

J. F. NOLAN.
MOLDING MACHINE.

APPLICATION FILED JULY 16, 1907. RENEWED MAY 8, 1908.

905,350.

Patented Dec. 1, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

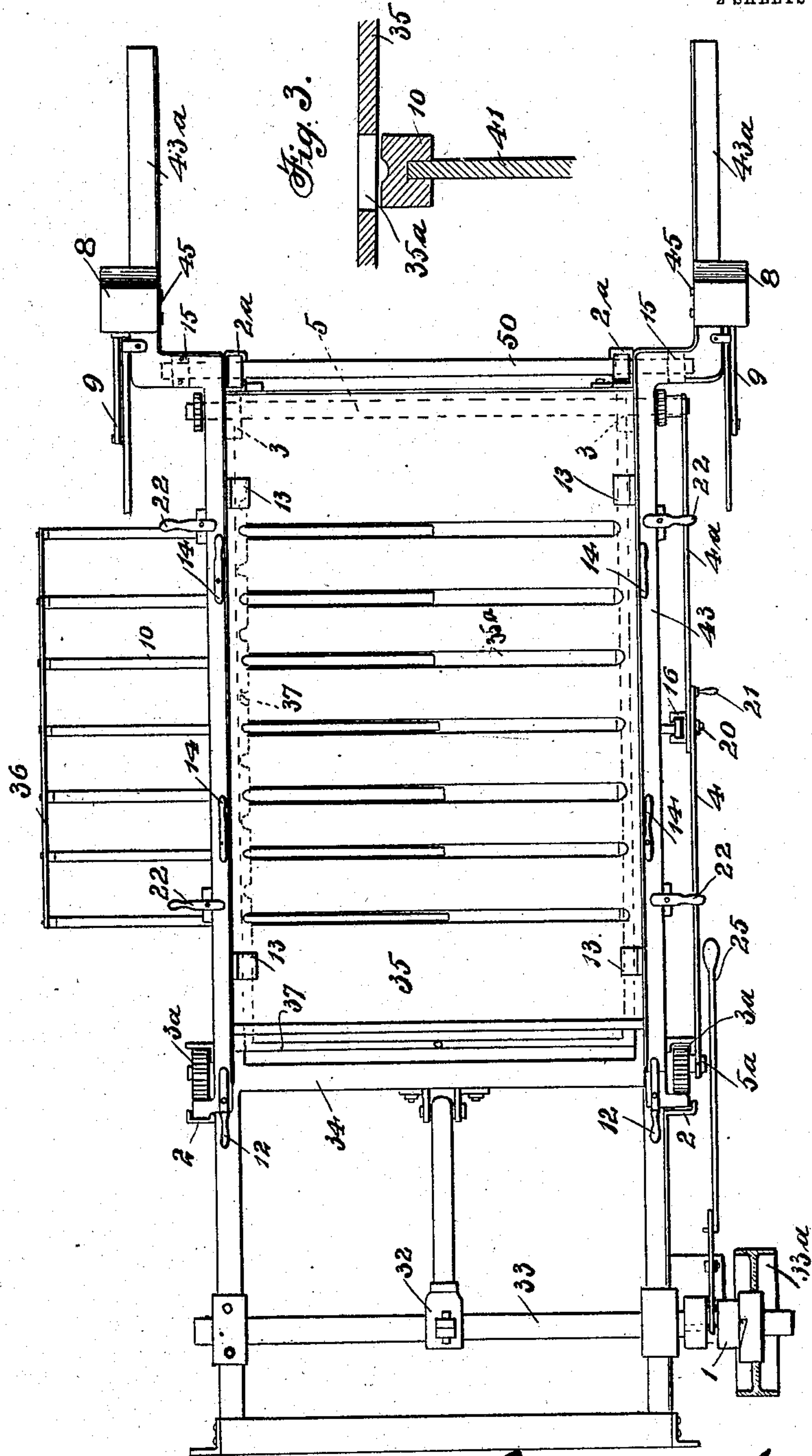
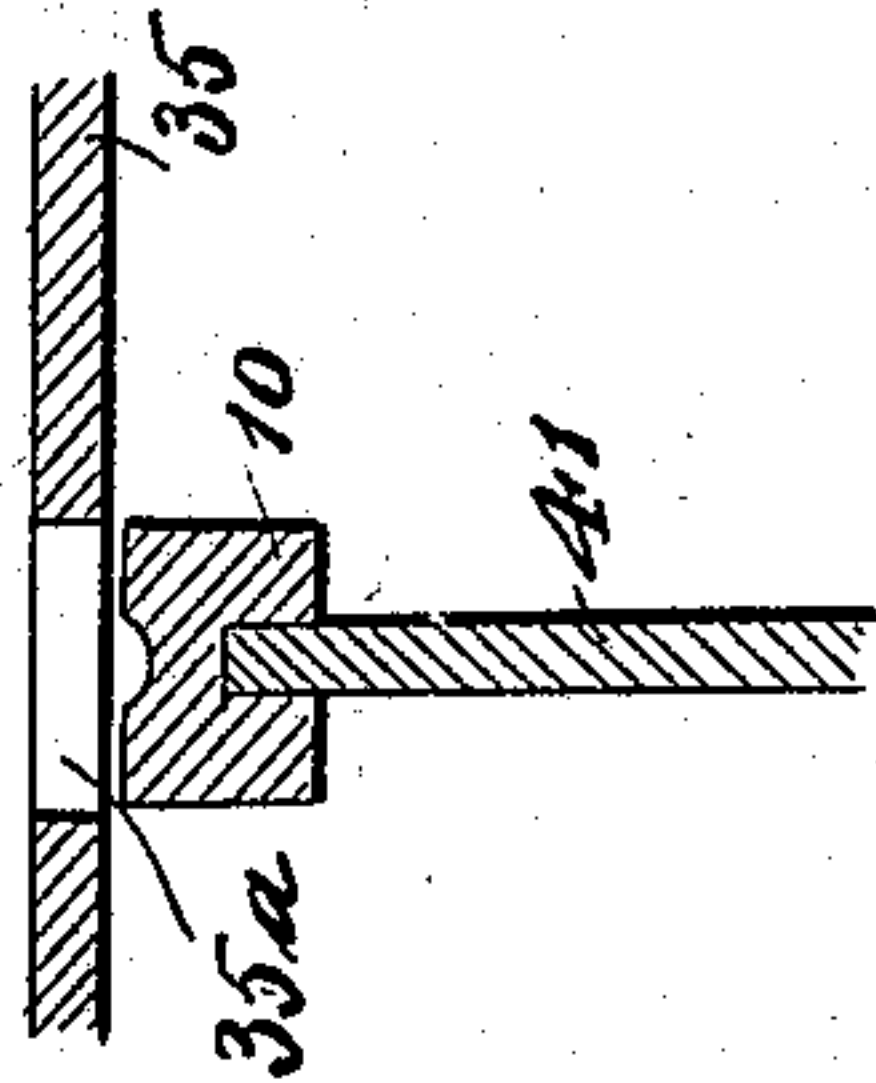


