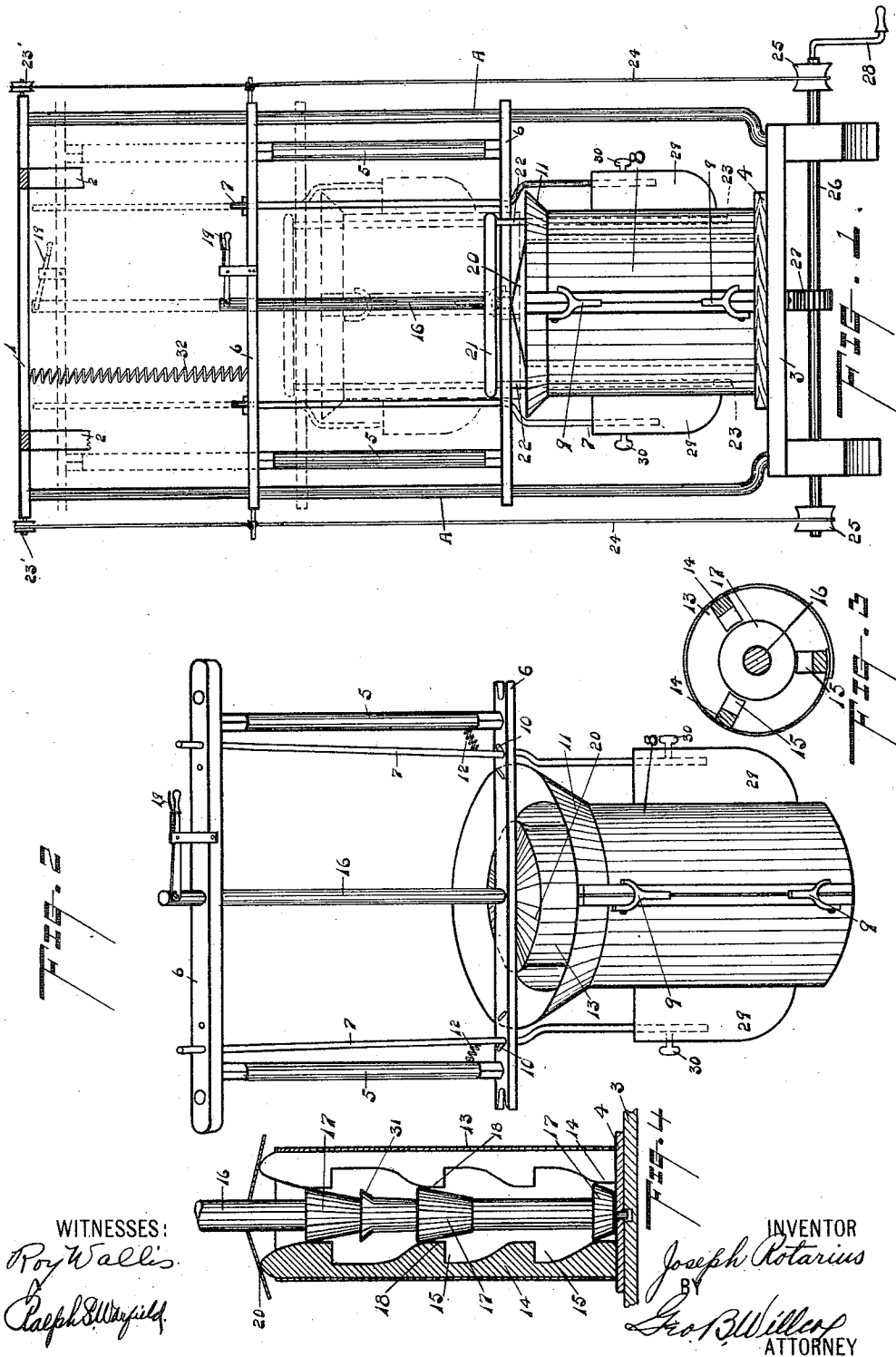


J. ROTARIUS.
TILE MACHINE.

APPLICATION FILED MAY 18, 1909.

