945,533.

F. J. HEYBACH.

CAN PACKING APPARATUS.

APPLICATION FILED JAN. 14, 1909.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

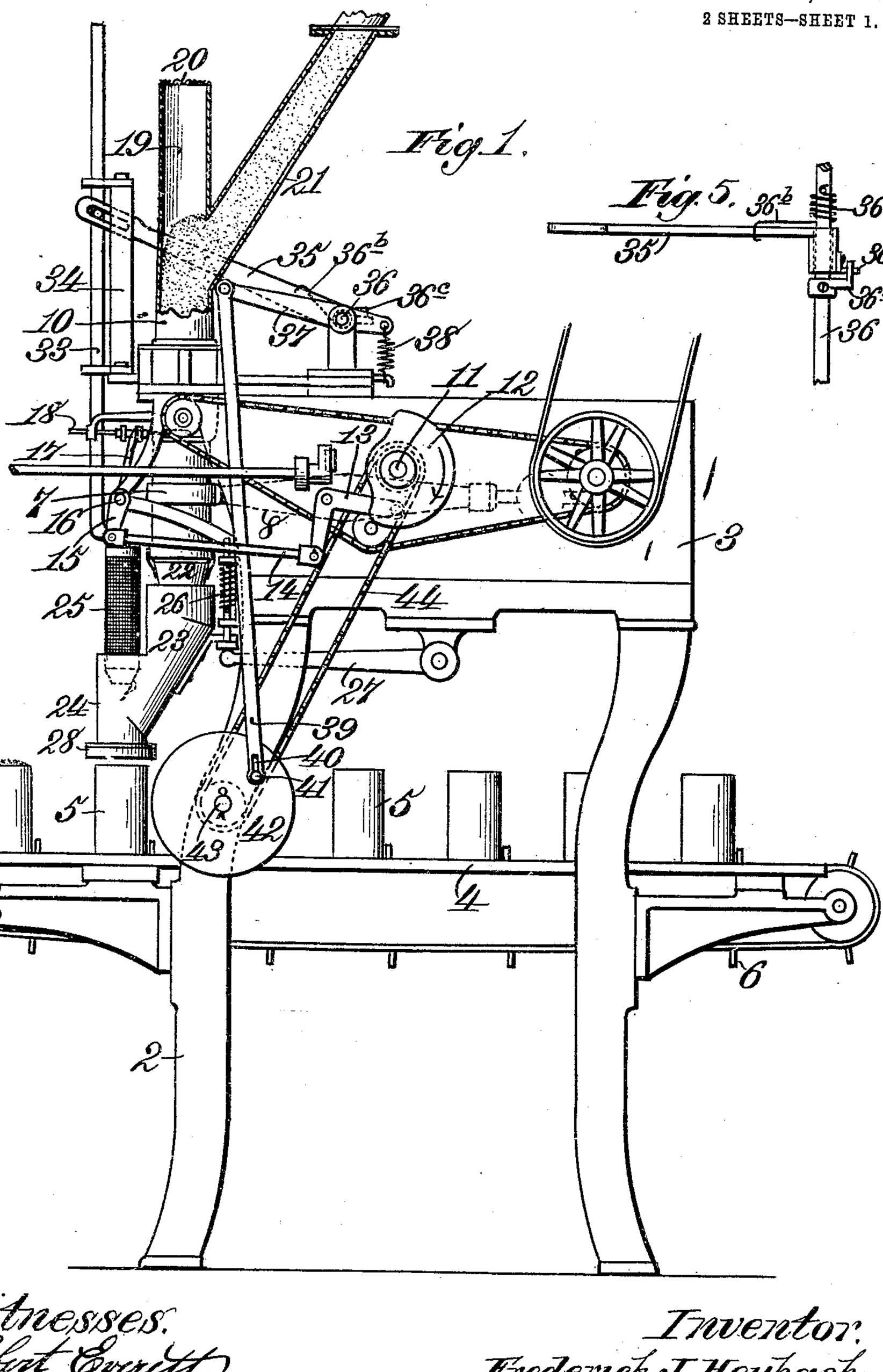

Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 2.

