March 10, 1931. C. T. SMALL 1,796,167

CAP FEEDING DEVICE

Filed Aug. 25, 1928 3 Sheets-Sheet 1

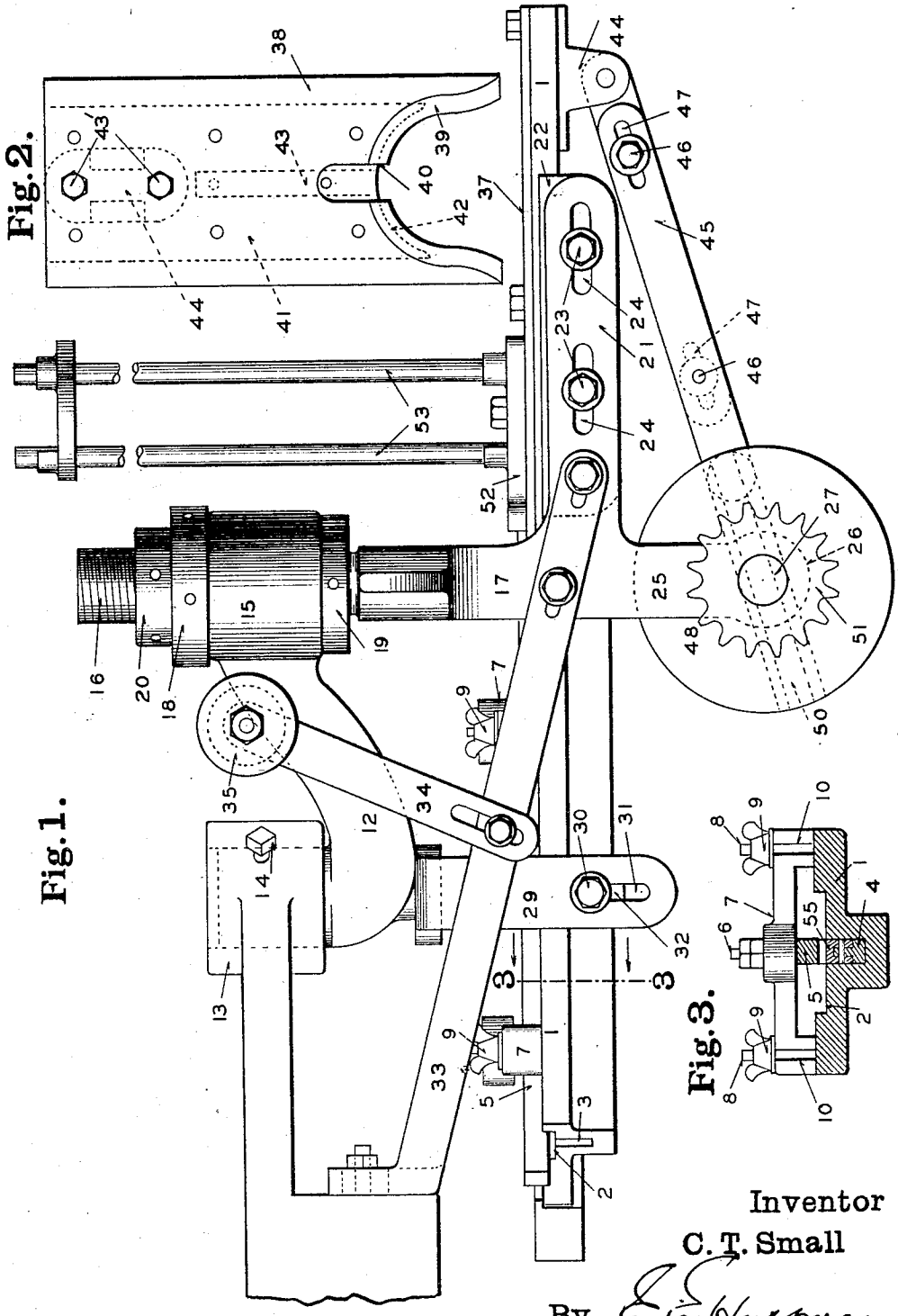


Fig. 2.

Fig. 1.

Fig. 3.

