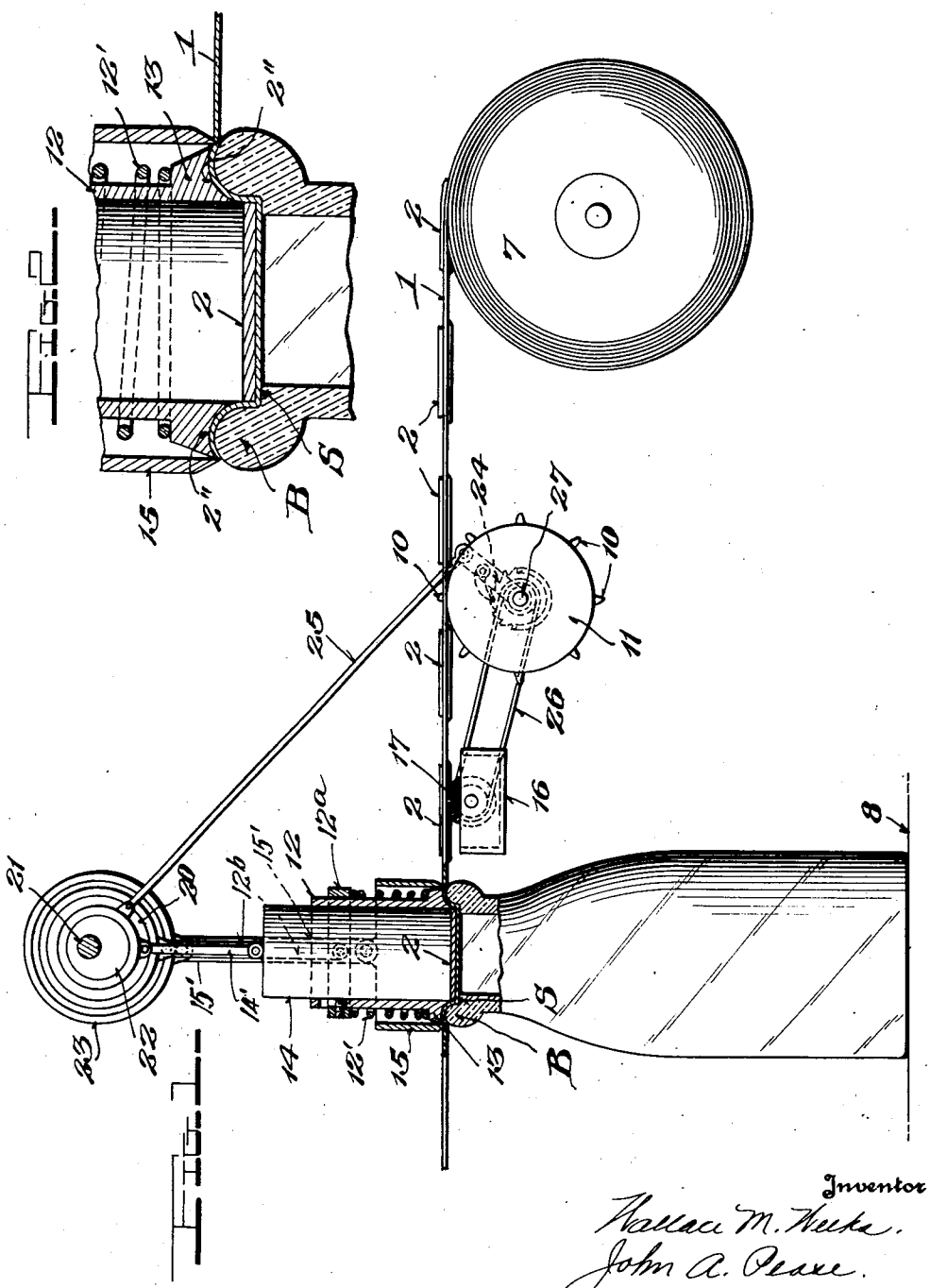
Dec. 13, 1927. 1,652,595

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METHOD AND APPARATUS FOR APPLYING BOTTLE CLOSURES

Filed Jan. 11. 1926 2 Sheets-Sheet 1



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Fig. 3.

