

Oct. 12, 1943.

V. G. WILLIAMS

2,331,587

MACHINE FOR FILLING CONTAINERS

Filed May 29, 1941

4 Sheets-Sheet 1.

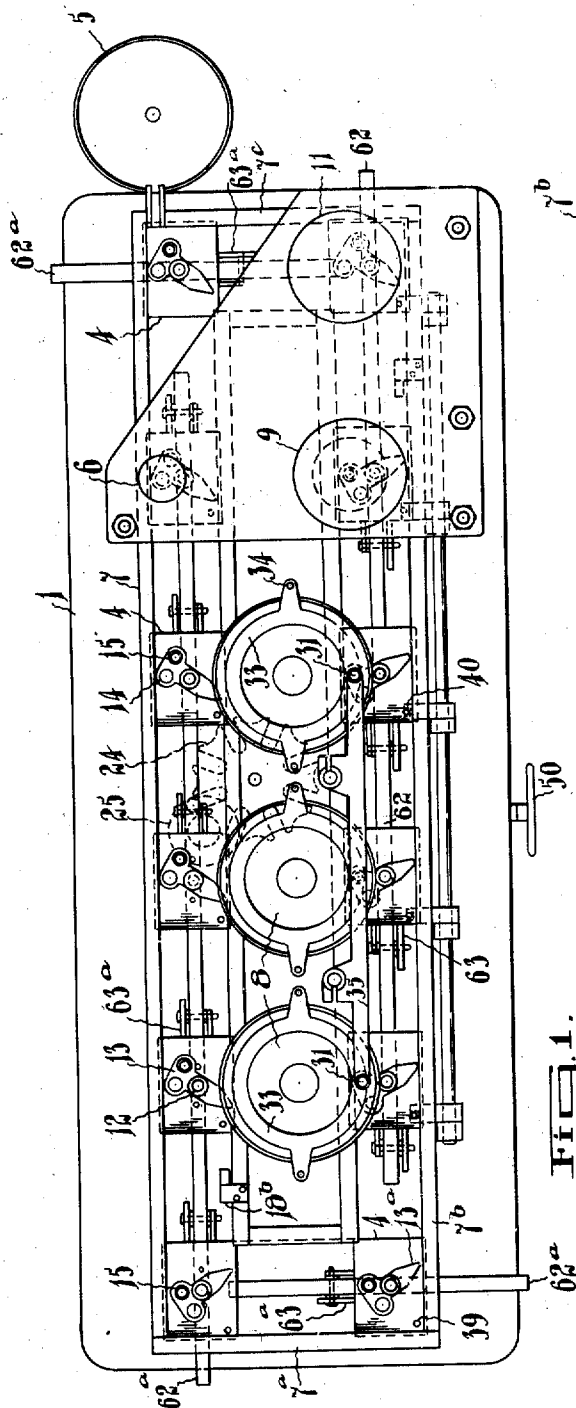


FIG. 1.

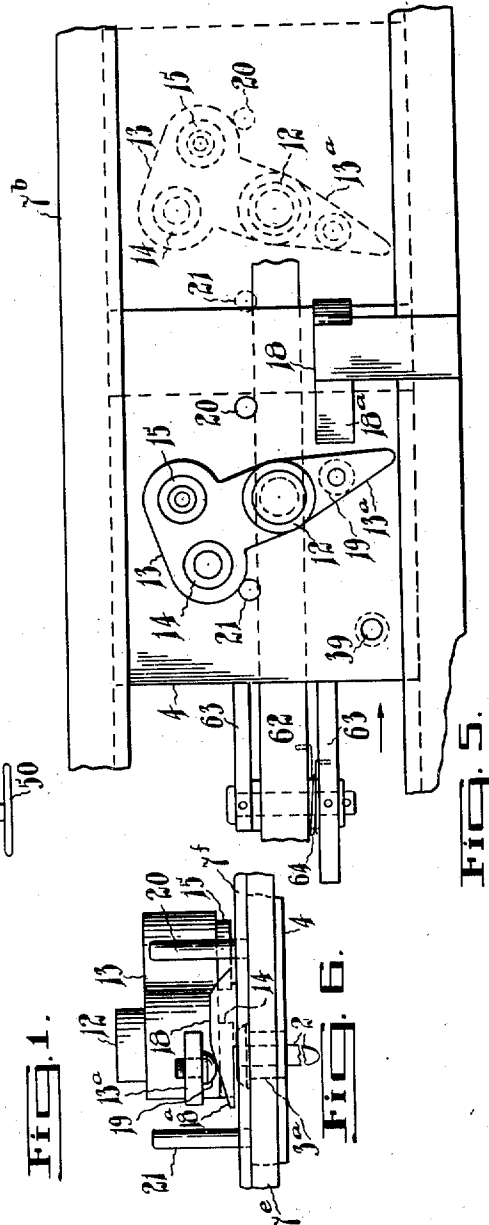


FIG. 5.