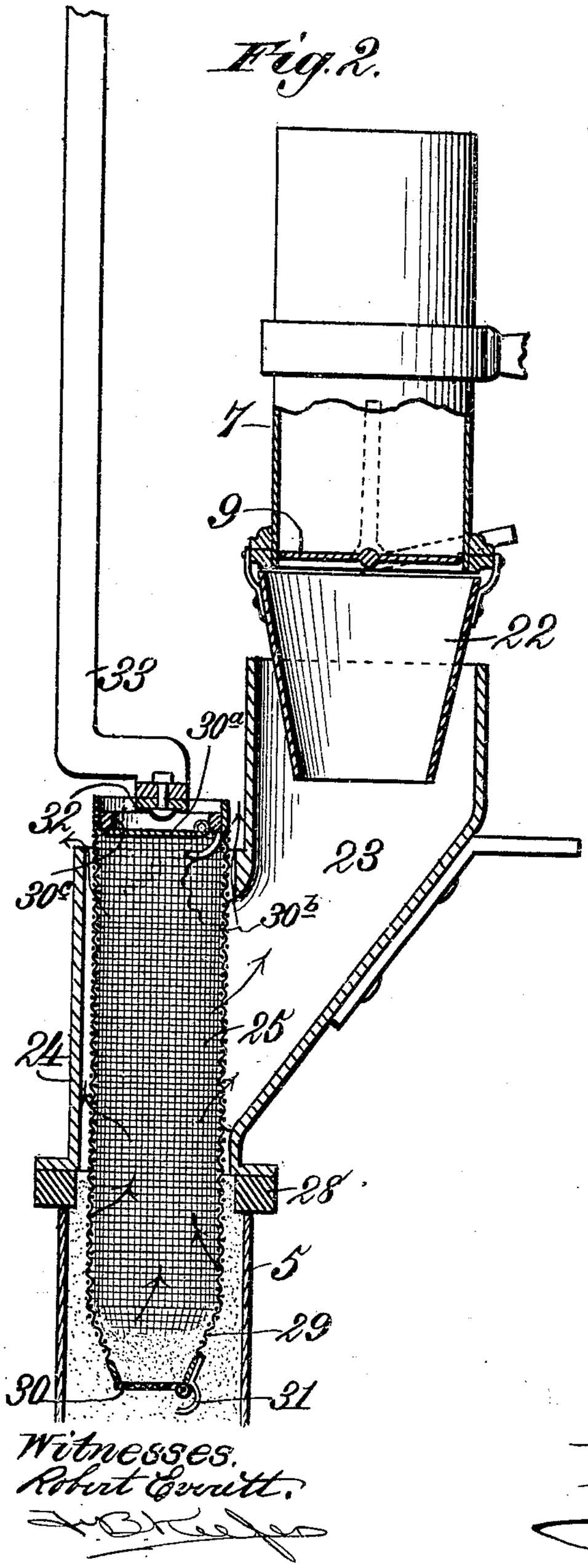


Fig. 3.

