F. H. & F. R. FLOUNDERS.

MACHINE FOR FEEDING AND PLACING CAN CAPS.

APPLICATION FILED MAY 31, 1912.

1,047,026.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

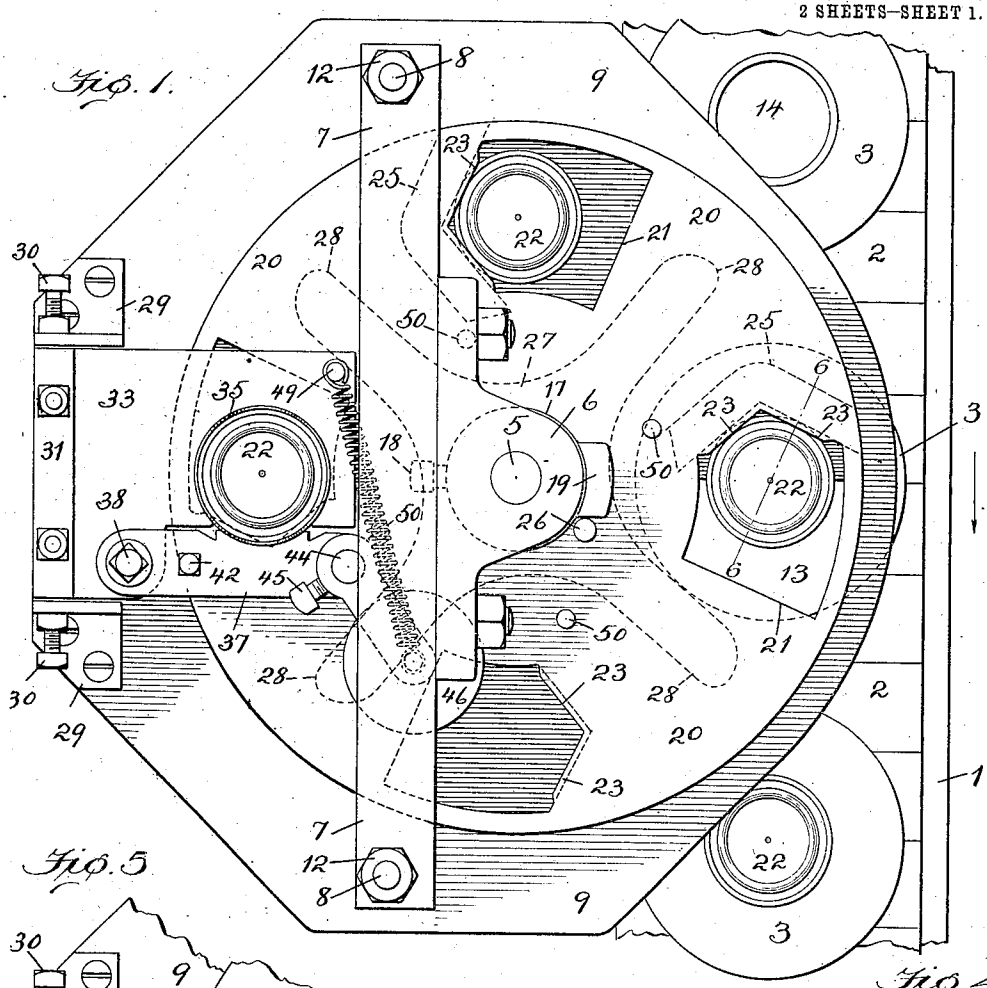


Fig. 5

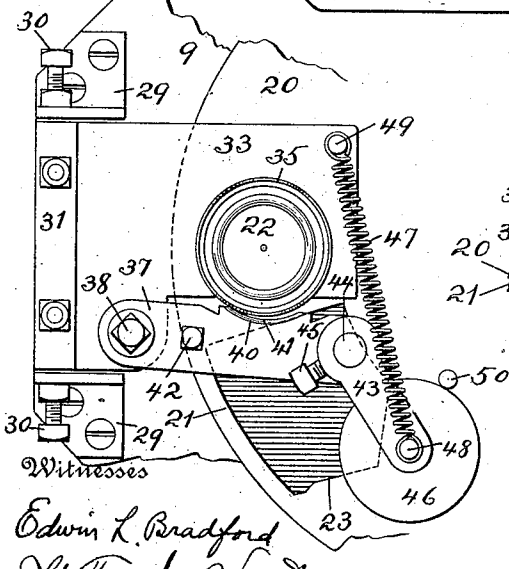
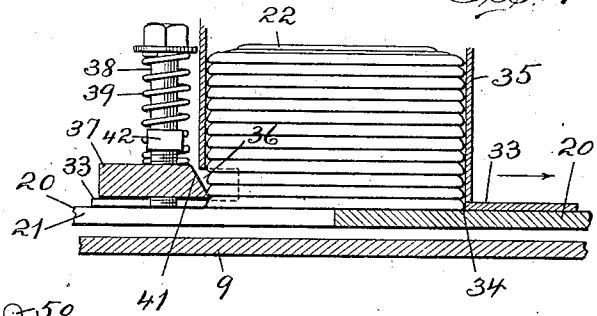


