I. M. NEWMAN.

MOLDING MACHINE.

APPLICATION FILED SEPT. 6, 1912.

1,081,399.

Patented Dec. 16, 1913.

5 SHEETS—SHEET 1.

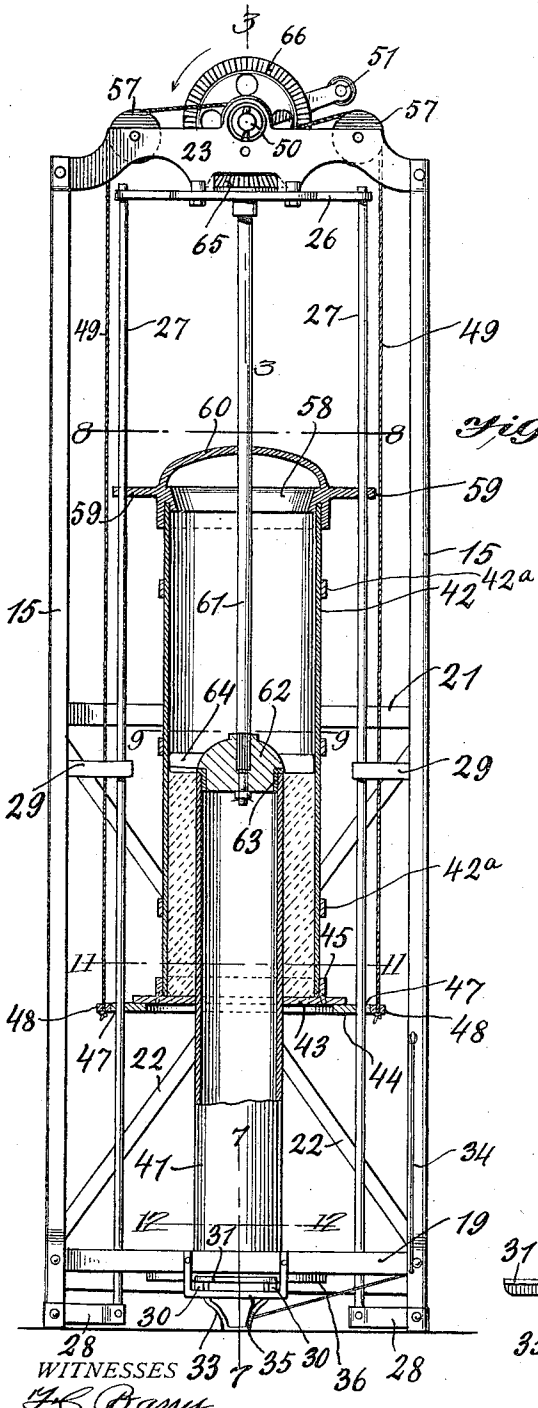


Fig. 1.