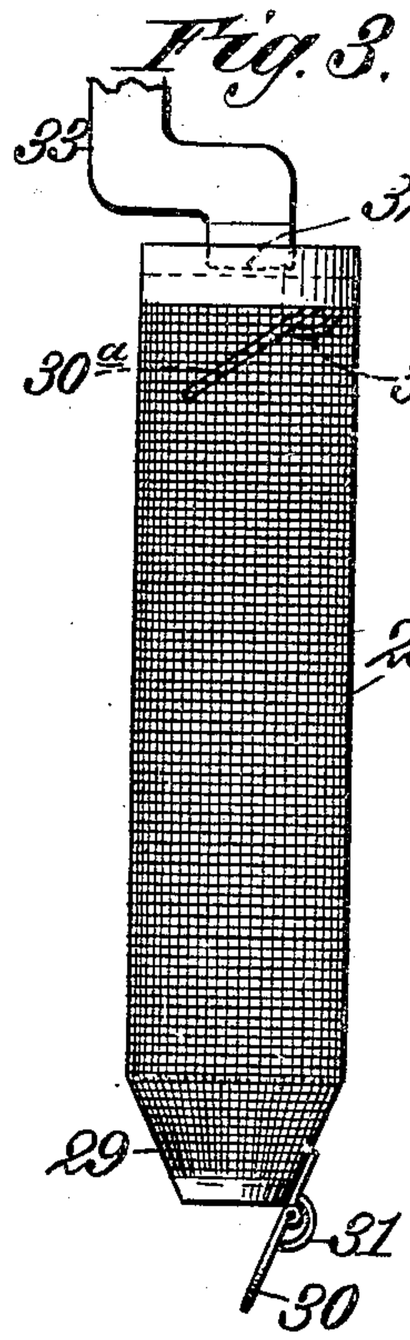
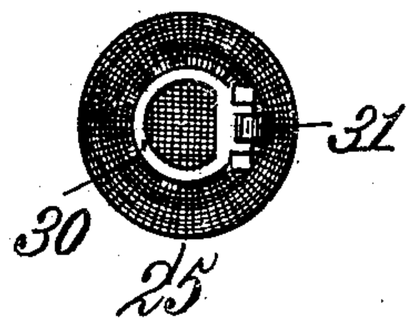


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK J. HEYBACH, OF SAVANNAH, GEORGIA, ASSIGNOR TO THE AMERICAN AUTOMATIC MACHINERY COMPANY, OF SAVANNAH, GEORGIA, A CORPORATION OF GEORGIA.

CAN-PACKING APPARATUS.

945,533. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed January 14, 1909. Serial No. 472,275.

To all whom it may concern:

Be it known that I, FREDERICK J. HEYBACH, a citizen of the United States, residing at Savannah, in the county of Chatham and State of Georgia, have invented new and useful Improvements in Can-Packing Apparatus, of which the following is a specification.

This invention relates to a can packing apparatus.

I use the term "can" in a generic sense to include receptacles other than those known specifically as cans.

The apparatus is especially adapted for handling highly pulverized or free flying substances, such as yeast powder. By its use I can pack such material in cans with rapidity and without waste.

In the drawings accompanying and forming a part of this specification, I have shown in detail certain forms of embodiment of the invention, which to enable those skilled in the art to practice the same will be set forth at length in the following description, while the novelty of the invention will be included in the claims succeeding such description.

Referring to said drawings, Figure 1 is a side elevation of said apparatus. Fig. 2 is a sectional detail view of the plunger or packing device, discharge hopper and part of a weighing bucket. Fig. 3 is an elevation of the plunger and part of the stem thereof. Fig. 4 is a bottom plan view of said plunger or packing device. Fig. 5 is a detail top plan view of a part of the actuating means for the packing device.

Like characters of reference refer to like parts throughout the several figures of the drawings.

In Letters Patent, No. 939506 granted to me September 28, 1909, I have illustrated and described some of the features shown in Fig. 1 of the drawings, these being represented in the present case for the purpose of indicating one advantageous application of the invention. In said Fig. 1 I have shown several standards or uprights as 2 surmounted by a box or housing as 3 which includes certain of the operative parts of the apparatus. These standards or uprights 2 also sustain a table, as 4, along which the cans 5 are advanced step-by-step by means of suitable feeding means as that designated in a general way by 6. These cans are supplied empty to the apparatus and are advanced in such condition along the table or platform 4 until they are brought to a point where they can receive charges of material from weighing mechanism hereinafter briefly described and which constitutes a convenient means for charging the cans. After the cans receive their charges they are further advanced and receive caps, although there is no means shown in the drawings for applying the caps to the cans.

The weighing mechanism comprises a bucket as 7 and a counterweight scale beam as 8, the bearing for which is inclosed in the box or housing 3, which with the standards 2 constitutes a suitable framework for the different working parts. The weighing mechanism is intermittently operative, the discharge of the loads from the buckets 7 by the positive opening of a valve 9 in the bottom thereof being automatically controlled. When said valve 9 is closed, as indicated in Fig. 2, it occupies a horizontal position. To effect the discharge of the contents of the buckets 7 the valve or closer 9 is brought positively to a vertical position. The weighing mechanism in itself forms no part of the present invention, for which reason it need not be further described in detail.

