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D. F. PUTNAM ET AL

2,461,233

MACHINE FOR MARKING CYLINDRICAL ARTICLES

Filed Nov. 28, 1945

2 Sheets-Sheet 1

Fig. 1.

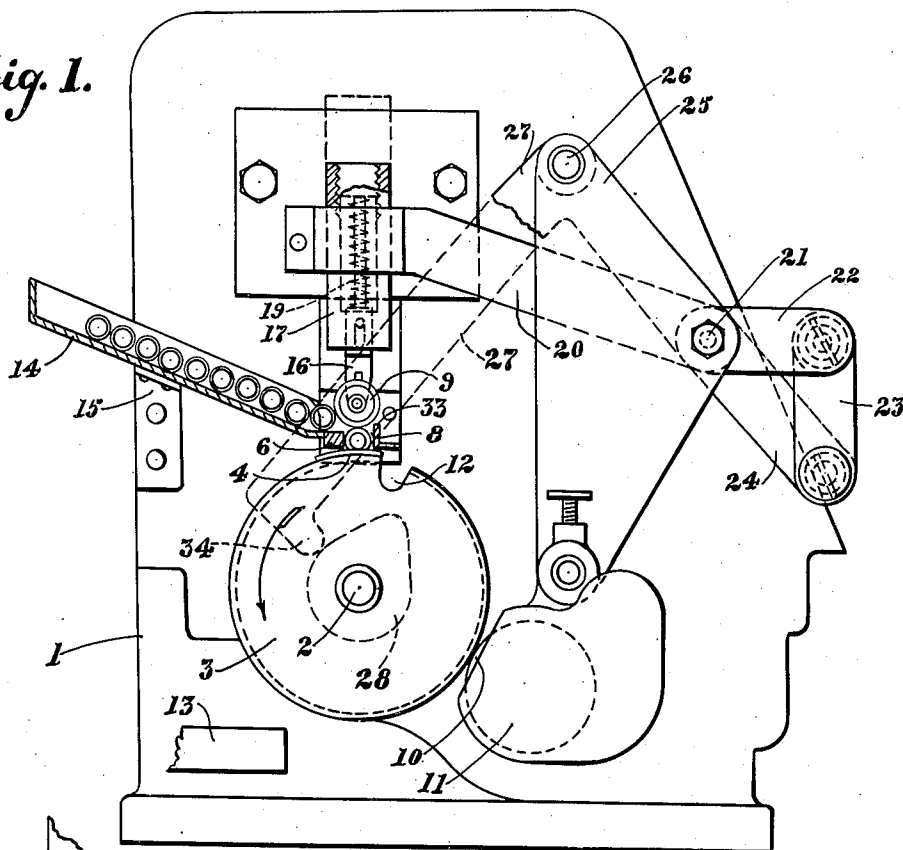
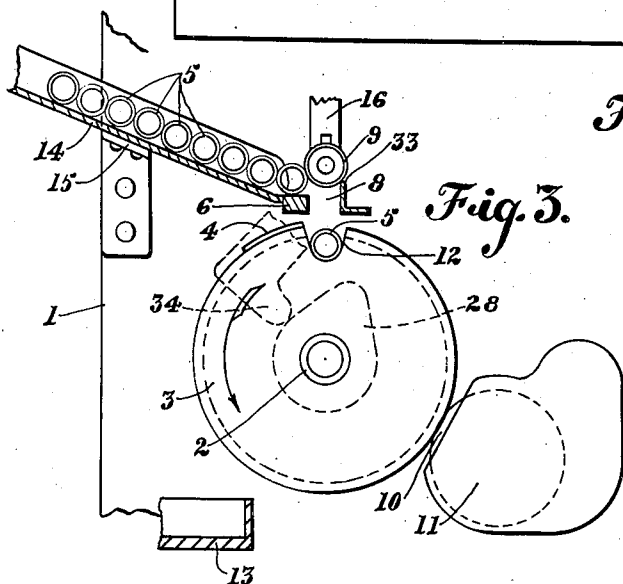


Fig. 6.

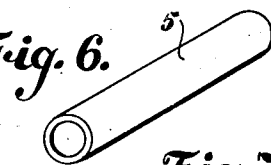
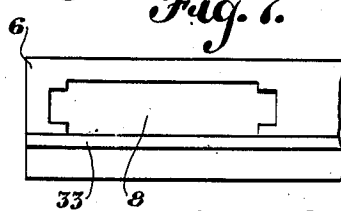


Fig. 7.



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2 Sheets-Sheet 2

Fig. 2.