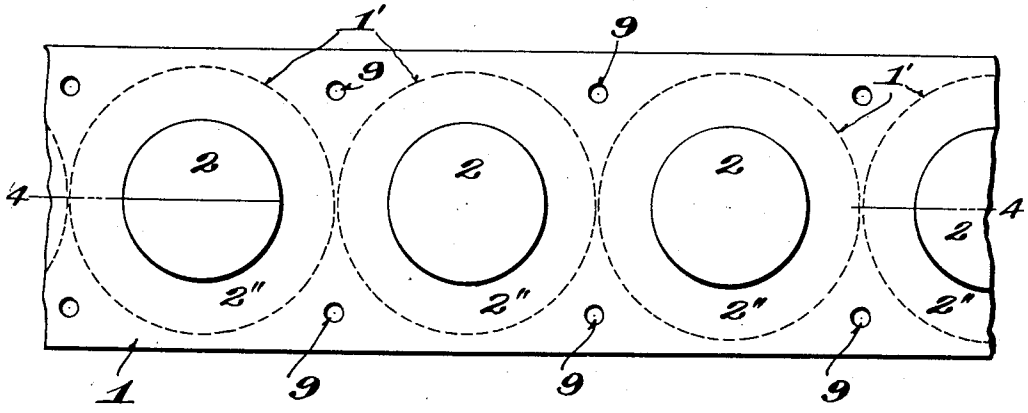
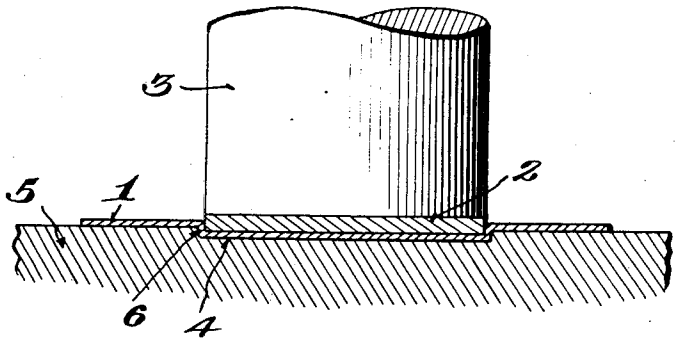


Fig. 4.



Fig. 5.



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UNITED STATES PATENT OFFICE.

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METHOD AND APPARATUS FOR APPLYING BOTTLE CLOSURES.

Application filed January 11, 1926. Serial No. 80,587.

This invention relates to a method of and apparatus for applying milk bottle closures, and the primary object thereof is to facilitate and simplify the application thereof to the filled bottles.

Briefly, the invention proposes to employ caps secured to and in spaced order along a continuous strip of material lighter than that of the caps, and to feed such strips over the mouths of the filled bottles, and to then force the cap within the bottle mouth by means of a male die or plunger and at the same time to utilize the bead of the bottle mouth as a die to conform that part of the paper strip surrounding the cap to the bead of the bottle mouth and to sever same from the body of the strip, thereby to expeditiously and economically apply the caps to the bottle mouths.

In the drawings:—

Fig. 1 is a side elevation, partly in section illustrating a means for practising the invention;

Fig. 2 is an enlarged fragmentary sectional view showing the placement of the cap and the flange;

Fig. 3 is a plan view of the strip;

Fig. 4 is a section on line 4—4 of Fig. 3, and

Fig. 5 is a detail view partly in section showing a step in the manufacture of the disk-carrying strip.

It is to be expressly understood that the drawings are merely illustrative of the principle of the invention and accordingly show, by way of example, one manner in which the invention may be practiced.

In the manufacture of the stock, a strip of paper 1 is employed which is of tough, but light gage paper and which is of breadth slightly greater than the diameter of the disks 2, which latter are secured to the strip 1 at regular predetermined or spaced intervals throughout the length of the strip. The strip of paper is preferably initially perforated in circular formation as at 1′ the circles being of greater diameter than the disks 2 thereby forming annular flanges 2″ that surround the disks. The side edge parts of the strips are also provided with rows of spaced perforations 9. The disks may be secured by adhesive or may be stapled or otherwise secured to the strip in any suitable manner for the purpose. Simultaneously with securement of the disks to the paper strip or subsequent to such securement, a ram or plunger 3 of an area conforming to that of the disk exerts downward pressure thereon and forces the disk and therewith the part of the strip surrounding the periphery of the disk into the cavity 4 of a die 5 thereby offsetting such part of the strip and forming a circular shoulder 6. Thus formed the strip with the attached disks are wound upon a reel 7 and are ready or may be shipped ready for use with the capping device or machine now to be described.

