G. G. GLASS.

MACHINE EMPLOYED IN CANNING OPERATIONS.

APPLICATION FILED JULY 22, 1905.

909,582. **Patented Jan. 12, 1909.**

4 SHEETS—SHEET 1.

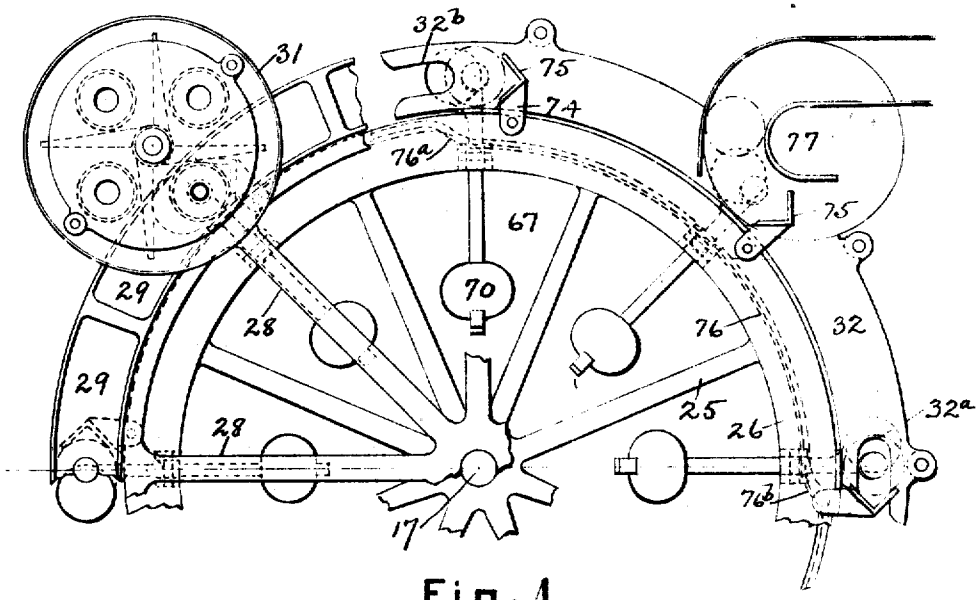