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4 Sheets-Sheet 2

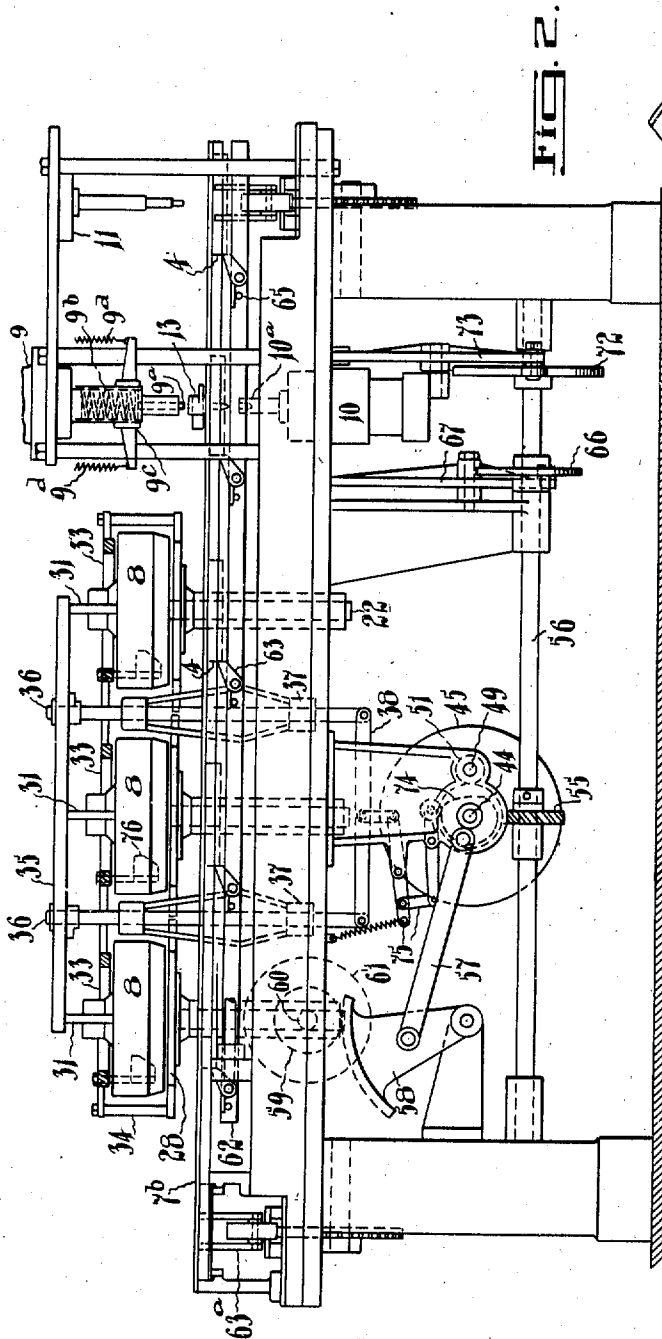


FIG. 2.

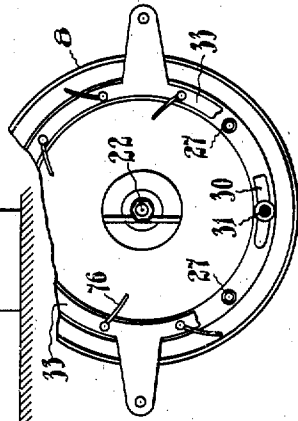


FIG. 10.

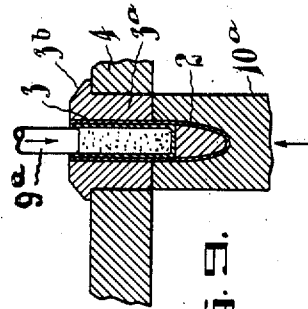


FIG. 9.

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4 Sheets-Sheet 3

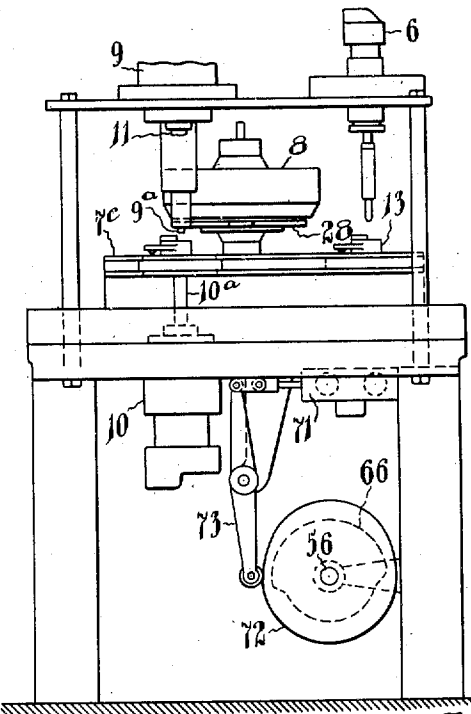


FIG. 3.