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CAP FEEDING DEVICE

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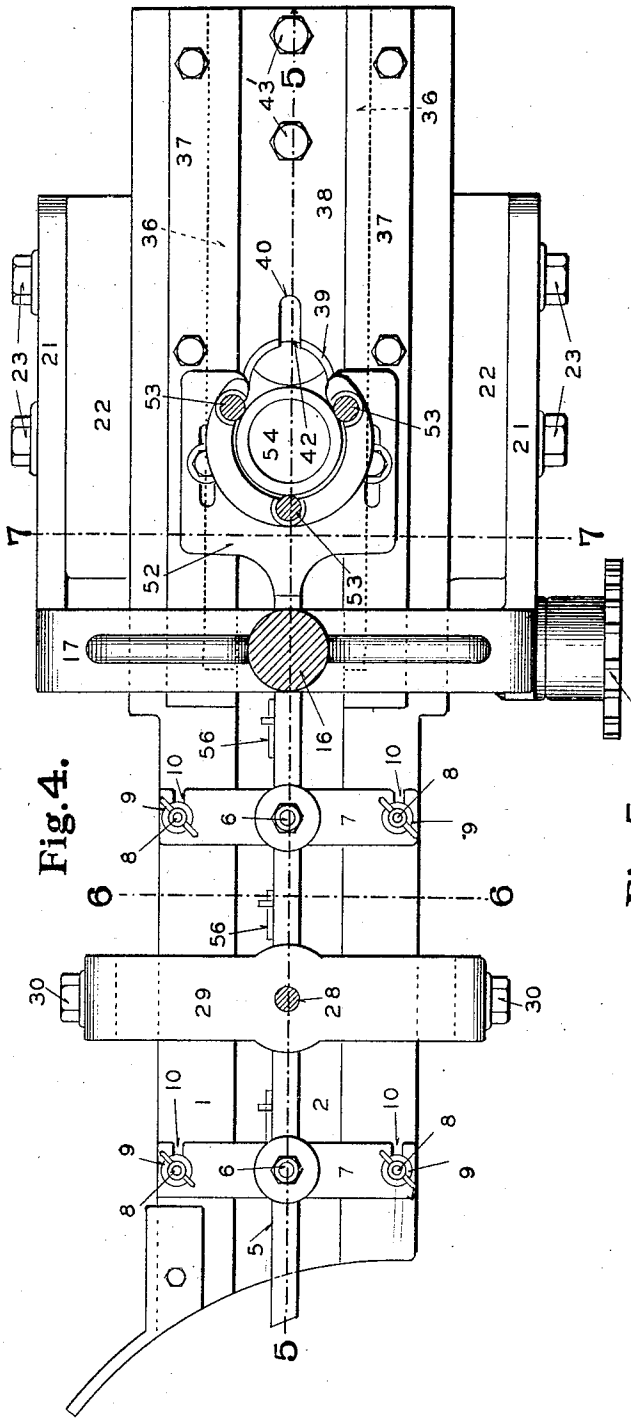


Fig. 4.

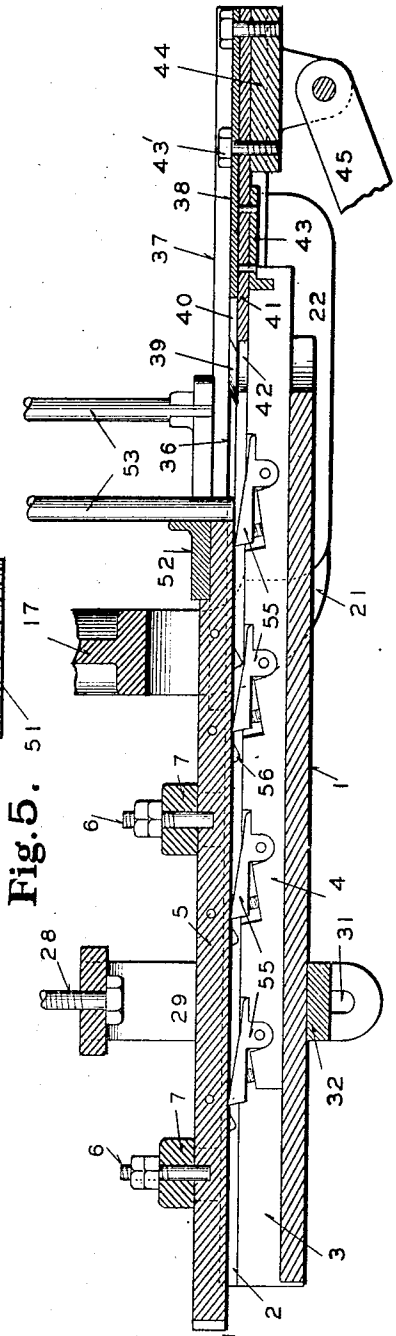


Fig. 5.