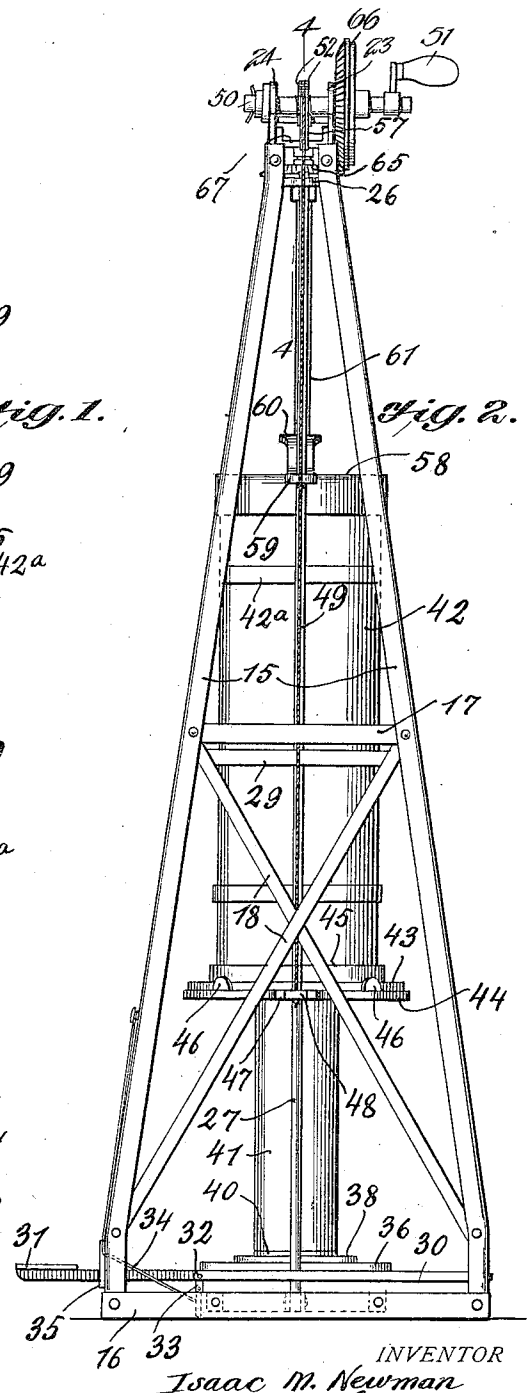


Fig. 2.

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Fig. 3.

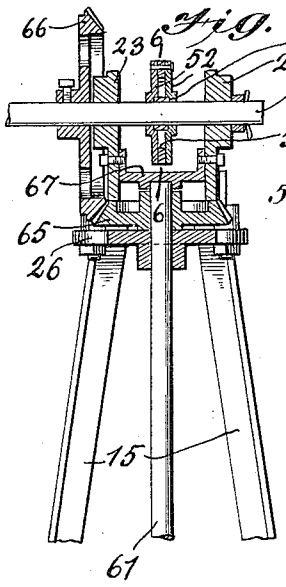


Fig. 4.

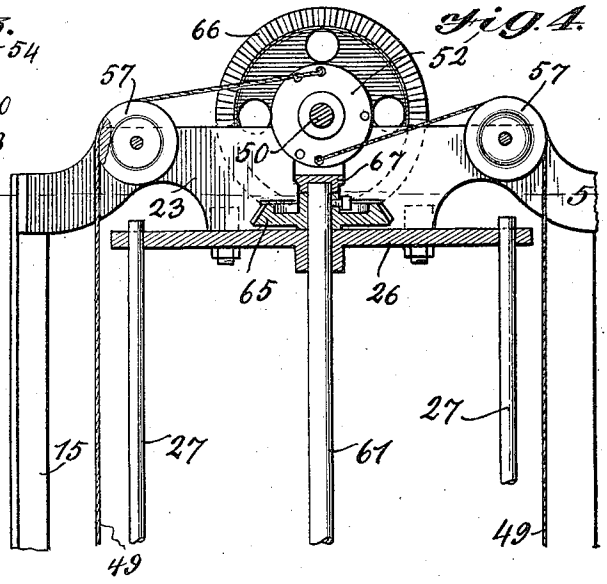


Fig. 5.

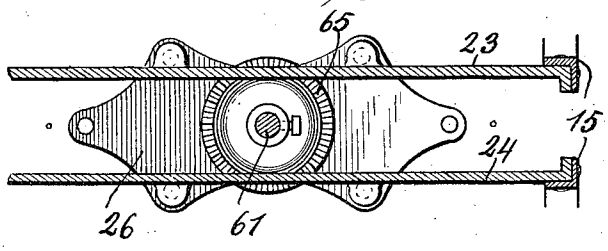


Fig. 6.

