

A. C. CAMPBELL.

MECHANISM FOR FEEDING BLANKS TO DIES, &c.

No. 577,643.

Patented Feb. 23, 1897.

FIG:2.

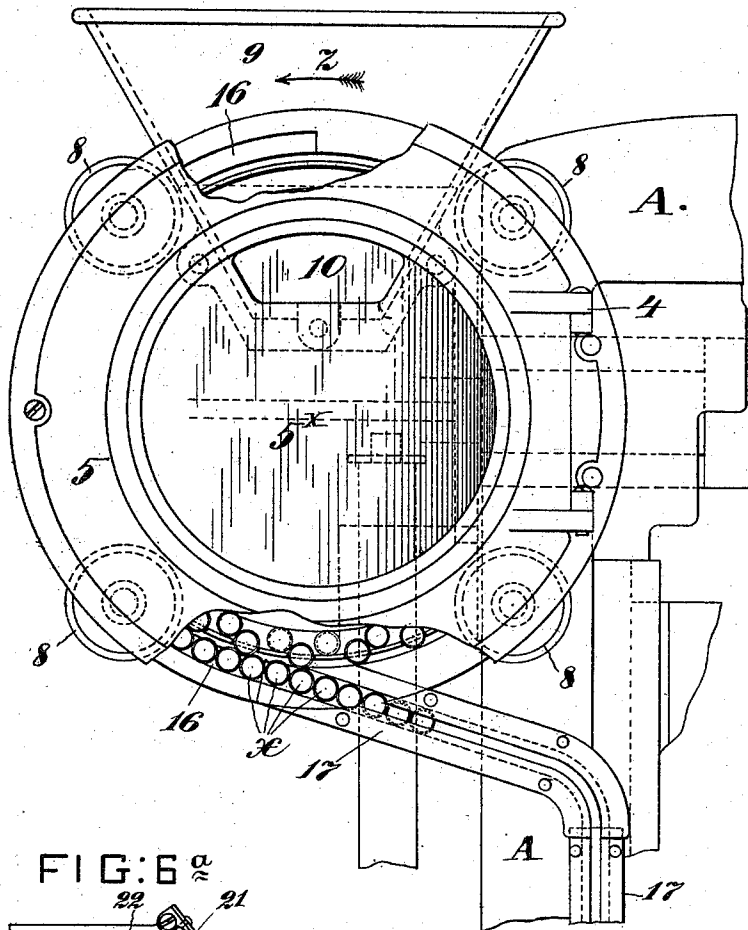


FIG:7.

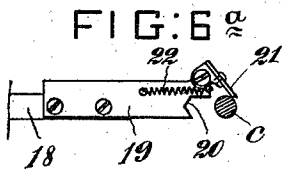
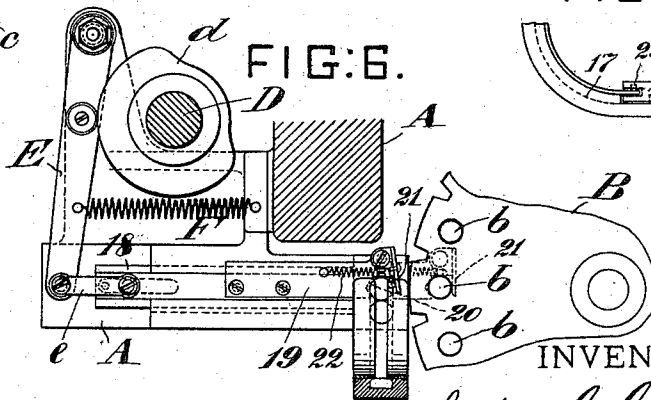
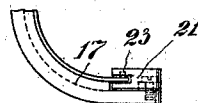


FIG:6b



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR FEEDING BLANKS TO DIES, &c.

SPECIFICATION forming part of Letters Patent No. 577,643, dated February 23, 1897.

Application filed June 6, 1896. Serial No. 594,463. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. CAMPBELL, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Mechanisms for Feeding Blanks to Dies and the Like, of which the following is a specification.

My invention relates to mechanism adapted for feeding blanks to dies, and particularly for feeding partly-formed sheet-metal button-blanks one by one to dies, &c., for giving to said blanks other forms; and the main object is to provide means for automatically assorting the blanks and delivering them in regular order and in a uniform manner to the road or guide way which carries them to the dies, punches, or the like of the machine.

The invention consists partly in the blank-assorting mechanism and partly in the construction of and means for mounting the blank holder or reservoir.