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CAP FEEDING DEVICE

Filed Aug. 25, 1928 3 Sheets-Sheet 3

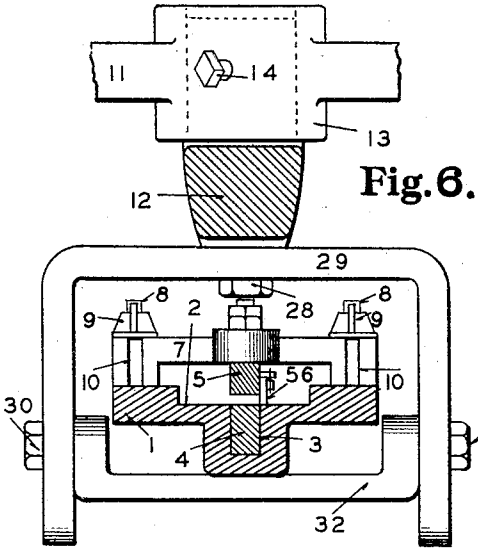


Fig.6.

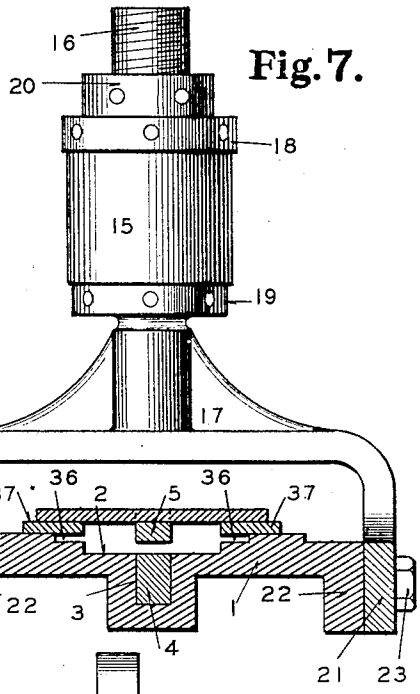
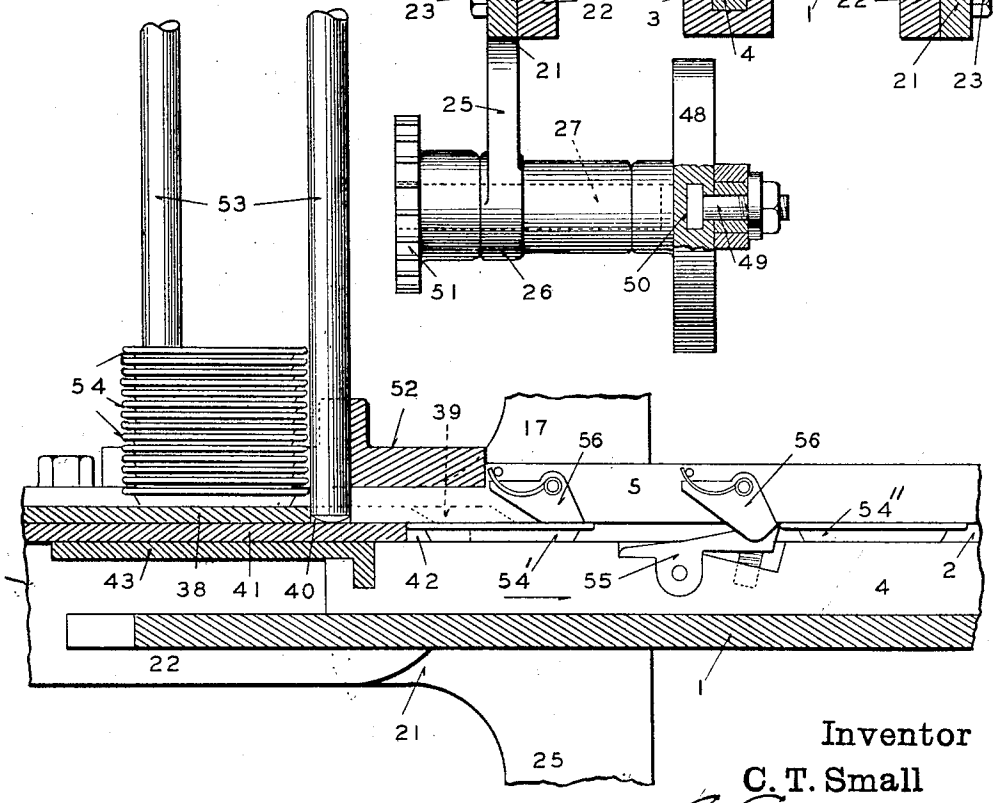


