

1,257,012.

Patented Feb. 19, 1918.
2 SHEETS—SHEET 1.

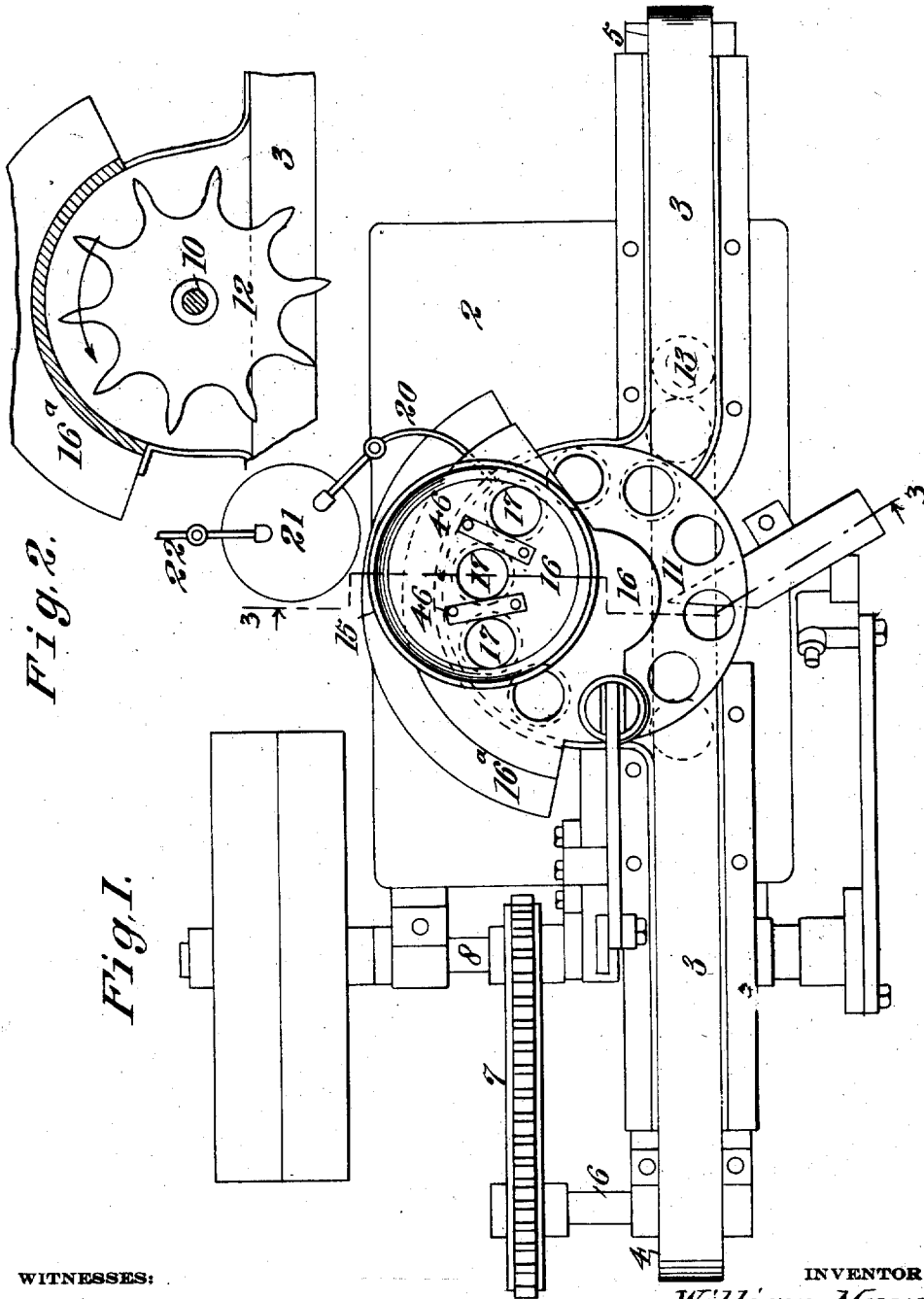


Fig. 2.

