No. 775,374. PATENTED NOV. 22, 1904.

C. P. MELVIN.

MOLDING APPARATUS.

APPLICATION FILED NOV. 23, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

FIG. 6

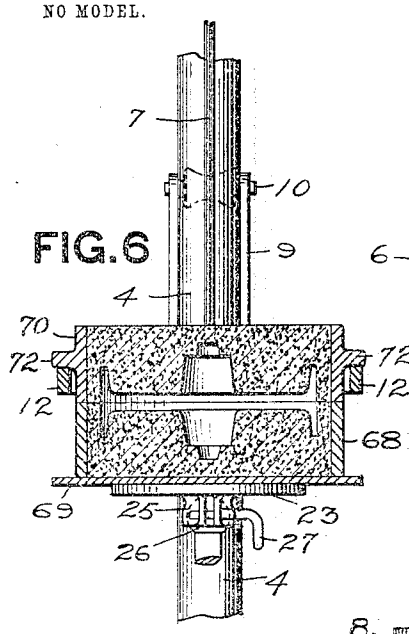


FIG. 1

FIG. 7

WITNESSES.

J. R. Keller

Robert C Totten

INVENTOR.

Charles P Melvin

By Kay Totten & Winter attorneys

No. 775,374. PATENTED NOV. 22, 1904.

C. P. MELVIN.

MOLDING APPARATUS.

APPLICATION FILED NOV. 23, 1903.

NO MODEL. 3 SHEETS—SHEET 2.

FIG. 5

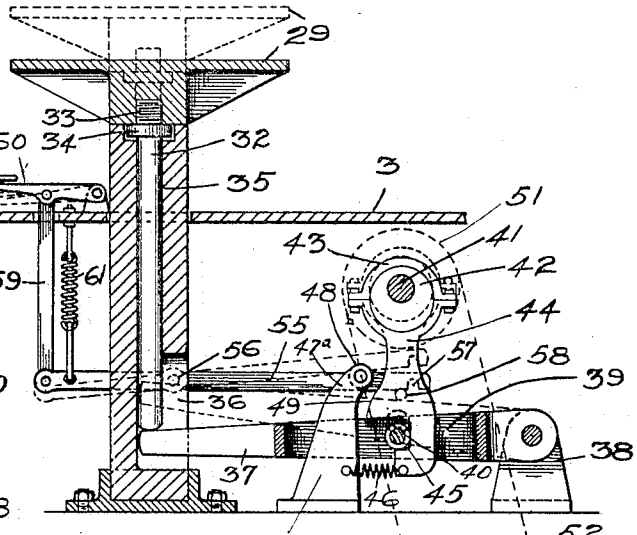
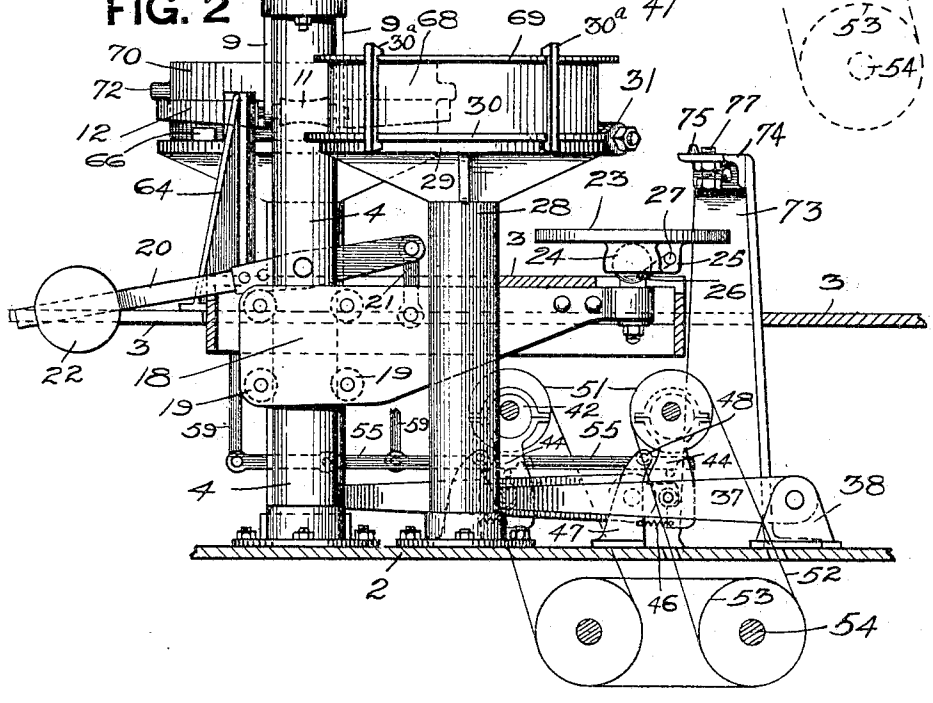


