Feb. 6, 1923. 1,444,540

L. A. FREEDMAN

MACHINE FOR FILLING RECEPTACLES

Original Filed May 18, 1918 2 sheets-sheet 1

Fig. 2.

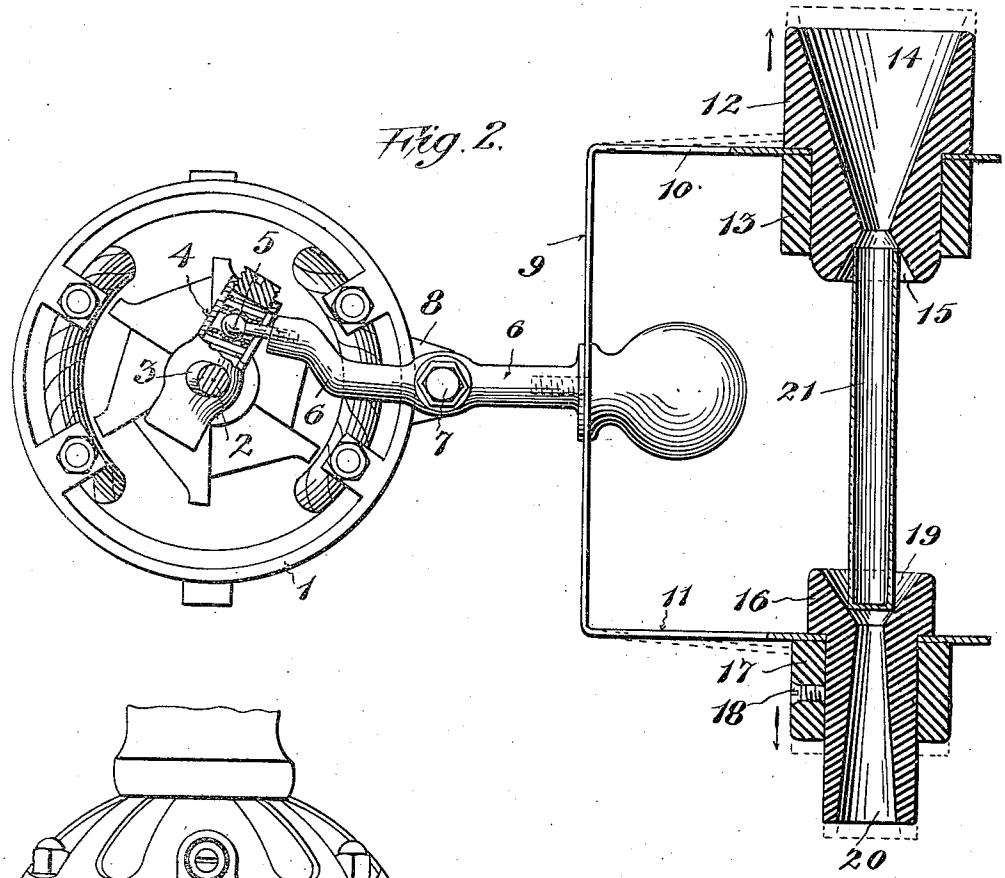
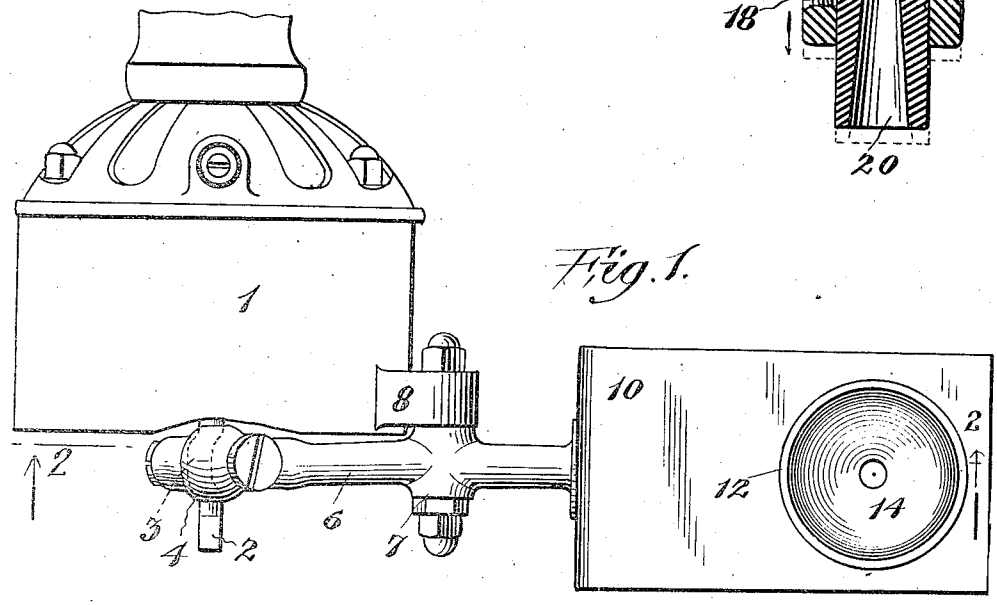


