Nov. 5, 1940. J. W. WILKINSON 2,220,137

CAN TRANSFER VALVE

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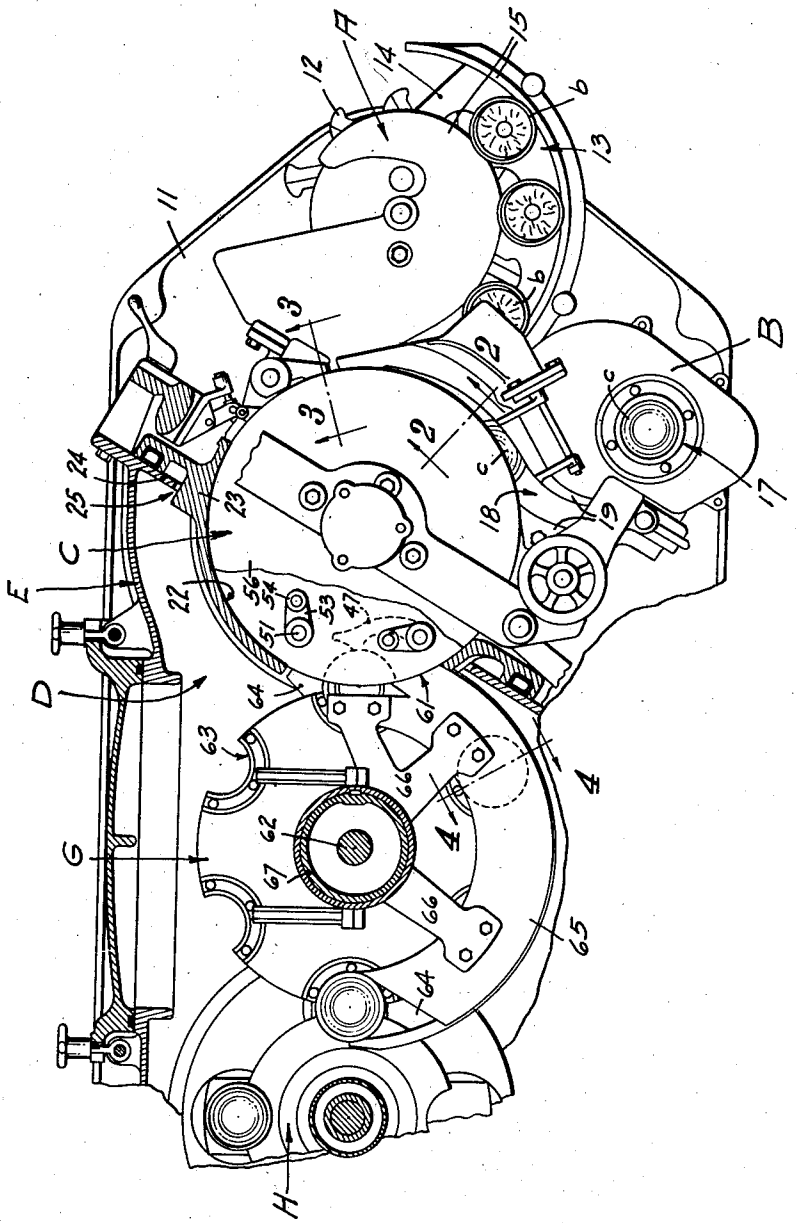