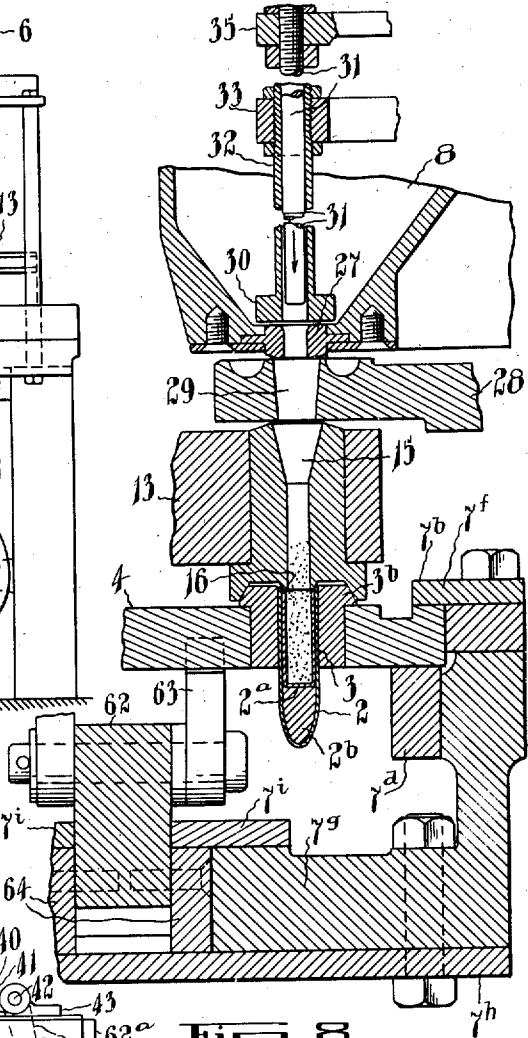


FIG. 8.

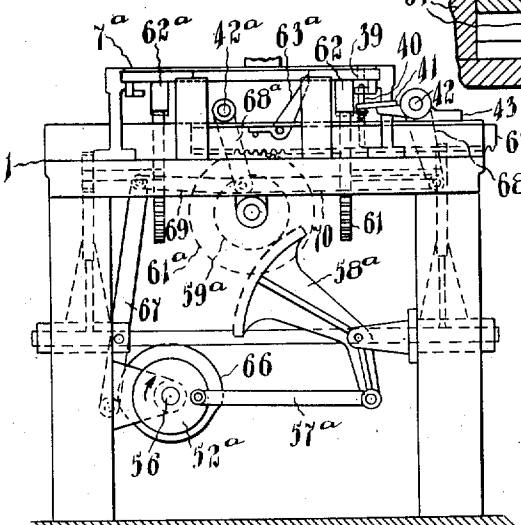


FIG. 4.

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4 Sheets-Sheet 4

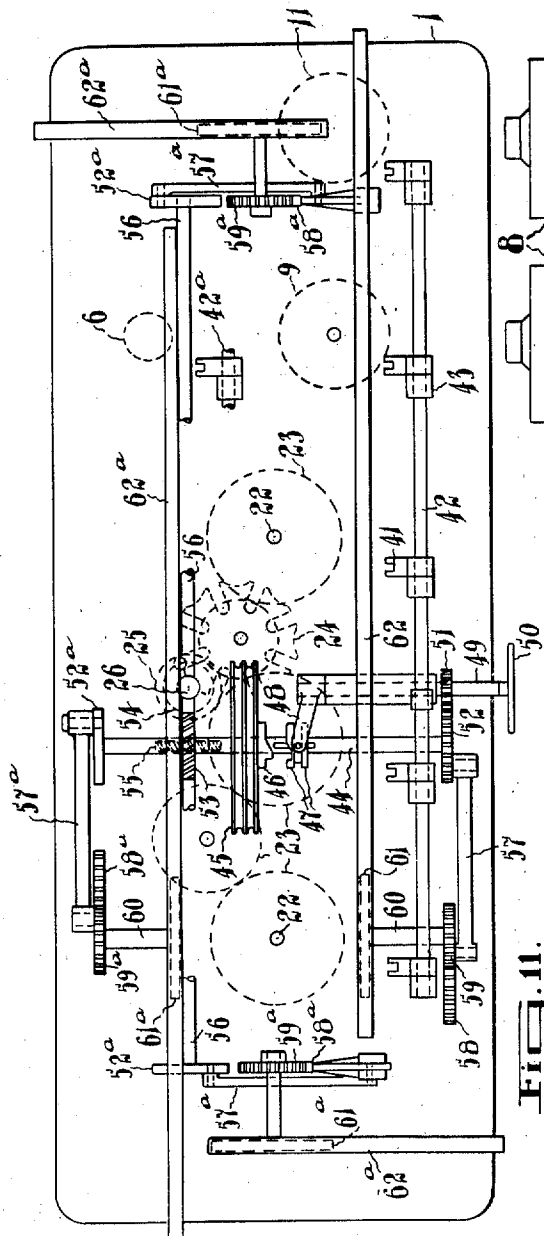


FIG. 11.