Above the bucket 7 is a supply hopper, as 10, see Fig. 1, in connection with which is operative valve mechanism for controlling the discharge of material from the hopper 10 to the bucket 7. The valve mechanism is operable from the intermittently rotative shaft 11, said shaft being given one full turn each time it is thrown in action. The shaft 11 is provided with a cam 12 to rock an angle lever 13 connected to a rod 14 which in turn is jointed to an arm as 15 on a shaft 16 provided with an arm 17 for operating the stem 18 of the valve mechanism in the hopper 10. As the said valve mechanism and the parts which operate the same do not constitute part of the invention their mode of operation need not be set forth; they are briefly alluded to for the reason that they appear in the drawings.

From the supply hopper 10 there is shown as rising a tube 19 which is preferably closed at its upper end by a cap as 20 of some per-

forated material, such for instance as wire-gauze to prevent foreign substances from entering the tube 19. The tube 19 is vertically disposed and it has projecting from it between the top and bottom at an upward acute angle the supply tube 21 down which the material to be charged into the cans gravitates, and this material can be directed into said tube or pipe 21 in any desirable way. The tube 19 serves as an air relief duct or passage and it prevents the fluffy material from being blown into the room in which the apparatus may be located. In ordinary forms of apparatus when the supply valve mechanism is opened or closed an upward draft of air is directed through the material above said valve mechanism and the air in the material when the latter is disturbed passes from the same and in doing so blows a portion of such material out of the supply device. The supply stream follows an inclined path down the tube or duct 21 into the hopper 10 and when the valve mechanism operative in connection with said hopper is closed or opened any air that may be in the material flows upwardly into the tube or duct 19 and out of the same into the external atmosphere. The tube or duct 19 is made sufficiently long as to prevent such particles of the material which may have been carried up with the air into said tube 19 and above the downwardly flowing stream descending along the tube 21 from spilling out of the apparatus.

From the bottom of the weighing bucket 7 there is shown as depending a tapered or substantially frusto-conical tubular guide device 22 which directs each load of material discharged from the bucket into the hopper 23 which in turn directs the load into a can. The hopper 23 is in the main inclined and it has a vertically disposed branch 24 in which is a reciprocative hollow packing device 25 of some foraminous material and the body of which is shown as being cylindrical. The hopper 23 is capable of vertical movement, it being lowered by a spring as 26 and elevated by an arm as 27. The means for vertically moving the hopper does not constitute part of the present invention, so that it need not be described in detail. It might be remarked that on the feed movement of the cans, the hopper 23 is up. When a can is in position, however, to receive a load from the bucket 7, the said hopper 23 is lowered so as to carry a gasket 28 at the lower end thereof into air-tight contact with the upper edge of said can. The lower portion of the packing device 25 is represented as inwardly tapered or substantially conical, as shown at 29, so as to facilitate its entrance into the body or charge of material in the can 5. By reason of the fact that the packing device 25 is of foraminous or perforated material the entrance thereinto of the air within the can 5 and also of the air confined in the material within said can is permitted, whereby such air can not blow the contents of the can therefrom. I may, if desired, make the packing device wholly of wire-netting and the mesh preferably is of such size as to prevent the entrance of the pulverized material thereinto, although air can freely pass thereinto. Should, however, any of the material pass into the packing device I provide for the escape thereof and its delivery into the can, as will hereinafter appear. The packing device 25 is open top and bottom, the open bottom being controlled by a valve or flap as 30, preferably also foraminous or perforated and pivoted at one side of the lower opening in any suitable way. Said valve or flap is preferably automatically operable and is adapted when wide open to rest against a stop as 31 fastened to the tapered or conical portion of the packing device and to also occupy an acute angular position with respect to the lower edge of said packing device.