Fig. 1

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Fig. 2

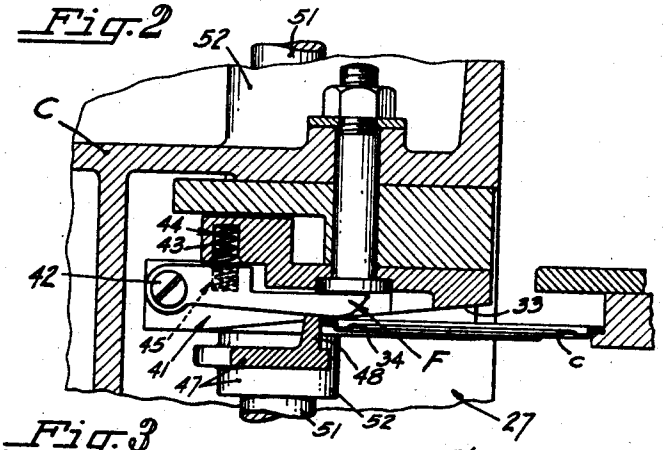


Fig. 3

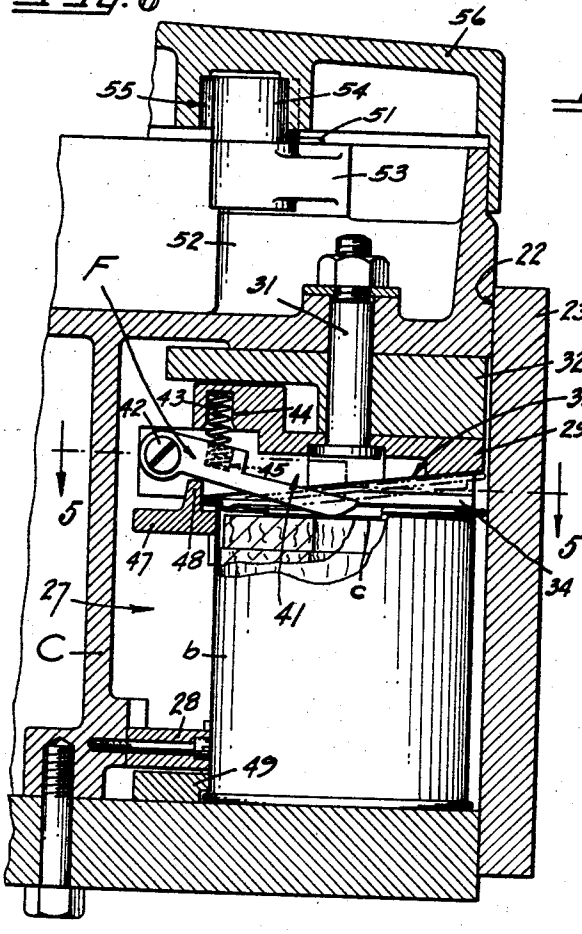
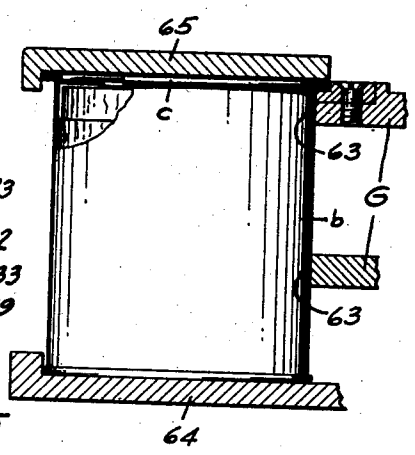


Fig. 4



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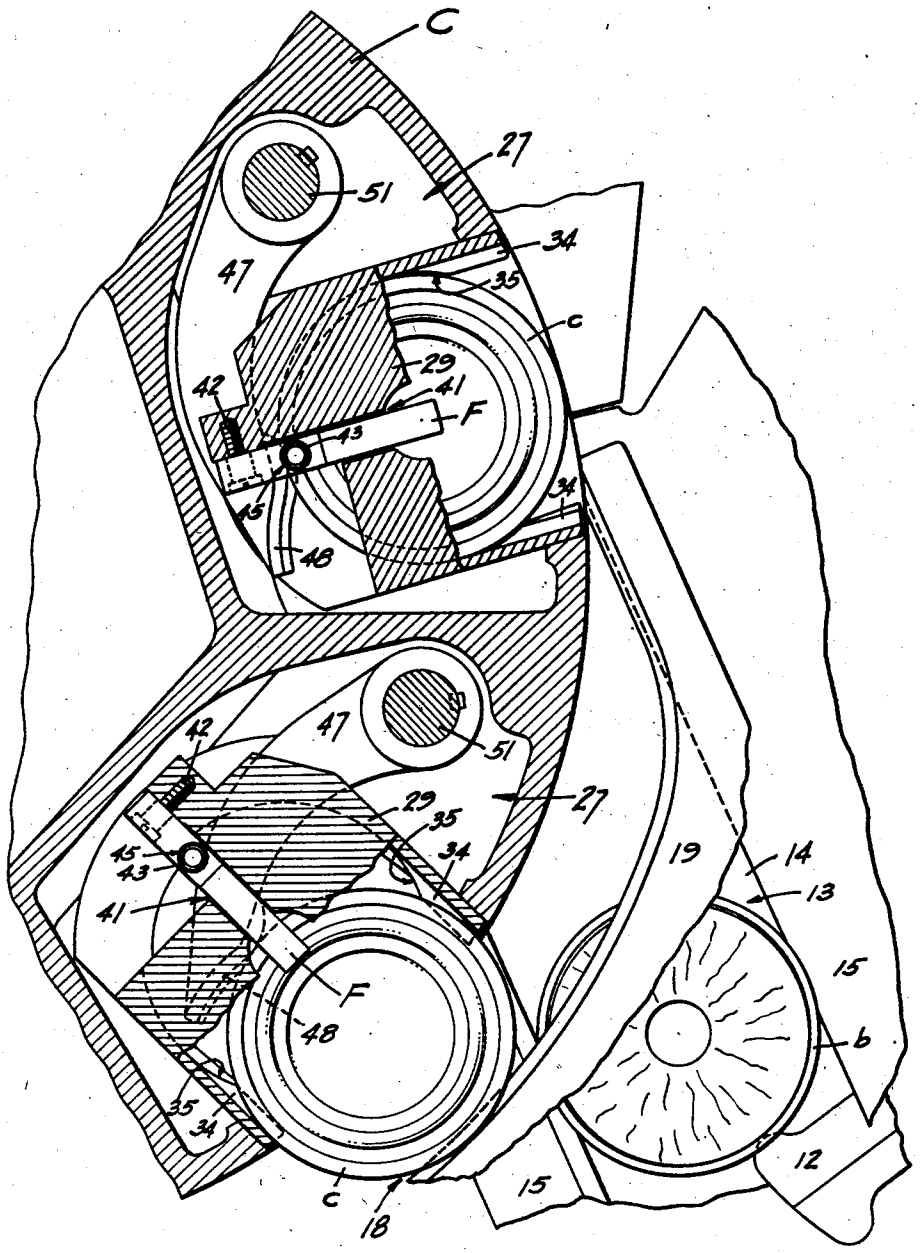
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Fig. 5