In the accompanying drawings I have illustrated an embodiment of my invention, the main portion of the punching or stamping machine being omitted as forming no essential part of the present invention.

Figure 1 is a side elevation of the feeding mechanism, and Fig. 2 is a front elevation thereof. Fig. 3 is an enlarged sectional view of the lower part of the blank holder or reservoir. Fig. 4 is a fragmentary sectional plan of the lower part of the reservoir in the plane indicated by line x^4 in Fig. 3. Fig. 5 represents the blank in diametrical section and also as seen from the under side. Fig. 6 is a fragmentary plan view of the transfer device on the same scale as Figs. 1 and 2. Fig. 6^a is a plan of the pocketed blank-pusher 19, and Fig. 6^b is an end view of the transfer device as seen from the right in Fig. 6. Fig. 7 is a view showing several forms of blanks which my machine or device may be employed to assort, segregate, arrange, and deliver.

A represents, generally, the framework of the machine, which may be a stamp, punch, or press, to which my feeder is adapted to supply blanks x , such as are seen in Fig. 5. This machine may, for example, have an intermittently-rotating carrier-bed B, (see Fig.

6.) containing sockets b to receive at proper points reciprocating punches or dies from above and below. I have not shown all the features of such a machine, as they have no necessary connection with my invention any further than as here illustrated.

Mounted on the machine-frame A is the blank-reservoir. This reservoir consists of a stationary back plate 1, connected by arms 2 with a ring 3, to which is hinged at 4 a door 5, which closes the front of the reservoir and has in it, by preference, a window 5^x, of transparent material. Within the open-sided box described is mounted a short, rotatable, conical, hollow drum 6, which fits up to the back plate 1 quite snugly and has in it a V-groove 7 to form a track. On the ring 3 are mounted V-edged bearing-rollers 8, which engage the groove 7 and form an exterior rotative support for the drum 6. This mode of mounting the drum 6 leaves it open at the back, and the blanks filled into a hopper 9 flow thence into the hollow of the drum 6 through an inlet 10. (Seen in Fig. 2.) The transparent window 5^x in front enables the operator to see at any time how full the reservoir is and also the condition of its contents. The drum 6 is rotated by a belt 11, which engages a V-groove 12 in the drum.

About the periphery of the drum 6 at its front and larger end is fixed a strip or band 13, preferably of sheet metal, which extends out beyond the margin or end of the drum a distance equal to the depth of the cupped blank x , or a little more, the edge of said band 13 fitting up pretty closely to the inner face of the door 5, thus leaving between said door and the end of the drum 6 an inner channel 14 for the blanks to work down into edgewise.

In the band 13 are formed at suitable intervals (see Fig. 4) apertures 15, through which the unsymmetrical blanks x may pass by gravity, provided they are properly presented to said apertures. That is to say, the aperture 15 is of the proper size and contour to permit a blank to pass only when the open face to the blank—the lower face thereof, as seen in the upper view, Fig. 5—is presented to the inner face of the door. If presented the opposite way with the rounded or con-

vex face to the door, the blank cannot pass through, as the aperture has the same form as the blank and the latter fits into it quite snugly when properly presented. The blanks are tumbled about in the rotating drum 6 and work down its inclined surface into the channel 14, which they can only enter edgewise. This channel thus effects the first step in assorting the blanks by presenting them edgewise to the apertures 15 at the bottom of the channel, and these apertures effect the second and last step by permitting only those blanks faced in the proper direction to pass into a lower channel 16 in the ring 3, which leads the blanks into the channel in a guideway 17, as clearly shown in Fig. 2, where the lower part of the door 5 is broken away to show the construction. The lower part of the blank-reservoir and upper part of the guideway 17 are broken away also in Fig. 1 for purposes of illustration.

The arrow z in Fig. 2 indicates the direction of rotation of the drum 6, and I may say that the lower or outer channel 16 in the ring 3 will be by preference extended up toward the left in Fig. 2, as seen when the door 5 is broken away at the upper part of this figure, to about the top of the ring; but the extent of this channel is not very important.

The guideway 17 is seen in cross-section in the lower part of Fig. 6, and in its general construction it possesses no specially novel features except that, as seen in Fig. 1, it has in it at 17^x a curve or bend, its lower extremity being turned at right angles to its upright portion, so that at the delivery end, where the transfer device is situated, the blanks are presented face downward, as represented in the upper view of Fig. 5.