Fig. 1.



Inventor
Louis A. Freedman
by his atty. Joseph L. Levy

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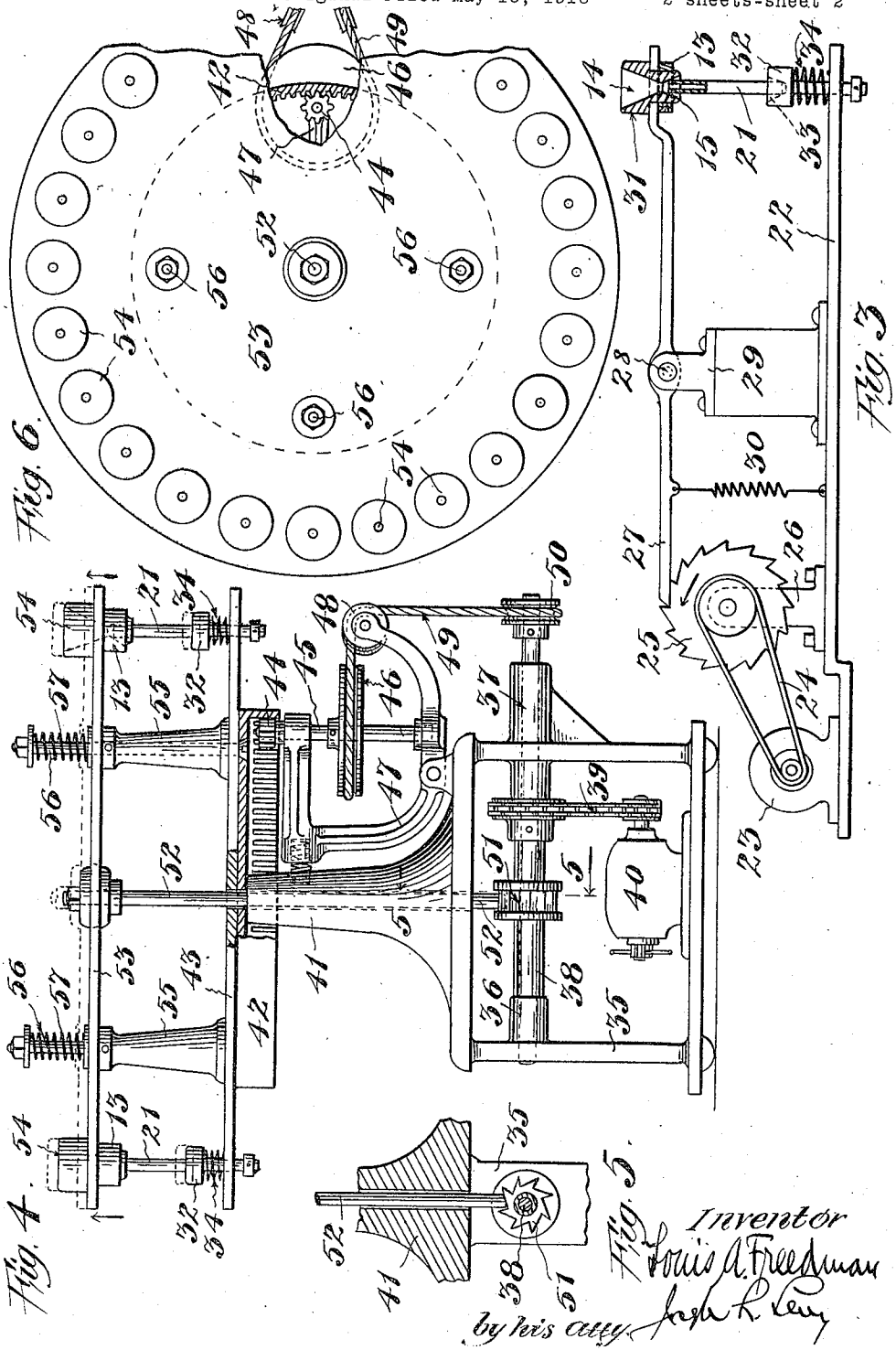


