Nov. 9, 1937. R. JARRIER 2,098,246

AUTOMATIC BAG FILLING AND WEIGHING MACHINE

Original Filed March 24, 1932 2 Sheets-Sheet 1

Fig. 1.

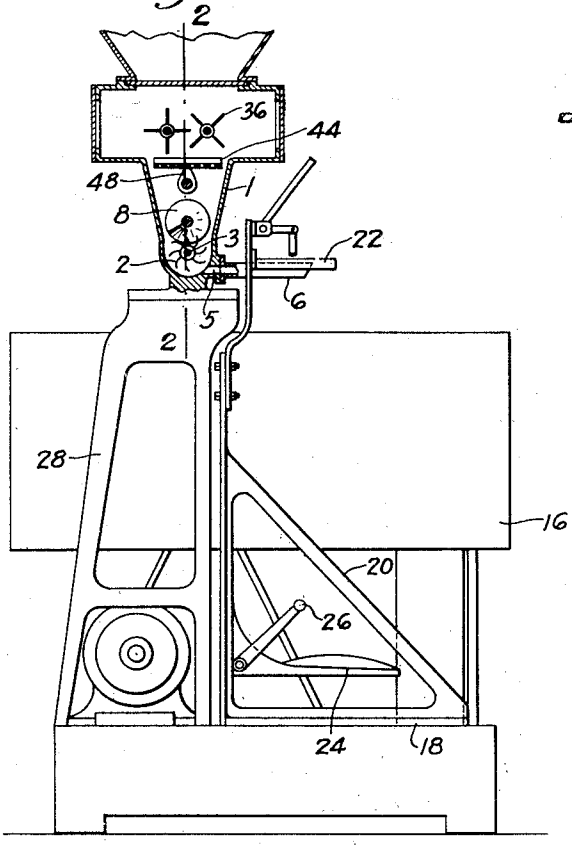


Fig. 2.

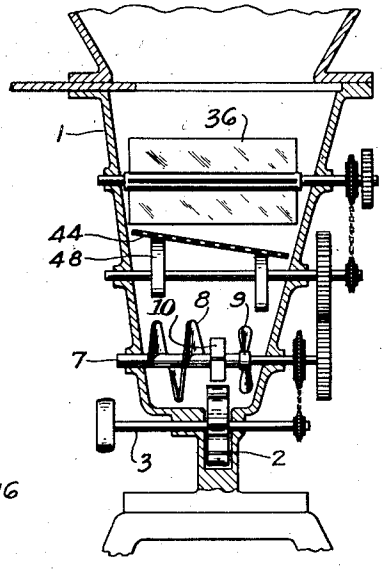
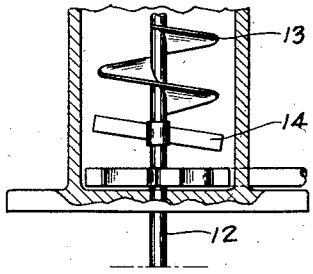


Fig. 3.



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Fig. 4.

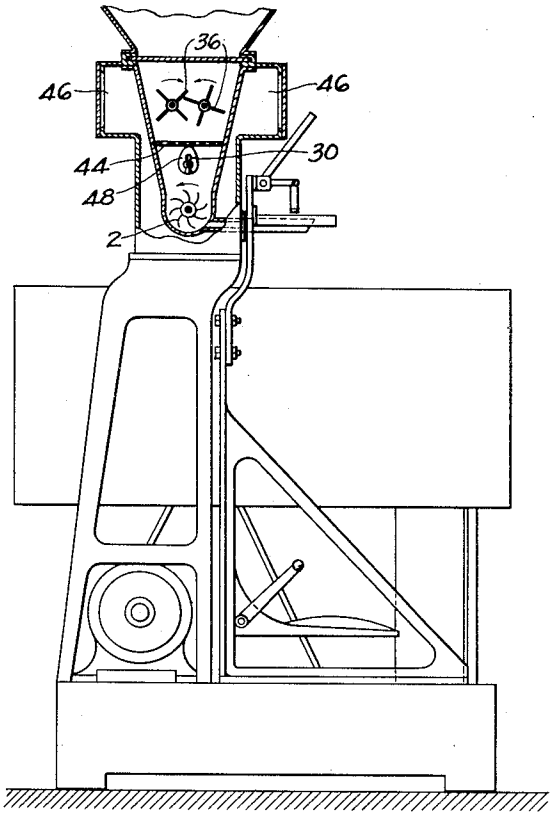
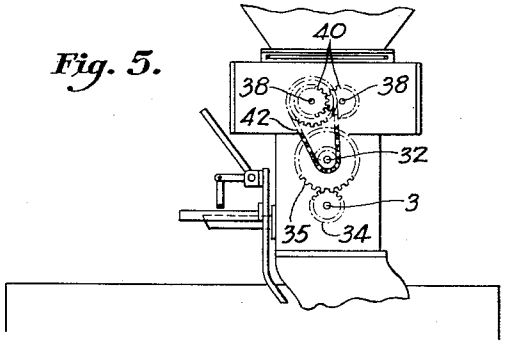


Fig. 5.