I have shown as pivotally mounted in the packing device 25 a valve 30^a which like the valve 30 is preferably of disk form, although I prefer that the valve 30^a be imperforate and of some light sheet metal. The valve 30^a when opened as indicated in Fig. 3, is adapted to rest against a stop as 30^b in said packing device, at which time it occupies an angular position; when closed, the valve 30^a fits against a ring as 30^c fitted in the packing device 25. It will be understood that the valve 30^a and its coöperating parts are located near the top of said packing device. When the packing device enters a can air, of course, passes outwardly thereof and strikes against the under side of the valve 30^a, swinging the same upward to its horizontal or closed position against the ring 30^c, whereby such air is caused to take a lateral course by virtue of which such air is utilized to clean or free the openings of the packing device of any particles that may be therein. I have shown as extending diametrically of the upper portion of the said packing device a cross bar 32 to which is connected the lower bent end of the stem 33 which extends in an upward direction from said packing device and which is guided vertically by several lugs on the post 34 fastened to the framing of the machine. To the stem 33 between the ends thereof is shown connected by a loose joint, such as a pin-and-slot connection, the arm 35 loosely mounted on the rock-shaft 36 sustained by a suitable bearing on the casing 3 and to which is also fixed the lever 37. To the short arm of said lever 37 is connected a spring 38, while to the long arm thereof is shown as pivoted a rod or pitman 39 having near its lower end an elongated slot 40 to receive the pin 41 on the

disk 42 mounted on the shaft 43 driven by sprocket gearing denoted in a general way by 44 from the intermittently rotative shaft 11.

A coiled spring 36[a] (see Fig. 5) is mounted upon the rock-shaft 36, one end of said spring being fastened to said shaft, while the other end thereof is provided with a projecting portion 36[b] overlying the upper side of the arm 35, whereby said arm 35 will be yieldingly mounted. An arm 36[c] is fastened to said shaft, said arm being represented as of right-angular formation and one branch thereof engaging over a projection as 36[d] on the hub of the arm 35.

After a can as 5 is positioned under the hopper 23 the latter is lowered to carry the gasket 28 into contact with said can which at this time is at rest. It should be explained that the hopper 23 is lowered by the throwing of the shaft 11 into action. At about the time the gasket 28 strikes the empty can the load of material from the bucket 7 will be discharged therefrom and will be directed by the part 22 and hopper 23 into the can, the packing device 25 at this time being up. When the load or charge is in the can the disk or wheel 42 is caused to rotate. Each time the shaft 11 is thrown into action the disk or wheel 42 is given one complete turn, the normal position of said wheel being indicated in Fig. 1. After said wheel 42 is moved a certain distance it will draw down the rod or link 39 imparting thereby a corresponding movement to the long arm of the lever 37. At a subsequent point the rod or link 39 is elevated by the said wheel. It, therefore, follows that the lever 37 is reciprocated and this reciprocation is utilized through the intermediate described parts for reciprocating the packing device 25; that is to say, said packing device is first lowered to pack the material and is then elevated. As the shaft 36 rocks in a forward direction under the action of the lever 37, the arm 35 acted on by the spring 36[b] is lowered so as through the stem 33 to lower the packing device 25. On the return movement of said shaft 36 the arm 36[c] acting against the projection 36[d] returns the arm 35 and necessarily the spring 36[b] to its original position, shown in Fig. 1. The means, therefore, for lowering the packing device involve a yieldingly mounted part, such as the arm 35 so that should a can as 5 be placed up-side-down no injury will result when the packing device strikes the inverted can, as the spring 36 will take up any shock that is due to such an incorrect positioning of said can. During the downward movement of the rod 39, the spring 38 is being stretched so that just before the wheel 42 is ready to impart a return movement to the packing device 25 through the intervention of the coöperating parts, said spring can give to said packing device a forcible movement independent of the reciprocating means therefor to free such packing device of any material which may be thereupon. After the spring 38 has performed its function the packing device is returned to its original position by its actuating means independent of said spring 38. When the packing device enters the can it densely packs any material that may be therein and prevents such material from squirting out of the can by the power of the air that may be therein. The air, however, is free to pass through the openings of the packing device and it rises upwardly therethrough and strikes and then closes the upper valve 30[a] so that such air is positively caused to travel sidewise to aid in clearing the packing device of any material which may tend to stick thereto. As soon as the valve 30 strikes the material in the can said valve is closed on the downward movement of the packing device to prevent the material in the can from entering said packing device by way of the valve-controlled opening in the lower end thereof. At times a small portion of the substance being packed will enter the packing device 25 through the openings therein. This will be but a very small part of the charge. The instant, however, the packing device 25 rises after performing its densifying function the valve 30 is automatically opened so as to permit the material within the packing device to pass therefrom and into the can. The material on the descent of the packing device does not squirt up out of the can or on the outside of the packing device. As soon as the packing device enters the can, the material therein forms a cushion at the top of the can around the packing device or at the gasket 28. The material may rise slightly, but such material is carried downward by the packing device on its descent, the freeing of the air in the material facilitating this action.

