

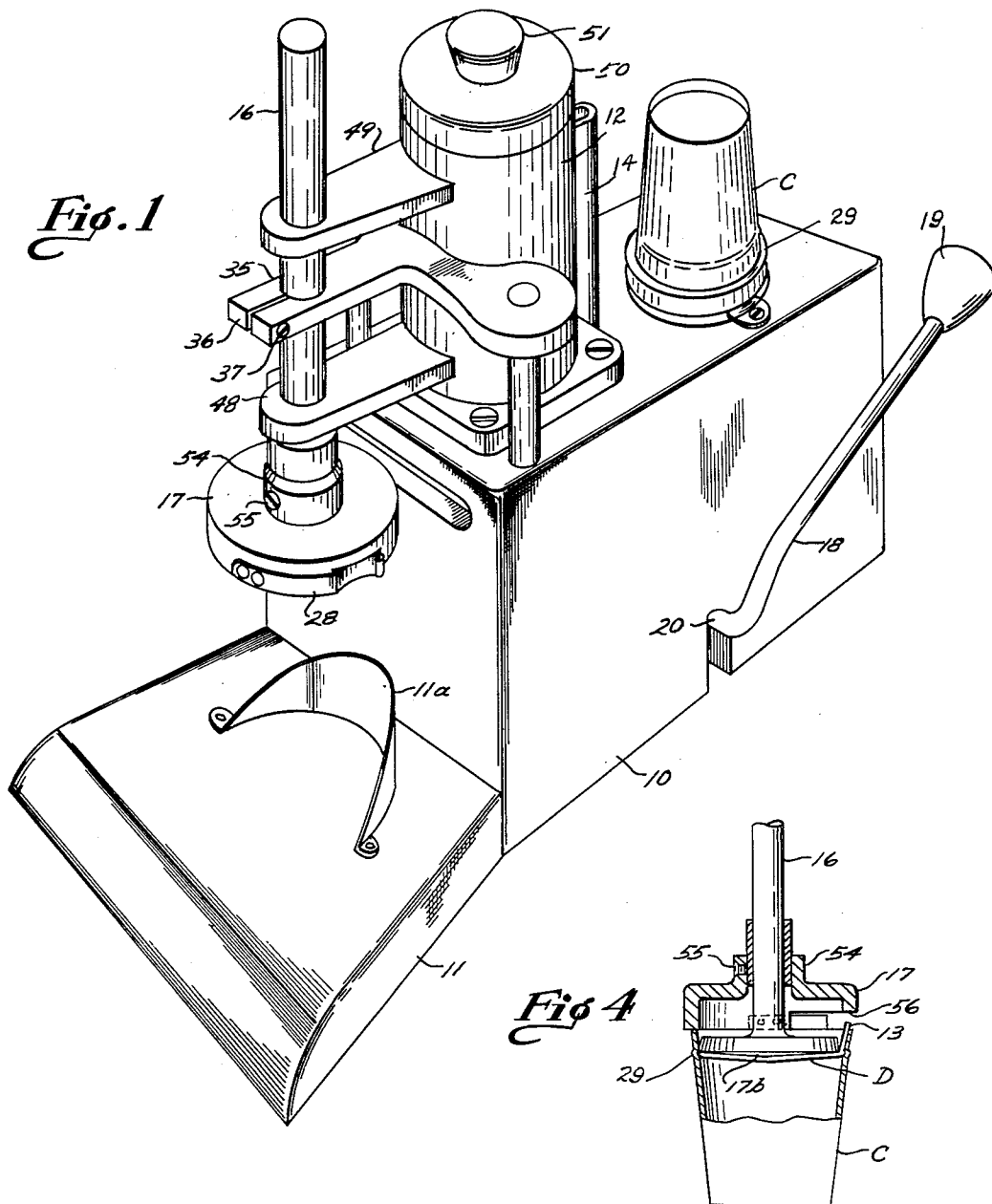
July 12, 1955

E. J. CHARLAND
CAPPER FOR PAPER CUPS

2,712,893

Filed Oct. 4, 1952

2 Sheets-Sheet 1



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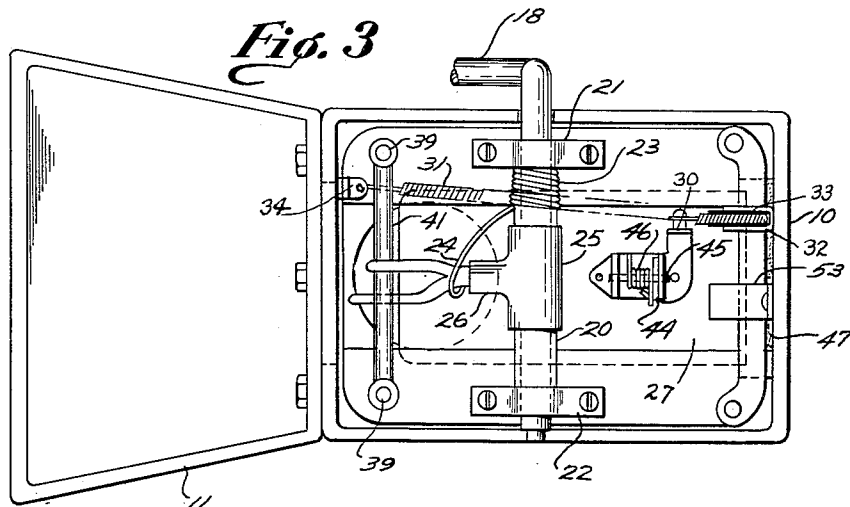
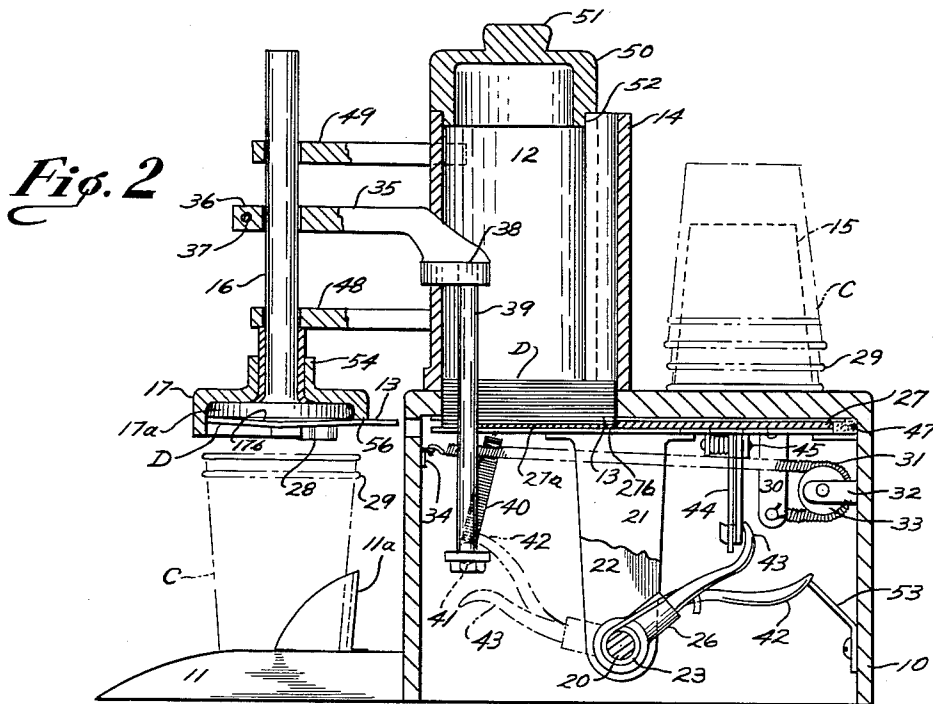
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CAPPER FOR PAPER CUPS

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11 Claims. (Cl. 226—92)

This invention relates to food receptacles and more particularly to a manually operable apparatus for inserting disk-like paper caps into tapered conical paper cups containing hot coffee, cold drinks, ice cream etc.

One object of the present invention is to provide an apparatus of the above nature which will be completely sanitary, as the hands of the operator do not touch the mouth of the cup, or the cap at any time.

A further object is to provide an apparatus of the above nature, which is adapted for the successive capping of a plurality of cups, and in which the caps are discharged from the vertical magazine which holds them, by means of a slide, which forcibly ejects said caps from said magazine one at a time.

A further object is to provide an apparatus of the above nature in which each cap which has been ejected from the magazine will be forced downwardly into the flared open end of a cup by means of a plunger, which has means for holding said cap prior to its insertion into said cup.

A further object is to provide an apparatus of the above nature which will be easy to operate, simple in construction, inexpensive to manufacture, compact, ornamental in appearance, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawings, one form in which the invention may conveniently be embodied in practice.

In the drawings, Fig. 1 represents a perspective view of the entire apparatus prior to the placing of a cup upon the side platform.