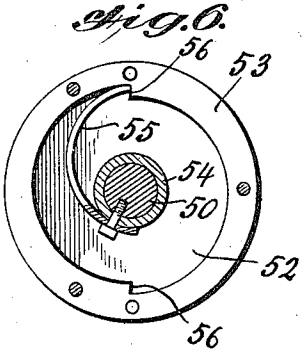
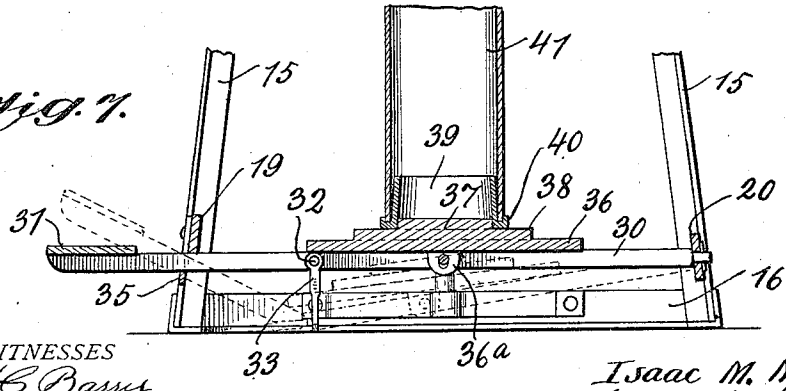


Fig. 7.



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Fig. 8.

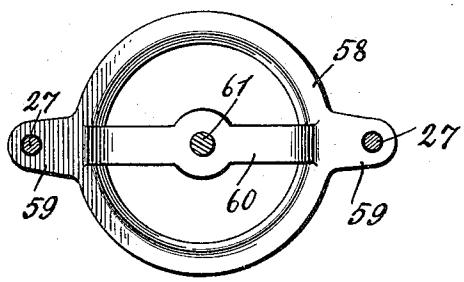


Fig. 9.

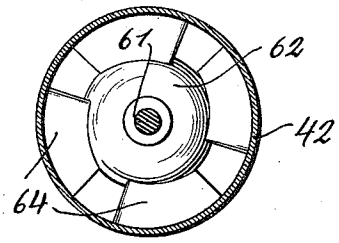


Fig. 14.

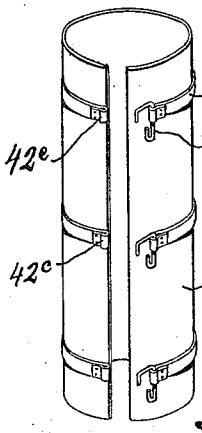


Fig. 10.

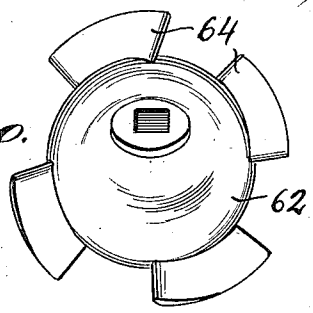


Fig. 15.

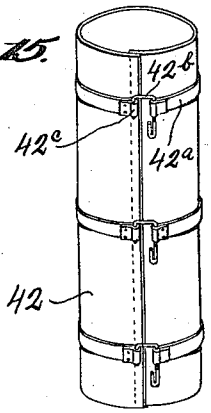


Fig. 11.

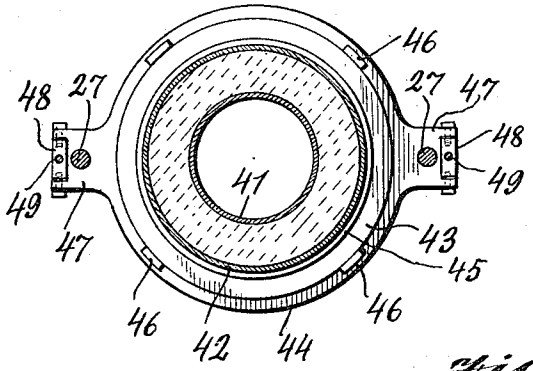


Fig. 12.

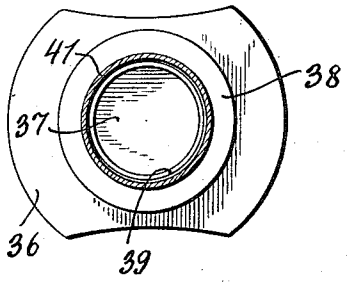
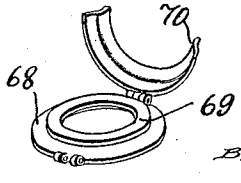


Fig. 13.