Fig. 4



Witnesses

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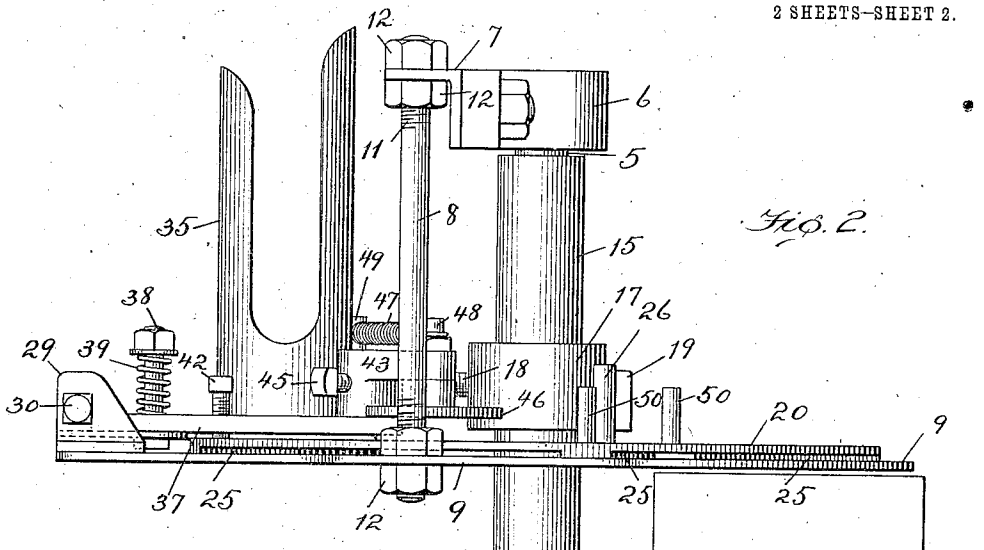

Fig. 2.

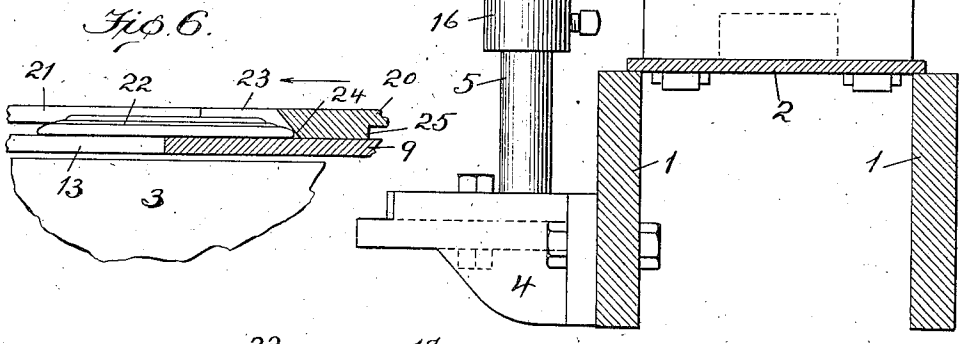

Fig. 6.

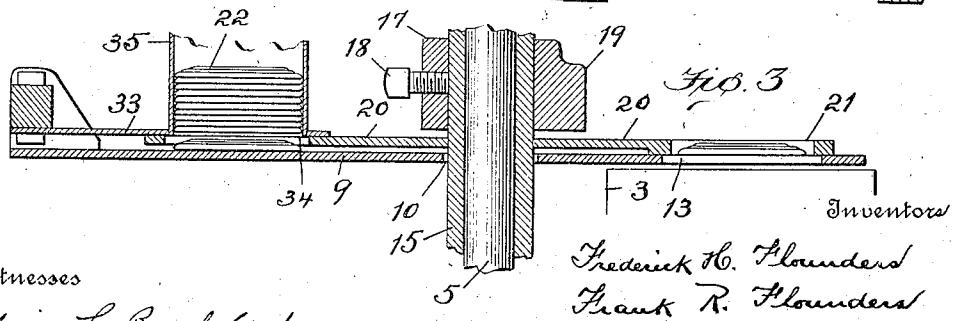

Fig. 3.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR FEEDING AND PLACING CAN-CAPS.