Fig. 2 is a vertical cross-sectional view of the same, showing a cup located on the platform, and with a cap held on the plunger by means of the spring clips, prior to the downward stroke thereof.

Fig. 3 is a bottom view of the apparatus looking upwardly.

Fig. 4 is a detail cross-sectional view of the plunger as it appears when a cap is being forced into a paper cup.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates a hollow casing for housing the mechanical parts of the apparatus, said casing having connected thereto, as by bolts, a horizontal side platform 11, upon which is secured, as by screws, an arcuate cup-holder 11a for receiving a single paper cup C, which is adapted to be manually removed from a stack of inverted cups C mounted on the rear of the casing 10.

Provision is also made of a vertical cylindrical cap magazine 12 containing a stack of disk-shaped caps D having tabs 13 on one side thereof, said magazine 12 being provided on its rear edge with a vertical guide slot 14 for receiving the tabs 13. The numeral 15 indicates an inverted frustum on which the paper cups C are stacked prior to their use.

Provision is also made of a plunger rod 16 having an

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enlarged shallow open bottom circular housing 17, within which each cap D is received after it has been ejected from the casing 10 by the mechanism to be hereinafter described.

In order to eject the cap D from the magazine 12 into the plunger housing 17, provision is made of a handle arm 18 located on the outside of the casing 10, said arm having a knob 19 on the outer end thereof. The handle arm is connected rigidly to a horizontal shaft 20 which is journaled in a pair of depending bearing brackets 21 and 22 secured at their upper ends to the top of the casing 10.

In order to return the shaft 20 to its original position after it has been rotated manually in a counterclockwise direction by means of the handle arm 18, provision is made of a coil spring 23 surrounding said shaft 20, one end 24 of which spring embraces a pair of curved fingers 42 and 43, the inner ends of which are mounted within a hollow sleeve 26 forming an integral part of a T-shaped tube 25 rigidly secured to the shaft 20.

In order to eject the lowermost cap D from the stack in the magazine 12, provision is made of a slide 27 having a thin extension 27a on the forward end thereof providing an ejecting shoulder 27b at the rear of said extension.

The plunger housing 17 is provided with a pair of resilient thin curved leaf spring clips 28 secured to the circumference thereof, which clips are adapted to extend within the periphery of said housing in order to hold the caps D from dropping out of the latter prior to their insertion into the cups C by a plunger piston 17a, after they have been ejected from the casing 10. The piston 17a preferably has a conical depending bottom portion 17b in order to cause the cap D to seat firmly in the cup C, without looseness.

The numeral 29 indicates an outwardly extending groove in the cup C into which a cap D is forced by the plunger piston 17a during the downward stroke thereof.

In order to cause the slide 27 to be forced forwardly whenever the handle arm 18 is swung to the left to eject a cap D from the magazine 12, provision is made of a depending arm 30 on said slide connected to an elongated coil spring 31, which passes over a pulley 33 mounted on a horizontal angle bracket 32 secured to rear end of the casing 10. The other end of the spring 31 is secured to angle bracket 34 attached to the forward end of the casing 10.

The plunger 16 is mounted for vertical reciprocation in a horizontal bracket 35, which is split at its forward end 36. Provision is also made of a set screw 37 located in the sections of said split end 36 so as to permit said bracket 35 to be clamped tightly around the plunger rod 16, at any desired adjusted position.

The plunger bracket 35 is connected at its inner end to a downwardly offset yoke 38, the two spaced ends of which are joined to a pair of vertical operating rods 39, which are pressed upwardly by a pair of depending coil springs 40 secured to the top of the casing 10. The spring 40 on the handle side of the apparatus is made stronger than the other spring 40 to compensate for the eccentric force of the finger 42. The lower ends of the rods 39, 39 are connected to a cross rod 41 which is secured to the lower ends of the coil springs 40.

In order to permit the slide 27 to move back to its original position by the action of the elongated coil spring 31, provision is made of a yieldable depending abutment 44 mounted upon a pivot rod 45 carried by the slide 27. The yieldable abutment 44 is urged to its normal vertical position by a coiled spring 46.

Provision is also made of a noise-absorbing felt bumper 47 located on the rear wall of the casing in alignment with the slide 27.

In order to guide the plunger 16 in its vertical reciprocation, provision is made of a pair of horizontal spaced arms 48, 49 secured to the cap magazine 12, which is also provided with a hollow cover 50 having a hand knob 51. The cover 50 has a recessed interior shoulder 52 which fits snugly within the top of the magazine 12.