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UNITED STATES PATENT OFFICE

2,220,137

CAN TRANSFER VALVE

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Application May 18, 1937, Serial No. 143,389

5 Claims. (Cl. 198—209)

The present invention relates to a can treating machine having a rotatable transfer valve with can and cover carrying pockets such as utilized in a can closing or sealing machine and has particular reference to devices located in the valve pockets for holding a cover superimposed upon a can to prevent spilling of the can contents while the can is in the valve.

An object of the invention is the provision of a can closing machine or the like having a rotatable transfer valve formed with can pockets, wherein covers carried in the valve pockets in superimposed relation relative to the cans therein, are positively forced into tight engagement with the cans by yieldable presser fingers also located within the can pockets thus preventing spilling of the can contents during rotation of the valve and transfer of the cans.

Another object is the provision of such a machine wherein the holding action of the yieldable presser fingers is synchronized with the entrance and ejection of cans and covers into and from the valve pockets, the actuation of the fingers being controlled by spring pressure and by movement of can and cover ejector arms which are also located in the valve pockets.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a top plan and sectional view of the principal parts of a vacuum can closing machine embodying the instant invention, with parts being broken away;

Figs. 2, 3 and 4 are enlarged fragmentary vertical sections taken substantially along the respective lines 2—2, 3—3 and 4—4 in Fig. 1; and

Fig. 5 is a fragmentary horizontal section taken substantially along the line 5—5 in Fig. 3.

As a preferred embodiment of the invention the drawings illustrate the principal parts of a vacuum can closing machine of the character disclosed in United States Patent 2,039,338 issued May 5, 1936, to R. E. J. Nordquist et al. on Vacuum closing machine, although it should be understood that the invention is equally well adapted to any other kind of machine having rotary transfer valves.

In the machine illustrated in the drawings filled cans *b* (Fig. 1) are received from any suitable source of supply and are fed into the machine in timed order by a can feeding device A. Simultaneously with the feeding of cans, can covers *c* are fed into the machine in timed order by cover feeding elements or devices B. A fed can and a fed cover are inserted into a rotatable transfer valve C so that the cover is superimposed on the can and in this relation they are carried by the valve into a vacuum chamber D which is enclosed by a casing E. While in the valve the cover is held tightly on the can to prevent spilling of the can contents, by pressure finger elements F (Fig. 3). It is to this latter feature that the invention is particularly directed.

Cans with covers when introduced into the vacuum chamber are preferably received in a rotatable transfer turret G which carries them into a can sealing or closing mechanism H where the cover is united with the can in any suitable manner as by an interfolding of can and cover parts. The sealed cans are then discharged in any suitable manner.

The various parts of the machine are preferably mounted on a base 11 (Fig. 1) at one end of which are located the can feeding device A and the cover feeding device B. The can feeding device A includes a plurality of can pushers fingers 12 which are moved through a curved runway 13 defined by a bottom plate 14 and curved inner and outer side guides 15 which terminate adjacent the transfer valve C hereinbefore mentioned. The pusher fingers are actuated in any suitable manner in time with the other moving parts of the machine.

Cans entering the runway 13 are engaged by the pusher fingers 12 and are advanced in timed order between the guides 15 while being supported on and moved along the bottom plate 14.

