Dec. 17, 1929. R. S. CICERO 1,739,663

CORE MAKING MACHINE

Filed May 17, 1928 4 Sheets-Sheet 1

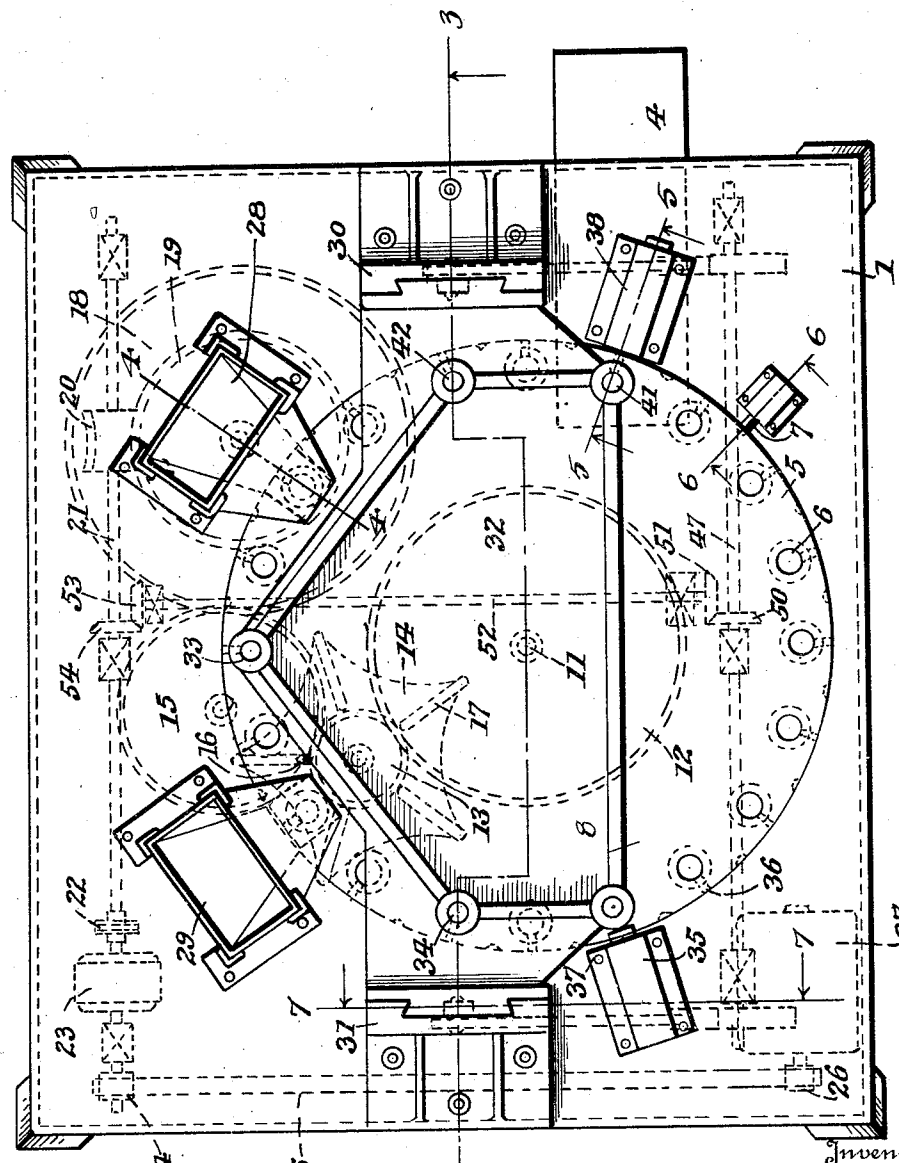


FIG. 1.