What I claim is:—

1. In an apparatus of the class described, a packing device provided with foraminous walls and also having an outlet, and a shiftable member for freeing the same of material that may enter the space inclosed by said foraminous walls.

2. In an apparatus of the class described, a packing device embodying a foraminous tube provided with a valved outlet.

3. In an apparatus of the class described, a foraminous packing device provided with a valve to be closed by the pressure of material thereagainst on the working movement of said packing device and adapted to be automatically opened on the return movement of said packing device to permit any material therein to escape therefrom.

4. In an apparatus of the class described, a substantially foraminous cylindrical hollow packing device having a tapered lower portion.

5. In an apparatus of the class described, packing mechanism involving a substantially foraminous cylindrical hollow packing device having a tapered lower portion provided with a valved-outlet.

6. In an apparatus of the class described, a hollow packing device having a foraminous wall and an outlet for the escape of any granular material that may pass thereinto, and a valve connected with said packing device, for controlling said outlet.

7. In an apparatus of the class described, a hollow foraminous packing device, having an outlet for the escape of any granular material that may pass thereinto, and a self-acting valve connected with said packing device for controlling said outlet, said packing device being provided with a stop to limit the movement of said valve.

8. The combination of a support for a can, means for delivering a charge of material into said can, a foraminous packing device to enter the can, means for imparting a downward and return stroke to the said packing device, and independent means for causing a forcible initial return movement of said packing device.

9. The combination of means for supporting a can in position to receive a charge of material, means for supplying to said can a charge of such material, a foraminous packing device to move said charge downward into the can and then operative to rise from the can, and a spring for forcibly initially applying to the packing device a return movement.

10. In an apparatus of the class described, a foraminous hollow packing device provided with a plurality of independently operable valves, one for controlling the discharge of any material that may pass into the packing device during the working movement thereof, and the other closable by air in said packing device, said latter valve when closed serving to cause a lateral flow of such air.

11. In an apparatus of the class described, a foraminous hollow packing device having a discharge outlet provided with a valve closable by the pressure of material thereagainst on the working movement of said packing device and openable on the retracted movement of said packing device to permit the escape therefrom of any material which may be therein, said packing device having a second valve located near the top thereof and closable by air pressure in said packing device.

12. In an apparatus of the class described, the combination of means for supporting a can in position to receive a charge of material, a packing device, and means for operating the packing device involving a yieldably mounted member operative to move the packing device into packing position by a yielding pressure and for positively withdrawing the packing device from a can.

13. In an apparatus of the class described, the combination of means for supporting a can in position to receive a charge of material, a packing device for packing the material in the can, and mechanism involving an arm, and a spring yieldingly acting against said arm for imparting a working movement to said packing device.

14. In an apparatus of the class described, the combination of means for supporting a can in position to receive a charge of material, a packing device to pack the material in the can, a shaft, an arm loosely carried by said shaft, a spring fastened to the shaft and acting against said arm, means for rocking said shaft to impart an advancing movement through said spring to said arm, means on the shaft on the rocking motion thereof for imparting a return movement to said arm, and means for transferring the effect of the arm to said packing device.

15. In an apparatus of the class described, a supply device comprising a tube along which a stream of material is adapted to flow, and a second tube extending upward from the first tube and constituting an air relief duct.

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

FREDERICK J. HEYBACH.

Witnesses:
W. MORAN,
E. FITZGERALD.