Fig. 1

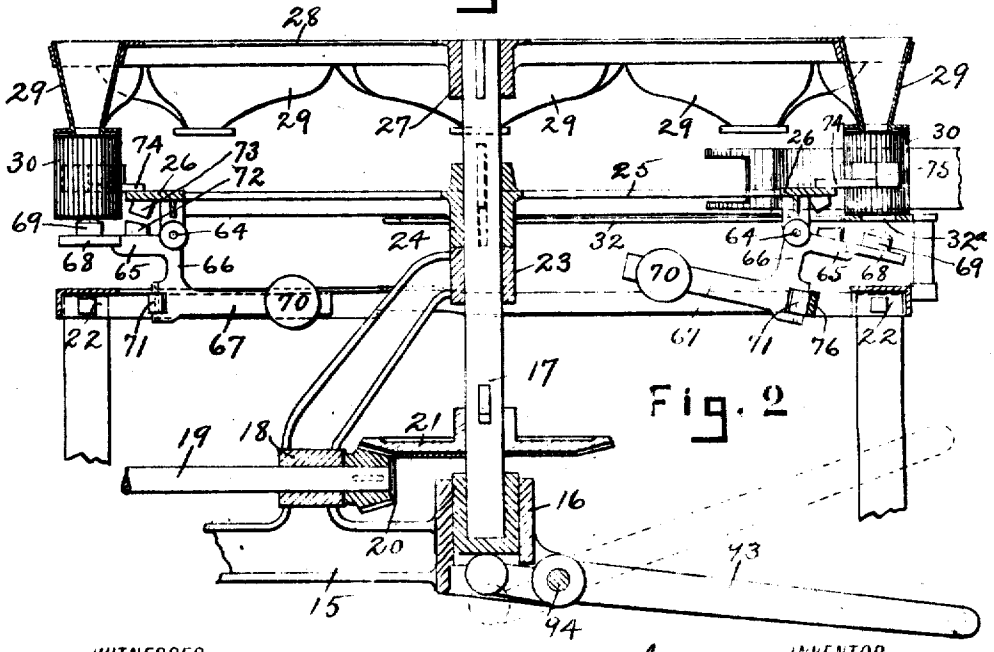


Fig. 2

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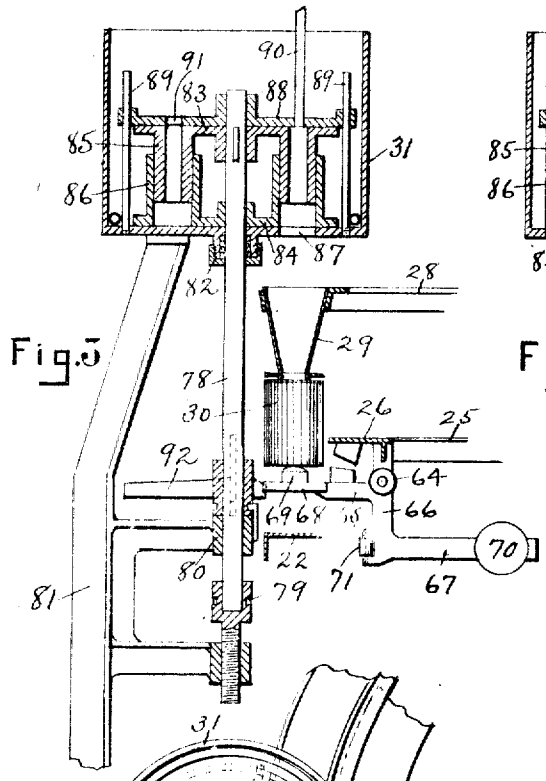