Fig. 3.



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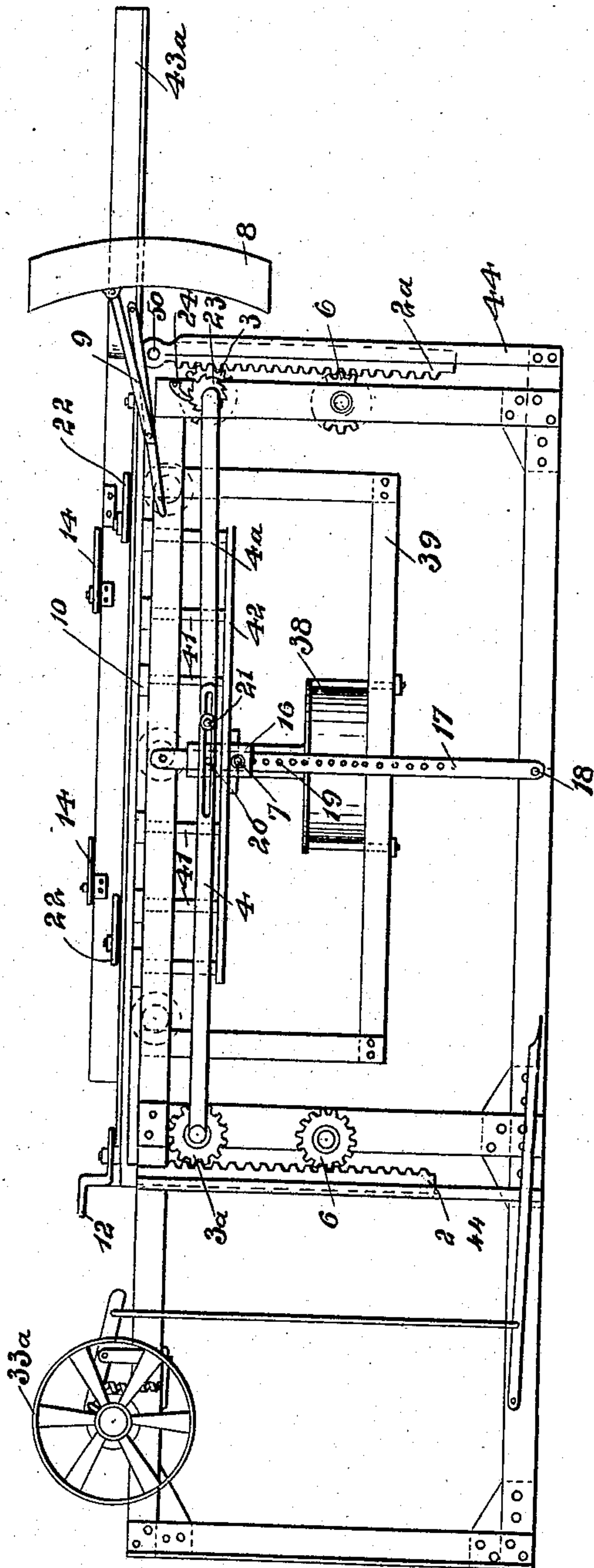


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN F. NOLAN, OF CHICAGO, ILLINOIS.