Fig. 6.

Fig. 3

Fig. 4.

Fig. 5.

Inventor
Louis A. Freedman
by his atty Joseph R. Levy

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UNITED STATES PATENT OFFICE.

LOUIS A. FREEDMAN, OF NEW YORK, N. Y.

MACHINE FOR FILLING RECEPTACLES.

Application filed May 18, 1918, Serial No. 235,307. Renewed June 28, 1922. Serial No. 571,477.

To all whom it may concern:

Be it known that I, LOUIS A. FREEDMAN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a certain new and useful Improvement in Machines for Filling Receptacles, of which the following is a specification.

The object of this invention is to provide a means for filling receptacles, such as tubes, vials, or other containers, particularly those having a small mouth or aperture through which a powdered filling material is adapted to enter. The material with which the containers are adapted to be filled is preferably a powdered substance. It is well known that various chemical powders, such as chloride of lime and the like, are difficult to handle in damp weather, and therefore very difficult to place within containers rapidly. The main object therefore of this invention is to provide a machine which will at all times operate effectively to rapidly and expeditiously fill containers of the character above referred to with any powdered substance.

With these objects, and other objects which may hereinafter appear, in view, I have devised the particular arrangement of parts set forth below and more particularly pointed out in the claims appended hereto.

Reference is to be had to the accompanying drawing, forming a part hereof, in which—

Figure 1 is a plan view of an embodiment of one of the filling elements, together with its vibrating mechanism,

Figure 2 is a sectional view on the line 2—2 of Figure 1, looking in the direction of the arrows,

Figure 3 is a side elevaton partly in section, of a modified form of one of the filling elements and vibrating mechanism therefor,

Figure 4 is a side elevation, partly in section, of a modification of my improved machine,

Figure 5 is a sectional view on the line 5—5 of Figure 4, looking in the direction of the arrows; and

Figure 6 is a plan view of the structure shown in Figure 4, parts being broken away and parts being shown in section to clearly reveal the construction.

Throughout the various views of the drawings, similar reference characters designate similar parts.

Referring to the embodiment of my invention shown in Figures 1 and 2. Here is shown a motor 1, which is suitably supported in any desired manner and is provided with its shaft 2 rotated in the usual well known manner. This shaft 2 is eccentric on its outer end as at 3, and mounted thereon is the casing 4 in which is held under spring tension, a ball 5 on the end of the arm 6. It will thus be seen that rotation of the shaft 2 will cause oscillation of the casing 4. The ball 5 acts as a universal joint for the arm 6 to which it is attached so that the arm 6 is, by the rotation of the shaft 2, rapidly vibrated. This particular vibrating device before mentioned is well known and forms no part of my invention. The arm 6 is pivotally mounted as at 7 in the bracket 8 which extends from the casing of the motor 1, and secured to the outer or free end of the arm is a bracket 9 having a pair of parallel arms 10 and 11.