FIG. 2



WITNESSES.

J. R. Keller

Robert C. Cotten

INVENTOR.

Charles P. Melvin

By Kay Cotten & Winter

attorneys

No. 775,374. PATENTED NOV. 22, 1904.

C. P. MELVIN.

MOLDING APPARATUS.

APPLICATION FILED NOV. 23, 1903.

NO MODEL. 3 SHEETS—SHEET 3.

FIG. 3

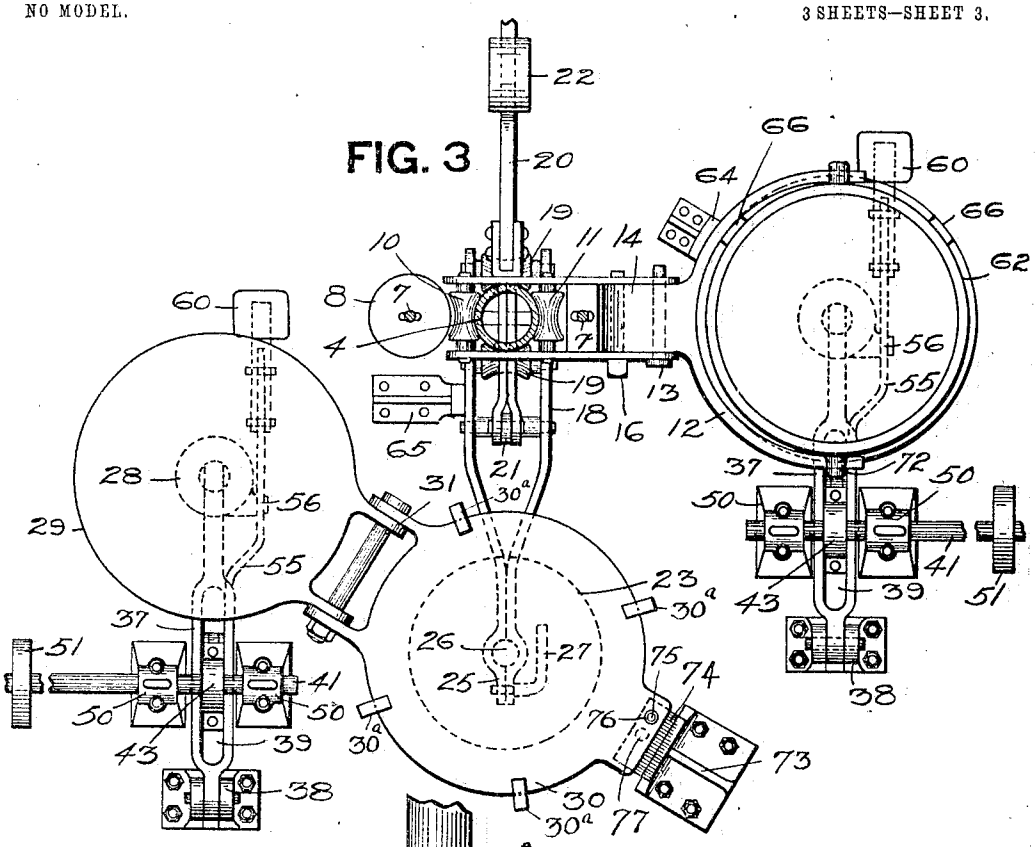
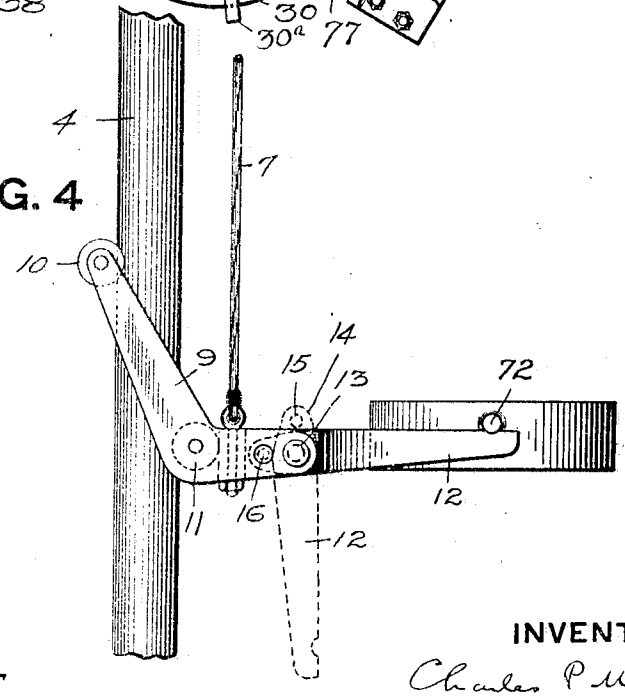