MOLDING-MACHINE.

No. 905,350.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed July 16, 1907, Serial No. 383,988. Renewed May 8, 1908. Serial No. 431,664.

To all whom it may concern:

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

This invention relates to molding machines, and is particularly an improvement on the invention shown in my United States Patent No. 719,250, dated January 27, 1903, and on the improvements shown in my pending application for patent, Number 374,617, filed May 20, 1907. Said patent and application disclose a vibrating sand plate or bed, and a half core box which is forced into the sand on the sand plate while said plate is being vibrated; and means are also shown for forcing core rods into the cores.

The object of the present invention is to form improved means for forcing the core box into the sand plate as it is vibrated.

A further object is to provide improved means for tilting or rocking over the core box after having been filled, in order to deposit same upon a joining table.

A further object of the invention is to provide improved means for placing and removing the core and vent rods.

A device is also provided for starting and stopping the machine whenever desired.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a top plan view. Fig. 2 is a side elevation. Fig. 3 is a detail in section.

The general construction and operation of the machine is the same as shown in said application and patent, and hence an extended explanation is believed to be unnecessary, but the main structure will be briefly referred to in the following description. The vibrating frame 34, which supports the sand plate 35, is operated by an eccentric 32 on shaft 33, which is thrown in or out of gear with driving pulley 33^a by means of a clutch indicated at 1, operated by a treadle 25, and acts to start or stop the machine whenever desired.

The core box (not shown) is or may be held between arms 43, by being mounted or placed upon the flanges 13 projecting therefrom, and held in place by clamps 14. These clamps are pivoted to the arms 43 and are arranged to turn to engage a core box placed

between the arms, said core box being clamped between the flanges 13, above referred to, and the turning members 14 on the top. These arms 43, and the parts carried thereby, are arranged to swing or rock over, being carried upon a shaft 50 which is mounted in bearings 15 at the top of vertical rack bars 2^a located at one end of the machine. At the other end of the frame are corresponding vertical rack bars 2. These rack bars, 2 and 2^a, slide in guides formed in the legs 44 of the main frame of the machine, and are operated by means of pinions 3 and 3^a, mounted on opposite ends of cross shafts 5 and 5^a, respectively, which shafts extend across under the bed of the machine. On one side of the machine, these shafts are fastened to levers 4 and 4^a, whereby said shafts may be turned, one of the levers having a handle 21. These levers lap at their ends, and are held together by a pin 20 extending through the slots and into the slide 16.

The levers may be fixed at any desired position by a pin 7, carried by the slide 16, and which may be inserted in any one of a series of holes 19 in a vertical guide bar 17 held beside the main frame by countersunk bolts 18 and on which the slide 16 may be slid up and down. The racks 2 and 2^a are also held in position by idle pinions 6.

Instead of the pins 7 and the parts associated therewith the racks may be held as set by means of ratchets 23 and pawls 24, said ratchets being fixed to the shafts 5 and 5^a, the pawls being pivoted to the main frame.

The outer ends of the arms 43 are offset beyond the end of the machine, as indicated at 43^a, a sufficient distance to swing beside the main frame of the machine when the core box and associated parts are rocked over. Said extensions carry the counterweights 8 which may be slid back and forth on the arms by means of levers 9 connected thereto. The arms 43 are preferably constructed of angle iron, and the weights 8 are held thereon by clips 45, in such manner, however, that the weights may be slid along on the arms to any desired position.

When the arms 43 and the parts carried thereby are swung over or upon the frame of the machine the ends of said arms rest upon the offsets at the top of the racks 2, and are there held by clamps 12, and are also held to the sand plate by means of clamps 22 on the sides of the sand plate, and which

act to secure the arms to the sand plate after the core boxes have been forced down into the sand.