A cup 12 is held in an opening in the upper arm 10 by means of the collar 13 and this cup 12 is provided with the conical filling opening 14 and extending from the lower end of this conical opening 14 is the downwardly widening conical opening 15 into which the open upper end of the receptacle to be filled is inserted.

The lower supporting arm 11 is provided with a receptacle support 16 which extends through the arm and is held thereon by the collar 17 which is held in place by the screw 18. The receptacle support is provided with an upwardly widening conical opening 19 from the lower end of which extends a downwardly widening conical discharge opening 20.

From the foregoing the operation of this embodiment of my invention will be readily understood. The arms 10 and 11 of the supporting bracket 9 are preferably resilient so that they may be spread apart or distended as indicated in dotted lines in Figure 2, so that the receptacle to be filled can pass between the cup 12 and support 16 and can be held therein as indicated at 21 in Figure 2, with its lower end resting in the conical opening 19 and its upper end or mouth inserted in the opening 15 in the cup. The

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advantage of the co-operating conical openings 15 and 19 is readily apparent as they center and hold concentric receptacles irrespective of their varying diameters. After the tube or other receptacle 21 is in place as shown in Figure 2, a desired quantity of the filling powder is deposited in the conical opening 14 in the cup 12 and the motor is set in operation. By means of the mechanism heretofore described the shaft 6 with the attached bracket 9 is thus rapidly vibrated, causing the powder held in the opening 14 in the cup to be rapidly shaken down into the tube or receptacle 21. The rapid vibrations of the bracket 9 prevent the powder from "building up", clinging or adhering to the interior wall of the opening 14, and thus all that is deposited therein is quickly and effectively shaken down into the receptacle 21. The discharge opening 20 in the support 16 is used merely to allow any stray surplus powder which may not fall into the receptacle to fall through and thus keep the support 16 clean.

In the embodiment of my invention as shown in Figure 3, I have shown a fixed base 22 on which is mounted a motor 23 or other driving means. This motor drives a ratchet wheel 25 by means of the belt 24, the ratchet wheel being suitably mounted in a standard 26 affixed to the base 22. An arm 27 is pivoted at 28 in a standard 29 extending upwardly from the base 22 and one end of the arm engages the ratchet wheel 25 and is held in engagement therewith by means of the spring 30. In the other end of the arm 27 is mounted a cup 31, this cup corresponding in all respects to the cup 12 shown in Figures 1 and 2, and is provided with the like openings 14 and 15 for the purposes heretofore described.

Below the cup 31 is the receptacle support 32 which has a conical opening 33 to receive the lower end of the receptacle 21. This receptacle support is mounted loosely in the base so that it can move vertically therein and is forced upwardly by the spring 34. It will thus be seen that the receptacle 21 resting in the conical opening 33 is held with its upper end firmly forced into the opening 15 in the cup by the tension of the spring 34. The rotation of the ratchet wheel 25 causes vibration of the arm 27 so that the powder placed in the filling opening 14 is rapidly shaken down into the receptacle 21 by these vibrations. The spring 34 holds the receptacle 21 tightly in the opening 15 at all times. After the receptacle 21 is filled, it is removed, and an empty one is inserted between the filler and support and the procedure is repeated.

In Figures 4, 5 and 6 of the drawings, I have shown a machine for filling a number of receptacles. The machine is provided with a frame 35 in which is journaled at 36 and 37 a shaft 38 suitably driven by a chain 39 from a motor 40 or other source of power. Extending upwardly from the frame 35 is a standard 41 and mounted to rotate horizontally on the upper end thereof is an internal gear 42 on top of which is secured a table 43. The internal gear 42 is driven by a pinion 44 on a vertical shaft 45 which is supported in a bracket 47 on the frame. Fixed on the shaft 45 is a pulley 46 which is rotated by a belt 49 extending from a pulley 50 on the shaft 38 and over the pulleys 48 supported in the bracket 47.