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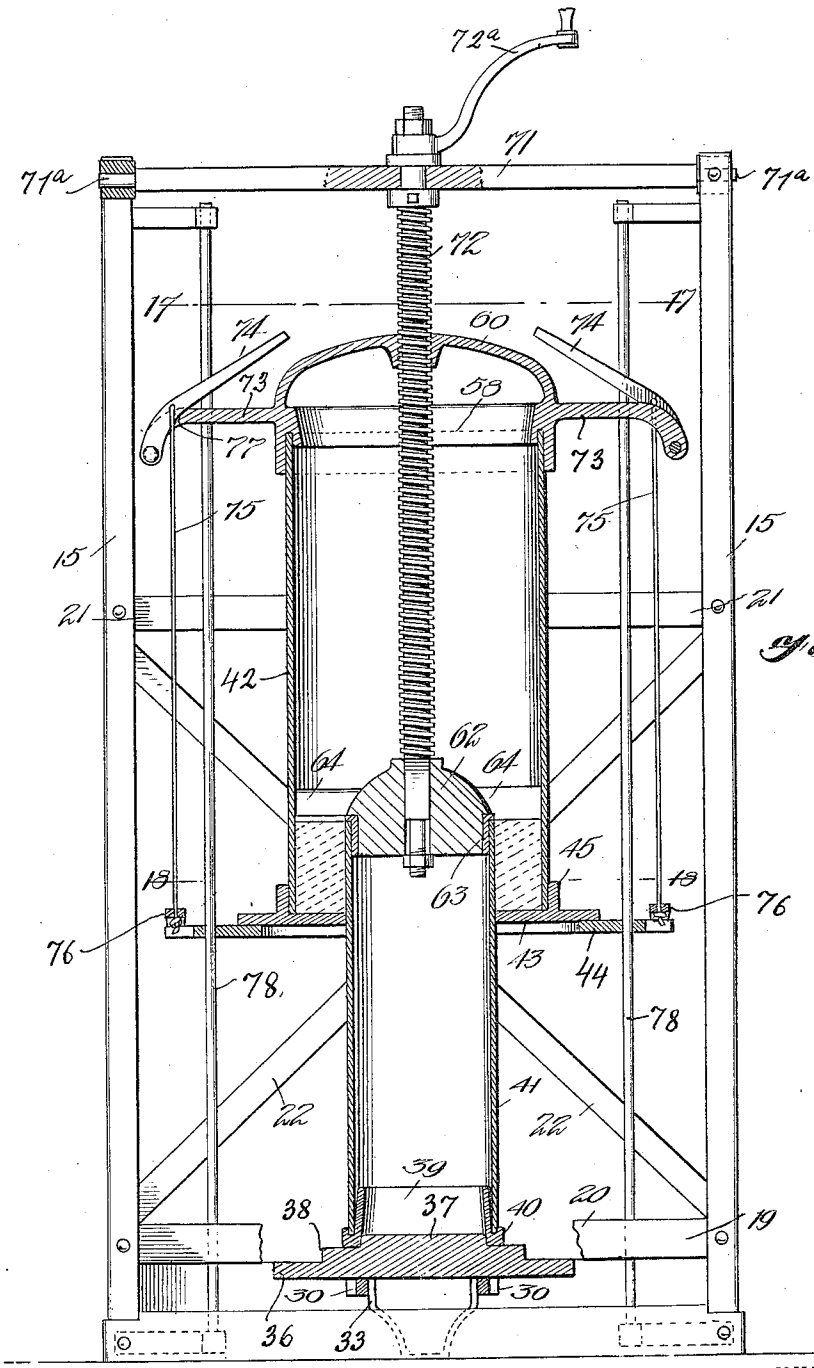


Fig. 16.

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5 SHEETS—SHEET 5.

Fig. 17.