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

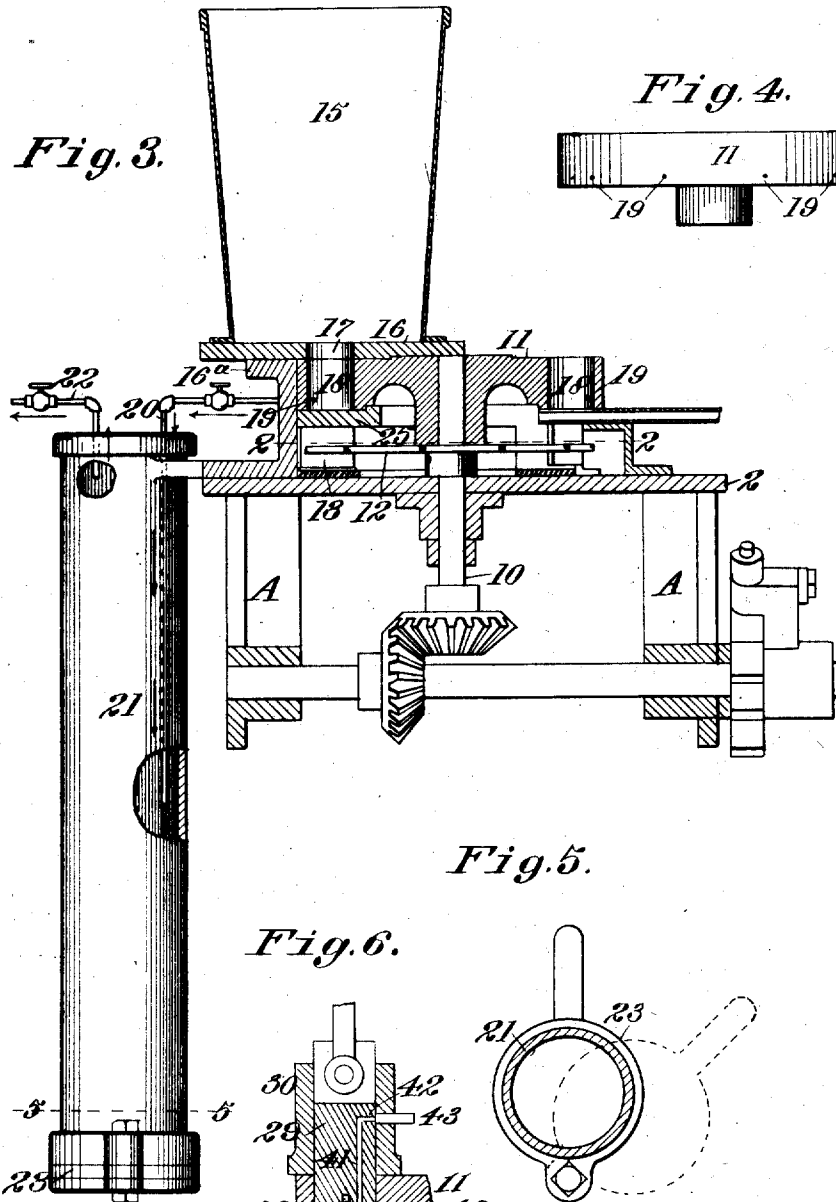


Fig. 4.

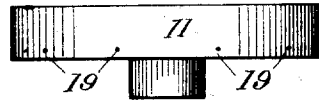
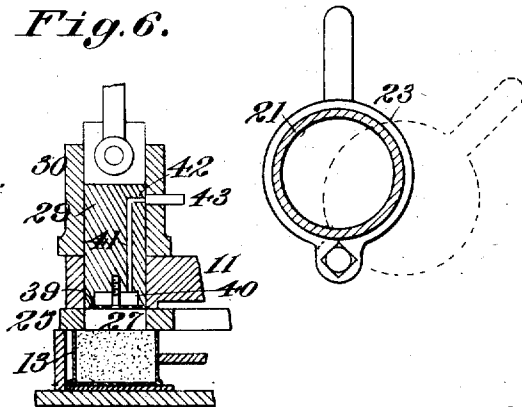


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM MUNN, OF ALAMEDA, CALIFORNIA.

FILLING-MACHINE.

1,257,012.

Specification of Letters Patent.

Patented Feb. 19, 1918.

Application filed April 11, 1917. Serial No. 161,355.

To all whom it may concern:

Be it known that I, WILLIAM MUNN, a citizen of the United States, residing at Alameda, in the county of Alameda and State of California, have invented new and useful Improvements in Filling-Machines, of which the following is a specification.

This invention relates to filling machines of the type shown and described in my prior application Serial Number 12,716, allowed January 26, 1917; and has for its object to assist the material in the hopper in settling into the charging pockets in the turret, whereby a more rapid and certain filling of the pockets results.