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CORE MAKING MACHINE

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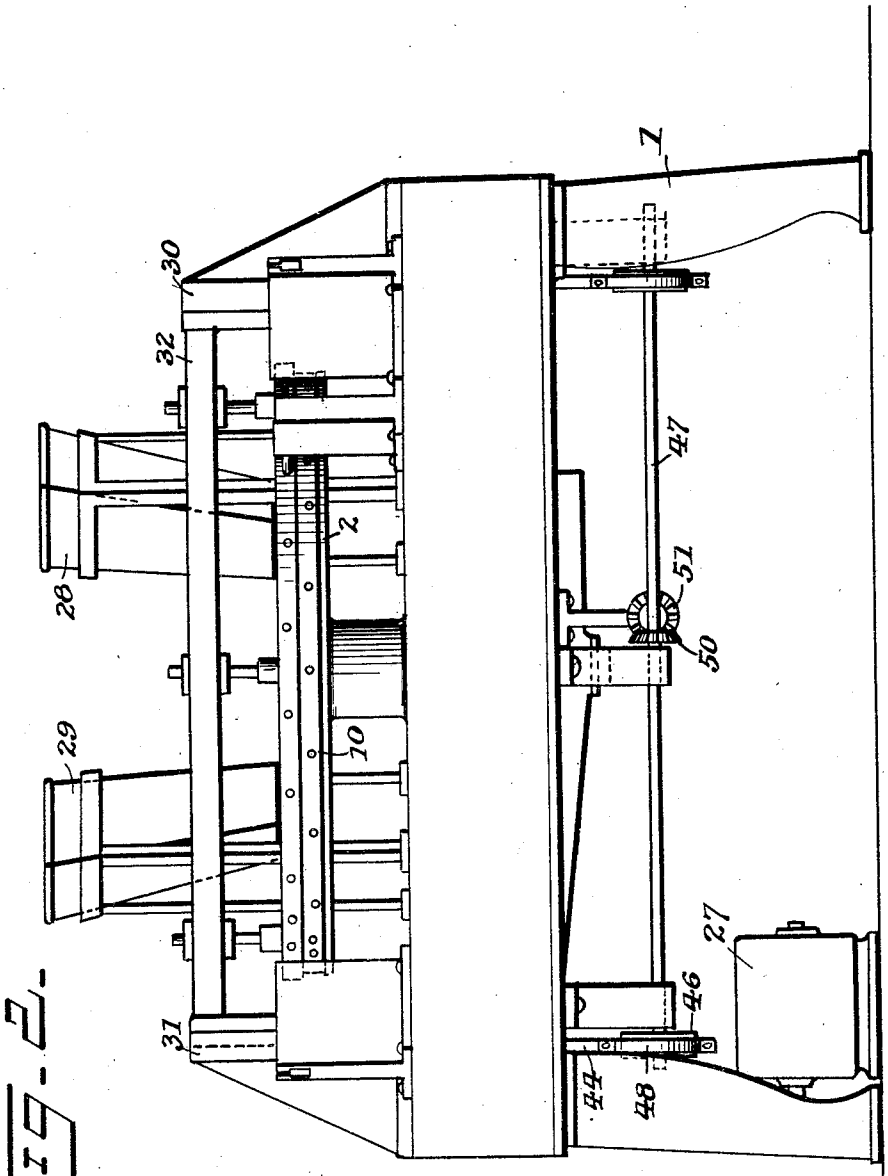


Fig. 2.

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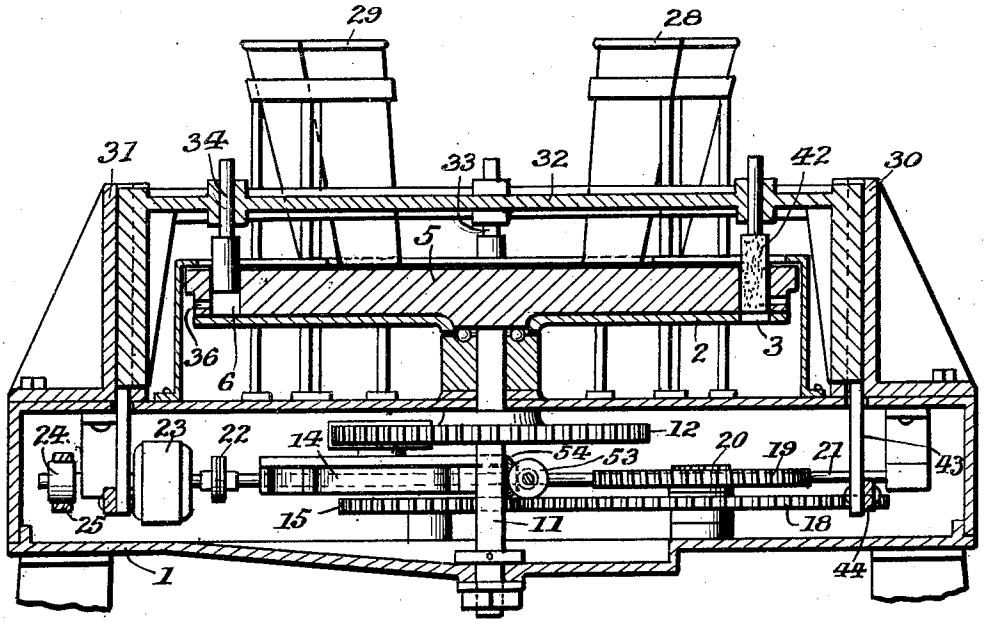
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Fig. 3.