The sand plate is slotted as indicated at 5 35^a for the purpose of receiving the cap strips 10 which support the core and vent rods, or by means of which said rods are inserted through said slots. In Fig. 1, these cap strips are shown partly pulled out, and 10 they are connected at their ends by a rod 36 whereby they may be all pulled out together. These caps rest upon the edges of cross pieces 41, as shown in Fig. 3, and slide in and out thereon when the cross pieces 41 are 15 lowered. The cap strips 10 have slight grooves along the top to receive the rods to be pressed into each half core. Said strips may be locked to the sand plate by means of notched strips 37, in the same manner as 20 that described in my pending application above noted, and when so locked they are brought up with the sand plate to hold the rods in the cores, which prevents the rods from dropping away from the cores when 25 the plate is lifted out of the frame. The core rods and supporting strips are raised and lowered by means of an air cylinder 38 and frame 42 in a manner fully described in my said patent and pending application, the 30 hoisting cylinder being supported by hangers 39 suspended from the vibrating frame 34. Lugs 40 on the bottom of the sand plate fit in holes in said frame 34 and hold the sand plate in place while the parts are vibrating.

35 In operation, the sand tempered and ready for use is placed on the sand plate to the required depth, and the arms 43 are rocked over upon the same, the multiple core boxes, not shown, being secured therebetween. The 40 ends of the arms rest upon the top of the front racks 2 where they are held in position by the clamps 12. The machine is started by means of the clutch 1. The levers 4 and 4^a, which up to this time had been 45 lowered, are then released and slowly raised, which by means of the pinions 3 and 3^a causes the racks 2 and 2^a to slide down, thereby lowering the arms and the core box, and inasmuch as the sand on the sand plate is 50 vibrating it quickly fills the matrices in the core box as it is pressed down to the sand plate. When the boxes are filled with sand the sand plate is stopped with the slots therein in position directly underneath the center of each 55 core. During the vibration of the sand plate the cap strips 10 are held flush with the top of the sand plate, by means of the hoisting cylinder. When the machine is stopped the caps are slightly raised to pack the sand in the core boxes somewhat more firmly and 60 make it ready to receive the core rods. The caps 10 are then lowered away from the sand plate by exhausting the air cylinder, and when lowered may be pulled out endwise as 65 shown in Fig. 1 and the core rods placed

thereon, after which they are slid back under the plate and again raised through the slots, pressing the rods into each core, to the distance desired. The cap strips 10 are then locked to the bottom of the sand plate by 70 means of the strips 37, which have notches to allow the cap strips to pass through when they are raised or lowered. When the cap strips are in place the lock strips are slid lengthwise a short distance, thereby locking 75 the cap strips to the sand plate, which is then clamped to the arms 43 by means of the clamps 22. The levers 4 and 4^a are then lowered which raises the sand plate from the 80 bed and clears the plate from the vibrating frame 34. The counterweights are then pushed to the end of the arms 43^a by the levers 9, and the clamps 12 released, allowing the arms to rock over, which brings the core 85 box in reverse or face-upward position ready to be deposited on any suitable joining table by releasing the clamps 14. The arms are then rocked back to deposit the sand plate in position, and the machine is then 90 ready for the next operation.

I claim:

1. In a core molding machine, the combination of a vibrating sand plate, rocking arms adapted to support a core box therebetween and located at each side of the plate 95 to swing the box down upon the sand on the plate, and means to apply pressure to said arms, to press the core box into the sand.

2. In a core molding machine, the combination of a vibrating sand plate, rocking 100 arms adapted to support a core box therebetween and located at each side of the plate to swing the box down upon the sand on the plate, and means to apply pressure to opposite ends of the arms, to press the core box 105 into the sand.

3. In a core molding machine, the combination of a vibrating sand plate, rocking arms at opposite sides of the plate and adapted to support a core box over said 110 plate, raising and lowering devices connected to the pivot of said bars and also to the free ends thereof, said devices being connected together to operate simultaneously. 115

4. In a core molding machine, the combination of a vibrating sand plate, rocking arms at opposite sides of the plate and adapted to support a core box over said 120 plate, vertically-slidable bars connected to the arms at the pivots thereof, similar bars having means to engage the free ends of the arms, and means to simultaneously raise or lower said bars.

5. The combination of a horizontal sand 125 plate, supporting arms for a core box, movable toward or from the plate, rack bars connected to opposite ends of the arms and movable vertically to raise or lower said arms, pinions engaging said rack bars, and 130

levers connected to said pinions, to turn the same and raise or lower said arms.

6. The combination with a slotted sand plate, of a hoisting device and frame located thereunder, said frame having cross pieces, and cap strips having grooves in which said cross pieces fit and slidable in and out on said cross pieces, and adapted to support core rods and to be forced through the slots when the frame is hoisted.

7. The combination of a main frame, a slotted sand plate removable therefrom, a hoisting device and frame located in the

main frame under said sand plate, detachable cap strips mounted on said hoisting frame and adapted to support core rods and to be forced through the slots when the frame is hoisted, and means to attach the cap strips to the sand plate when desired.

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

JOHN F. NOLAN.

Witnesses:

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H. G. BATCHELOR.