Fig. 3

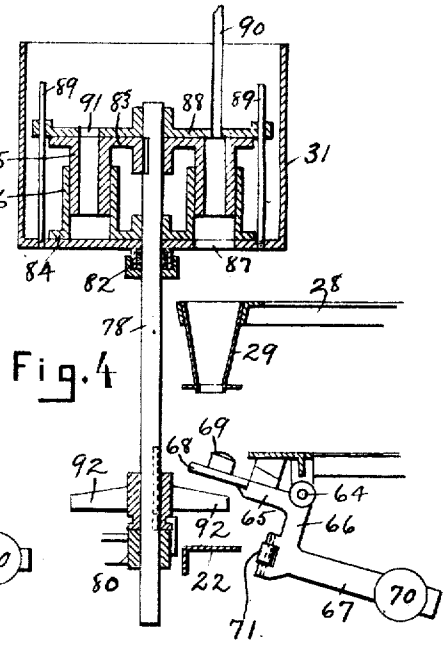


Fig. 4

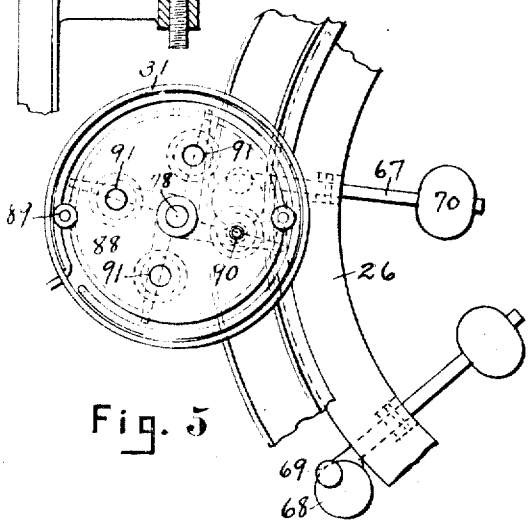


Fig. 5

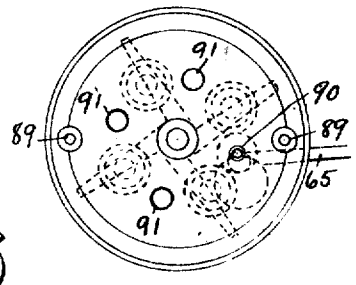


Fig. 6

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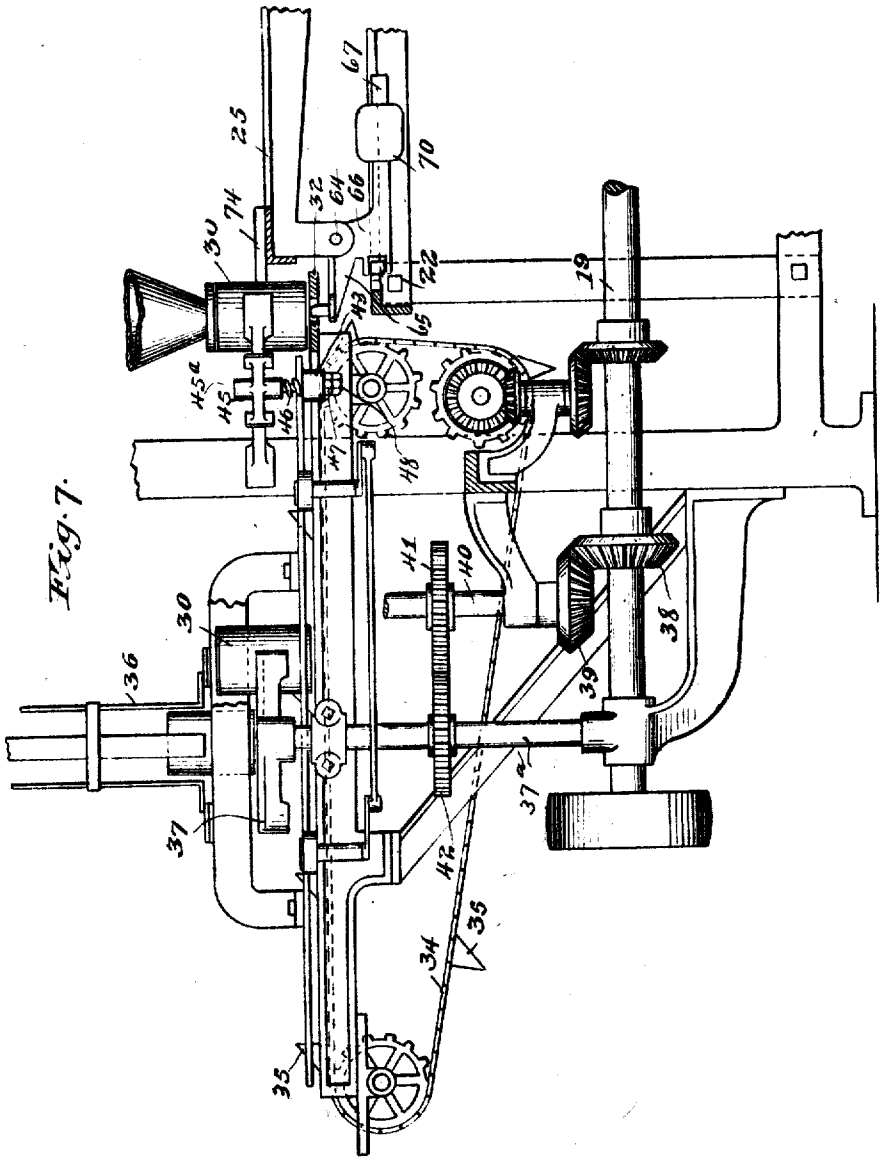


Fig. 7.

Witnesses,
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4 SHEETS—SHEET 4.