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2,098,246

AUTOMATIC BAG-FILLING AND WEIGHING MACHINE

René Jarrier, Saint Quentin, France, assignor to Bartlett Arkell, New York, N. Y.

Application March 24, 1932, Serial No. 600,884. Renewed January 25, 1936. In France April 4, 1931

10 Claims. (Cl. 198—128)

My invention relates to bag filling machines, and has special reference to automatic bag filling and weighing machines.

One of the objects of my invention is to provide a novel and improved machine of this character.

Another of the objects of the invention is to provide a bag filling machine which is simple in construction and efficient in operation.

The several features of my invention, whereby the above-mentioned and other objects may be attained, will be readily understood from the following description and accompanying drawings, in which:

Figure 1 is a sectional elevation of a machine embodying the features of my invention in their preferred form;

Fig. 2 is a sectional elevation, on an enlarged scale, taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional elevation of a portion of a modified form of the machine;

Fig. 4 is a view similar to Fig. 1, but showing another modified form; and

Fig. 5 is a side elevation of the upper portion of the machine shown in Fig. 4.

The machine illustrated in Figs. 1 and 2 of the drawings comprises a hopper 1 for receiving the material to be operated upon. Within this hopper 1 there is a scoop wheel or propeller 2 which is secured on a horizontal shaft 3. This propeller turns a chamber or pocket 4, the upper part of the propeller projecting above the pocket. This pocket which is formed in the bottom of the hopper leads into a discharge orifice or throat 5, which in turn opens into the inner end of a bag filling tube 6.

As shown, the propeller 2 is provided with radially projecting blades which are curved in the direction of rotation of the wheel. The sides of the wheel are arranged closely adjacent the vertical sides of the pocket 4.

The machine is further provided with a horizontal shaft 7 located parallel with and spaced above the propeller wheel shaft 3. This shaft 7 carries a feed screw 8 and a propeller screw 9 arranged at opposite sides of the propeller 2. A small wheel 10 having radially projecting blades is secured on the shaft 7 directly above the propeller 2. The distance between the two shafts 3 and 7 is less than the combined radii of the propeller 2 and screw conveyor 6 so that this screw conveyor extends a distance below the periphery of the propeller 2 and close to the bottom of the hopper 1. The propeller screw 8 may have fan-shaped blades, as shown.

It will be apparent that with this construction the material is urged from left to right by the feed screw 8 and is forced to enter between the scoops or blades of propeller 2. Propeller screw 9 acts in like manner, but in the opposite direction, upon material which falls along the adjacent side wall of the hopper, to force the material sidewise between the blades of the propeller. The small wheel 10, which like the screws 8 and 9 turns in the opposite direction from propeller 2, has the effect of urging the material on to the periphery of said propeller, thus counteracting the tendency of the material to be thrown from the upper part of the wheel by centrifugal force.

In the form shown in Fig. 3, the propeller 2' is secured on a vertical shaft 12 and rotates directly on the base of the hopper. The forced feeding device, like the one above described, may comprise a short Archimedean screw 13 which is secured on the shaft 12 with the propeller 2'. Also, a two-arm propeller 14 may be secured on the shaft 12 between the screw 13 and the propeller 2'.

With this construction also the feed screw 13 and the two-arm device 14 tend to force the material between the blades of the propeller 2', thus insuring maximum delivery of the material by the propeller through the discharge throat 5 and filler tube 6.

It will be understood that the machine may be provided with the usual scale 16 on a movable bed plate 18 from which risers 20 support a bag holding device 22. The bottom of the bag rests on a plate 24 whose height may be regulated at will by means of a handle 26. A fixed bracket 28 supports the hopper 1.

One disadvantage of bag filling machines at present in general commercial use is that with the use of certain substances such as cement and plaster, the feeding is liable to take place in more or less irregular manner and even stop completely owing to the tendency of the material to pack and form an arch above the feeding devices of the machine. Also, with these machines stones or other foreign bodies mixed in with the material to be acted upon, are liable to damage the mechanism.

In the machine illustrated in Figs. 4 and 5, a small feed screw 30 is mounted on a shaft 32 located above and parallel to the shaft 3 of the propeller 2. This screw is disposed above and at the side of the propeller 2 in such a manner as to project the material on to the paddles of the propeller. The shaft 32 is driven from the shaft

3 of propeller 2, by gears 34 and 35 respectively secured on the shafts 3 and 32.