1,047,026. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed May 31, 1912. Serial No. 700,768.

To all whom it may concern:

Be it known that we, FREDERICK H. FLOUNDERS and FRANK R. FLOUNDERS, citizens of the United States, residing at Ridgely, in the county of Caroline and State of Maryland, have invented certain new and useful Improvements in Machines for Feeding and Placing Can-Caps, of which the following is a specification.

This invention relates to improvements in can cap feeding and placing mechanism and has particular reference to a mechanism for removing can caps one at a time from a pile of caps and presenting the same to the filled cans,—the caps being placed by the mechanism over the filling openings of the succeeding cans in readiness to be soldered thereon.

It is immaterial to the present invention whether the caps be provided with the so-called solder hems or not,—the invention consisting in the novel mechanism and devices employed to sustain and feed the caps one at a time to the cans as the latter are presented to the cap placing mechanism.

The accompanying drawings illustrate the invention wherein,

Figure 1, shows a top plan view of the improved machine in position at the side of a can conveyer. Fig. 2, illustrates a side elevation of the machine and a vertical cross-section through the can conveyer. Fig. 3, shows a central vertical cross-sectional detail through the cap supporting table and the transfer disk. Fig. 4, illustrates an enlarged vertical sectional detail of the lower end of the cap retainer and the escapement. Fig. 5, shows a top plan view of portions of the table and transfer disk and of the cap retainer and cap escapement, and Fig. 6, shows an enlarged sectional detail through the table and transfer disk,—the section being taken on the line 6—6 of Fig. 1.

Referring to the drawings the numeral, 1, designates suitable guide rails or supports for a conveyer, 2, which latter sustains the filled cans, 3, and presents them in succession to the cap-feed and placing mechanism. One of the guide rails or supports rigidly sustains a bracket, 4, and a vertical stationary post, 5, is supported by the said bracket and extends upwardly at the side and projects above the conveyer. The extreme upper end of the post, 5, rigidly carries a bracket, 6, and an angle bar, 7, is carried by the said bracket and extends horizontally and laterally with respect to said bracket and post. Suitable rods, 8, depend from the angle bar, 7, and their lower ends rigidly sustain a flat plate or table, 9, which has a central opening, 10, so as to enable the said table to extend entirely around the post, 5. The rods, 8, are provided with screw threads, 11, and nuts, 12, by means of which the table, 9, may be adjusted vertically with respect to the can conveyer, 2, over which one side of said table projects.

At one side of the post, 5, the table, 9, has an opening, 13, which latter has position directly over the conveyer and immediately above the tops of the cans and the central filling openings, 14, in the can tops.

A bushing or tubular sleeve, 15, is slipped onto the vertical post, 5, so as to revolve thereon,—a collar, 16, being rigidly provided on the said post below the sleeve to sustain the latter and prevent it from sliding downwardly. This sleeve extends vertically through the central opening, 10, in the table as shown in Fig. 3, and above the table said sleeve carries a collar, 17, which is made rigid therewith by means of a set bolt, 18. A lug, 19, is provided on the circumference of the collar, 17, for a purpose which will presently be explained.

Between the collar, 17, and table, 9, there is provided a circular transfer disk, 20, through the center of which sleeve, 15, extends. This transfer disk has a plurality of vertical openings, 21, into which the caps, 22, are deposited and said openings are of sufficient size to readily receive the caps. At the rear, each opening has diverging walls, 23, which give the opening a V-shape or formation at that end and each of the diverging walls has a downward and rearward bevel, 24, as shown particularly in Fig. 6.

In the present instance the bottom side of the transfer disk, 20, is provided with thickened or enlarged portions, 25, immediately at the rear of the diverging walls, 23, of the cap-openings, 21, and these thickened portions seat directly on the top surface of the stationary table, 9. This is not essential because the entire disk could obviously be as thick as at those thickened portions but it is desirable because it avoids the use of unnecessary metal and it avoids contact between the disk and table surfaces except at the points where such contact is advantageous. The transfer disk is also provided,

in the present instance, with a vertically-extending pin, 26, which latter has position in the circular path of the lug, 19, on collar, 17, so that as the collar is revolved its lug will engage pin, 26, on the disk and cause said disk to also revolve.

