C. F. WELLS.

MOLDING MACHINE.

APPLICATION FILED MAR. 31, 1920.

1,431,608.

Patented Oct. 10, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

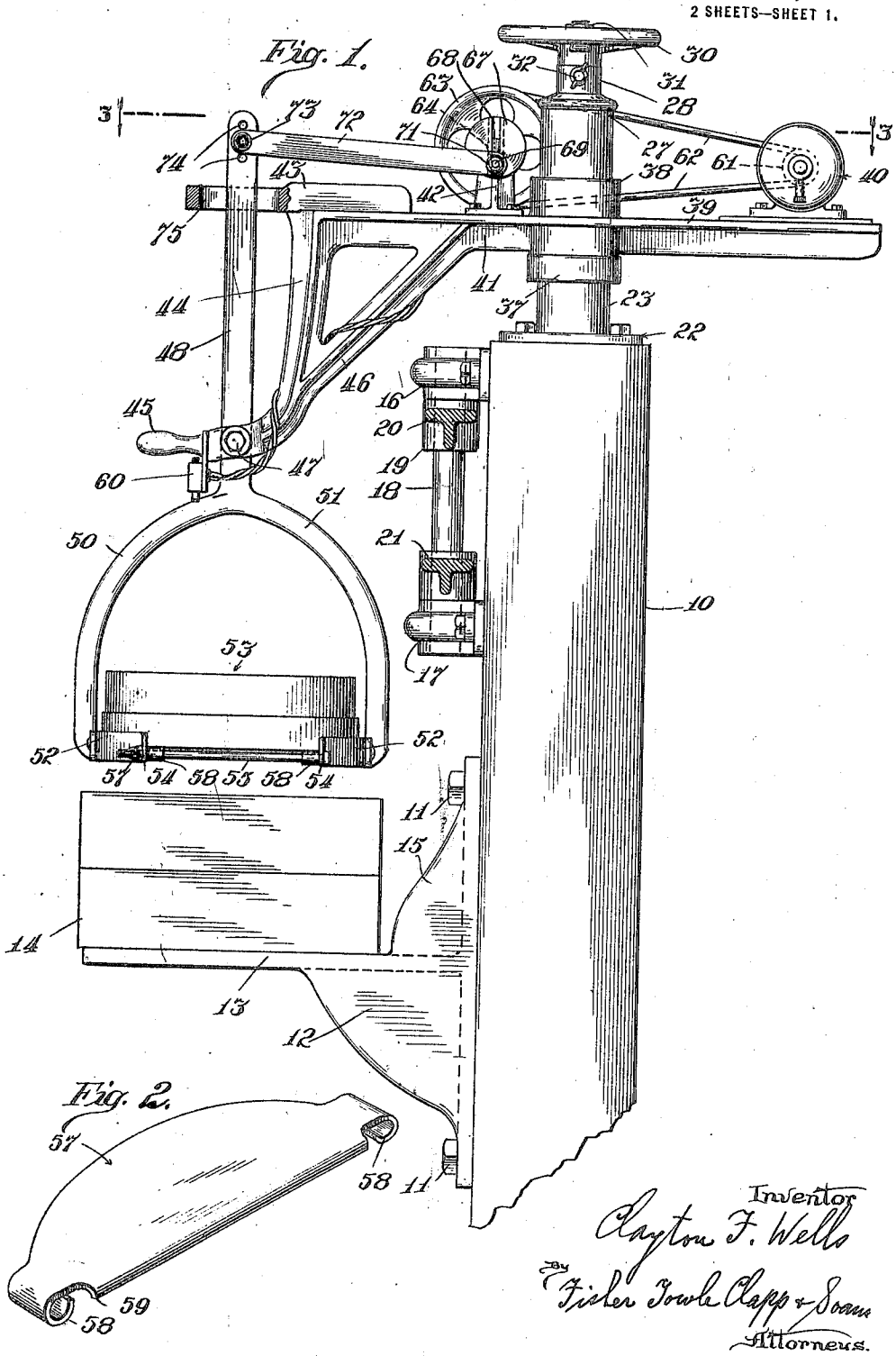