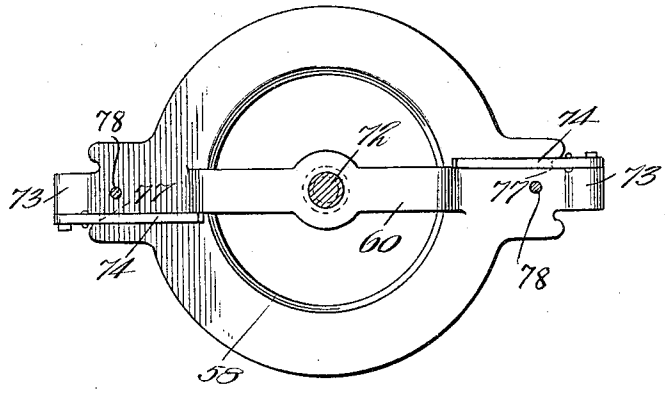
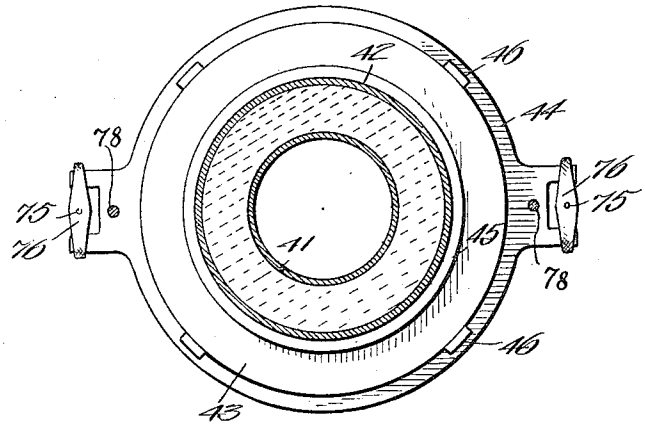


Fig. 18.



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UNITED STATES PATENT OFFICE.

ISAAC M. NEWMAN, OF HEWINS, KANSAS.

MOLDING-MACHINE.

1,081,399. Specification of Letters Patent. Patented Dec. 16, 1913.

Application filed September 6, 1912. Serial No. 718,871.

To all whom it may concern:

Be it known that I, ISAAC M. NEWMAN, a citizen of the United States, residing at Hewins, in the county of Chautauqua and State of Kansas, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

This invention relates to pipe or tile molding machines having spaced inner and outer shells, the inner shell being stationary and serving as a core, and the outer shell being movable in the direction of its length to form the pipe around said core, together with a compacting device operating in the outer shell above the core.

It is the object of the invention to provide in a machine of the kind stated, novel and improved means for operating the outer shell and the compacting device, and also to provide a machine which is simple in construction and which can be easily and rapidly operated.

Other objects and advantages of the invention will be pointed out in the detailed description appearing hereinafter, and in order that the invention may be better understood, reference is had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine, partly in vertical section. Fig. 2 is a side elevation. Fig. 3 is a vertical section on the line 3—3 of Fig. 1. Fig. 4 is a vertical section on the line 4—4 of Fig. 2. Fig. 5 is a horizontal section on the line 5—5 of Fig. 4. Fig. 6 is a vertical enlarged section on the line 6—6 of Fig. 3. Fig. 7 is a vertical section on the line 7—7 of Fig. 1. Figs. 8 and 9 are horizontal sections on the lines 8—8 and 9—9, respectively, of Fig. 1. Fig. 10 is a perspective view of the compacting device. Figs. 11 and 12 are horizontal sections on the lines 11—11 and 12—12, respectively, of Fig. 1. Fig. 13 is a perspective view of a modified form of spacing device. Fig. 14 is a perspective view of the outer shell of the mold showing the same open. Fig. 15 is a similar view of the outer shell showing the same closed. Fig. 16 is a vertical section of a modified machine. Figs. 17 and 18 are horizontal sections on the lines 17—17 and 18—18, respectively, of Fig. 16.

Referring specifically to the drawings, the supporting frame of the machine comprises four uprights 15 connected in pairs at the bottom by sills 16, and intermediate the top and bottom by cross-bars 17, and crossed braces 18. The front uprights are connected by a bottom cross-bar 19, and the rear uprights by a bottom cross-bar 20, the latter being also connected by an intermediate cross-bar 21, and crossed braces 22. The members of the respective pairs of uprights converge toward the top and carry thereat a head which supports the gears to be presently described. The uprights are angle irons and they are bolted or otherwise rigidly fastened to the four corners of the head, the latter comprising front and rear plates 23 and 24, respectively, said head therefore forming an open frame. To the bottom of the head is bolted or otherwise fastened a plate 26 supporting the upper ends of two laterally spaced vertical rods 27, which are supported at the bottom by converging bracket arms 28, and intermediate their ends by similar bracket arms 29.