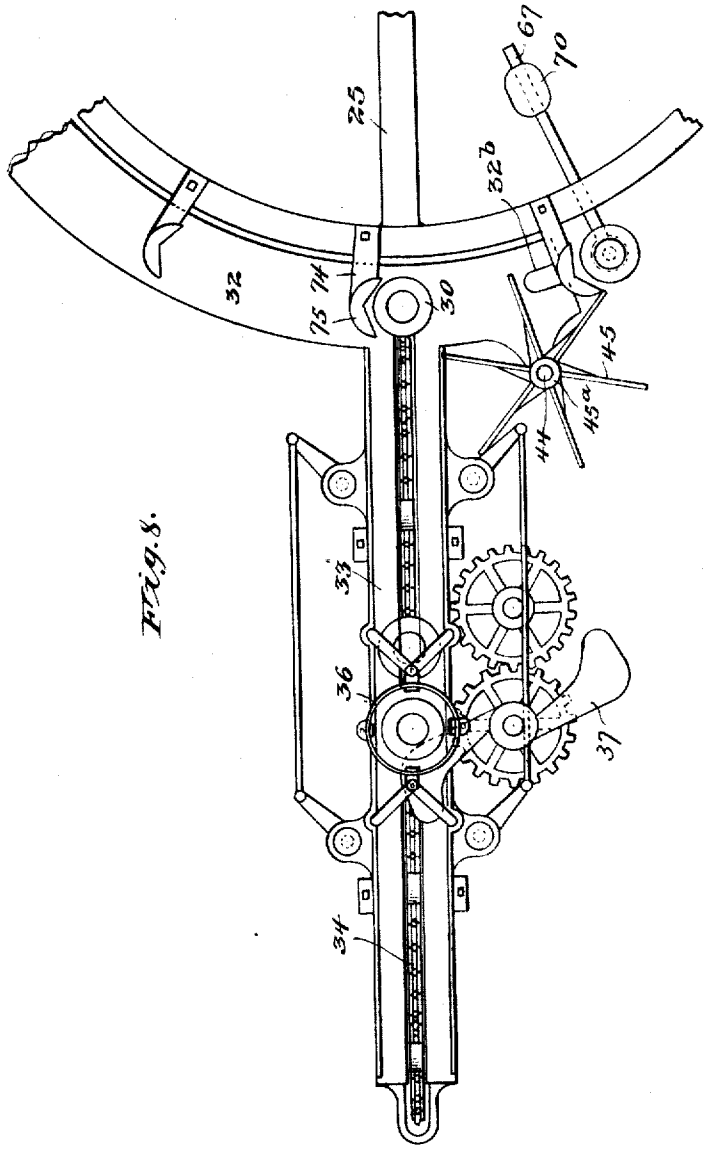


Fig. 8.

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UNITED STATES PATENT OFFICE.

GEORGE G. GLASS, OF HOOPESTON, ILLINOIS.

MACHINE EMPLOYED IN CANNING OPERATIONS.

No. 909,582. Specification of Letters Patent. Patented Jan. 12, 1909.

Application filed July 22, 1905. Serial No. 270,780.

To all whom it may concern:

Be it known that I, GEORGE G. GLASS, a citizen of the United States, residing at Hoopeston, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Machines Employed in Canning Operations, of which the following is a specification.

My invention relates to machines employed in canning operations; and pertains in part to a novel mechanism for supporting the cans while the latter are passing through the machine, and for causing said cans, irrespective of their height, to properly register with the parts of the machine engaging the upper ends of the cans, the chief object of the invention, so far as it relates to this feature, being to render the machine practically universal in respect to its capability of handling cans of varying sizes.

Another object of the invention, which is more particularly related to can-filling machines is to provide an improved mechanism for automatically actuating the measuring and filling devices that supply the goods to be charged into the cans, dependent for its operation upon the presence in the machine of an empty can properly positioned to receive its contents.

Still another object of the invention is to provide an improved means for accurately and automatically centering the cans as they are received into the machine from the feeding-in mechanism.

With these and other minor objects in view my invention consists in the improvements hereinafter described and more particularly defined in the appended claims.

In the accompanying drawings I have illustrated my improvements as embodied in a can-filling machine of the rotary type; the drawings illustrating so much of a rotary filling machine as is essential to a clear understanding of my present improvements; but it will be understood that those features of the invention pertaining to the novel mechanism for supporting the cans and raising them into proper position for cooperation with other parts of the machine, as well as for centering them when received into the machine, are equally capable of use advantageously in machines operating in other ways upon the cans, such, for instance, as capping or soldering machines.