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CORE MAKING MACHINE

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Fig. 7.

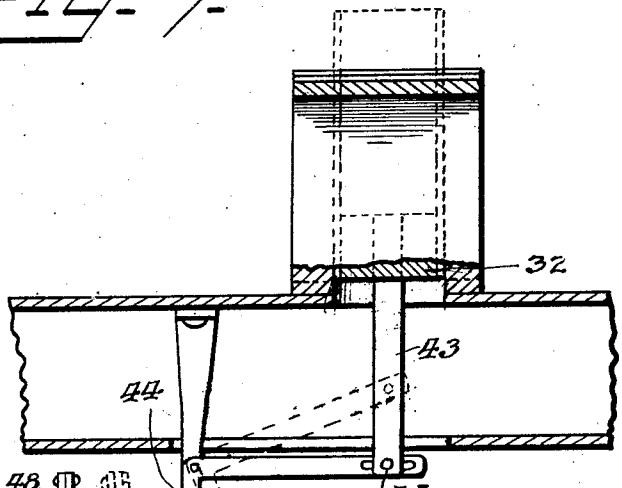


Fig. 5.

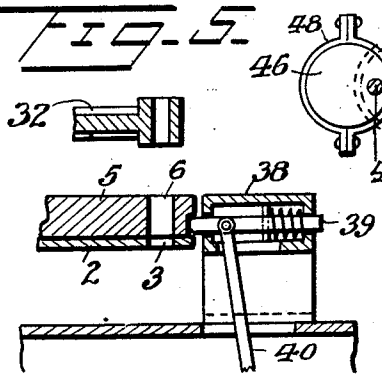
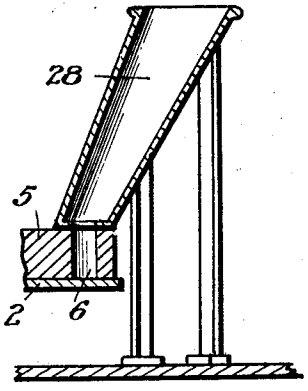


Fig. 4.



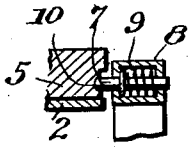


Fig. 6.

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Patented Dec. 17, 1929 1,739,663

UNITED STATES PATENT OFFICE

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CORE-MAKING MACHINE

Application filed May 17, 1928. Serial No. 278,444.

This invention relates to a core making machine and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide in a machine of the character stated a series of molds carried by a plate and adapted to rotate intermittently around an axis, there being means for turning the plate by stages and means for holding the plate temporarily at fixed position.

A further object of the invention is to provide means for supplying sand to the molds successively, means for tamping or compacting the sand in the molds, means for marking the articles which are formed in the molds, means for tapping the molds to loosen the articles therein, means for ejecting the articles from the molds and means for cleaning the molds after the articles have been ejected therefrom.

With these objects in view, the machine includes a table upon which a plate is mounted for rotation by stages or at intervals, the said plate being provided at its peripheral portion with a series of molds. A pair of hoppers is mounted above the plate and is adapted to supply the sand to the molds. A spring-pressed pin is mounted upon the table and engages the edge of the plate and is adapted to hold the same at a fixed position at those intervals of time during which the molds are receiving the sand. A bridge member is mounted for vertical reciprocatory movement above the plate and carries tampers adapted to enter the molds after the sand has been supplied thereto and which serves as means for compacting or pressing the sand in the molds to form the cores. A marker is carried by the bridge and is adapted to pierce or mark the cores. A tapper is mounted upon the table and is adapted to strike the plate to loosen the cores in the molds. An ejecting means is carried by the bridge member and is adapted to remove the completed cores from the molds and a brush is carried by the bridge member and is adapted to clean the molds after the cores have been removed therefrom.

In the accompanying drawings:

Figure 1 is a top plan view of the core machine.

Figure 2 is a side elevational view thereof.

Figure 3 is a fragmentary transverse sectional view thereof, cut on the line 3—3 of Figure 1.

Figure 4 is a transverse sectional view through one of the sand hoppers of the machain cut on the line 4—4 of Figure 1.