At the bottom of the frame herein described is mounted a vertically swinging support for the core, said support comprising a pair of levers 30 which are loosely supported at their rear ends in apertures made in the rear bottom cross-bar 20, so that they are free to be rocked in a vertical plane. The forward ends of the levers carry a foot plate 31. The levers are in two sections which are pivotally connected by a rod 32 which also connects the sections. To the rod is also pivoted a prop 33 which is adapted to be swung down in contact with the floor or ground to hold the levers in elevated position. Upon swinging the prop upward, the levers are free to drop down as shown by dotted lines in Fig. 7. A line 34 connected to the prop provides a convenient means for swinging the same to release the levers. The forward ends of the levers are supported in a stirrup 35 carried by the front cross-bar 19.

On the levers is supported a carrier for the core and the finished tile, said carrier comprising a plate 36 having bottom ears 36ª whereby it is connected to the levers. The plate has two or more circular top enlargements 37 and 38, respectively, of different heights and diameters, which are adapted to center thimbles of different diameters. Fig. 7 shows a thimble 39 seating on the plate and centered by the smaller enlargement 37, the latter fitting in the bottom of the thimble. The thimble has an

outstanding annular bottom flange 40 provided with a top groove in which seats the lower edge of the core 41, the latter being a vertically arranged cylindrical shell. The thimble extends into the lower end of the shell. For a core of greater diameter, a large thimble will be employed, and the same will be centered by the enlargement 38.

The outer cylindrical shell of the mold is indicated at 42, said shell being split longitudinally so that it may be expanded to release the finished article. On the outside of the shell are fastened circumferential bands 42^a. One end of each band carries a latch 42^b which is engageable with an eye 42^c on the other end of the band, whereby the shell is locked in contracted position, and upon releasing the latches the shell expands and permits removal of the finished article. The shell is vertical and of greater diameter than the core 41, so that the latter may pass thereinto. The shell 42 is open at both ends and its lower end rests on a pallet 43 supported on a vertically traveling carrier 44. The pallet is a circular plate having a top upstanding annular flange 45 which encircles the lower end of the shell and centers the same. On the top of the carrier 44 are upstanding lugs 46 which engage the edge of the pallet and center the same.

The carrier 44 is slidably mounted on the guide-rods 27, it having diametrically opposite vertical apertures through which said rods pass, and adjacent to these apertures, the carrier has outstanding ears 47 which are slotted at their outer ends to accommodate blocks 48 to which latter are connected the lower ends of hoisting lines 49, the blocks being swiveled in the slots.

The following means are provided for operating the hoisting lines to raise and lower the carrier: In the plates 23 and 24 is journaled a transverse shaft 50 fitted at one end with a hand crank 51. Between the plates 23 and 24, the shaft 50 carries two disks 52, which are loose on the shaft and between which is held a ring 53, the disks and ring being bolted or otherwise fastened together. On the shaft 50 is fast a sleeve 54 which carries a spring pawl 55 adapted to engage abutments 56 on the inner periphery of the ring, whereby the motion of the shaft in one direction is transmitted to the ring and disks. When the shaft is rotated in the opposite direction, the pawl slips and the ring and disks remain stationary. One of the hoisting lines 49 is connected to one of the disks, and the other line is connected to the other disk. From the disks, the hoisting lines pass in opposite direction to guide pulleys 57 mounted between the plates 23 and 24 near the ends thereof. The hoisting lines are adapted to be wound on the shaft in opposite directions by rotating the latter in a direction to engage the pawl 55 with the abutments, and after the lines are wound on the shaft, they are unwound by rotating the shaft in the opposite direction.

On the top of the shell 42 is removably mounted a hopper 58 having perforated ears 59 whereby it is slidably connected to the guide rods 27. The hopper also has a cross head 60 through which loosely passes the shaft 61 of the compacting device which will now be described.

