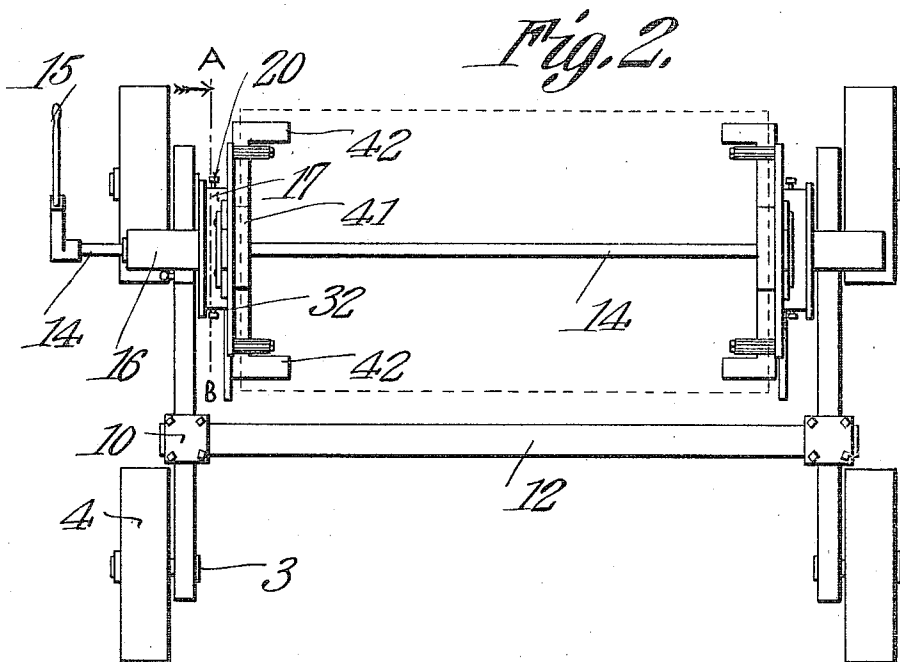
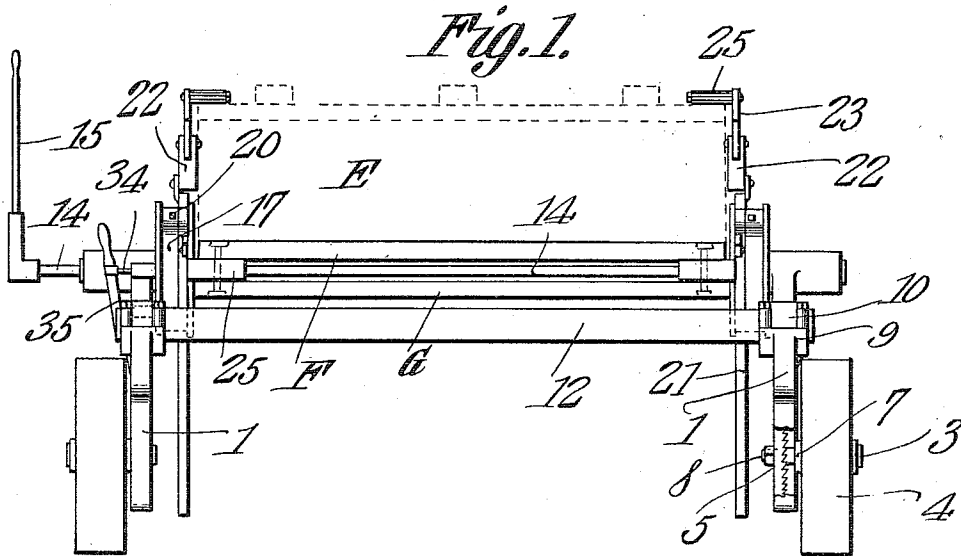


E. KILLING.  
MOLDING MACHINE.  
APPLICATION FILED JULY 22, 1909.

957,564.

Patented May 10, 1910.