Fig.7.

Fig.8.



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Patented Mar. 10, 1931

1,796,167

UNITED STATES PATENT OFFICE

CHESLEY T. SMALL, OF ST. LOUIS, MISSOURI

CAP-FEEDING DEVICE

Application filed August 25, 1928. Serial No. 301,977.

My invention relates to a device for feeding caps (tops or bottoms) to various types of can making or can sealing machinery. The object of my invention is to produce a device which will feed the caps rapidly and accurately without danger of injury thereto.

In the accompanying drawings, which illustrate a form of my invention particularly adapted for feeding bottoms to double-seamers, Figure 1 is a side elevation; Figure 2 is an enlarged plan view of the cap separating plate; Figure 3 is a section taken on the line 3—3 of Figure 1; Figure 4 is a top plan view, the supporting bracket and strut bar being omitted; Figure 5 is a section taken on the line 5—5 of Figure 4; Figure 6 is a section taken on the line 6—6 of Figure 4; Figure 7 is a section taken on the line 7—7 of Figure 4; and Figure 8 is an enlarged section of a part of the device similar to Figure 5 but taken from the opposite side and showing the feed slide at the inner end of its movement.

The body of the device consists of a casting 1 having formed in its upper face a way 2 equal to the diameter of the cap in width and preferably slightly greater in depth than the thickness of the cap. Located centrally of the way 2 is a narrower and deeper way 3 in which slides the movable feed bar 4. Situated directly above the bar 4 is a fixed feed bar 5 which is secured by studs 6 to yokes 7. The yokes 7 are fastened to the casting 1 by bolts 8 and wing nuts 9, the yokes being preferably provided with slots 10 to allow of quick removal.

The device is supported from the frame 11 (Figure 1) of the double-seamer by means of a bracket 12, one end of which enters a sleeve 13 on said frame and is held by a set screw 14. On the other end of the bracket is a sleeve 15 through which passes the threaded stem 16 of a yoke 17. This stem, however, does not have threaded engagement with the sleeve but is adjusted vertically by threaded collars 18 and 19, respectively, engaging the stem above and below the sleeve. A locking collar 20 secures the parts after adjustment. Carried by the yoke 17 are arms 21 secured to wings 22 on the casting 1 by bolts 23. These bolts 23 pass through the slots 24 in the arms to provide adjustment of the device toward and away from the seamer. One side of the yoke is provided with a downward extension 25 terminating in a bearing 26 for the driving shaft 27. In order to provide additional support for the inner end of the device, I secure to the bracket 12 by means of a bolt 28 a yoke 29. Secured to this yoke by bolts 30 passing through slots 31 is a cross bar 32 on which the inner end of the casting rests, as best shown in Figures 5 and 6. A strut bar 33 extends between the frame 11 and the yoke 17. This bar serves to give added rigidity to the device and also carries a pivoted arm 34 carrying an idler 35 for tightening the sprocket chain (not shown) which drives the shaft 27.

At the outer end of the casting the way 2 is provided with shallow extensions 36 covered by plates 37 thus forming guide ways to receive the edges of the cap separating plates 38 (shown in detail in Figure 2). formed in the inner end of this plate is a recess of somewhat less diameter than the caps and having its edges beveled, as shown at 39. At the center of the recess is a slot 40 to accommodate the lower end of one of the holder rods hereinafter to be described. Secured to the lower face of the plate 38 is a plate 41 having a recess 42 formed on a radius equal to that of the periphery of the cap. This latter plate also carries on its lower face a hook plate 43 engaging with the feed bar 4.