Figure 5 is a fragmentary sectional view through the tapping mechanism of the machine, cut on the line 5—5 of Figure 1.

Figure 6 is a transverse sectional view of the means for holding the plate, cut on the line 6—6 of Figure 1.

Figure 7 is a side elevational view of the means for raising and lowering the bridge member, showing the parts in section, and cut on the line 7—7 of Figure 1.

The core making machine comprises a table 1 having a top 2 provided with an outlet opening 3. An unloading tray 4 is carried by the table and is disposed below the opening 3 of the table top.

A plate 5 is journalled for rotation above the top 2 and is provided at its peripheral portion with a series of molds 6. A pin 7 is slidably mounted in a standard 8 carried by the table 1 and a spring 9 is housed in the standard and bears at one end against the portion of the standard and at its opposite end upon the pin and serves to hold the end portion of the pin in engagement with the periphery of the plate 5. The plate 5 is provided at its edge with a series of indentations 10 into which the end of the pin may be engaged, thus holding the plate stationary at intervals. The plate 5 is mounted upon a shaft 11 which is journalled upon the table and a gear wheel 12 is carried by the said shaft.

The teeth of the gear wheel 12 mesh with the teeth of a gear wheel 13 journalled upon the table and a star wheel or Geneva wheel 14 is fixed to the gear wheel 13. The gear wheel 15 is journalled upon the table and is provided at its sides with a stud 16 which is adapted to engage in grooves 17 provided upon the star wheel 14 as the wheel 15 is rotated. Thus, means are provided for turning

the star wheel at intervals and through the intermeshing gear wheels 13 and 12, the plate 5 is turned at intervals or by stages. A gear wheel 18 is journaled upon the table and its teeth mesh with the teeth of the gear wheel 15. A worm wheel 19 is fixed to the side of the gear wheel 18 and its teeth mesh with a worm 20 mounted upon a shaft 21 journaled upon the table. A clutch mechanism 22 is carried by the shaft 21 and is also connected with the shaft of a speed reducer 23. A pulley 24 is mounted upon the shaft of the speed reducer 23 and a belt 25 is trained around the pulley 24 and also around a pulley 26 mounted upon the shaft of a motor 27. The motor 27 is located under the table. Thus, means are provided for driving the wheels 19 and 21, from the motor 27.

Sand hoppers 28 and 29 are mounted upon the table and have their discharge ends located over the peripheral portion of the plate 5 so that the molds may pass successively under the said hoppers. The hoppers 28 and 29 are spaced from each other. Guides 30 and 31 are mounted upon the table at the opposite side edges of the plate 5 and a bridge 32 is mounted for movement between said guides. Tamping members 33 and 34 are carried by the bridge and are located above the molds of the plate 5. The tamping member 33 is between the members 28 and 29, and the tamping member 34 is located beyond one side of the hopper 29. A marking device 35 is located adjacent the edge of the plate 5 and includes a pin 37 adapted to be moved through the openings 36 provided at the sides of the molds 6 whereby the articles which are contained within the said molds are marked or stamped. The pin 37 passes through the openings 36 when the plate 5 is held at a state of rest by the pin 7, as hereinbefore described, and at the same time, the tamping members 33 enter the molds which are located under them and the sand which is deposited into the molds from the hoppers is tamped or compacted. A tapping mechanism 38 is mounted upon the table and includes a pin 39 actuated by a lever 40 and which is adapted to strike the edge of the plate 5 and loosen the cores in the molds. An ejector 41 is carried by the bridge 32 and enters the molds successively after the cores have been loosened therein and removes the cores from the mold whereby the cores fall through the openings 3 and drop upon the unloading tray 4. A brush 42 is carried by the bridge 32 and enters the molds after the cores have been ejected therefrom and cleans the surfaces of the molds so that they are made ready to receive additional charges of sand.

Arms 43 are carried by the bridge member 32 and levers 44 are pivoted upon the table and one end of the levers are operatively connected with the lower end of the arms 43 by means of pin and slot connections 45 of usual form. Eccentrics 46 are mounted upon a shaft 47 journaled upon the table and straps 48 surround the eccentrics and are connected by means of bars 49 with the ends of the levers 44. As the shaft 47 is rotated, as will be hereinafter explained, the eccentrics are turned about the axis of the shaft, whereby the levers 44 are rocked and the bridge 32 is moved vertically in the guides 30 and the parts carried by the bridge are moved into the molds whereby the sand is tamped in the molds, the cores are marked, the molds are tapped, the cores are ejected and the molds are cleaned. A gear wheel 50 is mounted on the shaft 47 and meshes with a gear wheel 51 mounted upon a shaft 52. A gear wheel 53 is mounted upon the shaft 52 and meshes with a gear wheel 54 mounted upon the shaft 21, hereinbefore described. Thus, means are provided for transmitting rotary movement from the shaft 21 to the shaft 47, and through the connecting parts the bridge is raised and lowered between the guides 30 and 31.