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

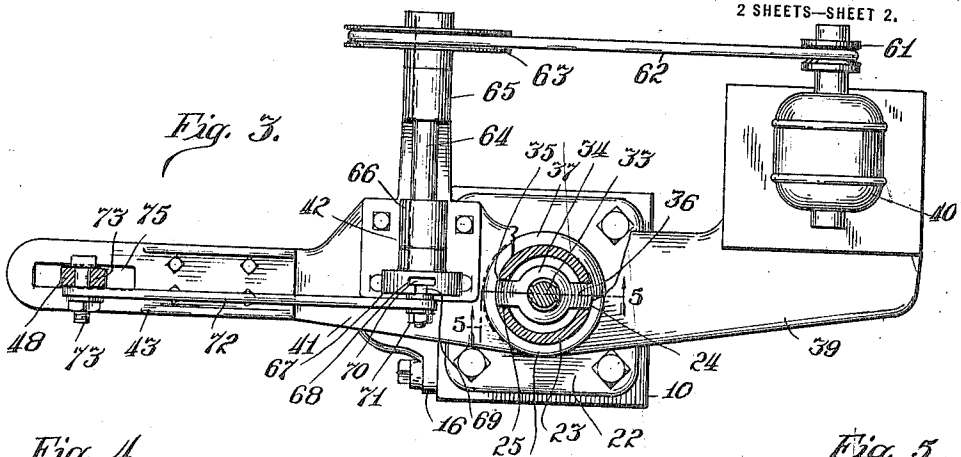


Fig. 4.

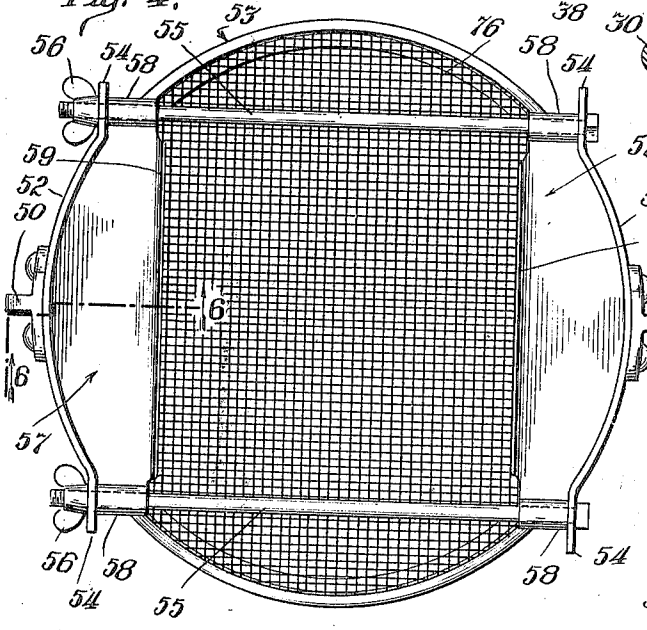


Fig. 5.

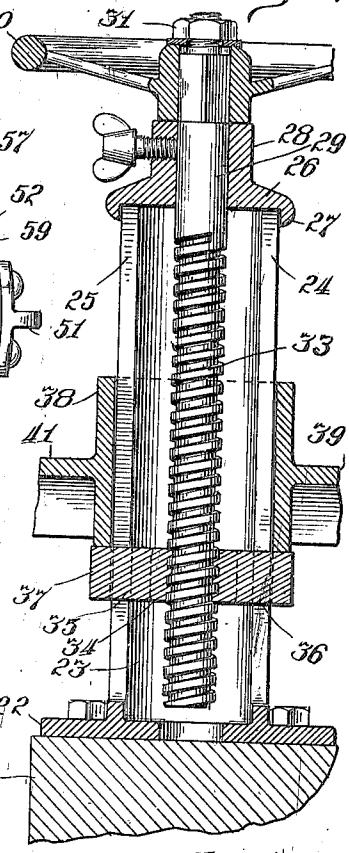
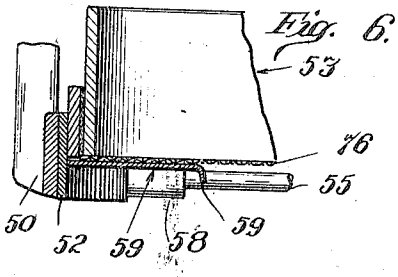