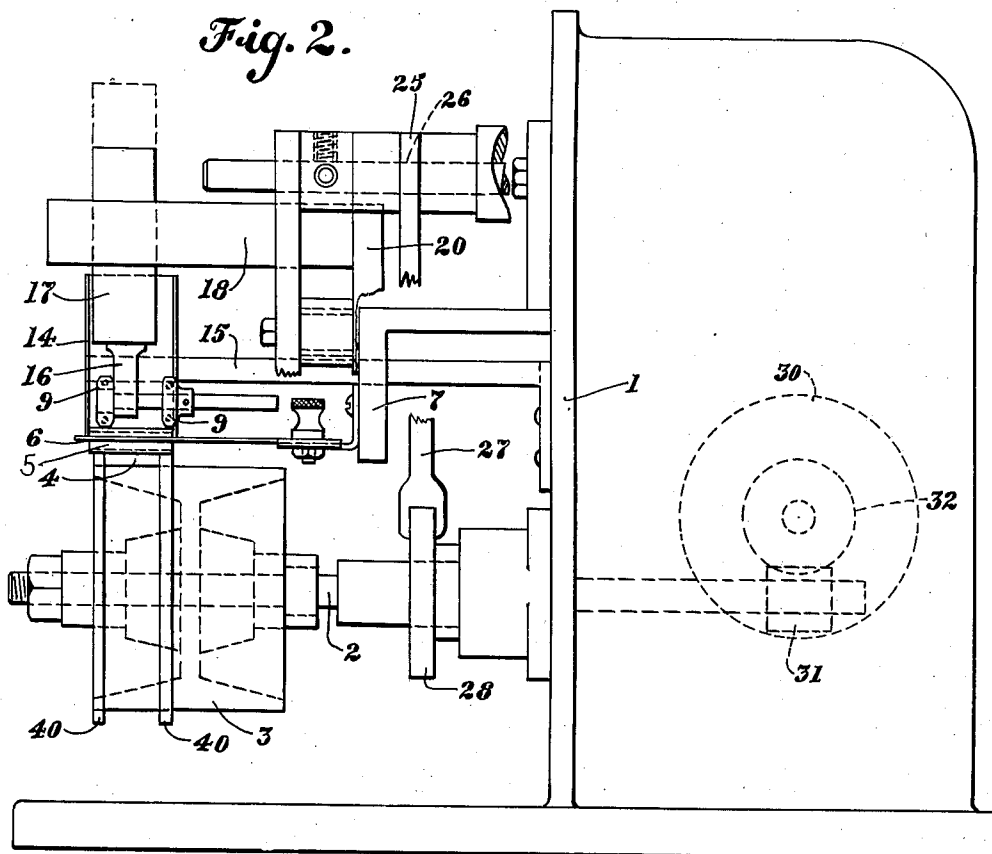


Fig. 4.

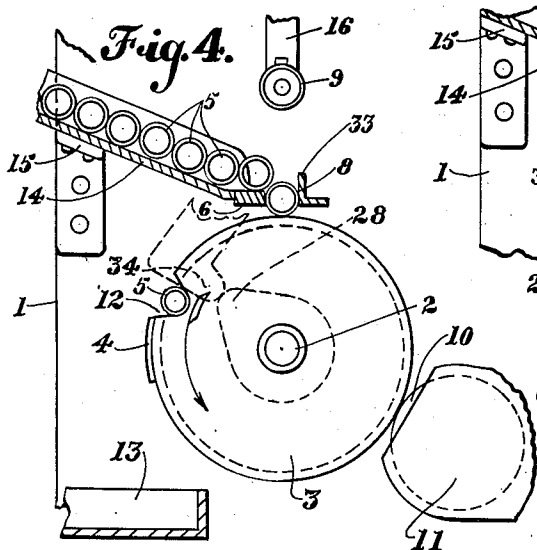
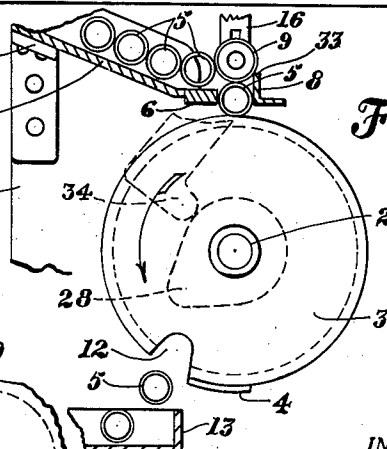


Fig. 5.



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MACHINE FOR MARKING CYLINDRICAL ARTICLES

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Application November 28, 1945, Serial No. 631,370

1 Claim. (Cl. 101—38)

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This invention relates to a machine for marking cylindrical articles and is in the nature of an improvement upon the machines shown and described in co-pending applications, Serial No. 563,329, filed November 14, 1944 by Charles F. Robbins, and Serial No. 605,808, filed July 18, 1945 by David F. Putnam and Charles H. Cheeseman.

The machines shown in the above applications comprise a cylindrical printing roll having a printing plate on its periphery and a holder for the cylindrical article on which the imprint is to be made which is located above the printing roll and which has a through opening therein of a size to freely receive the cylindrical article, said article, when in the opening, rests freely on the periphery of the printing roll.

Said machines also include a hold-down roll adapted to engage the cylindrical article while it is in the holder and to maintain it in contact with the printing roll.

When the printing roll is rotated the frictional contact between the roll and the cylindrical article in the holder causes said article to rotate and thereby a printed impression will be made on the article.