Referring to the drawings,—Figure 1 is a top plan view of one side of the machine, with certain parts omitted for the sake of clearness; Fig. 2 is a transverse vertical section through the rotary carrier and a superposed funnel guide, with the can-supporting devices shown in side elevation; Fig. 3 is a detail view in vertical section through the syrup measuring and filling tank, showing a can in operative position to receive a charge; Fig. 4 is a view similar to Fig. 3, but illustrating the manner in which the actuation of the measuring and filling device is omitted when a can is not present in receiving position; Fig. 5 is a top plan view of Fig. 3; Fig. 6 is a top plan view of the measuring and filling mechanism, illustrating an intermediate position of the parts; Fig. 7 is a side elevational view of a feeding-in mechanism and, in connection therewith, a device for centering the cans as they are received by the machine; and Fig. 8 is a top plan view of the parts shown in Fig. 7.

Referring to the drawings, 15 may designate a portion of the stationary frame of the machine, which is provided with central vertical bearings 16 and 23 and for a central upright shaft 17, and with a horizontal bearing 18 for a driving shaft 19. Motion is imparted by the latter to the central vertical shaft 17 by bevel gears 20 and 21, the latter being splined on shaft 17.

22 designates a stationary ring constituting an element of the rigid frame of the machine, the center of which is coincident with the axis of the vertical shaft 17. Superposed on the bearing 23 and keyed to the shaft 17 is the hub 24 of a spider 25 having an outer ring 26. Also keyed to the shaft 17 above the spider 25 is the hub 27 of another spider 28, which latter carries at the outer extremity of its arms or spokes can-charging devices 29 designed to engage at their lower ends the upper ends of the cans 30 and direct the contents into the latter when said cans are raised thereto by the mechanism hereinafter described. The present illustration of the charging devices 29 is conventional only, said parts being intended to represent any suitable or convenient means in the general nature of funnels serving to receive a measured quantity of the goods and syrup to be filled into the cans from one or more superposed filling tanks

such as the syrup tank 31 as they pass beneath the latter, and deliver the same into the cans.

Supported upon the stationary annular member 22 of the frame and disposed above and parallel with the latter throughout a portion of its circumference is a can receiving and discharging plate 32 (Fig. 1), said plate being longitudinally slotted inwardly of both ends for a short distance, as shown at 32^a and 32^b, for a purpose hereinafter described. Pivoted at intervals at 64 to the under side of the rotary ring 26 are a series of vertically oscillating levers that are offset in a vertical plane between their ends, each of said levers comprising an outwardly extending arm 65, an intermediate portion 66, and an inwardly extending arm 67. The upper arm 65 terminates in a rounded plate or disk 68, on the upper face of which, eccentrically thereof, is a vertical can-contacting lug 69 having a rounded or convexed upper surface, as shown. The inwardly extending arm 67 of the lever carries a weight 70, while the outer end of said arm carries a vertically journaled roller 71. On the upper edge of arm 65 is a lug 72 adapted at times to contact a stop-lug 73 on the under side of ring 26 to limit the upward swing of the arm 65. Secured to and projecting radially from the upper face of the ring 26 (Figs. 1 and 2) are a series of short arms 74 carrying at their outer ends V-shaped members 75 which serve as pushers to move the can off the end of the plate 32 when first received thereon, and also, in conjunction with a device hereinafter described, serve the function of centering devices to properly position the cans on entering the machine and preliminary to their engagement by the lugs 69 of the counterweighted can-supporting levers. On the inner edge of the stationary ring 22 is formed or secured a curved cam-track 76, which track is substantially co-extensive and co-terminous with the receiving plate 32, as shown by dotted lines in Fig. 1, and is provided with inclined or sloping ends 76^a and 76^b, said track being adapted to be engaged by the rollers 71, as the can-supporting levers travel over that portion of their path lying opposite the receiving and discharging plate 32.