Fig. 6.



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UNITED STATES PATENT OFFICE.

CLAYTON F. WELLS, OF CHICAGO, ILLINOIS.

MOLDING MACHINE.

Application filed March 31, 1920. Serial No. 370,222.

To all whom it may concern:

Be it known that I, CLAYTON F. WELLS, 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.

My invention relates to improvements in molding machines and has particular reference to an apparatus which is employed for sifting and distributing the sand which is used for filling the flask.

The principal object of the invention is to provide an improved efficient apparatus of the character referred to which shall be simple and economical to manufacture and inexpensive and convenient to operate and maintain.

In the drawings—

Figure 1 is a side elevation of the apparatus as applied to a molding machine with a swinging head;

Fig. 2 is a perspective view of one of the distributory shields associated with the riddle;

Fig. 3 is a section taken on the line 3—3 of Fig. 1;

Fig. 4 is an under side plan view of the riddle;

Fig. 5 is a section taken on the line 5—5 of Fig. 3; and

Fig. 6 is a section taken on the line 6—6 of Fig. 4.

Referring to the drawings, 10 represents a stout post which may be stationarily or portably mounted, as desired. On the lower portion of said post there is secured by means of bolts 11 a bracket 12 having a shelf or table 13 used for supporting the molding flask 14. Preferably the upper portion of the bracket 12 is extended upwardly as shown in Fig. 1 and formed with a substantial rib 15 which materially adds to the strength and rigidity of the bracket.

On the upper face of the post 10 there are bolted an upper bearing bracket 16 and a lower bearing bracket 17, the axes of said bearings being aligned vertically and rotatably accommodating the pintle 18. Said pintle 18 is preferably secured by casting or otherwise in the arm 19 which supports the plunger or head by means of which the sand may be tamped in the flask. In view of the fact that said tamping apparatus is well known to those skilled in this art, it has not been illustrated, the portions 20 and 21 being shown in section to indicate that the tamping apparatus has been broken off for the sake of clearness. It will be understood that by reason of the pintle 18 being rotatable in the brackets 16 and 17, the tamping apparatus may be swung to one side when not in use or may be moved to bring same in operative relation to the flask 14.

By referring now to Figs. 3 and 5 it will be observed that on the top of the post 10 I bolt a bracket 22 having an upstanding tubular column portion 23, said column 23 being slotted diametrically as indicated at 24 and 25. The upper end of the column 23 is equipped with a circular cap 26 having a depending flange 27 fitting around the upper end of the standard 23. The upper end of the cap 26 is equipped with an upwardly extending hub portion 28 and the said cap and hub are vertically bored out to accommodate the cylindrical portion of a screw-shaft 29. The upper end of the screw-shaft 29 carries a hand wheel 30 resting upon the top of the hub 28 and rigidly secured to the upper end of said shaft 29 by means of a lock nut 31. It will be manifest that the shaft 29 may be rotated in its bearing in the hub 28 and cap 26 by means of the hand wheel 30, and when desired can be prevented from rotating therein by tightening the thumb-screw 32 threaded into the hub 28.