By way of example, the machine may embody a table or platform 8 upon which the filled bottles ready for capping are placed. The strip 1 may be fed by means of the spaced perforations 9 which extend throughout its length and receive therethrough pins or projections 10 on a feed wheel 11 which latter may be rotated in any desired manner to effect regulable feed of the strip 1 over the mouths of the bottles. When a cap is in register with the bottle mouth a sleeve 12 tensioned by a spring 12′ descends, the sleeve having a head 13 of the same configuration as that of the upper arc of the bead B of the bottle mouth so as to conformably but lightly hold the flange 2″ of the strip engaged with the upper arc of the bead. Immediately following this movement of the sleeve a plunger 14 slidable within the sleeve enters into action. The plunger 14, which is of the same area as that of the cap, engages the latter and forces the cap and therewith the strip into engagement with the seat S in the bottle mouth. At this time, a cutter 15 enters into action and effects final severance of the flange 2″ from the strip, the cutter being of the same diameter as that of the circle of perforations 1′, when the strip is in operative position over the bottle. The spring 12′ engages against the head 13 and against a ring 12^a that has restricted sliding movement on the sleeve 12. A rod 12^b connected to eccentric 20 is also connected to the ring to operate the sleeve 12. The cutter 15 is operated by means of a rod 15′ connected thereto and to eccentric 23.

The invention further contemplates the application of adhesive to the bottom face of the flange 2″ prior to the latter being conformed to the bead of the bottle mouth so as to affect securement by adhesion of the flange to the bead. For this purpose a glue

trough 16 may be employed into which a glue applying brush 17 dips and spreads glue over the paper strip 1, before the latter registers with the bottle mouth.

In the embodiment shown, the sleeve is actuated by an eccentric 20 driven from shaft 21, while the plunger is similarly operated by an eccentric 22, connected to rod 14', the eccentrics being mounted on the shaft so that the sleeve first engages the strip and conforms same to the bead of the bottle mouth, following which the plunger forces the disk into the bottle mouth and then the cutter enters into action. The feed wheel and the glue applying brush remain stationary during the working strokes of the sleeve, plunger and cutter and upon upward or idling movement of these parts, the feed wheel and brush are actuated by the ratchet mechanism 24 to feed a fresh disk into position and at the same time to apply adhesive to the strip.

The ratchet mechanism may be actuated by rod 25 operated from eccentric 22, while the glue applying brush may be rotated by a belt 26 driven from the shaft 27 of the feed wheel 11.

What is claimed is:—

1. A method of applying milk bottle closures, which resides in feeding a strip of paper, having disks fixed thereon at spaced intervals, over the bottle mouths, then in forcing the disks and the adjacent parts of the strip surrounding the disks into the mouths and conforming said parts over the beads of the mouths, and then in severing the said parts of the strip against the beads of the bottle mouths.

2. A method of applying milk bottle closures, which resides in feeding a strip of paper, having disks fixed thereon at spaced intervals, over the bottle mouths, applying adhesive to the under face of the strip, then in forcing the disks and the adjacent parts of the strip surrounding the disks into the mouths and over the beads of the mouths so as to cause said parts to conform and adhere to the bead of the mouth, and then in severing the said parts of the strip against the beads of the bottle mouths.

3. In a device for applying milk bottle closures composed of a strip having disks secured at spaced intervals therealong, means to feed the strip and therewith the disks over the bottle mouth in a single operation, means to engage and conform the part of the strip surrounding the disks onto the bead of the bottle mouth, means to engage the disk and force same and therewith the adjacent parts of the strip into the mouth, and means vertically aligned with the bottle mouth to sever the strip at points about and against the bead of the mouth while said parts of the strip are in engagement with the bottle mouth.

4. In a device for applying milk bottle closures composed of a strip having disks secured at spaced intervals therealong, means to feed the strip and therewith the disks over the bottle mouth in a single operation, means to apply adhesive to the under face of the strip, means to engage and conform the part of the strip surrounding the disks onto the bead of the mouth, means to engage the disk and force same and therewith the adjacent parts of the strip into the mouth, and means vertically alined with the bottle mouth to sever the strip at points about and against the bead of the mouth.

5. A device for applying milk bottle closures, which latter are composed of a strip having disks fixedly secured thereon at spaced intervals, including means to feed the strip so as to cause a disk to register with and overlie the bottle mouth in a single operation, a sleeve formed to engage the part of the strip surrounding the disks and to force and hold such part in engagement with the bead of the bottle mouth, a plunger slideable in the sleeve to engage the disks and force same and therewith the adjacent parts of the strips into the bottle mouths. and a cutter surrounding the sleeve and engageable with the bead of the mouth to sever the strip.

6. A device for applying bottle closures composed of a strip having disks secured at spaced intervals therealong, comprising a reciprocable die, a conforming member surrounding said die to hold the adjacent parts of the strip surrounding the disk engaged with the bottle, an annular cutter vertically aligned with the bottle mouth and surrounding the die and conforming member to sever the strip while said parts thereof are engaged with the bottle mouth, means to feed the strip beneath the die and over the mouth of the bottle, and means adapted to move the several members successively whereby to apply the cap to a bottle mouth and sever the same from the strip at a single operation.

In testimony whereof we affix our signatures.

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