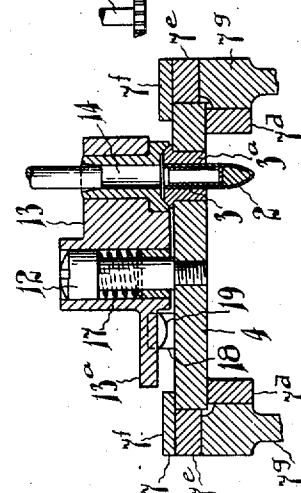
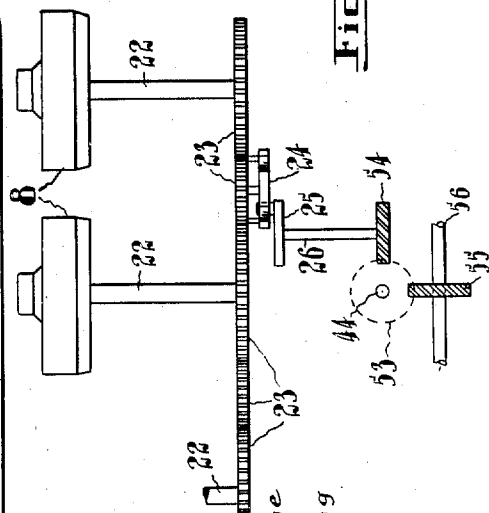


FIG. 7.

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FIG. 12.



UNITED STATES PATENT OFFICE

2,331,587

MACHINE FOR FILLING CONTAINERS

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Application May 29, 1941, Serial No. 395,771

17 Claims. (Cl. 226—95)

This invention relates to machines for filling containers and more particularly to powder filling machines in which the powder is compressed in the container and my object is to devise an improved machine of this character which is more efficient and smoother in operation than those heretofore in use.

The construction is hereinafter fully described and is illustrated in the accompanying drawings in which

Fig. 1 is a plan view of my machine;

Fig. 2 a front elevation thereof;

Fig. 3 an end view of the right hand end of Fig. 2;

Fig. 4 an end view of the left hand end of Fig. 2;

Fig. 5 a detail in plan of a carrier showing the pivoted arm thereon swung from one position to its other position while the carrier is being moved along a guide;

Fig. 6 a detail in front elevation of some of the parts of Fig. 5;

Fig. 7 a cross section of the pivoted arm, carrier and guide;

Fig. 8 a cross-sectional detail in full size of part of the machine showing a container being filled;

Fig. 9 a sectional detail in full size of the dies for compressing the powder in the container;

Fig. 10 a plan view of part of a hopper on an enlarged scale with its upper stationary ring partly broken away to show the scraper and flasks in the bottom of the hopper;

Fig. 11 a plan view of the drives; and

Fig. 12 a front elevation of the hopper drives.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is the frame of the machine which is suitably shaped to carry the various parts. The containers 2 to be filled are inserted in openings 3 in carriers 4. Each carrier is provided with an opening 3 and the container 2 may be inserted either manually or by any suitable automatic device, indicated at 5, for feeding containers one by one into the openings as the intermittently operated carriers 4 come to rest at the rear right hand corner of the frame. At a succeeding stop of the carrier, the container 2 is pressed downwardly in the opening by a suitable press 6 until the upper open end of the container is positioned correctly relative to the upper surface of the carrier 4. The carrier is advanced in a guide 7 along the rear side of the frame, then in a guide 7^a along one end of the

frame, then in a guide 7^b along the front side of the frame where its container receives two or more charges of different kinds of powder from hoppers 8. The hoppers are spaced apart to discharge a predetermined amount of each kind of powder successively into the container when it comes to rest adjacent each hopper. The carrier next comes to rest between oppositely directed presses 9 and 10 which are adapted to engage the powder in the container and the lower end of the latter, respectively, to compress the powder without applying any pressure to the frame of the machine. The container illustrated is a bullet casing having a thin cylindrical metallic capsule 2^a therein, the bottom of which rests on a metal insert 2^b placed in the nose of the bullet casing. The container 2 is subsequently ejected from the carrier by a press 11 which may be located on the right hand end of the guide 7^b. The carrier is then advanced along the guide 7^c at the other end of the frame to receive another container and to complete the cycle along the guides 7, 7^a, 7^b and 7^c.

The carriers 4 are rectangular in plan and are advanced along pairs of metal strips 7^d which extend parallel to one another at the opposite sides and ends of the frame. The opposite edges of the carriers 4 are engaged by pairs of strips 7^e to prevent lateral displacement of the carriers. The upper sides of the carriers are engaged by pairs of strips 7^f forming caps for the strips 7^e except at convenient places such as the corners whereby any carrier may be removed and replaced at such places. The guide strips of metal 7^d, 7^e and 7^f, forming the guides 7, 7^a, 7^b and 7^c, are secured to pairs of brackets 7^g which are carried in spaced relationship to one another on plates 7^h which are spaced apart around the frame and secured thereto, see Figs. 1, 5, 7 and 8.

The opening 3 of each carrier 4 is preferably formed in a die 3^a having a collar 3^b at its upper end which projects above the upper surface of the carrier, see Figs. 7, 8 and 9. On each carrier is pivoted, at 12, an arm 13 which carries a hollow guide 14 and a funnel 15 adapted to be alternately registered with the opening 3. The bore of the guide 14 is adapted for the passage of the container 2 therethrough to direct the container into the opening 3. The bore of the funnel 15 is slightly smaller than that of the guide 14 whereby material from the hoppers 8 may be directed into the container without contacting the upper edge thereof around the mouth of the container.

