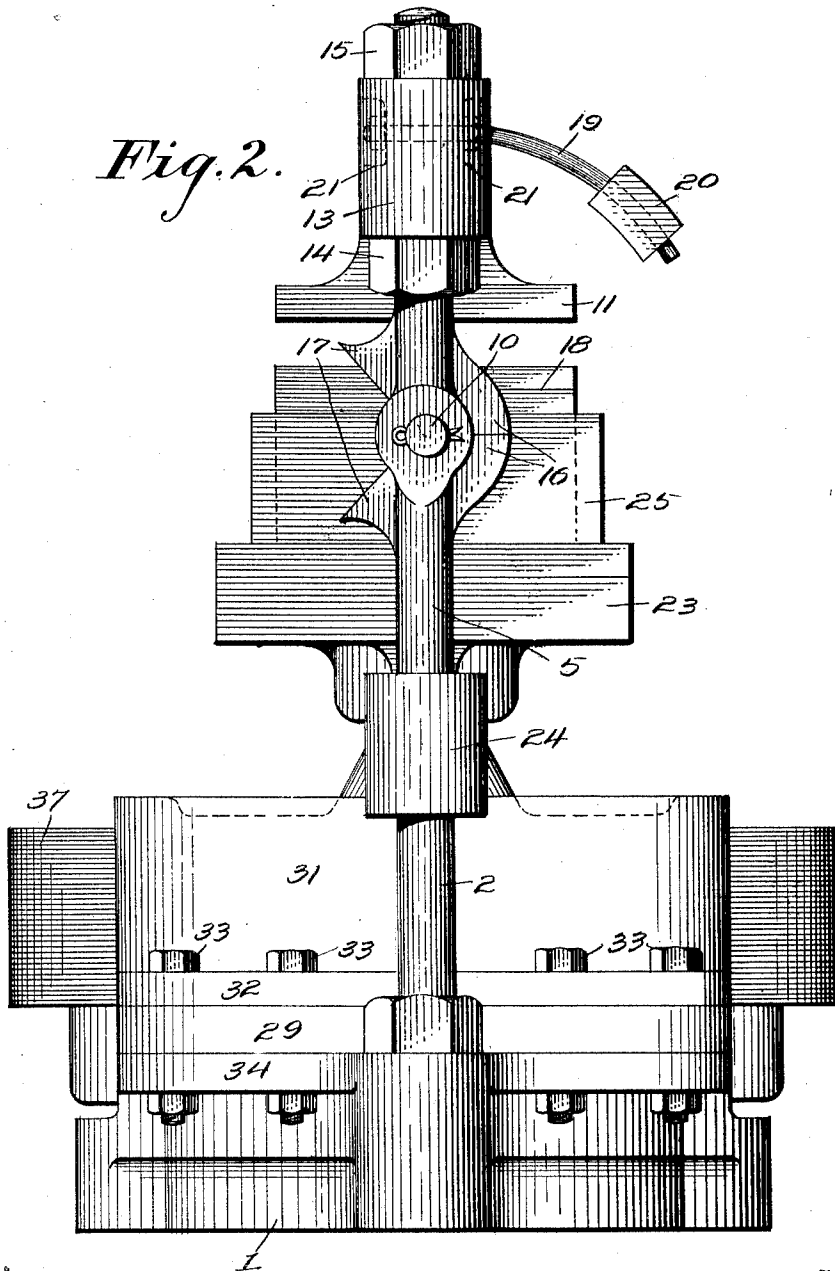
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

HARRY S. STEWART, OF CHICAGO, ILLINOIS, ASSIGNOR TO CRANE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MOLDING-MACHINE.

1,009,803.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed April 15, 1909. Serial No. 490,103.

To all whom it may concern:

Be it known that I, HARRY S. STEWART, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Molding-Machines, of which the following is a specification.

This invention relates to molding machines, the object of the invention being to provide means for electrically operating and controlling said machine for the purpose of compressing the sand around the pattern in the flask, the said means embodying in connection with a novel arrangement of frame, guides and movable flask and pattern support, an arrangement of electro-magnet and armature or solenoid, whereby when the magnet is energized, movement of the armature or solenoid effects a corresponding movement of the flask and pattern support, causing the sand to be compressed around and about the pattern.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—

Figure 1 is a front elevation partly in section of a molding machine embodying the present invention.

Figure 2 is a side elevation of the same.

The molding machine contemplated in this invention comprises essentially a bed or base 1 to which are fixedly connected the lower ends of a pair of oppositely arranged guiding posts or standards 2 preferably having their lower ends threaded as shown at 3 and screwed into the base and fixed by means of lock nuts 4.