The cover feeding device B is located adjacent the can feeding device A and preferably includes a magazine 17 in which a quantity of can covers are arranged in a stack. Below the magazine is located a runway 18 having curved inner and outer side guides 19 which terminate adjacent the valve C. The outer guide 19 extends around a portion of the valve C in spaced relation therewith and terminates at the terminal end of the inner guide 15 of the can runway 13, overlapping the same as shown in Fig. 5. The inner guide 19 terminates at the face of the valve. The covers are removed individually from the bottom of the stack and advanced along the runway by any suitable means operating in time with the other moving parts of the machine.

The transfer valve C is cylindrical in shape and is retained in a curved seat 22 which is

formed in a bracket 23 held against a wall section 24 of the casing E. An opening 25 is provided in the wall section to permit the valve seat to extend into the vacuum chamber D. The valve is rotated in its seat by any suitable means and in time with the other moving parts of the machine.

A plurality of pockets 27 (Figs. 2, 3 and 5) are formed in the transfer valve C adjacent its periphery for carrying the cans *b* and covers *c* into the vacuum chamber D. Each pocket is provided with a stop lug 28 for properly locating a can in the pocket. Each pocket is further provided with a cover top guide 29 which is secured by a bolt 31 to the bottom of the valve top wall. A spacer block 32 is interposed between the valve top wall and the cover top guide to properly locate the latter relative to the can height.

The sides of the top guide extend downwardly and are cut away on an angle to form inclined top ledges 33 and inwardly projecting bottom ledges 34 for guiding a cover as it is inserted into the pocket. The bottom ledges are further cut away as at 35 in Fig. 5.

Each cover top guide 29 carries one of the cover presser fingers F hereinbefore mentioned. Each finger has vertical rocking movement in a recess or groove 41 formed centrally in the bottom of the top guide as shown in Figs. 2, 3 and 5. The inner end of the finger is mounted on a pivot screw 42 which is threaded into a recess defining side wall of the guide. The outer end of the finger is free and is located adjacent the center of a cover when it is fully inserted in the guide.

An expansion spring 43 is interposed between the bottom of the top guide and the top of the finger and exerts a downward pressure on the finger tending to hold its free end against an inserted cover. The upper end of the spring is held in a socket 44 which is formed in the bottom of the guide while its lower end is retained in a similar socket 45 formed in the top of the finger intermediate the ends thereof.

When a cover is being inserted into a valve pocket and again when a can and cover are being discharged from the pocket, as will hereinafter be explained, the free end of the presser finger F is held up against the resistance of the spring 43. In this position it is out of the path of travel of the cover. A can and cover ejector arm 47 is utilized to hold the presser finger in raised position.

The arm 47 is located inside the pocket and is adjacent the upper end of a can when within the valve pocket. This arm is provided with an upright lug 48 which has two functions. It locates an inserted cover within the valve pocket and it also holds the finger F in non-engaging position. A similar arm 49 (Fig. 3) is also disposed in each valve pocket adjacent its bottom and engages against and backs up the side wall of the lower end of a positioned can.

The ejector arms 47, 49 are mounted on a vertical shaft 51 carried in bearings 52 formed in the top wall of the transfer valve C. The upper end of the shaft extends above and outside of the valve pocket and carries a cam arm 53 having a cam roller 54 which operates within a cam groove 55 of a stationary cam 56. Thus rotation of the transfer valve carries the cam rollers through the cam groove and hence actuates the ejector arms in the proper direction.

As the transfer valve C rotates in its seat 22 a pocket 27 first passes the can cover runway 18 and picks up a cover *c* being advanced therealong. The outer edge of the cover enters beneath the cover top guide 29 between the ledges 33, 34 and is temporarily supported on the ledges as it is advanced by the valve along the outer guide rail 19.

At the terminal end of guide rail 19 the valve pocket passes the can runway 13 and here picks up a can *b* which is partially pushed into it by a pusher finger 12 of the can feeding device. As the valve pocket passes the joined ends of the runways 13, 18 the end of the inner side guide 15 which constitutes a side wall of the can runway 13 (Fig 5) sweeps the can fully into the pocket and locates it against the stop lug 28. Simultaneously with this action the end of the cover runway 18 sweeps the cover fully within the cover top guide 29. The ejector arms 47, 49 located within the valve pocket move inwardly in time with the insertion of the can and its cover to provide a solid backing for them, the cover engaging against the vertical lug 48 of arm 47.