At the rear of the casing, provision is made of an inclined resilient stop finger 53, which is adapted to yieldably engage the plunger-operating finger 42, to limit the rearward motion thereof.

The plunger housing 17 is also provided with an upstanding neck 54 having a set screw 55 for securing it adjustably upon a plunger sleeve 16a. The plunger housing 17 has a cutaway slot 56 on its inner side to permit the passage of the caps D from the casing 10 whenever the handle arm 18 is swung manually in a counterclockwise direction, so far as it will go.

Operation

In the operation of the improved apparatus herein disclosed, the caps will first be stacked vertically in the magazine 12 with the tabs 13 located in alignment with each other in the vertical guiding slot 14. The operator will then manually remove a cup C from the cone 15, turn it right side up, fill it with hot coffee or other food, and place it upon the platform 11 within the arcuate cup holder 11a. The handle arm 18 will then be swung manually in a counterclockwise direction against the action of the coil springs 23 and 31, which will cause the curved finger 43 to engage the depending abutment 44 and force the slide 27 forwardly to eject one of the caps D from the stack in the magazine 12 through the slot 56 into the housing 17.

After the cap D has been ejected through the slot 56 into the plunger housing 17, it will be held therein by means of the pair of resilient leaf spring clips 28. When the handle arm 18 is moved farther on its stroke, the spring clips 28 will engage the top of the cup C, which is then located on the platform 11, and the cap D then located in the center of the plunger housing 17 will be forced downwardly by the movement of the piston 17a out of said housing 17, forcing said cap into the groove 29 near the top of the cup C.

Upon releasing the handle arm 18, the elongated coil spring 31 operating around the pulley 33 will return the slide 27 back to its original position (Fig. 2), and the plunger 16 will simultaneously be raised to its upper position by the pair of coil springs 40 and the rods 39 connected to the yoke arms of the plunger bracket 35.

It will be understood that on the reverse movement of the slide 27, the abutment 44 will yield and be moved automatically about its pivot rod 45 when the curved finger 43 engages it, to permit the latter to swing back to its original position as shown in full lines in Fig. 2, at which time it will engage the stop 53, and the slide 27 will strike the noise-absorbing bumper 47.

While there has been disclosed in this specification, one form in which the invention may be embodied, it is to be understood that this form is to be shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In a machine for inserting a disk-shaped paper cap into a conical paper cup, a casing, a plunger housing, a vertical magazine mounted upon said casing for containing a stack of paper caps, a reciprocating slide to push the lowermost cap out of said magazine into said plunger housing, a handle-operated shaft having a curved finger secured thereto and operably connected to said slide for moving the latter forwardly when said handle is swung to a predetermined position, a second curved finger on said shaft operatively connected with said plunger and operable when said handle is swung farther beyond said position for depressing the plunger to force said cap from said housing into said cup which is located upon a platform secured to said casing.

2. The invention as defined in claim 1, in which said plunger is connected to an operating bracket having a rear yoke, the sides of which are connected to a pair of depending rods, the lower ends of which are joined to a cross-rod, and a spring for connecting said cross-rod with said casing to return said plunger to its original elevated position automatically after it has been manually operated to force a cap into a cup.

3. The invention as defined in claim 2, in which said plunger is detachably mounted upon said yoke bracket.

4. The invention as defined in claim 2, in which said plunger housing is detachably mounted on said plunger bracket to accommodate cups of different heights.

5. The invention as defined in claim 1, in which said plunger housing has a pair of curved leaf spring clips extending within the perimeter thereof to hold said cap from falling out prior to its insertion into said cup by said plunger.

6. The invention as defined in claim 1, in which said slide will be automatically returned to its original position by means of an elongated coil spring.

7. The invention as defined in claim 6, in which said coil spring is connected at one end to said casing, passes around a pulley secured upon the rear end of said casing, and is connected at its other end to a depending arm on said slide.

8. The invention as defined in claim 1, in which a felt bumper is mounted upon the rear of said casing in alignment with said slide to reduce noise when said slide is restored to its original position.

9. The invention as defined in claim 1, in which said slide is provided with a one-way swingable cam abutment which is engaged by the curved slide-operating finger in the rearward motion thereof to permit said finger to return to its initial position.

10. The invention as defined in claim 1, in which an inclined resilient stop finger is connected rigidly to the rear end of the casing to limit the rearward motion of said curved fingers.

11. The invention as defined in claim 1, in which a cover is interfitted with the top of said cap magazine.

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