In order to cause the rotating drum 6 to agitate the blanks in the reservoir, the drum may have on its inner face at intervals ribs 6^x , as seen in Figs. 1 and 3.

I will now describe the transfer device with special reference to Figs. 6, 6^a , and 6^b .

Mounted in a guideway in a part of the frame A of the machine is a reciprocating slide 18, which carries a pocketed blank-pusher 19. (Seen detached in plan in Fig. 6^a .) This pusher is so placed with reference to the surface of the bed B of the machine that in its forward movement it may play over the upper surface of the said bed, and in its forward end it has a blank-pocket formed by a notch or recess 20 at one side, and a hinged finger 21, provided with a spring 22, at the other side. When the pusher is retracted and in its receiving position, Fig. 6, the foremost blank in the guideway 17 will occupy said pocket, and when the pusher is advanced to the position seen in dotted lines in Fig. 6 the blank will be pushed out and over the bed B far enough to bring it directly over an aperture b in said bed, where it is held for a moment until a punch or die (c in Fig. 6^a) descends and drives it down out of the pocket. The pusher now draws back and the spring-

finger 21 releases itself from the die or punch by springing backward and finally wiping past the punch, as clearly indicated in Fig. 6^b , which shows the position of the finger while the pusher is being drawn back. The guideway 17 is omitted from this view in order to show the pusher more clearly.

The delivery end of the guideway 17 is slotted for the passage of the pusher, as seen in Fig. 6^b , and the finger 21 will by preference be slotted, so that the upper portion or branch thereof will play over the top of the guideway, and when the pusher is fully withdrawn this portion or branch of the finger will engage and be held back a little by a detent-pin 23 in the guideway, so as to expand the pocket slightly and make free room for the foremost blank to enter. As soon, however, as the pusher starts to advance the spring-finger will be permitted to close on the blank and hold it firmly in the pocket. The properly-timed reciprocating movement may be imparted to the pusher by any suitable mechanism connected with the machine which operates on the blanks fed to it. As shown in Fig. 6, this movement is effected by a cam d on an upright shaft D, said cam acting on a lever E, coupled at its end to the slide 18 by a link e . The cam withdraws or retracts the pusher 19, and a spring F advances it by holding the lever E up to its cam.

The shaft D may be driven from the main crank-shaft G of the punching-machine by bevel-gears, as indicated in Fig. 1. I have not deemed it necessary to illustrate and describe these features that relate to the punching-machine more fully.

My feeder is not limited to feeding unsymmetrical blanks of the form shown in Fig. 5. By altering the apertures 15 other forms of unsymmetrical blanks may be assorted, of which those illustrated in Fig. 7 are examples. The blank must be of such shape that it can pass through the apertures 15 only when faced in the proper direction. The channel in the guideway 17 will be of such size as to permit the blanks to descend by gravity, but not permit them to turn over or pass each other. The band 13, being rigidly fixed to and moving with the open-ended drum 6, forms in effect a part of the latter. This band is constructed separately for convenience in the manufacture. The door or wall of the stationary box adjacent to which the front end or margin of the drum moves serves to close one side of the apertures 15 and also to form one wall of the channel 16.

Having thus described my invention, I claim—

1. A feeding mechanism for unsymmetrical blanks and the like, having a stationary box, and a conical, open-ended drum rotatively mounted in said box with the margin about its larger open end adjacent to the inner face of one wall of the box, said drum having at the said margin a channel 14, and unsymmetrical apertures 15, through which the blanks

in the drum may pass when presented to the apertures facing in one direction only, substantially as and for the purpose set forth.

2. In a feeding mechanism for unsymmetrical blanks and the like, the combination with the stationary box, provided with a channel 16 to receive the blanks, the drum mounted rotatively in said box and provided at its edge with a channel 14, having in its bottom unsymmetrical apertures 15 of such form as to fit the blank when the latter is presented to it facing in one direction only, and a guideway arranged to receive the blanks which fall through the openings in the drum into the channel 16 in the box, substantially as set forth.

3. In a feeding mechanism for blanks and the like, the combination with the stationary box, comprising the back plate 1, the ring 3,

having in it the channel 16, the arms connecting said back plate and ring, and the door 5, hinged to said ring, of the conical drum 6, mounted rotatively in said box and provided with a channel 14, and a band 13, having in it apertures 15 for the passage of the blanks from the drum to the outer channel 16, of the wheels 8 on which said drum is rotatively mounted, and a guideway connected with the channel 16 and adapted to receive the blanks from said channel, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ANDREW C. CAMPBELL.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.