To align the guide 14 or the funnel 15 with the

opening 3, the collar 3^b is formed as a frusto-conical seat and the guide and the funnel are each countersunk at their lower end to fit said seat as shown in Figs. 7 and 8. The funnel is provided with a depending lip 16 concentric to its bore and this lip fits into the opening 3 to ensure the material from the hopper will be directed into the container.

The pivot 12 comprises a headed stud threaded in the carrier 4. The carrier is bored to receive the head of the stud and is bushed at the lower end of the bore to form a bearing on the stud. A spring 17 disposed on the stud bears against the upper side of the bushing and the underside of the head of the stud and tends to move the arm axially on the stud towards the carrier. Thus the spring tends to retain the countersunk end of the funnel 15 or of the guide 14 on the frusto-conical seat 3^b and this engagement between the seat 3^b and either of the funnel or of the guide prevents the arm from swinging on the stud until the arm is moved axially thereon to clear the seat or collar 3^b. This is accomplished by an inclined surface 18^a on a stationary part 18 over which the end 13^a of the arm 13 remote from the funnel and guide passes, see Figs. 5, 6, 7 and 1. The underside of said end 13^a is provided with a round headed projection 19 which engages the inclined surface 18^a, as the arm 13 is moved with its carrier 4 relative to said surface, and causes the arm to be moved axially on its stud 12. Immediately the countersunk lower end, of whichever one of the funnel or guide parts, that was engaged with the collar 3^b is raised clear of said collar, the friction between the projection 19 and the inclined surface 18^a causes the arm 13 to be swung on the stud until the other of the said funnel or guide part is in register with the collar 3^b. This position is determined by an abutment 20 projecting upwardly from the carrier 4 to limit the swinging movement of the arm 13 in one direction of rotation. The projection 19 then continues to ride over the part 18 and, when it reaches the end thereof, the arm will descend to bring the countersunk lower end of the said other funnel or guide part into engagement with the frusto-conical collar 3^b which centers the countersunk end thereon and locks the arm from rotary movement on the stud. The abutment 20 approximately positions the guide 14 for registration with the opening 3 when the projection 19 moves past the part 18. Since the carriers 4 are not turned during their movement around the perimeter of the frame, the arm 13 will be properly positioned for engagement with another inclined surface 18^a, on a stationary part 18^b located at the side of the machine opposite that on which the part 18 is carried, for raising the arm and swinging it to shift the guide 14 out of register with the opening 3 and the funnel 15 into register therewith. An abutment 21, similar to the abutment 20, approximately positions the funnel 15 for registration with the opening 3 and limits the swinging movement of the arm 13 in the direction of rotation opposite that limited by the abutment 20.

Each of the hoppers 8 is secured to an intermittently driven shaft 22. The shafts are connected by a train of gears 23 one of which is connected with a Geneva wheel 24 which is actuated by a Geneva drive wheel 25 secured to a shaft 26. Preferably the gears 23 rotate the hoppers in the same direction of rotation. In the bottom of each hopper are a plurality of measuring chambers or flasks 27 which may be removably secured

therein by any suitable means, see Fig. 8. The powder in each hopper drops into the chambers therein, and a stationary disk 28 (over which the chambers rotate) prevents the powder from spilling out of the chambers until they reach a discharge opening 29 in the disk 28. To prevent the powder within each hopper above the measuring chambers from passing through the chambers as they are brought into register with the discharge opening 29 and to ensure all the contents of the measuring chamber in register with the discharge opening being discharged therethrough, I provide a scraper 30 which is held from rotation in the hopper just above the upper surface of the bottom thereof and I provide a reciprocable plunger 31 guided in the scraper for ejecting the material from the measuring chamber in register with the discharge opening.

The scrapers 30 for the hoppers 8 are each formed of a flat piece of metal which is arcuate in plan to lie in the annular space at the bottom of the hopper. Each scraper is held in the hopper above the discharge opening 29 by a tubular support 32 secured to a stationary ring 33. The latter is provided with lugs which are secured by distance collars and bolts 34 to lugs on the stationary disk 28. Each plunger 31 is guided in a support 32 and the upper ends of the plungers are connected with a cross head 35 having depending rods 36 slidably mounted in bearings 37. The lower ends of said rods are connected by a bar 38 which is operated as hereinafter described to actuate the plungers 31 and to normally position them above the underside of the scrapers 30 and thus clear of the measuring chambers 27. Should the powder in one or more of the hoppers be a mixture, a plurality of stationary blades 76 will be provided to depend from each ring 33 into the hopper beneath it to ensure an even mixing of the mixture therein.