Opposite that end of the plate 32 having the slot 32^b will be located a suitable can feeding-in mechanism and, operating in conjunction therewith, a device which cooperates with the pushers 75 in accurately centering the cans as they are received by the machine so that they may be properly engaged and raised by the underlying can-supporting and carrying levers. In Figs. 7 and 8 I have illustrated a suitable form of feeding-in mechanism and can-centering means; and referring thereto, 33 designates a feed chute arranged normally to the periphery of the plate 32 and having a longitudinally slotted bottom wall in which operates an endless conveyer 34 provided on its outer surface with a series of flights 35 adapted to engage the cans and move them into the machine. Superposed on the chute is a can-spout 36, of skeleton form, through which the cans are fed in succession into the chute. Coöperating with the flights 35 in feeding the lowermost can from the stack is a rotary sweep 37, the arms of which engage the cans from behind and move them toward the machine simultaneously with their engagement by the flights 35. The sweep 37 may conveniently be driven from the main driving shaft 19 of the machine through bevel gears 38 and 39, countershaft 40, and intermeshing gears 41 and 42, the latter being fast on the shaft 37^a of the sweep.

Rotatably mounted in a vertical bearing 43 formed in a radial projection of the plate 32 is a vertical shaft 44, on the upper end of which is rigidly mounted the hub 45^a of a star wheel 45. The shaft 44 and the star wheel carried thereby are supported vertically by a coil spring 46 interposed between the lower end of the hub 45^a and the upper end of the bearing 43; the lower end of shaft 44 being threaded to receive a nut 47 and lock nut 48, whereby said shaft is prevented from undergoing vertical displacement, and whereby also the degree of frictional rub between the ends of the spring and the members contacted thereby may be varied and adjusted to effect the desired degree of resistance to the free rotation of the star wheel. The star wheel is so located that, as it is turned, its arms successively project across the path of travel of the cans as the latter move off the plate 32, the cans being carried successively into contact with the successive arms of the star wheel by the pushers 75 whereby, owing to the frictional resistance to rotary movement which the arms of the star wheel exert, said cans are pressed into equal engagement with both surfaces of the pusher, whereby the can is accurately centered by and between three contacting points located at substantially equal distances about its circumference. This insures an accurate positioning of the cans so that the bottom of each can will be engaged at its exact center by the lug of the underlying pivoted can-carrier. As the can moves over the slot 32^b, the roller 71 of the underlying lever rides down the incline 76^a, thus allowing the lug 69 to rise through the slot 32^b and contact and raise the can (by virtue of the counter-weight 70) into engagement with the lower end of the funnel 29 before said can has entirely passed off the end of the receiving plate. Thereafter the can, accurately centered and securely sup-

ported at its ends by and between the counter-weighted lever constituting its carrier and the lower end of the filling device 29, as well as supported laterally on its rear side, relatively to its direction of travel, by the pusher 75, travels around with the rotary carrier ring 26, during which travel the substance with which it is to be filled is gradually fed thereinto through the funnel member 29. As soon as the filled can approaches the opposite end of the plate 32, the roller 71 rides up the incline 76[b], thereby withdrawing the carrier lug 69 from the slot 32[b] and depressing the same beneath the plane of the plate 32, leaving the can supported on the latter, over which it is moved by the pusher 75 until brought into the field of action of a discharging conveyer conventionally illustrated at 77.

Referring now to the measuring and filling tank 31, and the means whereby a predetermined quantity of the syrup or liquor with which the goods are put up is delivered thereby only in case an empty can is beneath the same to receive the charge, 78 designates a vertical shaft stepped at its lower end in a vertically adjustable bearing 79 and journaled in a bearing 80 carried by an upright frame-member 81 and passing through a stuffing box 82 in the bottom of the tank 31. Keyed on the upper end of this shaft is a measuring device comprising a pair of upper and lower disks 83 and 84, respectively, having a series of depending and upstanding telescoping cylinders 85 and 86, respectively. The bottom wall of the tank 31 has a single aperture 87 located directly above the path of travel of the funnels 29, and surmounting the rotary measuring device is a non-rotary valve-disk 88 guided vertically upon the upper end of shaft 78, as well as upon vertical posts 89 mounted in the base of the tank. The disk 88 carries a pipe 90 that is located directly over the opening 87 of the base, which pipe serves to break the vacuum when a charge of syrup is to be delivered to the hopper or funnel 29. The upper valve-disk 88 is also provided with a series of apertures 91 so disposed that when one of the telescoping measuring cylinders is registering with the discharge opening 87 and vacuum-breaking pipe 90, the other three cylinders will be in registration at their upper ends with the openings 91, and will consequently be taking in a measured quantity of the syrup, which latter is contained in the tank 31 up to a level above that of the valve-disk 88. By adjusting the bearing member 79 in which the lower end of the shaft 78 is stepped, the telescoping members 85 and 86 which create the measuring chambers can be adjusted inwardly or outwardly to thereby reduce or enlarge the capacity of said chambers, as desired.