Connected pivotally to the upper ends of the posts 2 are post extensions 5, the same having knuckles 6 which are received between lugs 7 on the post 2 and pivotally connected thereto by means of hinge pins or pivots 8 provided with heads 9 at one end and holes 10 adjacent to the opposite end adapted to receive cotter pins. 11 designates a stationary abutment forming part of a casting or head frame 12, the latter being provided at its opposite ends with lugs 13 through which the post extensions 5 pass, said extensions being preferably threaded

to receive clamping nuts 14 and 15 arranged respectively below and above the lugs 13, whereby the head frame is held at a predetermined distance from the base. Adjacent to the pivot 8, the upper and lower sections 5 and 2 of the posts are provided at one side with stop shoulders 16 which rest in contact with each other when the abutment 11 is disposed horizontally as shown in Figure 2. At the opposite end or side there are arranged other stop shoulders 17 which are inclined at an angle of forty-five degrees more or less, so as to enable the head frame to be swung back to an approximately horizontal position to enable access to be obtained to the flask for the purpose of introducing and removing the pattern and also the pallet board 18, which is placed upon the flask after the sand has been introduced therein.

Connected to the head frame 12 are counter-balance arms 19 provided with suitable counter-balance weights 20, said arms being inserted through holes in the head frame and being secured by means of lock nuts 21 arranged at opposite sides of the head and threaded upon the arms 19, the said counter-weights being employed to hold the abutment face 11 of the head frame normally in horizontal position during the sand compressing operation.

22 designates a flask and pattern support provided with oppositely extending arms 23 terminating in guide sleeves 24 through which the posts 2 pass, whereby said support is adapted to slide up and down on the posts 2. 25 designates a flask resting upon the support 22.

The face is recessed as shown at 26 to receive an armature or solenoid 27 and is further recessed as shown at 28 to receive the bottom section or plate 29 of an electro-magnet, the latter also comprising an upper section 30 which constitutes the pole or magnetic face. The pole or section 30 is provided with a cylindrical rim 31 which extends downward and is provided with a bottom flange 32 secured to the base 1 by means of bolts 33 which pass through the flanges 32, the bottom section 29 of the magnet and flanges 34 on the base as shown at the lower right hand corner of Figure 1 and also clearly illustrated in Figure 2.

The top section or pole piece 30 of the magnet is also recessed to form an annular

shoulder 35 and encircling said shoulder is a non-magnetic sleeve 36 of brass or equivalent material which extends downward to and rests upon the bottom section 29 of the magnet. The windings 37 of the magnet are included between the non-magnetic sleeve 36 and the top and bottom sections of the magnet as shown at the left hand end of Figure 1. The armature or solenoid 27 is provided with a tapered central bore 38 to receive the correspondingly tapered lower end portion 39 of a non-magnetic push rod 40 which may be of brass or other suitable material, the same sliding through a guide opening 41 in the top section or pole piece 30 of the magnet, while the upper extremity of said push rod is inserted in a socket 42 in the under side of the flask support 22 hereinabove described.

From the foregoing description, it will be seen that when the magnet is energized, the armature or solenoid 27 is attracted upward toward the face of the pole 31, causing a corresponding upward movement of the flask support 22 and carrying the pallet board 18 against the abutment 11, which results in compactly compressing the sand around the pattern contained in the flask. When the current passing through the magnet is broken, the solenoid is permitted to descend, carrying downward with it the push rod 40 and the flask support 22 together with the load thereon.

I claim:—

1. In combination in a molding machine, a base, upright guide members secured to the base, a flask supporting member slidably mounted upon the guide members, a presser member horizontally hinged to the guide members above the flask supporting member, and adapted in one position to lie over the flask supporting member and in its other position to lie to one side thereof, and power means interposed between the base and flask supporting member for moving such member upward.

2. In combination in a molding machine, a base 1 provided with upright guide rods 2, 2, a flask supporting member 22 slidably mounted upon the guide rods, a presser

member 11 horizontally hinged to the upper ends of the guide rods, and power means for moving the flask supporting member upward.

3. In combination in a molding machine, a base provided with a guide recess, a solenoid core slidably mounted therein for vertical movement, an annular guide member encircling the core and mounted upon the base, a winding mounted on the guide member and encircling the core, a casing mounted on the guide member and inclosing the winding, a flask supporting member mounted for vertical movement above the base and having operative connection with the core, and a presser member mounted above the flask supporting member.

4. In combination in a molding machine a base 1 provided with a guide recess, a solenoid core 27 mounted therein for vertical movement, a casing of magnetic metal having an end portion 30 mounted upon the base, a winding 37 housed in the casing and encircling the core, a flask supporting member 22 mounted for vertical movement above the base, and a connecting rod 40 carried by the core and extending through the end portion 30 and engaging the flask supporting member.

5. In combination in a molding machine a base 1 provided with a guide recess, a solenoid core 27 mounted therein for vertical movement, a casing of magnetic metal having an end portion 30 mounted upon the base, a winding 37 housed in the casing and encircling the core, an annular supporting member 29 of magnetic metal carrying the winding and interposed between the base and the casing, a flask supporting member 22 mounted for vertical movement above the base, and a connecting rod 40, carried by the core and extending through the end portion 30 and engaging the flask supporting member.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY S. STEWART.

Witnesses:

H. C. FULLER,

J. H. STEINER.