The carriers 4 are provided with countersunk holes 39 adapted to receive spring actuated pins 40 for correctly positioning the carriers relative to the feed device 5, the presses 6, 9 and 10, and 11 and the hoppers 8. The pins are provided with shoulders intermediate their ends for engagement by bifurcated fingers 41 secured to shafts 42, 42^a which extend lengthwise of the machine and are journaled to oscillate in suitable brackets 43. When the said shafts are oscillated in one direction of rotation, the fingers move the pins out of the path of the carriers and when the shafts are oscillated in the opposite direction of rotation, the fingers permit the springs to move the pins into engagement with the undersides of the carriers whereby they will move into the holes 39 to prevent the carriers from overrunning their advancing means.

A drive shaft 44, having one or more motor driven pulleys 45 freely mounted thereon, is adapted to be actuated by a clutch having one member 46 secured to the pulley and another member 47 feather keyed on the shaft 44. The clutch shift fork 48 is carried on an axially movable shaft 49 which is manually operable to engage or disengage the clutch members. The shaft 49 has a handwheel 50 and a pinion 51, the latter is adapted to mesh with a gear 52 secured to the drive shaft 44 when the shaft 49 is shifted to disengage the clutch whereby the drive shaft may be rotated by hand. A helical gear 53 on the drive shaft meshes with a helical gear 54 on the hereinbefore described Geneva drive wheel shaft 26 and also with a helical gear 55 on a shaft 56 which extends longitudinally of

the machine at right angles to the drive shaft. The gear 52 is at one end of the drive shaft and is provided with a crank pin on which one end of a connecting rod 57 is pivotally connected. The other end of the connecting rod is pivotally connected with a segmental gear 58 which meshes with a pinion 59 on a stub shaft 60. The latter has a gear 61 secured thereto which meshes with teeth on the underside of a rack bar 62 which extends along one side of the frame 1 and is provided with pawls 63 for engaging the rear edges of those carriers 4 in the guide 7^b.

The other end of the drive shaft 44 and each end of the longitudinal shaft 56 have a crank disk 52^a secured thereto for actuating a segmental gear 58^a by means of a connecting rod 57^a. These three disks 52^a, segmental gears 58^a, connecting rods 57^a are similar to the corresponding parts 52, 58 and 57 respectively. The gears 58^a mesh with pinions 59^a on stub shafts 60^a having gears 61^a which mesh with rack bars 62^a. One of the bars 62^a extends along the other side of the frame 1 and additional bars 62^a extend along the ends of the frame and each of these bars is provided with pawls 63^a for engaging the rear edges of the carriers in the guides 7, 7^a and 7^c. The rack bars at the ends of the frame are so positioned that their ends will pass beneath the ends of the rack bars at the sides of the frame. Thus the pawls on the two end rack bars are longer than those on the two side rack bars.

The four rack bars 62, 62^a are similarly mounted for reciprocation and, referring to Fig. 8, it will be noted that the bar 62 has blocks 64 secured to the sides thereof. The blocks are spaced apart along the bar and slide on the plates 7^b between the inner ends of the brackets 7^c. Guide strips 7^d secured to said brackets bear against the sides of the rack bar and overlie the blocks 64 to prevent vertical displacement of the rack bar. The other rack bars 62^a are similarly guided.

The pawls 63, 63^a are arranged in pairs along the rack bars and the pawls of each pair are secured to the ends of a pin journaled in a rack bar. One pawl of each pair is provided with a rearward extension and with a spring 64 which normally positions said extension against a stop pin 65. During the return strokes of the rack bars, the pawls are thus permitted to pass under the carriers 4 behind them and the stop pins 65 position the pawls for engaging the rear edges of the said carriers on the next forward strokes of the rack bars. The latter move in unison to advance the carriers simultaneously so that the carrier which was positioned at the rear right hand corner of Fig. 1 by the pawls on the right end rack bar, will be engaged by a pair of pawls on the rear side rack bar and moved thereby into position for the press 6 to force the container 2 downwardly into the opening 3. The guide 14 has been in register with the opening 3 during the feeding of the container thereto and the pressing down of the container therein. Before the carriers leave the guide 7 at the rear side of the machine, the arms 13 are shifted by the stationary part 18^b to move the funnels 15 into register with the openings 3. After the carriers are moved past the feeding and the compressing means at the front side of the frame, the arms 13 are shifted by the stationary part 18 to move the guides 14 into register with the openings 3 and thus the carriers are conditioned for the press 11 to eject the containers from and the

feeding device 5 to insert fresh containers into the openings 3. The oscillating shafts 42, 42^a are simultaneously actuated by a cam 66 on the longitudinal shaft 56, a lever 67, crank arms 68, 68^a secured to said shafts, a link 69 connecting the lever 67 and arm 68, and a link 70 connecting the crank arms.

One or more valves or other devices 71 are used to control the operation of the presses 6, 9 and 10, and 11 and such devices are actuated by a cam 72 also secured to the longitudinal shaft 56, and a lever 73 which is pivotally connected with the plunger of the valve 71.