FIG. 4



WITNESSES.

J. R. Keller

Robert C. Potter

INVENTOR.

Charles P. Melvin

By Kay Potter & Winter attorneys

No. 775,374. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

CHARLES P. MELVIN, OF MONONGAHELA, PENNSYLVANIA.

MOLDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 775,374, dated November 22, 1904.

Application filed November 23, 1903. Serial No. 182,323. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. MELVIN, a resident of Monongahela, in the county of Washington and State of Pennsylvania, have invented a new and useful Improvement in Molding Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to molding apparatus.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of my improved apparatus. Fig. 2 is a side view thereof. Fig. 3 is a plan view. Fig. 4 is a detail of a portion of the pillar and the cope-handling device. Fig. 5 is a vertical section of the jarring apparatus. Fig. 6 is a section of the completed mold. Fig. 7 is a form of the eccentric and the lever mechanism for holding the jarring apparatus out of operation where an overhead shaft is employed.

Like numerals indicate like parts in each of the figures.

In the accompanying drawings the numeral 2 designates a suitable platform or foundation, preferably arranged below the foundry-floor 3. Bolted or otherwise secured to this foundation 2 is the column 4, which may be formed of a section of tubing of suitable dimensions, and at the upper end of the pillar 4 is the bracket 5, in which are journaled the pulleys 6. Over the pulleys 6 passes the cable 7, one end of said cable being secured to the weight 8 and the other end to the sliding frame 9. This frame 9 is provided with the rollers 10 11, which engage the pillar 4 at opposite points, said rollers being concave to correspond to the contour of said pillar and adapted to move readily up and down thereon. Pivoted to the outer end of the frame 9 is the bifurcated arm 12, said arm being adapted to swing freely on the pin 13 and said arm having the extension 14 beyond said pin 13, said extension having the opening 15, adapted to receive a pin 16. When this pin 16 is inserted in the opening 15 and the corresponding openings 17 in the frame 9, said bifurcated arm is held up in horizontal position, as represented in Fig. 4, and when said pin 16 is removed said arm is permitted to swing down in the position shown in dotted lines.

At the lower end of the pillar 4 is the sliding frame 18, said frame having the rollers 19 engaging the opposite points on the pillar 4 and adapted to move readily up and down thereon. A lever 20 is secured by the link 21 to the sliding frame 18, the outer end of said lever having the weight 22. Mounted on the outer end of the sliding frame 18 is the plate or support 23, said plate being connected to the frame 18 by means of the universal joint 24. A split ring 25 on said plate 23 engages the ball 26 of the joint, and in order to tighten said split ring on said ball the bolt 27 is employed. Adjacent to the pillar 4 is the standard 28, bolted or otherwise secured to the foundation 2. Supported on said standard 28 is the table 29, said table having the hinged top 30 adapted to swing on the hinge 31.