995,293.

Patented June 13, 1911.



WITNESSES:
Roy Wallis
Ralph B. Willcox

INVENTOR
Joseph Rotarius
BY
Geo. B. Willcox
ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEPH ROTARIUS, OF KAWKAWLIN, MICHIGAN.

TILE-MACHINE.

995,293.

Specification of Letters Patent. Patented June 13, 1911.

Application filed May 18, 1909. Serial No. 496,739.

To all whom it may concern:

Be it known that I, JOSEPH ROTARIUS, a citizen of the United States, residing at Kawkawlin, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Tile-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for molding cylindrical structures as tile and the like, one object being the provision of means for raising the mold and its connected parts to permit the article molded to be removed.

Another object is the provision of improved means for releasing the mold from the article.

A further object is the provision of an improved expansible and contractible core.

To these and other ends, therefore, my invention consists in certain novel features and combinations of parts such as will be more fully described hereinafter and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a side view of one embodiment of my invention, dotted lines showing the position of the parts when raised, Fig. 2 is a detail perspective view of the frame and connected parts, and Figs. 3 and 4 are horizontal and vertical cross-sectional views respectively, through the core.

My invention in brief comprises a suitable guide frame on which is slidably received a sash supporting the mold casing, the core, and if desired, a tamping member, the sash being raised by means of a flexible connection passing around pulleys on the frame. Means is also provided for securing the expansion and contraction of the core.

Referring to the drawings, A indicates a pair of vertical guides mounted on any suitable support and provided with a cross-brace 1 at or near its upper end, and braces 2, 2. The cross-brace 1 may constitute an arch integral with the guides.

In the drawing I have shown the guides as being mounted on a base 3 which supports the removable pallet board 4, but when

molding heavy tile or crocks, the base is omitted so that the tile can be formed on the ground and left to season, the machine being moved to a new site after each tile is molded.

Slidably mounted on the vertical guides is a sash comprising the stiles 5, 5 and bars 6, 6, the latter riding on the guides. Rods 7, 7, which, if desired, may be resilient, are journaled in the bars, the lower ends of the rods being secured to the opposite sides of a mold casing 8. This mold casing comprises a cylinder preferably made of resilient material and split longitudinally, the abutting edges being held together by any suitable means as the latches 9, 9. The tendency of the abutting edges of the casing is to lie apart from each other, causing an expansion of the mold casing. This tendency to expansion operates to cause the mold to automatically release or free itself from the molded article, movement of the rods to accommodate or cause such expansion, being permitted by the formation of divergent slots 10, 10, in the lower rail of the sash. The upper end of the mold casing may be provided with a funnel mouth or flange 11 to receive the material of which the molded article is to be formed, and the rods may be bent outward to avoid contact with the flange.

In the event that the resilience of the metal of which the mold is formed, is not sufficient to expand the casing when the latches 9 are released or if hinged mold casings are employed, I may equip each rod 7 with a coiled retracting spring 12, one end of which is stationarily secured, the opposite end being connected to the rod. These springs are placed under tension when the mold is closed and when the latches are released, the tension of the springs operates to expand the mold casing to cause its release from the article. The rods move with the sash as the latter is raised or lowered.

In order to properly center the mold when setting up the machine, I provide the mold with socketed brackets 29 in which the lower ends of the rods 7 are rotatably received, and set screws 30 carried by the brackets engage the rods to firmly clamp them in the brackets after the mold is adjusted to the satisfaction of the operator.

A core 13 is located within and preferably movable vertically with the mold, such core comprising a cylindrical member slit longitudinally, the abutting edges overlapping each other more or less as the core is contracted or expanded. I have shown such core composed of a single sheet of resilient material so formed that its constant tendency is to collapse or contract automatically.