The die 10^a of the press 10 is recessed to receive all of the lower end of the bullet casing 2 projecting beneath the carrier 4. To ensure the die being moved to its operative position, in which its upper surface contacts the undersurface of the carrier, or of the die 3^a carried thereby, before the punch 9^a of the press 9 is moved sufficiently to cause the casing 2 to be moved axially in its opening 3, I provide suitable means for delaying the operation of the press 9. The descent of the ram of the press 9 compresses a spring 9^b within a yoke 9^c which is supported by tension springs 9^d from the frame of the press whereby sufficient fluid pressure must be built up to overcome the springs 9^b, 9^d before the punch will compress the powder in the casing 2. In the meantime the die 10^a has moved to embrace all the lower end of the casing 2 depending from the carrier so that when the punch descends to compress the powder there will be no danger of the walls of the casing being bulged outwardly which would occur if the die did not reach its final position before the punch can apply any appreciable compression force to the powder. In other words, the powder should be compressed by the punch after the die has come to rest and not by the die moving towards the punch. The use of the double presses 9 and 10 removes all pressure from the frame of the machine which is important since it is desired to compress the powder preferably at about forty tons per square inch.

The bar 38, which operates the plungers 31 for ejecting material from the measuring chambers 27 into the containers 2, is actuated by a cam 74 secured to the drive shaft 44. To avoid using a large sized cam or lowering the bar 38, I employ a linkage indicated at 75 for transmitting motion from the cam 74 to the bar 38. This linkage comprises two levers connected together by a link, one of the levers being connected with the bar and the other being engaged by the cam.

It will be distinctly understood that various modifications may be made without departing from the spirit of the invention.

What I claim as my invention is:

1. A filling machine comprising a non-circular frame; a plurality of carriers for carrying containers; means for guiding the carriers around the sides of the frame; means for feeding material to the containers while being carried by the carriers; means for advancing the carriers intermittently and independently of one another on the guiding means to the feeding means; means for releasably locking the carriers relative to the feeding means to position the containers one by one to receive material therefrom, the releasably locking means comprising a plurality of spaced apart spring actuated pins each adapted to be received in a hole in each of the carriers; and an oscillating shaft provided with a plurality of

fingers for engaging and controlling the operation of the pins.

2. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm movable on said carrier and having a hollow guide and a funnel adapted to be alternately registered with said opening, the guide being adapted to direct the container into the opening and the funnel being adapted to direct material into the mouth of the container; means for feeding material through the funnel into the container; and means for shifting the arm relative to the carrier to move the guide out of register with the opening and the funnel into register therewith.

3. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm pivoted on said carrier, the arm having a hollow guide and a funnel spaced equally from the pivot of the arm so that either the guide or funnel may be brought into register with the opening, the guide being adapted to direct the container into the opening and the funnel being adapted to direct material into the mouth of the container; means for feeding material through the funnel into the container; and means for swinging the arm relative to the carrier to shift one of the guide and funnel parts out of register with the opening and the other of said parts into register therewith.

4. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm pivoted on said carrier and axially movable relative thereto, the arm having a hollow guide and a funnel spaced equally from the pivot of the arm so that either the guide or funnel may be brought into register with the opening, the guide being adapted to direct the container into the opening and the funnel being adapted to direct material into the mouth of the container; means for feeding material through the funnel into the container; means for ensuring registration of the guide and funnel parts with the opening and for locking the arm positively to the carrier at the end of each turning movement; and means for axially moving the arm relative to the carrier to release the locking means and for turning the arm when the locking means is released.

5. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm pivoted on said carrier and axially movable relative thereto, the arm having a hollow guide and a funnel spaced equally from the pivot of the arm so that either the guide or funnel may be brought into register with the opening, the guide being adapted to direct the container into the opening and the funnel being adapted to direct material into the mouth of the container; means for feeding material through the funnel into the container; means for ensuring registration of the guide and funnel parts with the opening and for locking the arm positively to the carrier at the end of each turning movement; a stationary part having an inclined surface; a round headed projection on the underside of the arm adapted to engage the inclined surface to cause the arm to be moved axially to release the locking means and thereafter cause the arm to be turned; and means for limiting the said turning movement of the arm to approximately position it for engage-

ment with the locking means when the projection disengages the said stationary means.

6. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container and having a frusto-conical seat concentric with the opening; an arm pivoted on said carrier and axially movable relative thereto, the arm having a hollow guide and a funnel adapted to be alternately registered with the opening, the guide and funnel being countersunk to fit said frusto-conical seat to ensure proper registration of said parts with said opening; and means for axially moving the arm relative to the carrier to cause the guide and funnel parts to clear the seat and for turning the arm to move one of said countersunk parts out of and the other into register with the seat.

7. A filling machine comprising a non-circular frame; a plurality of carriers for carrying containers; means for guiding the carriers around the sides of the frame; means for feeding material to the containers while being carried by the carriers; means for advancing the carriers intermittently and independently of one another on the guiding means to the feeding means, the said advancing means comprising a plurality of reciprocable members, one member being suitably mounted at each side of the frame; a plurality of spaced apart pawls pivoted on the members and normally positioned for engagement with the carriers; and means for reciprocating the members simultaneously.