The table 29 is secured to the rod 32, said rod having the threaded portion 33 entering a threaded seat in said table and provided with the collar or enlargement 34. The rod 32 fits within the seat 35, formed for it within the standard 28, and said rod is free to move up and down said seat. The standard 28 is recessed, as at 36, and into said recess the inner end of the bar-lever 37 projects, said jarring-lever engaging with the lower end of the rod 32. The lever 37 is pivoted at its outer end in the bracket 38. The lever 37 is provided with the slot 39, and within said slot is the pin 40. Mounted on the shaft 41 is the eccentric 42, encircled by the strap 43. Depending from the strap 43 is the arm 44, which enters the slot 39. The lower end of the arm 44 has the seat 45 formed therein, with which the pin 40 is adapted to engage. A spring 46 connects the lower end of the depending arm 44 with the tripping-frame 47 and is adapted to hold said arm normally in engagement with said pin. The upper end of the tripping-frame 47 has the inclined portion 47^a, with an idle roller 48 mounted therein. The depending arm 44 has the cam-face 49, which is adapted to move into contact with the roller 48 at certain positions of the eccentric, whereby the depending arm 44 is tripped and thrown out of engagement with the pin 40, all as fully hereinafter set forth.

The shaft 41 is mounted in suitable bearings 50 and is driven by the pulley 51, connected up by the belt 52 with the pulley 53 on the power-shaft 54.

In order to provide for throwing the depending arm 44 out of engagement with the pin 40 and retaining it in this position, I provide the lever 55, pivoted at 56 to the standard 28, the inner end of said lever having the hook or recess 57, which is adapted to engage a pin 58 on the depending arm 44. The outer end of the lever 55 is connected to the arm 59, which is connected to the treadle 60 above the foundry-floor 3. A spring 61 is connected to the lever 55 and to the floor 3, which spring acts to hold said lever normally up in the position shown in full lines, Fig. 5. A similar molding-table 62, provided with the same apparatus for jarring it as that described with reference to the molding-table 28, may be employed. The apparatus for jarring said molding-table is operated by the same shaft 54. It is apparent that any number of jarring-tables may be connected to the shaft 54. This second molding-table and the support 23 are located with their centers on the circumference drawn with the axial line of the pillar 4 as a center, so that when the frame 9, bearing on the cope from the table 62, is swung over in position to lower said cope onto the drag, supported on the plate 23, the two parts of the mold will be brought into exact coincidence with each other without the necessity of guiding-pins or other devices. In order to regulate the swing of the frame 9, the stops 64 and 65 are employed. The top of the table 62 is also provided with lugs 63 to provide for the accurate adjustment of the cope upon said table. Adjacent to the support or plate 23 is the standard 73, with the bracket 74 secured thereto. On the bracket 74 is the standard 75, with which the openings 76 in the swinging top 30 registers when said top is swung back, as indicated in Fig. 3. An adjusting-screw 77 passes up through the bracket 74 to regulate the position of said top 30. In case of the wearing of the parts it may be necessary to adjust said screw 77 from time to time to bring the top 30 into proper relation to the plate 23.