As indicated best in Fig. 5, the threaded portion 33 of the vertical screw-shaft 29 engages in a nut 34, said nut being prevented from rotating with the screw 33 by reason of a pair of arms or lugs 35, 36 extending through the slots 25 and 24 in the column and loosely slidable therein. On the exterior of the column and slidable thereon is a collar 37, said collar preferably being made in one piece with the nut 34 so that when the hand wheel 30 is rotated the collar 37 will be moved slidably in a vertical direction along the exterior of the standard 23. Said collar 37 forms a bearing for the riddle supporting apparatus, the arrangement described being effective to raise or lower the said riddle apparatus as a whole when occasion requires.

Referring to Figs. 1, 3 and 5, it will be seen that above the collar 37 and resting thereon there is a hub member 38 which is rotatable around the exterior of the column 23. Said hub 38 is equipped with an inte-

gral rear extension 39 which supports an electric motor 40, and with a front extension 41, both of said arms or extensions being preferably made in one piece with the hub element 38. As shown best in Fig. 1, the extension 41 is constructed with a horizontal portion on which a bearing bracket 42 and a guide 43 are bolted and a depending extension portion 44 which terminates in a handle 45. The lower end of said depending arm 44 is preferably braced by an oblique rib or bar 46 formed as a part of the main casting, or carrier.

The lower end of the arm 44 carries a pivot pin or bolt 47 constituting a pivot for the upstanding lever member 48, said lever member 48 being at its lower end forked to provide spaced depending arms 50 and 51. The lower ends of said arms 50 and 51 are bolted or riveted to a pair of curved clamp members 52 arranged to conform to the curvature of the riddle 53. The ends of the said curved clamp members 52 are preferably bent out straight, as indicated at 54 in Fig. 4, in order to accommodate clamping or supporting bolts 55 capable of being tightened by thumb-nuts 56. The portions of said clamping bolts 55 adjacent the curved clamping members 52, constitute supports for the shields 57 (see Fig. 2), the ends of said shields being curled over, as indicated at 58, in order to fit said bolts 55. The purpose of the shields 57 is to confine somewhat the flow of sand and prevent it from scattering beyond the edge of the flask when the riddle is vibrated. As shown in the drawings, the said shields are preferably made in the shape of a section of the riddle circle, the chord edge 59 of said section being formed in the shape of a curve, as indicated best in Figs. 2 and 6.

Referring now back to Figs. 1 and 3, it will be seen that the electric motor 40 which, if desired, may be controlled by the hand switch 60 adjacent to handle 45, is equipped with a small grooved pulley 61 around which passes a driving belt or cord 62. Said cord 62 is trained around a driven pulley 63 keyed to the end of a horizontal shaft 64 supported in bearings 65 and 66 formed as parts of bracket 42. On the front end of said shaft 64 there is keyed a crank disk 67 provided with a transverse or diametric slot 68 within which is adjustably accommodated a slidable crank pin 69. It will be understood that the said T slot 68 co-operates with the head 70 of the adjustable crank pin 69 so that the pin 69 may be clamped by means of the nut 71 into any position of eccentricity with reference to the center of the shaft 64. Said crank pin 69 operates a connecting rod or pitman 72 the outer end of which is pivotally connected by means of an adjustable pin 73 with the upper end of the upstanding lever 48. The said upper end of the lever 48 is preferably apertured with a plurality of holes as at 74, whereby the amplitude of vibration of the lever 48 on its pivot 47 may be adjusted. As shown best in Fig. 3, in order to prevent sidewise movement of the lever 48, the latter extends through a guide slot 75 formed in the guide bracket 43 previously referred to.

The operation of the device is manifestly so simple in view of the above description of the details of construction that it is unnecessary to devote much space to a description thereof. It will be understood that when the flask 14 is being filled with sand the tamping apparatus has been swung to one side out of the way and the riddle apparatus has, by means of the handle 45, been swung into the position indicated in Fig. 1, bringing the riddle 53 over the flask. After a sufficient quantity of sand has been shoveled into the riddle the switch 60 is operated to start the motor 40, which will result in a lateral shake or vibratory movement of the suspended riddle 53 in an obvious manner. The mesh of the riddle screen 76 is of course suitably selected to give the desired sifting effect upon the sand, which is thus deposited in the molding flask in the proper condition. It will also be manifest that by reason of the shields 57 the lateral shake of the riddle does not scatter the sand beyond the edge of the flask.