Secured to the slide composed of plates 38 and 41 by bolts 43′ is a bracket 44 pivoted to one end of a pitman bar 45. This bar is formed of two parts fastened together by bolts 46 passing through slots 47 so that it may be adjusted in length. Its inner end is connected to a disk 48 on the driving shaft 27. In order to vary the length of the stroke this connection is made through a stud 49, the head of which slides in a T-slot 50 in the disk. The disk is actuated by means of a sprocket wheel 51 on the outer end of the shaft 27 driven by a sprocket chain (not shown) leading from any suitable rotary part of the machine.

Mounted on the plates 37 is a cap support base 52 carrying three rods 53 arranged in triangular form to provide a holder in which

the caps 54 are stacked. The rod 53 forming the apex of the triangle extends down (as shown in Figure 8) substantially flush with the upper face of plate 41 to prevent the feeding of more than one cap at a time. Carried on the feed bar 4, which moves with the feed slide, are spring dogs 55 which engage the caps and force them along the way 2, their retrograde movement being prevented by spring dogs 56 on the fixed feed bar 5.

The operation of my feeder is briefly as follows: The caps 54 are stacked between the rods 53, as shown in Figure 8, their form being such that they are slightly nested in this position. The initial position of the slide is that shown in Figure 5. As the slide is moved inwardly by the pitman bar 45 the recessed inner end of the plate 38 enters the space between the rims of the lowest and next to the lowest caps, the beveled edge 39 raising all the caps except the lowest one resting on the bottom of the way 2. This latter named cap is now free to move along the way 2 when engaged by the recess 42 in the end of the plate 41. When the slide has reached the end of its stroke, as shown in Figure 8, the lower cap 54 will have been moved to the position indicated at 54′ in this figure and will be engaged by the first retaining dog 56 which will prevent its retrograde movement on the return stroke of the guide. On the next stroke of the slide the cap will be advanced by the first feed dog 55 to the position indicated at 54″ where it will be engaged by the second retaining dog 56. One or more additional feed steps may be used as required, this depending upon the length of the feed stroke and the distance of the stack from the receiving table of the machine to which the caps are fed. It will be seen that by my device each cap is fed independently of the others in a straight line from a position at rest on the floor of the feed way to the point of delivery. Owing to this fact it is possible to feed the caps as rapidly as may be desired without danger of injuring them.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, the combination with a holder adapted to hold caps in a stack, of a guide way leading from said holder, and a reciprocating slide comprising upper and lower plates, the upper plate having an approximately semi-circular concave beveled end for separating the lower cap from the remainder of the stack and the lower plate engaging said cap and feeding it along said guide way.

2. In a device of the class described, the combination with a holder adapted to hold caps in a stack, of a guide way leading from said holder, and a slide reciprocating under said stack and adapted to move the covers singly into said guide way, said slide having a substantially semicircular beveled edge and a substantially semicircular concentric shoulder of greater diameter below said edge.

3. In a device of the class described, the combination with a bracket, of means for securing said bracket to a can forming machine, of a vertically adjustable yoke carried by said bracket, a table extending between the arms of said yoke, means for adjusting said table longitudinally, cap feeding means including a reciprocating feed plate carried by said table, a driving shaft carried by said yoke below said table and driving connections between said shaft and feed plate, said connections being adjustable to compensate for the relative movement of the table and yoke.

4. In a device of the class described, the combination with a bracket, of means for securing said bracket to a can forming machine, of a vertically adjustable yoke carried by said bracket, a table extending between the arms of said yoke, means for adjusting said table longitudinally, a second yoke carried by said bracket forward of said first named yoke, a vertically adjustable cross bar carried by said second named yoke and passing under said table, cap feed means including a reciprocating feed plate carried by said table, a driving shaft carried by said first named yoke below said table, and driving connections between said shaft and feed plate.

In testimony whereof, I hereunto affix my signature, this 18th day of August, 1928.

CHESLEY T. SMALL.