The revolution of the collar, 17, is effected through the rotation of the sleeve, 15, to which it is attached, and the sleeve is rotated in the present instance by means of a star wheel, 27, whose arms, 28, project over the conveyer, 2, and in the path of the filled and traveling cans, 3. It will thus be seen that in the present instance the arms, 28, of the star wheel are successively engaged by the respective cans, each of which latter effects an intermittent and partial rotation of the star wheel, sleeve collar, 17, and transfer disk. In the present instance the transfer disk is provided with four cap-receiving openings, 21, which requires that the disk be given four intermittent and partial movements before a complete revolution of the disk takes place, therefore the star wheel is provided with four arms, 28, or one arm for each cap-receiving opening.

Diametrically opposite the cap-discharge opening, 13, in the table, 9, the upper surface of the latter is provided with spaced-apart brackets, 29. These brackets each carry a bolt or pin, 30, which pivotally engage a bar, 31, that extends lengthwise between them and the bar carries a horizontal plate, 33, having a cap-opening, 34, therein. The plate, 33, projects over the transfer disk, 20, and its opening, 34, has position where it will register with the cap-receiving openings, 21, in the disk, one at a time, as the disk is rotated. A cap chute or tube, 35, is carried by the plate, 33, and has its lower end in fixed relation and register with the opening, 34, in the plate so that the caps may be piled in the chute to be freed or withdrawn one at a time from the lower end. The cap chute, 35, has position on the plate, 33, so as to project slightly over one edge thereof and at this projecting edge said chute has a horizontal circumferential slot, 36, which is shown clearly in Fig. 4.

An escapement lever, 37, is pivotally sustained at one end by the plate, 33,—a bolt, 38, passing freely through the lever and engaging the said plate, and a coiled spring, 39, is carried on the bolt to yieldingly press the lever, 37, downwardly. This lever has a concave notch, 40, in the side which confronts the slot, 36, in the cap chute and said notch has a beveled or wedge-shaped wall, 41, which enters the notch and forms a ledge or support for the can caps in the chute. An adjusting screw, 42, passes through the escapement lever, 37, and its lower end seats on the upper surface of the transfer disk, 20, so that by turning the screw the beveled wall or support, 41, of the lever, 37, may be adjusted with respect to the thickness of the can caps and thus enable said wall to project beneath the edge of the second cap in the pile, thus leaving the lowermost cap in the pile free and supported only by the disk, 20, as shown in Fig. 4. The spring, 39, on bolt, 38, allows the escapement lever, 37, to be vertically adjusted as just explained.

The escapement lever, 37, carries an arm, 43,—the latter being adjustably secured to the former by means of a pin, 44, and set screw, 45, so that said arm may extend horizontally and project over the transfer disk, 20. The outer end of arm, 43, is provided with a roller, 46, and a coiled spring, 47, has one end connected to a pin, 48, on the arm and its other end attached to a pin, 49, on the plate, 33, whereby to yieldingly draw the escapement lever, 37, and its beveled wall, 41, toward the caps in the chute or tube.

The transfer disk, 20, is provided with a plurality of vertically-projecting pins, 50, the number of which is determined by the number of cap-openings in the disk, there being four in the present instance. These pins are so placed on the disk that they will successively contact with the roller, 46, at each intermittent revolution of the disk and will momentarily release the pile of caps in the chute so as to allow the lowermost cap to drop onto the disk, 20, but the pin will release the roller in time to allow the supporting wall, 41, of the escapement lever to return and engage the second cap in the pile to retain the remaining caps until the lowermost cap has been removed.

The operation of the machine is as follows:—The caps are placed or fed in any desired manner to the chute or tube, 35, and the entire pile of caps will normally be sustained by the wall, 41, of the escapement lever, 37. The filled cans, 3, are presented in succession by the conveyer 2, to the star wheel, 27, and each can imparts a partial rotating motion to the star wheel, sleeve, 15, and collar, 17, on the sleeve. A like partial rotation is given the transfer disk, 20, by the movement of the star wheel, which in the present instance, is effected by the lug, 19, on the collar engaging pin, 26, on the disk. As each cap opening, 21, in the disk, 20, passes beneath the cap chute the lowermost cap, which has been freed, as will presently be explained, will drop into said opening in front of V-shaped or diverging rear walls, 23, of said cap-opening, which latter serves to center the cap. As the disk makes its next movement to carry the cap away from beneath the chute, one of the pins, 50, on the disk will engage the roller, 46, on the escapement and will swing the lever, 37, sufficient distance