As shown and described in my prior application, a revolving turret member is employed, having a charging opening or pocket passing beneath the hopper which contains the material, and a plate beneath the turret which closes the bottom of the pocket. Gravity is depended upon to cause the material in the hopper to settle in the pockets and except for the provision of small bleed ports in the plate, at the bottom of the turret, said pockets are entirely closed during the charging operation. As a consequence of this, material, and particularly that of a sticky or plastic nature, will not readily settle into the pockets and a slower operation of the turret is therefore made necessary.

In the present device I provide suction means communicable with the charging pockets when the latter are disposed beneath the hopper, whereby to exhaust the air therefrom and assist the material in settling within. Therefore, I am enabled to increase the rate of movement of the turret and by adding other plungers for discharging the material from the pockets into the cans, I can greatly increase the number of cans filled by a single machine.

One form which my invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which—

Figure 1 shows a plan view of a device embodying my invention.

Fig. 2 shows a horizontal, sectional view in plan, taken on the line 2—2 of Fig. 3.

Fig. 3 shows a vertical, sectional view, taken on the line 3—3 of Fig. 1.

Fig. 4 shows a detail view, in side elevation, of the turret.

Fig. 5 shows a sectional view of the

vacuum or suction tank, taken on the line 5—5 of Fig. 3.

A is a suitable framework having a bed 2 which is traversed by the endless conveyer belt 3. The belt 3 is supported on end pulleys 4—5; pulley 5 being fast on shaft 6, which is driven through the sprocket chain 7 from the drive shaft 8.

Mounted adjacent to the conveyer 3 is a vertical turret shaft 10, carrying the turret or measuring device 11 and the star wheel conveyer 12; turret 11 being sufficiently elevated above the bed of the table 2 to accommodate the cans 13, which latter are conveyed from the belt by the star wheel 12 around beneath the filling devices and then returned on to the belt, as indicated in Fig. 1.

15 is a stationary hopper with a bottom supported above the bed plate upon an arcuate, flanged plate 16^a, said bottom having one or more openings 17 adapted to register with corresponding charging and measuring openings 18 in the turret 11. As here shown, there are three of these charging openings in the bottom of the hopper, so positioned that each time the turret comes to rest, three openings 18 in the turret will register with these three openings 17 in the hopper; it being understood that the turret and star wheel and cans during the filling operation of the cans are given a step by step movement in unison, through appropriate drive connections with the drive shaft 8. The turret contacts at one side with the arcuate plate 16^a and is provided with radial ports 19, one for each of the pockets 18. The said plate 16^a has a port in its side to register with the ports 19, and communicating with said port is a pipe 20 running to a vacuum tank 21 operated by a suction pipe 22, whereby, when the ports are in register, suction will be applied to the interior of a pocket 18 to exhaust the air from the latter.

25 is a fixed bottom plate disposed immediately beneath a portion of the turret and extending from a point ahead of the first of the charging openings 17 to a point a little beyond where the material is delivered from a pocket 18, and is adapted to support the material in the pockets while the turret is traversing the hopper and until the point of delivery is reached. This plate has an opening 27 which is approximately the same size as the can and is beyond the

hopper, and is in the last step of the turret before the can is returned to the conveyor belt.

In line with and above the opening 27 is a filling plunger 29, which is reciprocable in guides 30, by suitable means. The motion of the plunger takes place during the period of rest of the turret and cans and at the time that a can to be filled is in line beneath the opening 27 and a charge chamber 13 under it.

The plunger 29 has a perforated plate 39 on its bottom, behind which an air chamber 40 in the plunger is formed, which chamber 40 connects with an air duct 41 and an inlet port 42; port 42 being adapted to register at the moment the plunger reaches its lowest point, with an air tube 43, which latter may be connected with any suitable source of air pressure supply. Preferably this air pressure is not very strong, but yet sufficient to admit air into the top of the can after the material has been compressed so as to free the material from the end of the plunger and prevent the latter being drawn upward and out of the can when the plunger is retracted.

The operation of the apparatus is as follows:

The cans are fed onto the belt and directed by suitable guideways 45 into the star wheel or spider 12; the belt being operated continuously and the star wheel and filling mechanism intermittently. Step by step the cans are moved around with and beneath the turret charging device 11, in line with pockets 18, and brought into register with the successive openings 17 in the bottom of the hopper, the latter being charged with material to be canned.