As the material passes into the feed hopper it is acted upon by a suitable mixing and distributing device consisting of oblong or helicoidal paddle wheels 36 which are secured on shafts 38. These shafts are caused to rotate in opposite directions by gears 40 which engage one another. The distance between the shafts 38 is such that any one of the paddles penetrates deeply into the space between two consecutive paddles of the paddle wheel on the other shaft. One of the shafts 38 is driven by means of a sprocket chain 42 which passes over sprocket wheels on said shaft 38 and the shaft 32. This device comprising the paddle wheels 36 thoroughly mixes the material as it enters the hopper.

Between paddle wheels 36 and the screw 30, there is disposed a screen 44 which aids in dividing the material acted upon by the paddle wheels. The principal purpose of this screen is to sift out pebbles and other foreign bodies that may be present in the material. The foreign bodies caught by the screen, are brushed off by the paddle wheels 36 into lateral chambers 46 in the head of the machine which are in communication with the upper portion of the hopper 1 through suitably arranged openings [not shown] in said hopper. The screen may be vibrated by cams upon which it rests, one of the cams being shown at 48 and carried by the shaft 32. These cams 48 are better shown in Figs. 1 and 2. The two cams are diagonally displaced with respect to each other so that a rocking movement is imparted to the screen.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and a pocket leading into said throat, a propeller having a substantially horizontal axis and blades projecting generally radially for propelling the material through the discharge throat, the wall of said pocket covering portions of the sides of said propeller adjacent said throat, and means for forcing the material sidewise toward the uncovered portions of the sides of the propeller and between the blades.

2. In a bag filling machine of the class described the combination of a hopper having a discharge throat near its lower end and a pocket leading into said throat, a propeller having a horizontal axis and having blades projecting generally radially for propelling the material through said discharge throat, the wall of said pocket covering portions of the sides of said propeller adjacent said throat, a screw conveyor within the hopper for feeding the material sidewise toward the uncovered portions of the sides of the propeller and between the blades of said propeller, and means for driving the propeller and said screw conveyor.

3. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and a pocket leading into said throat, a propeller having its axis arranged substantially horizontal for propelling the material through said discharge throat, said propeller having blades extending substantially radially with at least the major portions of the blades below the axis of the propeller projecting into said pocket, and means for directing the material downwardly upon the periphery of the propeller and for forcing it sidewise between said blades above the pocket.

4. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and an upwardly opening pocket in alinement with said discharge throat, said pocket leading into said discharge throat, a propeller mounted in said pocket having its axis arranged substantially horizontal and its sides in proximity to the sides of the pocket, the upper portion of said propeller projecting above said side walls of the pocket, and said propeller having blades extending generally radially, and means for forcing the material sidewise between the portions of the blades projecting above said pocket.

5. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and an upwardly opening pocket in alinement with said discharge throat, said pocket leading into said discharge throat, a propeller mounted in said pocket having its axis arranged substantially horizontal and its sides in proximity to the sides of the pocket, the upper portion of said propeller projecting above said pocket, and said propeller having blades extending generally radially, and means for causing the material within the hopper to be forced in opposite directions sidewise into the spaces between the portions of the blades projecting above said pocket.

6. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and an upwardly opening pocket in alinement with said discharge throat, said pocket opening into said discharge throat, a propeller mounted in said pocket having its axis arranged substantially horizontal and its sides in proximity to the sides of the pocket, the upper portion of said propeller projecting above said pocket, said propeller having blades extending generally radially, means for causing the material within the hopper to be forced in opposite directions sidewise into the spaces between the portions of the blades projecting above said pocket, and means for causing the material in the hopper to be forced downwardly over the upper portion of the periphery of the propeller.

7. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and an upwardly opening pocket in alinement with said discharge throat, a propeller mounted in said pocket having its axis arranged substantially horizontal and its sides in proximity to the sides of the pocket and the upper portion thereof projecting above said pocket, said propeller having blades extending generally radially, and material feeding devices comprising screw conveyors for feeding the material in opposite directions sidewise between the upper portions of the blades, and a wheel having radially projecting blades for forcing the material over the periphery of said propeller.

8. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and a pocket leading into said throat, a propeller having blades extending generally radially thereof for propelling material within the hopper through said discharge throat, the wall of said pocket covering portions of the sides of said propeller adjacent said throat and means for feeding the material

sidewise toward the uncovered portions of the sides of the propeller and into the spaces between the blades of said propeller.

9. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and an upwardly opening pocket in alinement with said discharge throat, said pocket leading into said discharge throat, a propeller mounted in said pocket having its axis arranged substantially horizontal and at least one of its sides in proximity to one of the sides of said pocket, the upper portion of said propeller projecting above said side wall of the pocket, said propeller having blades on the periphery thereof, and means for forcing the material sidewise between the portions of the blades projecting above said pocket.

10. In a bag filling machine of the class described, the combination of a hopper having a discharge throat near its lower end and a pocket leading into said throat, a propeller having blades on the periphery thereof for propelling the material within the hopper through said discharge throat, the wall of said pocket covering a portion of at least one side of said propeller, and means for feeding the material sidewise into the spaces between the blades of said propeller.

RENÉ JARRIER.