2 SHEETS—SHEET 1.



Witnesses  
*Robert H. Brown*  
*Herbert S. Lawson*

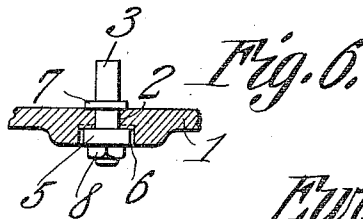
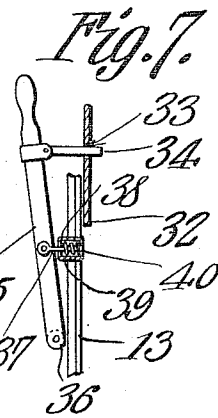
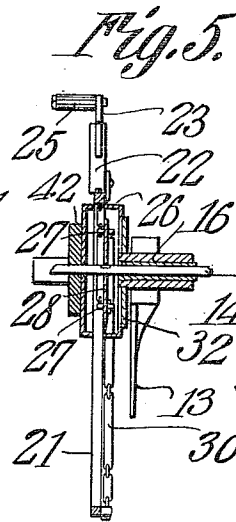
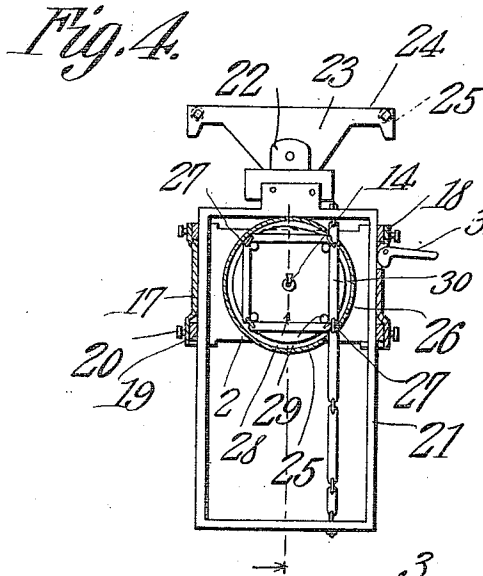
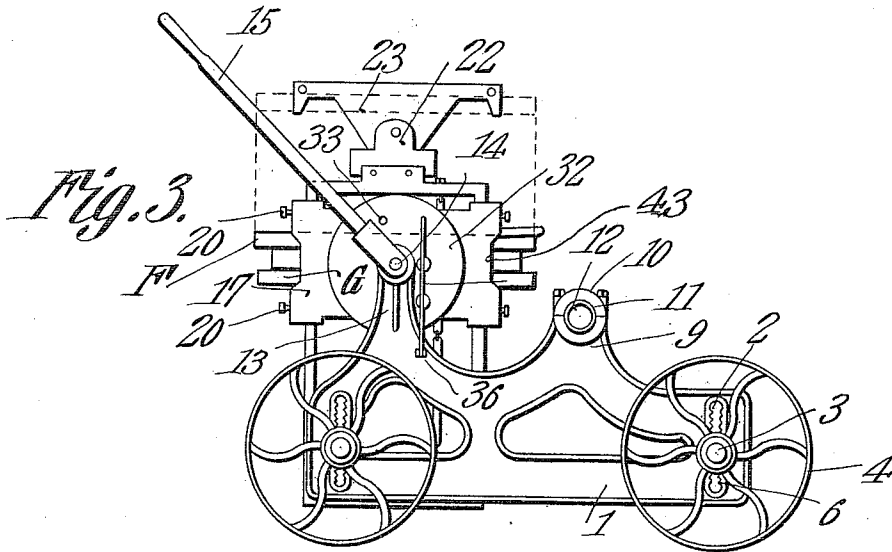
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By *C. A. Snow & Co.*  
Attorneys

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2 SHEETS—SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

EWALD KILLING, OF DAVENPORT, IOWA.

MOLDING-MACHINE.

957,564.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed July 22, 1909. Serial No. 508,982.

*To all whom it may concern:*

Be it known that I, EWALD KILLING, a subject of the Emperor of Germany, residing at Davenport, in the county of Scott and State of Iowa, have invented a new and useful Molding-Machine, of which the following is a specification.

This invention relates to molding machines of that type utilizing a carrier mounted for rotation about a horizontal axis, so as to permit the flask to be inverted and placed on the floor by the machine.

One of the objects of the present invention is to provide a machine of this character which can be adjusted to any desired width so as to receive flasks of different lengths.

Another object is to provide a molding machine which can be adjusted to different elevations and having flask lowering mechanism of a simple and durable nature, which is unaffected by sand, etc., which may be deposited thereon.

A further object is to provide improved clamping means combined with the flask lowering mechanism.

Another object is to provide a molding machine so constructed that it will straddle the sand heap, this being advantageous, because in cleaning or shaking out upon the completion of a day's work, the sand, as well as the flask, is in proper position for subsequent use.