8. A filling machine comprising a non-circular frame; a plurality of carriers for carrying containers; means for guiding the carriers around the sides of the frame; means for feeding material to the containers while being carried by the carriers; means for advancing the carriers intermittently and independently of one another on the guiding means to the feeding means, the said advancing means comprising a plurality of reciprocable members, one member being suitably mounted at each side of the frame; a plurality of spaced apart pawls pivoted on the members and normally positioned for engagement with the carriers; means for reciprocating the members simultaneously, the reciprocating means including a drive shaft; a second shaft disposed at right angles to and driven by the drive shaft; and a crank disk carried on each end of each shaft for actuating the reciprocable members.

9. A filling machine comprising a non-circular frame; a plurality of carriers for carrying containers; means for guiding the carriers around the sides of the frame; means for feeding material to the containers; a drive shaft extending transversely of the frame and driven by the drive shaft; means for advancing the carriers intermittently and independently of one another on the guiding means to the feeding means; means at opposite ends of the drive shaft for driving the advancing means at opposite sides of the frame; and means at opposite ends of the driven shaft for driving the advancing means at opposite ends of the frame.

10. A filling machine comprising means for intermittently advancing carriers for carrying containers having open mouths, each carrier having an opening therethrough adapted to receive and frictionally support one of the containers; pressure means for moving the container downwardly in the opening to a predetermined position; means for feeding compressible material to

the containers; means for simultaneously applying pressure to the material in the container and to the latter to compress the material without applying pressure to the machine; pressure means for ejecting the container from its opening; means for releasably locking the carriers relative to the feeding means and to the different pressure means, the said locking means comprising a plurality of spaced apart spring actuated pins each adapted to be received in a hole in each of the carriers; and an oscillating shaft provided with a plurality of fingers for engaging and controlling the operation of the pins.

11. A filling machine comprising means for intermittently advancing containers, each container having an open mouth; means for feeding material to the containers including a rotatable hopper having measuring chambers in the bottom thereof; a non-rotating disk for closing the underside of the chambers, the said disk having a discharge opening therethrough, the containers being adapted to be brought seriatim into register therewith; means for intermittently rotating the hopper to bring the chambers seriatim into register with the discharge opening when a container is in register therewith; a stationary scraper in the hopper adjacent its bottom for cutting off communication between the interior of the hopper and the measuring chamber in register with the discharge opening; a plunger guided in the scraper and movable therethrough for ejecting material from the last mentioned measuring chamber through the discharge opening into a container; and means for actuating the plunger and for normally positioning it clear of the bottom of the hopper.

12. A filling machine comprising means for intermittently advancing containers, each container having an open mouth; means for feeding a powder mixture to the containers including a rotatable hopper having measuring chambers in the bottom thereof; a non-rotating disk for closing the underside of the chambers, the said disk having a discharge opening therethrough, the containers being adapted to be brought seriatim into register therewith; means for intermittently rotating the hopper to bring the chambers seriatim into register with the discharge opening when a container is in register therewith; a stationary scraper in the hopper adjacent its bottom for cutting off communication between the interior of the hopper and the measuring chamber in register with the discharge opening; and a stationary blade depending into the hopper for ensuring an even mixing of the mixture therein.

13. A filling machine comprising means for intermittently advancing carriers for carrying containers having open mouths, each carrier having an opening therethrough in which one of the containers is frictionally supported; means for feeding compressible material to the containers, the lower end of each container projecting beneath the underside of its carrier; a press having a die recessed to receive said projecting lower end; a press having a punch for applying pres-

sure to the material in the container after the die has been moved to embrace the projecting lower end; means for controlling the operation of the presses simultaneously; and means for delaying the operation of the punch to permit full operation of the die prior to compression of the material by the punch.

14. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm movable on said carrier and having a funnel adapted to be registered with the opening to direct material into the mouth of the container; and means for shifting the arm relative to the carrier to move the funnel alternately out of and into register with the opening.

15. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm pivoted on each carrier and axially movable relative thereto, the arm having a funnel adapted to be brought into register with the opening to direct material into the mouth of the container; means for ensuring registration of the funnel with the opening and for locking the arm positively to the carrier during such registration; and means for axially moving the arm relative to the carrier to release the locking means and for turning the arm when the locking means is released.

16. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container; an arm pivoted on said carrier and axially movable relative thereto, the arm having a funnel adapted to be brought into register with the opening to direct material into the mouth of the container; means for feeding material through the funnel into the container; means for ensuring registration of the funnel with the opening and for locking the arm positively to the carrier during such registration; a stationary part having an inclined surface; a round headed projection on the underside of the arm adapted to engage the inclined surface to cause the arm to be moved axially to release the locking means and thereafter cause the arm to be turned; and means for limiting the said turning movement of the arm to approximately position it for engagement with the locking means when the projection disengages the said stationary means.

17. A filling machine comprising means for advancing carriers, each carrier having an opening for receiving an open mouthed container and having an upwardly extending projection concentric with the opening; an arm pivoted on said carrier and axially movable relative thereto, the arm having a funnel adapted to be registered with the opening, the funnel being countersunk to fit said projection to ensure proper registration to said funnel with said opening; and means for axially moving the arm relative to the carrier to cause the funnel to clear the seat and for turning the arm to move said countersunk part out of and into register with the seat.

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