Keyed or otherwise secured on the shaft 78 is a star wheel having a plurality of radially extending arms 92, corresponding in number and relative disposition to the measuring chambers of the tank 31. This star wheel is so positioned on the shaft that its arms 92 will lie in the same horizontal plane occupied by the can-supporting arms 65 when the latter are operatively engaged in supporting cans, as shown in Fig 3, so that said arms will, one after another, project directly across the path of travel of the disks 68 constituting the end portions of said arms 65. From this it results that as each can passes beneath the disk 31, the edge of its carrier lever will strike an arm of the star wheel and thereby turn the shaft 78 through a partial revolution, bringing one of the measuring chambers into registration with the air pipe 90 and discharge opening 87, whereupon the syrup at once flows into the funnel-guide 29 and is delivered by the latter into the can. In case, through irregular feeding of the cans to the machine, or for any other cause, a carrier fails to receive a can, it will travel around in the tilted position indicated in Fig 4, wherein the arm 65 is out of the plane of the star wheel, and consequently the latter will not be struck, and the measuring mechanism in the tank 31 will not be actuated to deliver a charge of syrup. It will thus be seen that the actuation of the delivery mechanism contained in the tank 31 is entirely dependent upon the presence of a can on the can-support and carrier, although such mechanism is not actuated through contact with the can; and consequently the can is saved from possible indentation or injury that might result from making the actuation of the measuring and filling mechanism dependent on contact by the can.

From the foregoing it will be seen that the counter-weighted levers which support the can from beneath during their passage through the machine constitute practically universal carriers in that they are capable of operating upon cans having a considerable range of variation in respect to height without requiring any adjustment. Within the range permitted by the coöperating stops 72 and 73, the can-supporting arms of the levers will rise under the action of the counter-weights to any extent necessary to carry the upper end of the cans into registration with the funnels or other can-engaging parts, and will hold said cans in such engagement with a sufficient upward pressure depending upon the gravity of the counter-weights and their positions on the inwardly extending arms of the levers, which pressure will be substantially the same with all heights of cans. As a further means of enabling the machine to handle cans of different heights, the spider 28 carrying the funnels 29 may be

rendered vertically adjustable by means of a foot lever 93 (Fig. 2) pivoted at 94 to the base of the frame and underlying the vertically adjustable journal box in which the lower end of the shaft 17 is stepped.

It being evident that the mechanism as described and shown may be modified in respect to details of construction and relative arrangements of parts by those skilled in the art without affecting the substance of the invention or sacrificing any of the advantages thereof, I do not limit the invention to the particular mechanism shown, except to the extent indicated in specific claims.

I claim:

1. In a machine for operating upon cans, the combination with a movable carrying member, of a vertically swinging can-supporting lever pivoted thereto, means for introducing a can above one arm of said lever, means acting upon the other arm of said lever normally tending to swing said lever into lifting engagement with the can, and means adapted to engage and rock said lever out of engagement with the can at a predetermined point in the movement of said movable carrying member, substantially as described.

2. In a machine for operating upon cans, the combination with a movable carrying member, of a vertically swinging can-supporting lever pivoted thereto, means for introducing a can above one arm of said lever, a counterweight carried by the other arm of said lever normally tending to swing said lever into lifting engagement with the can, and means for rocking said lever in opposition to the gravity effect of said counterweight thereon, substantially as described.

3. In a machine for operating upon cans, the combination with a rotatable carrying member, of a series of vertically swinging can-supporting levers pivoted thereto and disposed radially thereof, means for introducing cans at a point above the path of movement of the outer ends of said levers, counterweights carried by the inner arms of said levers normally tending to swing said levers into lifting engagement with the cans, and means adapted to engage and rock said levers in opposition to the gravity effect of said counterweights whereby to release the cans, substantially as described.