Another object is to provide reversible supporting arms for the pattern plate, said arms being movable independently of the lowering mechanism and having means whereby they can be readily locked or unlocked.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a front elevation of a machine embodying the present improvements, the position of the flask therein being indicated by dotted lines. Fig. 2 is a plan view. Fig. 3 is a side elevation. Fig. 4 is a section on line A—B Fig. 2. Fig. 5 is a section on the line indicated by an arrow in Fig. 4. Fig. 6 is a horizontal section through the front portion of one of the sides of the machine and showing a stud secured

therein. Fig. 7 is a view partly in elevation and partly in section of the disk lock, said disk being shown in section.

Referring to the figures by characters of reference 1, 1 designate the sides of the machine, each side being preferably in the form of a casting having vertical slots 2 in the front and rear ends thereof and within which are adjustably mounted studs 3 supported by the front and rear wheels 4 of the machine. These studs are preferably screw-threaded and extend through blocks 5, seated within the slots 2, each slot being provided with longitudinally extending rabbets 6, having teeth designed to be engaged by corresponding teeth upon the blocks 5, there being a collar 7 upon each stud for bearing against the outer face of the member 1 when the block 5 is forced into engagement with the teeth in the slot. Nuts 8 are utilized for binding the parts together, these nuts being mounted on the screw-threaded studs and serving to draw the collars 7 and blocks 5 toward each other so as to cause them to bind securely upon the slotted portions of the members 1.

Each of the side members 1 is provided with an upwardly extending portion 9 provided with a removable cap 10, the meeting faces of the cap and projecting portions being concave, as indicated at 11, so as to receive the end portions of a coupling tube or bar 12, which serves to hold the side members 1 properly connected. Standards 13 also project upwardly from the side members 1 and constitute bearings for a shaft 14, which is provided at one end with a lever 15, whereby it can be readily actuated. This shaft extends through tubular extensions 16 movably mounted upon the standards 13 and projecting laterally from substantially rectangular guide heads 17 open at the top and bottom and provided in their sides with recesses 18 for the reception of guide blocks 19. These blocks are supported by adjusting screws 20, whereby they can be readily shifted toward or from each other, so as to properly guide a rectangular frame 21, which extends through each head 17 and is mounted to slide therein. A forked block 22 is secured upon the upper end of each of the frames 21 and has a head 23 secured therein and extending upwardly therefrom, there being oppositely extending arms 24 upon this head and provided with parallel clamping members 25, which are preferably in the

form of pins, having rollers journaled thereon. Each frame 21 surrounds a circular band 26 which is located within the guiding members 17 and has vertically alining openings 27 therein. This band and the opposed walls of the guiding members 17, form a drum within which a disk 28 is mounted to rotate, this disk being secured to the shaft 14, which extends transversely through the center of the drum. Pins 29 extend laterally from the disk 28, and secured to one of these pins and extending in opposite directions therefrom are two series of links 30, the two series being disposed in parallel planes and the length of the links being approximately equal to the distances between the adjoining pins. One set of links is connected to the upper end of the frame 21, while the other set is connected to the lower end of said frame and the links which are attached to the frame are designed to constantly project through the openings 27. As heretofore stated the disk 28 rotates with the shaft 14 and when such shaft is turned in one direction one set of links will wind upon the pins 29 and within the drum while the other set will unwind, this resulting in either the raising or the lowering of the frame 21 to which the links are connected. The band 26 serves to prevent sand, etc., from interfering with the operation of the links. A cam 31 is pivotally connected to one side of each of the guiding members 17, said cam being designed to swing into engagement with the frame 21 and lock it in any position to which it may be adjusted.

Each of the guide members 17 has a disk 32 secured to the outer face thereof and provided with diametrically opposed apertures 33 either of which is designed to receive a locking pin 34 carried by a lever 35 which is fulcrumed as at 36 upon one of the side members 1. A link 37 is pivotally connected to the lever 35 at a point between its fulcrum 36 and the locking pin 34, and this link is designed to reciprocate within a small housing 38 in which a spring 39 is located, this spring bearing against a head 40 so as to hold the pin 34 normally pressed against the disk 32. A cross-head 41 is pivotally mounted on the inner face of each guide member 17 and projects beyond the side thereof, each cross-head having supporting arms 42 at its terminals and which are perpendicular to the cross-head and parallel with the shaft 14. A pin 43 may be used for locking the cross-head against movement relative to the members 17 and with either side of the cross-head uppermost.