away from the slot, 36, in the chute to allow the pile of caps to settle. At this time the previously discharged cap will have been moved in a circular path over the table and away from the chute and the released pile of caps will settle on top of the disk with the lowermost cap in the path of the next opening, 21. Before the partial rotation of the disk is completed however, the pin, 50, will have passed the roller, 46, consequently the lever, 37, will be returned so that its beveled wall, 41, will again enter the chute slot, 36, and engage the lower edge of the second cap, leaving the lowermost cap free to drop into the next cap opening of the disk. As the disk is revolved the walls, 23, of its cap-openings will carry or slide the caps along over the table until finally the opening, 13, in the table is reached. As heretofore explained this opening, 13, is located directly over the tops of the cans on the conveyer, and as the disk and cans move together and at the same speed, the cap will drop from opening, 21, through table-opening, 13, onto the can top and in position to cover the opening, 14, in said top. The filled cans with the loose caps in place thereon are then moved to a capping machine where the capping irons are brought into register with the caps and the latter soldered on the cans.

By mounting the cap chute on the hinged plate, 33, both may be turned or swung back to permit access to the under side for any purpose desired.

Having thus described our invention what we claim and desire to secure by Letters Patent is:—

1. In a can cap feeding mechanism the combination with means to convey cans, of a stationary table having a cap discharge opening over the center of the path of the cans; a cap chute above the table; a rotary transfer device between the chute and table; means for sustaining the caps in the chute; means actuated by the movement of the transfer device to operate the cap sustaining means and release one cap at a time and means actuated by the cans for operating the transfer device.

2. In a can cap feeding mechanism the combination with means to convey cans, of a stationary table having a cap discharge opening over the center of the path of the cans; a cap chute above the table; a rotary transfer device between the chute and table, said transfer device having a plurality of cap receiving openings thereon; means for presenting the openings in the transfer device successively to the opening in the table; means for releasing one cap at a time from said chute and depositing it in an opening in the transfer device and means for moving the transfer device.

3. In a can cap feeding mechanism the combination with means to convey cans, of a stationary table having a cap discharge opening over the center of the path of the cans; a cap chute above the table; a rotary transfer device between the chute and table; said transfer device having a plurality of cap receiving openings each of which has a cap-centering wall; means for freeing one cap at a time from the chute and in the path of the openings of the transfer device and means for rotating the transfer device to move the caps from beneath the chute to the table opening.

4. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having cap receiving and centering means; a cap chute having its lower end adjacent to the transfer device; means for moving the chute with respect to the table and transfer device and means for moving the transfer device.

5. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having cap receiving and centering means; a cap chute having its lower end adjacent to the transfer device; a pivoted plate for sustaining the chute; means for releasing one cap at a time from the chute and means for moving the transfer device.

6. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having cap receiving and centering means; a cap chute having its lower end adjacent to the transfer device; a plate pivoted at one end and extending over the transfer device said plate sustaining the chute and having an opening which registers with the lower end of the chute and means for moving the transfer device.

7. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having cap receiving and centering means; a cap chute having its lower end adjacent to the transfer device; a plate extending horizontally over the transfer device said plate sustaining the chute; means for adjusting the plate vertically with respect to the transfer device and means for rotating the transfer device.

8. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having a plurality of cap receiving and centering openings in a circular path; a cap chute having its lower end adjacent to the transfer device and in the path of the cap-receiving openings; a plate extending over the transfer device and sustaining the chute; an escapement device carried by the plate to free one cap at a time

from the chute; means for moving the transfer device and means for actuating the escapement.

9. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having cap receiving and centering means; a plate extending over the transfer device; a chute extending vertically from and sustained by the plate,—said chute having a circumferential slot at its lower end; means carried by the plate and entering the chute slot to sustain the caps in the chute; means for yieldingly keeping the cap-sustaining means in said slot; means for moving the transfer device and means carried by the transfer device for operating the cap-sustaining means to release one cap at a time.

10. In a cap feeding mechanism the combination with a table having a cap-discharge opening, of a rotary transfer device movable over the table and having cap receiving and centering means; a plate extending over the transfer device; a chute extending vertically from and sustained by the plate,—said chute having a circumferential slot at its lower end; means carried by the plate and entering the chute slot to sustain the caps in the chute; means also carried by the plate for yieldingly keeping the cap-sustaining means in the chute slot; means for pivotally sustaining the plate whereby the same together with the chute and cap sustaining means may be swung away from the rotary transfer device and means for moving the transfer device.

In testimony whereof we affix our signatures in presence of two witnesses.

FREDERICK H. FLOUNDERS.
FRANK R. FLOUNDERS.

Witnesses:
JOSEPH K. SNOWBERGER,
MILTON C. SMITH.