The compacting device comprises a body 62 which is shaped to fit within a thimble 63 seating in the upper end of the shell 41, said body being carried by the lower end of the shaft 61. The body 62 has radial wings 64 which tend to work the material outward into the space between the shells 40 and 42. The compacting device is rotatable, the following means being provided for operating the same: On the upper end of the shaft 61 is made fast a bevel gear 65 which is in mesh with a similar gear 66 on the shaft 50. It will therefore be evident that the motion of the shaft 50 is transmitted to the compacting device. The upper end of the shaft 61 finds a bearing in a cross-head 67 extending between and supported by the parts 23 and 24.

Fig. 13 shows a modified form of support for the inner shell to be substituted for the part 36 when it is desired to form a flange on the bottom end of the pipe. This support comprises a ring 68 having a top flange 69, and carrying hinged rims 70, only one of which latter is shown. The two rims when swung down on the ring form a circular wall for the thimble 39.

In operation, the hoisting lines 49 are wound on the shaft 50 until the lower end of the shell 42 is at the top of the shell 41. The material is now passed through the hopper 58 into the shell 42 and the shaft 50 is rotated to unwind the lines 49, whereupon the shell 42 is allowed to descend, and at the same time the compacting device is operated. This operation is continued until the shell 42 reaches the lower end of the shell 41, the material being worked into the space between the two shells to form the pipe. At the end of the downward travel of the shell 42, the carrier 44 comes to rest on the plate 36, and the levers 30 are then released and allowed to drop down as shown by dotted lines in Fig. 7. This disconnects the shell 42 from the hopper 58 and the shell 41 from the compacting device 62 and leaves the two shells supported by the plate 36, the carrier 44 having a central opening sufficiently large to allow the plate 36 to pass therethrough. The top of the two shells are now leaning forward, and are removed by hand to a convenient place for the material to set. Before releasing the shells to effect their

removal, the top of the material is finished off by a few turns of the compacting device 62. The shell 40 is held up by its friction upon the material in the shell 42 when the two shells are removed from the machine as described.

Figs. 16 to 18 show a machine which is operated by a screw. At the top of the uprights 15 forming the supporting frame of the machine is mounted a cross-bar 71 carrying a vertically arranged non-traveling screw 72 provided with a crank handle 72[a] for operating the same. The lower end of the screw carries the compacting device 62 and is threaded through the cross-head 60 of the hopper 58. The cross bar 71 is swiveled at its ends in the top portion of the supporting frame as indicated at 71[a] so that the screw 72 may be swung to tilt the mold in order to effect removal of the finished tile.

To diametrically opposite ears 72 on the hopper 58 are pivoted levers 74 to which are connected cables or rods 75 which extend downward and are connected to bails 76 on the carrier 44. These parts provide a connection between the hopper and the carrier, which may be loosened by swinging the levers 74 downward, whereupon the shell 42 is released from the hopper 58, and the shell 41 from the compacting device, when the foot lever 30 is tripped. The carrier has notches 77 into which the levers are swung when in holding position.

The machine last described is operated by rotating the screw 72, whereby the shell 42 is made to descend, and at the same time the compacting device 62 is operated. Guide-rods 78 are also provided.

I claim:

1. A molding machine comprising spaced inner and outer shells, the inner shell being stationary and the outer shell being movable longitudinally over the inner shell, a lever comprising pivotally connected sections, means on one of the sections for supporting the inner shell, said shell being releasable, means for locking the lever, a carrier for the outer shell, a compacting device operating in the outer shell above the inner shell, and means for operating the carrier and the compacting device.

2. A molding machine comprising spaced inner and outer shells, the inner shell being stationary and the outer shell being movable longitudinally over the inner shell, a carrier for the outer shell, hoisting lines connected to the carrier, a compacting device operating in the outer shell above the inner shell, a shaft carrying the compacting device, a drive shaft geared to said shaft, a coupling between the hoisting lines and the drive shaft, a pawl-and-ratchet connection between the coupling and the drive shaft, and a support for the inner shell disengageable therefrom.

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

ISAAC M. NEWMAN.

Witnesses:
C. J. BURSON,
W. M. DOSBAUGH.

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