In actual practice where these machines are now in use, the material operated upon is a pasty mass of about the consistency of deviled ham. As the charging member or turret 11 comes to rest, three pockets 18 are brought into register with the hopper openings 17. The material in the hopper will press down into and fill the pockets 18 beneath. The pockets are closed by the plate 25 and without suitable means to exhaust the air therefrom, the material would not readily settle. However, the port in the arcuate plate 16^a is so positioned as to be in register with the radial port in a pocket 18 when the latter is beneath the first of the openings 17 in the bottom of the hopper. The suction from the tank 21 will exhaust the air from the pocket 18 and allow the material to fill the same. The time during which the ports register should be very brief in order that the material may not be sucked into the tank. However, a slight amount of material is bound to find its way into the tank and, therefore, I provide for

cleaning out the latter by means of a swinging bottom plate 23.

In the succeeding steps of the turret or charging member the material is further forced down through the dragging action of the turret beneath, by means of radial inclined deflecting plates 46, arranged in the bottom of the hopper between the openings 17. These deflecting plates and the successive passage of the turret beneath the several openings 17 causes the pockets as they leave the hopper to be completely filled. The filled pocket is then moved along the plate 25 until it stops over the opening 27 in plate 25 where the material thus being left unsupported may be dropped by gravity and under the charging action of plunger 29 into the can beneath. The air passing through ports 41 and 42 serves to free the face of the plunger from the sticky mass beneath and prevents pulling up the mass when the plunger is retracted. In the next step the filled can is deposited on the belt and carried off to any suitable point of delivery.

By the provision of suction means to exhaust the dead air from the charging pockets no resistance will be offered to the settling of the material within, and as a consequence the filling of the pockets will be more quickly accomplished and there will be no uncertainty as to the settlement of the material within. The use of this means to assist in the charging of the hopper will so increase the speed and efficiency of charging as to permit the use of a second plunger, similar to the plunger 29 and moving conjointly therewith, whereby to fill two cans simultaneously and thus increasing the output of the machine two-fold.

It is manifest that various changes in details of construction may be made in the machine without departing from the principle of the invention.

While I have described the device in its particular use for filling cans, it will be manifest that any other suitable or appropriate receptacle according to the nature of the article packaged, or the desired style of the finished package, may be used.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In a can filling machine, a hopper, a charging member movable beneath and having a pocket to receive material therefrom and deliver it to a can, and suction means for exhausting the air from the pocket to permit the material to settle within said pocket at the interval prior to its delivery to the can.

2. In a can filling machine, a hopper, a charging member movable beneath and having a pocket to receive material therefrom and deliver it to a can, and means for exhausting the air from the pocket to permit

the material to settle within, said means comprising a suction device adapted to register with a port opening into the interior of the pocket upon the initial movement of the pocket beneath the hopper.

3. In a can filling machine, a hopper, a charging member movable beneath and having an open-ended pocket to receive material from the hopper and deliver it to the can, a plate beneath the charging member forming a temporary closure for the bottom of the pocket, and suction means for exhausting the air from the pocket to permit the material to settle within said pocket when so closed.

4. In a can filling machine, a hopper having a bottom provided with a discharge opening, a turret movable beneath the hopper and provided with an open-ended pocket adapted to register with an opening in the bottom of the hopper and receive material therefrom for conveying it to a can, a plate forming a temporary closure for the bottom of the pocket while the same is being filled, and a suction device communicable with the pocket when the latter is beneath the hopper to exhaust the air therefrom and permit the material to settle into the pocket.

5. In a can filling machine, a hopper, a measuring receptacle therebeneath and in intermittent communication therewith, a bottom plate normally closing said receptacle and provided with a port through

which communication with the can may be established and positively operating means for exhausting the air from said receptacle during the filling operation and prior to the discharge of material therefrom.

6. In a can filling machine, a hopper having a bottom provided with a discharge opening, a turret movable beneath the hopper and provided with an open-ended pocket adapted to register with an opening in the bottom of the hopper and receive material therefrom for conveying it to a can, a plate forming a temporary closure for the bottom of the pocket while the same is being filled, a suction device communicable with the pocket when the latter is beneath the hopper to exhaust the air therefrom and permit the material to settle into the pocket, said suction device comprising a vacuum tank having a pipe leading to the turret, and a port in the turret opening into the charging pocket and adapted to register with the pipe from the vacuum tank for an instant of time when the pocket is being moved into charging position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM MUNN.

Witnesses:

MISS M. BAXTER,
J. H. HERRING.