Mounted on the shaft 38 is a ratchet wheel 51 and this engages the lower end of a rod 52 which passes vertically through the standard 41 and is movable therein. On the upper end of the rod 52 is fixed a table 53 and fixed in said table adjacent the outer edge thereof are a plurality of cups 54, these cups being identical in construction with those shown as 12 in Figures 1 and 2, and as 31 in Figure 3, of the drawings. Fixed in the table 43, which is below the table 53, are the receptacle supports 32 which are identical in construction with that shown in Figure 3.

Secured on the table 43 and extending upwardly therefrom are a plurality of standards 55 and passing vertically through the same are rods 56. These rods 56 extend through the table 53 and act so as to rotate the table 53 in unison with the table 43 and surrounding these same rods 56 and exerting a downward pressure on the table 53 are springs 57. These springs tend to force the table 53 downwardly and thus keep the lower end of the rod 52 on the ratchet wheel 51.

From the foregoing the operation of this embodiment of my invention will be readily understood. The cups 54 can be filled one after another with the filling compound as they pass any desired part of the machine. The filling of these cups with the powdered substance can be done either by hand or by machine, as desired. As the tables 43 and 53 are rotated, the upper table 53 with its attached filling cups is constantly vibrated by means of the ratchet wheel 51, and thus all the filling compound that is placed within the cups 54 is shaken down into the receptacles 21 that are placed and held below them as heretofore described.

From the foregoing it is obvious that my invention is not to be restricted to the embodiments herein shown but is broad enough to cover all structures coming within the scope of the annexed claims.

Having described my invention, what I claim is:

1. A machine of the class described comprising a rigid supporting member, means for resiliently supporting a plurality of receptacles thereon, and a vibrating member

having a plurality of filling openings, the resilient supports for the receptacles holding the open ends of the same against said openings whereby said receptacles are caused to vibrate with the vibrating member.

2. A machine of the class described comprising a rigid receptacle-supporting member, means for rotating the same, a vibrating member, connections between the rotary member and the vibrating member whereby said vibrating member is rotated with the rigid member and resilient mountings on the rotating member for holding receptacles against the vibrating member whereby said receptacles vibrate with the vibrating member.

3. A machine of the class described, comprising a table, a plurality of cups in said table, means for vibrating said table, a rotating table beneath the vibrating table, and connected thereto, a plurality of receptacle supports on said rotating table and means for causing said supports to hold receptacles beneath said cups and vibrate therewith.

4. A machine of the class described, comprising a table, means for rotating the same, a plurality of spring pressed supports on said table adapted to hold receptacles, a table above said rotating table provided with a plurality of cups, said supports and cups adapted to hold receptacles between them and means for vibrating the upper table.

5. A machine of the class described, having a vibrated supporting member, a filling cup held therein, said cup having an upwardly widening conical opening adapted to receive filling material, and a downwardly widening conical opening extending from the filling opening, and a support beneath said cup having a conical opening adapted as a seat for the lower end of a receptacle held between the support and cup and means for causing the receptacle to vibrate with the cup.

6. In a machine of the class described, a pair of rotary, spaced-apart members, one of said members being situated above the other, means for rotating one of said members, a connection between the rotated member and the other member whereby both members are rotated together, a plurality of filling cups on one of said members, means for vibrating said cup-holding member, and a plurality of resilient receptacle-supports for holding receptacles between the members and in position to receive a filling preparation through the filling cups.

7. A machine of the class described, comprising a pair of rotary members connected together and adapted to rotate in unison, one of said members having a plurality of openings through which a filling preparation is passed, means for resiliently supporting receptacles between the members with the mouths of said receptacles in position to receive filling preparation through the openings and means for vibrating the perforated member.

8. A machine of the class described, comprising a pair of rotary members mounted one above the other, said members being connected together and adapted to rotate in unison, means for vibrating the upper member independently of the lower member and means on the lower member for supporting receptacles against the upper member so that said receptacles vibrate therewith.

Signed at the city, county and State of New York, this 16th day of May, 1918.

LOUIS A. FREEDMAN.