4. In a machine for operating upon cans, the combination with a movable carrying member, of a can-supporting lever pivotally connected to said carrying member so as to swing in a vertical plane, a counter-weight carried by and swinging said lever into can-engaging position, and a fixed cam-track engaging said lever in a manner to withdraw it from the can, substantially as described.

5. In a machine for operating upon cans, the combination with a rotary spider carrying a series of devices adapted to engage the tops of cans, of an underlying rotary spider carrying a corresponding series of radially disposed counter-weighted can-supporting levers pivotally hung from the periphery thereof so as to swing in vertical planes and automatically engage and raise the cans into registration with said can-engaging devices, a can-receiving and discharging plate located in the path of travel of the can-engaging arms of said levers, and a cam-track engaged by said levers to swing the can-engaging arms of the latter beneath said plate, substantially as described.

6. In a can-filling machine, the combination with a measuring and filling mechanism, of an actuating device therefor, and a movable can-supporting and carrying device adapted, when carrying a can, to engage and operate said actuating device, and when idle to pass the latter without actuating the same, substantially as described.

7. In a can-filling machine, the combination with a measuring and filling mechanism, of an actuating device therefor, and a bodily movable pivoted can-supporting and carrying device adapted, when carrying a can, to engage and operate said actuating device, and when idle to pass the latter without actuating the same, substantially as described.

8. In a can-filling machine, the combination with a measuring and filling mechanism, of a bodily movable pivoted can-supporting and carrying device, and an actuating device for said measuring and filling mechanism projecting into the path of movement of said can-supporting and carrying device when the latter is carrying a can, but disposed to one side of the path of movement of said can-supporting and carrying device when the latter is idle, substantially as described.

9. In a can-filling machine, the combination with a measuring and filling mechanism, an actuating shaft therefor, and a star wheel on said shaft, of a movable can-supporting and carrying device adapted, when carrying a can, to contact and turn said star wheel, and when idle to pass the latter without actuating the same, substantially as described.

10. In a can-filling machine, the combination with a measuring and filling mechanism, an actuating shaft therefor, and a star wheel on said shaft, of a bodily movable pivoted can-supporting and carrying lever adapted, when carrying a can, to contact and turn said star wheel, and when idle to pass the latter without actuating the same, substantially as described.

11. In a can-filling machine, the combination with a measuring and filling mechanism, an actuating shaft therefor, and a star wheel on said shaft, of a rotary member having a plurality of counter-weighted can-supporting and carrying levers pivoted thereto, said levers being so positioned that, when carrying a can, they will contact and turn said star wheel, and when idle they will

travel to one side of the latter, substantially as described.

12. In a can-filling machine, the combination with a rotary measuring and filling mechanism, an actuating shaft therefor, and a star wheel on said shaft, of a rotary member having a plurality of counter-weighted can-supporting and carrying levers pivoted thereto, said levers being pivoted to swing in vertical planes and so positioned relatively to said star wheel that, when carrying a can, they will contact and turn said star wheel and when idle they will pass over the latter, substantially as described.

13. In a machine for operating upon cans, the combination with a feeding-in mechanism and a support upon which the cans are received from said feeding-in mechanism, of a carrier having can-engaging devices adapted take the cans from said support, and means for accurately centering said cans while on said support prior to their reception by said can-engaging devices, substantially as described.

14. In a machine for operating upon cans, the combination with a can-receiving plate and a feeding-in mechanism disposed radially thereof, of a rotary carrier having can-engaging devices adapted to take the cans from said plate, a series of pushers adapted to contact the cans on one side when received on said plate, and a yieldable member overlying the path of the cans on said plate and adapted to yieldingly press said cans from the opposite side against said pushers whereby to center the cans, substantially as described.

15. In a machine for operating upon cans, the combination with a can-receiving plate and a feeding-in mechanism disposed radially thereof, of a rotary carrier having can-engaging devices adapted to take the cans from said plate, a series of pushers having concave can-contacting sides overriding said plate, and a frictionally retarded star wheel the arms whereof overlie said plate and are contacted by the cans as the latter are advanced by said pushers, whereby said cans are centered, substantially as described.

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