From the foregoing description of the construction of my improved apparatus, it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of my invention and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention, what is claimed is:

1. A core making machine comprising a table having a top provided with an opening, a plate journaled upon the table and having molds adapted to move over the opening, hoppers mounted upon the table, said molds adapted to move under the hoppers, a bridge adapted to move vertically and intermittently over the plate, tampers carried by the bridge, a core ejector carried by the bridge and means for actuating said bridge, rotating said table and successively operating said tampers and core ejector.

2. A core making machine comprising a table having a top provided with an opening, a plate journaled upon the table and having molds adapted to move over the opening, means for turning the plate by stages, means cooperating with the peripheral edge of the plate for holding said plate at fixed positions at intervals between the stages of rotation, hoppers mounted upon the table, said molds adapted to move under the hoppers, a bridge adapted to intermittently move vertically over the plate, tampers carried by the bridge, a core ejector carried by the bridge and means for rotating the plate, simultaneously

moving said bridge and successively operating said tampers and core ejector.

3. A core making machine comprising a table having a top provided with an opening, a plate journaled upon the table and having molds adapted to move over the opening, hoppers mounted upon the table, said molds adapted to move under the hoppers, a bridge adapted to intermittently move vertically over the plate, tampers carried by the bridge, a core ejector carried by the bridge, a brush carried by the bridge and adapted to enter the molds and means for rotating said plate, simultaneously moving said bridge and successively actuating said tampers, core ejector and brush.

4. A core making machine comprising a table having a top provided with an opening, a plate journaled upon the table and having molds adapted to move over the opening, hoppers mounted upon the table, said molds adapted to move under the hoppers, a bridge adapted to intermittently move vertically over the plate, tampers carried by the bridge, a core marker mounted upon the table, an ejector carried by the bridge and means for rotating said plate, simultaneously actuating said bridge and successively operating said tampers, core marker and ejector.

5. A core making machine comprising a table having a top provided with an opening, a plate journaled upon the table and having molds adapted to move over the opening, hoppers mounted upon the table, said molds adapted to move under the hoppers, a bridge vertically and intermittently movable over said plate, tampers carried by the bridge, a tapping mechanism mounted upon the table and adapted to strike the periphery of the plate, a core ejector carried by the bridge and means for rotating said plate, simultaneously moving said bridge, and successively actuating said tampers, tapping mechanism and core ejector.

6. A core making machine comprising a table having a top provided with an opening, a plate journaled upon the table and having molds adapted to move over the opening, hoppers mounted upon the table, said molds adapted to move under the hoppers, a bridge vertically and intermittently movable over said plate, a core marker mounted upon the table and adapted to enter the molds, a tapping device mounted upon the table and adapted to strike the periphery of the plate, means cooperating with the periphery of the table for holding said table at rest at intervals, a core ejector carried by the bridge and a brush carried by the bridge adapted to enter the molds and means for rotating said plate, simultaneously moving said bridge and successively actuating said core marker, tapping device, core ejector and brush.

7. In a core making machine of the class described, a table having a top provided with an opening, a plate journaled upon said table and rotatable with respect thereto, said table having molds therein adapted to move over the openings, means for rotating said plate, means cooperating with the peripheral edge of said plate to retain the same in locked and still position at predetermined times, hoppers mounted upon said table, said molds being adapted to move under said hoppers, standards supported on said table, a bridge vertically movable on said standards, means cooperating with the rotating means for said plate to intermittently move said bridge with respect to the plate, tampers carried by the bridge cooperating with the core and the mold, a core marker mounted upon the table adapted to enter the molds, said marker being operable from the same means rotating said plate, a tapping device adapted to contact with the periphery of the plate, said tapping device being operable from the same means rotating said plate, a core ejector carried by the bridge and a brush carried by the bridge adapted to enter the molds, as and for the purposes described.

In testimony whereof I affix my signature.

RALPH S. CICERO.