As one means for expanding the core, I arrange the longitudinally extending ribs or battens 14 around the interior periphery thereof, the inner faces of the ribs being recessed as at 15, at points in the same horizontal plane. An expander coöperates with the ribs, such expander comprising a shaft 16 extending axially of the core. The upper end of the expander is loosely received in the bars of the sash. Inverted cone-shaped wedges 17 are arranged in series on the expander, the bases of the wedges lying opposite the recesses 15 when the core is in contracted position, the points of the wedges engaging the inclined faces 18 of the ribs, such inclined faces operating to guide the expander and form a seat therefor. When the expander is moved longitudinally, however, the wedges wipe over the grooved portions of the ribs to spread or expand the core. The lower end of the expander passes through a hole in the pallet board 4 and into a recess in the base 3 when the latter is employed. To contract the core, the shaft is pulled upward to the first position described, the core automatically collapsing as the wedges are removed from between the grooved portions of the ribs.

The expander preferably carries three expanding protuberances 17, two of which are located near the opposite ends of the core and the other in the middle. The expander also carries a head 31 adapted to engage the shoulders formed by recessing the battens where the core is contracted, and this head, together with the lowermost protuberance or wedge which is also adapted to engage said shoulders, coöperate to lift the core when the sash is lifted, so that the core and mold are raised simultaneously out of the way to permit the removal of the tile relative to the machine or vice versa.

The sash may be counter-balanced in any suitable manner as by means of a spring 32 depending from the cross-bar 1. In order to operate the shaft, I may provide a lever, one form of which is indicated at 19. Such lever is pivoted on the sash, with one end engaging the shaft.

In order to prevent the entrance of the material into the core, I provide the core with a conical cover 20 through which the shaft extends. A hand tamper may be associated with the mold, such tamper consisting of a cross-bar 21 journaled on the

shaft 16 above the lower sash bar and provided with legs 22 depending into the annular space between the mold and core, the lower ends of the legs carrying arcuate feet 23 adapted to engage the material.

In use, the operator reciprocates the cross-bar, turning the same on the shaft to tamp down the material throughout the annular space defined by the mold and core. The legs of the tamper straddle the lower sash bar to permit the movement of each leg through an arc of nearly 180 degrees, the feet being of such length as to engage the material lying directly beneath the sash bar.

In order to elevate the sash and its connected parts, I provide the pulleys 23' on the frame, flexible cables 24 being secured to the sash and extending over the pulleys and thence, down to the drums 25 on a shaft 26 journaled in the base and having a pawl and ratchet mechanism indicated at 27. This shaft is actuated by a crank 28.

The operation of that form of my invention herein illustrated is as follows: Assuming the sash with the mold, core, and tamper to be in elevated position, held in place by the ratchet, the operator will place a pallet on the base so that the aperture through the pallet registers with the recess in the base. Thereupon, the ratchet is released and the crank rotated to lower the mold and its coöperating parts, the casing and core resting on the pallet board, the lower end of the expander lying in alinement with the opening in the pallet board. The operator then actuates the lever 19 to expand the core and simultaneously lock the pallet, base and core in place. He then draws the free ends of the molds together and locks them in place by the latches 9. The mold is now in readiness to receive the plastic material which is tamped down and when completed, the lever 19 is actuated to release the expander, the normal tendency of the battens or ribs 14 being to force the expander out of the core to permit the latter to contract. The latches 9 are then thrown back to permit the walls of the casing to move apart, whereby the tile is automatically released. The crank is then operated to raise the sash and connected parts to a plane above the level of the tile so that the latter may be removed.

It is evident that changes may be made in the form and arrangement of the several parts described without departing from the spirit and scope of my invention.

Having thus fully disclosed my invention, what I claim as new, is:—

In a molding machine, a base formed with a central aperture, vertical guides carried by said base; a sash vertically movable on said guides; a shaft carried by said sash and vertically movable therein, said shaft adapt-

ed to enter the aperture of said base; core
expanders carried by said shaft; an expan-
sible core; an expansible mold inclosing said
core; oppositely placed socketed brackets
5 carried by said mold; resilient rods jour-
naled in said sash, the lower ends of said
rods removably secured to said brackets; and
retracted springs for said rods; together

with means for raising and lowering said
sash.

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

JOSEPH ROTARIUS.

Witnesses:

ELIZABETH MACPHERSON,
JAMES W. PEARSALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