When my improved molding apparatus is in use where the article to be made, for instance, is a car-wheel, the pattern 67 is secured to the hinge-plate 30 of the table 29. The mold-flask is then placed around the pattern and the flask filled with sand. The operator then applies his foot to the treadle 60, which disengages the lever 55 from the pin 58 on the depending arm 44, whereupon said arm is drawn by the spring 46 into engagement with the pin 40, and upon the revolution of the cam 42 the lever 37 is raised. This elevates the rod 32 and the table 29. When the cam 49 of the depending arm 44 comes into contact with the roller 48 of the tripping-frame 47, the depending arm 44 is tripped and disengaged from the pin 40, whereupon the lever 37 drops, and with it the table 29. This alternate raising and dropping of the table is continued until the sand in the mold has been jarred sufficiently to compact the same, whereupon the operator then removes his foot from the treadle 60, and the lever 55 is lowered in such position that the pin 58 on the arm 44 will be brought into engagement with the hook 57 of the lever 36, whereupon said arm 44 is held out of engagement with the pin 40, and as a consequence the operation of the cam does not act to raise and lower the lever 37, and the jarring action of the table 29 ceases. When the sand has been properly jarred, the top is smoothed off and the plate 69 is secured to the flask 68, the flask and plate being clamped to the hinged top 30 by suitable clamps 30^a. The hinged top 30 is then swung over into the position shown in Fig. 3, whereupon the plate 69 rests upon the plate or support 23, together with the flask and mold. Owing to the ball-and-socket joint of the plate 23, said plate will conform to any inequality in the flask-plate 69, and when said plate 23 has been properly adjusted the bolt 27 is given a partial turn, which secures said plate 23 in this position. The clamps are then removed which secure the flask 68 and plate 69 to the hinged plate 30, whereupon the frame 18 is lowered, carrying with it the support 23. By this lowering of the support 23 the flask is withdrawn from the pattern 67, which remains on the hinged plate 30. The downward movement of the supporting-plate 23 is in a direct vertical line, so that the withdrawal of the flask from the pattern is accomplished without any jarring and in a perfect vertical line, so that there is no liability of any injury to the mold. As soon as the flask and mold have been withdrawn in this manner the hinged plate 30 is then thrown back into position upon the table 29 and the mold remains upon the supporting-plate 23. In the meantime the other half of the mold has been formed in the cope 70, the pattern 71 having been secured to the table 62. The same process of jarring has rendered the sand of the mold properly compact. The bifurcated arm 12 on the frame 9 is brought up into position to engage the studs 72 of the cope, the pin 16 having been inserted to hold the arm 12 up into a horizontal position. With the bifurcated arm in engagement with the studs 72 the frame 9 is then raised to lift the cope from the pattern, the upward movement of the cope being in a direct vertical line, so that no liability of injury to the mold occurs. When the cope has been lifted free of the pattern, the frame 9 is then swung around in position until the arm 12 comes in contact with the stop 65, whereupon the frame 9 is lowered and the cope 70 rests upon the flask

68. The flasks are then connected, and the mold is then ready for the pouring operation, the proper core having been inserted in the mold. By having the central line of the table 62 on the same circumference as the center of the supporting-plate 23 with reference to the center of the pillar 44 the bringing of the two parts of the mold into proper alinement with each other is always assured, so that all adjustment by hand is avoided.

In Fig. 7 I have illustrated the manner of operating the jarring apparatus from an overhead shaft 76, in which an elongated rod 77 is employed to connect the eccentric with the lever 37.

What I claim is—

1. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said movable top, an eccentric, an arm depending from said eccentric adapted to engage said lever, and means for tripping said arm.

2. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said movable top, an eccentric, an arm depending from said eccentric adapted to engage said lever, means for tripping said arm, and means for throwing said arm into engagement with said lever.

3. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said movable top, an eccentric, an arm depending from said eccentric adapted to engage said lever, a cam on said arm, and a trip in the path of said cam.

4. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said movable top, an eccentric, an arm on said eccentric, a pin on said lever engaged by said arm, means for tripping said arm, and means for drawing said arm into engagement with said pin.

5. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said movable top, an eccentric, an arm on said eccentric adapted to engage said lever, a spring to hold said arm in engagement with said lever, and means for tripping said arm.

6. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said movable table, mechanism for lifting said lever and for releasing same, and means for throwing said lifting mechanism out of operative position with reference to said lever.

7. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said table, an eccentric, an arm on said eccentric adapted to engage said lever, and means for holding said arm out of engagement with said lever.

8. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said table, an eccentric, an arm on said eccentric adapted to engage said lever, a projection on said arm, and a lever having a seat adapted to engage said projection.

9. In molding apparatus, the combination of a molding-table, a vertically-movable top on said table, a lever adapted to lift said table, an eccentric, an arm on said eccentric adapted to engage said lever, a projection on said arm, and a lever having a seat adapted to engage said projection, and a treadle connected to said lever.

10. In molding apparatus, the combination of a molding-table, a hinged top on said table, a support in proper position with reference to said table to receive the mold when said top is inverted, a stand adapted to receive the inverted top, and means for adjusting the height of said stand.

11. In molding apparatus, the combination of a molding-table, a hinged top on said table, a support in proper position with reference to said table to receive the mold when said top is inverted, a stand adapted to receive the inverted top, and an adjusting-screw on said stand.

In testimony whereof I, the said CHARLES P. MELVIN, have hereunto set my hand.

CHARLES P. MELVIN.

Witnesses:
ROBERT C. TOTTEN,
G. C. RAYMOND.