As the cover moves into its fully inserted position in the valve pocket the inclined ledge 33 of the cover top guide 29 tilts the cover to an angular position over the cut-out 35 in the cover top guide. By this time the ejector arm 47 has moved in far enough to allow the spring 43 of finger F to bring the free end of the finger down into engagement with the top of the tilted cover. Further spring movement thereupon pushes the cover through the cut-out 35 and into superimposed position on the can. In this position the cover is below and free of the guide ledges 34. The finger remains against the top of the cover as the valve continues to rotate and thereby holds the cover tightly in place to prevent spilling of the can contents while the can is in the valve.

The rotating valve carries the can and its superimposed cover to a position adjacent an opening 61 (Fig. 1) which is formed in the valve seat 22 and which communicates with the vacuum chamber D. Here the ejector arms 47, 49 are further actuated to eject the can and its cover from the valve pocket, the arms pushing the can and cover through the opening 61 and into the vacuum chamber.

The transfer turret G which receives can and cover is located inside the vacuum chamber and is mounted adjacent the valve C on a vertical shaft 62 which is carried in suitable bearings formed in the casing E. The turret is rotated in any suitable manner in time with the other moving parts of the machine. Can and cover pockets 63 are formed in the turret at spaced intervals around its periphery for advancing a received can and its cover.

Adjacent one side of the turret, lower and upper arcuate guide plates 64, 65 (see also Fig. 4) are provided. The plate 64 supports the can and the plate 65 holds its cover in place. These guide plates are secured to radial arms 66 of suitable brackets which are clamped to a column 67 surrounding the turret shaft 62.

Cans and covers received in the transfer turret G are conveyed along the guide plates 64, 65 from the transfer valve C to the closing or seaming mechanism H which is also located within the vacuum chamber as previously mentioned. During this travel the cans are preferably vacuumized, the upper guide plate 65 permitting a slight raising of the cover to allow the escape and exhausting of air from the can.

The closing or sealing mechanism H may be of any suitable character of which there are numerous commercial constructions now widely

used. A preferable construction is one in which portions of the can and cover are interfolded in a seam to unite the cover with the can such as, for example, a double seam or the like.

After sealing, the closed can may be discharged from the machine in any suitable manner.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a can treating machine, the combination of a rotatable transfer valve having a pocket adapted to receive a filled can and a can cover to be applied to the top thereof, an ejector arm in said pocket, means actuating said ejector arm to move it into the pocket in time with the entrance of a can and a cover and to further move it outwardly at the proper time to eject the can and the cover from the pocket, and a movable finger yieldingly mounted in said pocket and operable by spring pressure and the said ejector arm, said finger when so operated engaging against the top of said cover to force it into engagement with the top of said can to prevent spilling of the can contents during rotation of said valve, said finger being disengaged from the cover when can and cover are being ejected from the pocket.

2. In a can treating machine, the combination of a rotatable transfer valve having a pocket adapted to receive a filled can and a can cover superimposed thereon, means in said pocket for ejecting cams therefrom, movably mounted spring pressed means located inside said pocket and traveling with said valve for holding the cover tightly in place on the can to prevent spilling of the can contents when the valve rotates, and means responsive to the movement of said can ejecting means for actuating said movably mounted spring pressed means to engage and release said can cover while contained within said pocket.

3. In a can treating machine, the combination of a rotatable transfer valve having a plurality of pockets adapted to receive filled cans and can covers superimposed thereon, means in said pocket for ejecting cans therefrom, spring pressed means mounted inside each of said pockets and traveling with said valve for holding the covers tightly in place on the cans to prevent spilling of the can contents when the valve rotates, and means responsive to the movement of said cam ejecting means for actuating said movably mounted spring pressed means to engage and release said can cover while contained within said pocket.

4. In a can treating machine, the combination of a rotatable transfer valve having a pocket adapted to receive a filled can and a can cover to be applied to the top thereof, means in said pocket for ejecting cans therefrom, a movable presser finger having a spring pressed resilient mounting inside said pocket and traveling with said valve for holding said cover tightly in place on the can to prevent spilling of the can contents when the valve rotates, and means carried by said can ejector means for positively actuating said spring pressed presser finger to alternately engage and release said can cover while contained within said pocket.

5. In a can treating machine, the combination of a rotatable transfer valve having a pocket adapted to receive a filled can and a can cover to be applied thereto, a cover guide also in said pocket for aligning can and cover, a spring held finger pivoted on said guide and housed within said pocket for engaging against the top of said cover to force it onto said can and to hold it thereon to prevent spilling of the can contents during rotation of said valve, and means engageable with and operative against said spring held finger for moving said finger out of engagement with said cover when said can and cover are discharged from said valve.

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