In using the machine herein described the side members 1 thereof are first adjusted vertically with relation to the wheels 4 by loosening the nuts 8 and shifting the blocks 5 longitudinally within the slots 2. By tightening the nuts the parts can then be fixedly

connected. After this vertical adjustment of the frame the side members 1 can be adjusted toward or from each other by loosening the caps 10 and then shifting said members 1 inwardly or outwardly, after which they can be secured together by tightening the caps 10 upon the tube or bar 12. After this adjustment has been effected, the flask E can be placed above the arm 42 and below the clamping member 25, it being understood that the mold board F and the mold board G are secured upon opposite faces of the cross-heads 41 and arms 42 so that by reversing said cross-heads, either the drag or the cope can be brought into position to constitute the bottom of the flask. Rotation of the guide members 17 and the parts carried thereby is of course prevented by the locking pin 34. In order to clamp the flask between the arms 42 and the members 25 the shaft 14 is partly rotated by means of lever 15, and this causes the disk 28 to also partly rotate and to wind one series of links 30 and to unwind the other series of said links. As a result the frame 21 will be moved downwardly so as to bring the clamping members 25 upon the upper portion of the flask and thus cause the flask to be securely held between said members and the arms 42. Each locking cam 31 is then shifted so as to bind against the adjoining frame 21 and the parts are thus held against displacement. When it is desired to invert the mold the disks 32 are unlocked and the guiding members 17 and all the parts connected thereto permitted to swing 180 degrees so as to bring the clamping members 25 lowermost. By then releasing the frames 21 and operating the lever 15 the links 30 can be wound and unwound so as to cause the frame 21 to move downwardly, thus permitting the flask or mold to be lowered on to the floor, a truck or other object provided for it.

It is of course to be understood that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the advantages of the invention.

What is claimed is:—

1. A molding machine including side frame members, supporting wheels adjustably connected to said members, adjustable connections between the members, and flask-supporting and inverting mechanism carried by said members.

2. A molding machine including wheel-supported frame members, adjustable connections between said members, pivotally and slidably supported clamping devices, pivotally mounted flask supporting devices movable independently of the clamping devices, and revoluble means for simultaneously shifting the clamping devices toward or away from the supporting devices.

3. A molding machine including wheel-

supported frame members, guide devices mounted for rotation upon said members, flask supports pivotally supported between the frame members and movable independently of the guide devices, means for locking said flask support to the guide devices, means for locking the guide devices against rotation, slides mounted in the guide devices, revoluble means for actuating said slides, and clamping members movable with said slides.

4. A molding machine including adjustably connected wheel-supported frame members, guide devices mounted for rotation thereon, means for locking said devices against rotation, flask-supporting arms extending from and movable with said devices, a frame slidably mounted within each guide device, a revoluble actuating element, flexible connections between said element and the opposed ends of the frame, said revoluble element operating to simultaneously wind and unwind the connections to shift the frames longitudinally, and clamping devices carried by the frames.

5. A molding machine including adjustably connected frame members, guide devices mounted for rotation thereon, means for locking said devices against rotation, an apertured drum within each guide device, a revoluble actuating element extending through the drums, frames slidably mounted within the guide devices, flexible connections between opposite ends of each frame and the actuating element, said element operating to simultaneously wrap and unwrap said connections to shift the frame longitudinally, flask-supporting members mov-

able with the guide devices, and clamping members movable with the frames.

6. A molding machine including adjustably connected frame members, a guide device mounted for rotation upon each member, flask-supporting members movable with each of said devices, means for locking said devices against rotation, a drum within each guide device and having alining apertures, a frame slidably mounted within each guide device, a revoluble actuating element extending through the drums, flexible connections between the ends of each frame and said actuating element, said connections extending through the apertures within the drum, said element constituting means for simultaneously wrapping and unwrapping the respective connections of each frame, and clamping members carried by each frame.

7. A molding machine including side frame members, guide devices mounted for rotation upon said members, flask supports revolubly mounted between said devices, means for locking said supports against movement relative to said devices, means for locking the guide devices against rotation, movably supported clamping devices, and revoluble means for simultaneously shifting the clamping devices toward or away from the flask support.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

EWALD KILLING.

Witnesses:

FRANK A. COOPER,  
CORNELIUS H. MURPHY.