The hand wheel 30 obviously serves to raise or lower the entire riddle apparatus whenever the height of the molding flask 14 or other conditions make it desirable to change the height of the riddle.

It will be understood that the described details of construction and operation are merely illustrative of one phase of my invention, the scope of which should be determined by reference to the appended claims, said claims being construed as broadly as possible consistent with the state of the art.

I claim:

1. The combination of a carrying frame, a substantially horizontally disposed riddle, a substantially vertically extending lever, to the lower end of which the riddle is rigidly secured, and which is pivoted intermediate its ends on said carrier on a substantially horizontal axis, and power means on said carrier for oscillating the upper end of said lever.

2. The combination of a carrier frame, a riddle, a support for said riddle comprising a substantially vertical lever, to the lower end of which the riddle is rigidly secured, and which is pivoted intermediate its ends on said carrier frame on a substantially horizontal axis, a rotary motor mounted on said carrier, and means operated by said rotary motor for oscillating the upper end of said lever for agitating the riddle.

3. In combination, a post, a carrier adjustably mounted at the top of said post to swing on a vertical axis, a lever pivotally mounted on a substantially horizontal axis on said carrier, a riddle supported on the lower end of said lever below said pivot, and a power means mounted on said carrier for reciprocating the upper end of said lever.

4. In combination, a post, a carrier rotatably mounted at the top of said post to swing on a vertical axis, a riddle, a vertically-extending bar having its lower end forked to receive said riddle, and being pivoted intermediate its ends on said carrier, a rotary motor mounted on said carrier, and means operated by said rotary motor for reciprocating the upper end of said bar for agitating the riddle.

5. In combination, a post, a carrier rotatably mounted at the top of said post to swing on a vertical axis, a riddle, a vertically-extending bar having its lower end forked to receive said riddle, and being pivoted intermediate its ends on said motor, a rotary motor mounted on said carrier, means operated by said rotary motor for reciprocating the upper end of said bar for agitating the riddle, and adjustable means for raising said carrier.

6. In combination, a post, a carrier mounted to swing on a vertical axis around the top of said post, a riddle, a suspension member for said riddle located on one end of said carrier at one side of said post, pivoted on said carrier and extending upwardly from said pivot, a motor on said carrier on the opposite side of said post, and means connecting the upper end of said suspension member with said motor for converting the rotary movement of said motor into reciprocatory movement of the upper end of said suspension member.

7. In combination, a post, a carrier mounted to swing on a vertical axis around the top of said post, a riddle, a suspension member for said riddle located on one end of said carrier at one side of said post, pivoted on said carrier and extending upwardly from said pivot, a motor on said carrier on the opposite side of said post, means connecting the upper end of said suspension member with said motor for converting the rotary movement of said motor into reciprocatory movement of the upper end of said suspension member, said converting means including a rotary member operated at less speed than the motor, and an adjustable crank on said rotary member connected to the upper end of said suspension member.

8. The combination of a portable carrier frame, a riddle suspended from said frame, the suspension means including a vertically extending bar forked at its lower end to receive and support the riddle, said bar being pivoted intermediate its ends on said carrier on a substantially horizontal axis, a rotary motor mounted on said carrier frame, and means connecting the upper end of said bar with said motor for converting the rotary movement of said motor into an oscillatory movement of the upper end of said bar.

9. The combination of a carrying frame, a horizontal shaft supported by said frame, a riddle suspended by a centrally disposed yoke from said shaft and adapted to oscillate in a vertical plane about the axis thereof, and power means on said carrier for oscillating said riddle.

CLAYTON F. WELLS.