In the machines shown in both of the applications the cylindrical articles to be printed are fed successively and manually by the operator to the holder. In the machine shown in the application Serial No. 563,329, the printed articles have to be removed from the holder manually by the operator. In the machine shown in application Serial No. 605,808, there is provided means for automatically discharging the printed articles from the holder.

In both machines, however, the cylindrical articles to be printed have to be fed to the holder by hand one at a time.

It is one of the objects of our present invention to provide novel means for feeding the articles automatically to the holder thus making the machine a completely automatic one.

In order to give an understanding of the invention we have illustrated herein a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claim.

In the drawings:

Fig. 1 is an end view of a machine embodying our invention with parts broken out.

Fig. 2 is a side view of Fig. 1 also with parts broken out.

Figs. 3, 4, and 5 are fragmentary sectional views illustrating the operation of the machine.

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Fig. 6 is a perspective view of a cylindrical article such as might be marked by this machine.

Fig. 7 is a fragmentary plan view of the holder by which the article is held during the marking operation.

The machine herein shown comprises a supporting frame 1 in which is mounted a shaft 2 carrying a printing roll 3 which has on its periphery a type member or printing plate 4 carrying the type by which the printed impression is made on a cylindrical article such as the cylindrical article 5 shown in Fig. 6. This printing plate or type member 4 may be conveniently made of rubber, although the material of which it is made forms no part of the present invention. The machine also includes an article-holding member 6 which is located above the printing roll 3 and is secured to a bracket 7 extending from the frame 1. The article holder 6 is provided with a through opening 8 of a size to freely receive the article 5 to be printed.

The opening 8 provides an article-receiving pocket which is open at the bottom so that the article 5 in the opening 8 rests freely on the periphery of the printing roll 3.

If desired the printing roll 3 may be provided with two peripheral ribs 40 on which the cylindrical article 5 rests when it is in the holder 6, the printing plate 4 preferably being located between these ribs.

The shaft 2 carrying the printing roll is rotated by any suitable means, and during its rotation, the printing plate 4 will be carried underneath the article 5 in the pocket 8. The frictional contact between the article and the rotating roll will cause the article to rotate about its own axis and as the printing plate passes beneath the holder a printed impression will be made on the article therein.

9 indicates a hold-down roll which is movable toward and from the holder 6 and which when in its lowered position, rests on the article in the pocket 8 and presses the article against the periphery of the printing roll. Means are provided for raising the hold-down roll 9 after the article has received its printed impression to permit an unprinted article to be automatically loaded into the holder 6 as will be presently described.

10 indicates an inking roll carried by an ink reservoir 11 and by which the type characters on the printing plate 4 are inked.

The printing roll is formed in its periphery with an article-receiving cavity 12 which is located adjacent the trailing edge of the printing

plate 4, such cavity extending longitudinally of the printing roll and being of sufficient size to receive the article 5.

It will be remembered that the cylindrical article 5 to be printed while occupying the pocket or opening 8 in the holder 6, is resting freely on the printing roll. Consequently when during the rotation of the printing roll, (said roll being rotated in the direction of the arrow in Figs. 1, 3, 4, and 5) the cavity 12 comes underneath the pocket 8, the printed article will drop by gravity from the pocket into said cavity 12 as shown in Fig. 3, and the continued rotation of the printing roll will carry the printed article out from under the holder as indicated in Fig. 4. When, during continued rotation, the printing roll reaches the position shown in Fig. 5, the printed article will drop out of the cavity 12 and thus be discharged from the machine, a receptacle 13 preferably being provided to receive the printed articles as they are thus discharged.

The parts thus far described are or may be similar to corresponding parts shown in the above-mentioned applications Serial Nos. 563,329 and 605,808.

The present invention has for its object to provide novel means for automatically feeding the cylindrical articles 5 to the pocket 8 in the holder 6, thus giving the machine high speed automatic characteristics both with respect to feeding the articles to the machine and discharging the printed articles therefrom.

Associated with the article holder 6 is a feeding chute 14 adapted to receive a plurality of cylindrical articles 5 to be printed, said chute being preferably arranged at an inclination so that the articles will automatically gravitate down the chute toward the holder 6. As herein shown, the lower end of the chute may be connected to the holder 6 while the upper end is supported by a suitable bracket arm 15 carried by the frame 1.

The hold-down roll 9 is carried at the lower end of a plunger 16 which is mounted in a head 17 carried by a bracket arm 18 that is secured to the frame, said plunger being acted on by a suitable spring 19 which yieldingly holds it in its lowered position as illustrated in application Serial No. 563,329.

When the hold-down roll 9 is in its lower operative position resting on the article 5 which occupies the opening 8 and which is receiving the imprint from the type plate 4 as shown in Fig. 1, said hold-down roll acts as a stop and prevents downward movement of the articles in the chute 14, said hold-down roll holding the bottom article in the chute separated from the article which occupies the holder 6.

Means are provided for raising the hold-down roll 9 after the article in the holder has received its imprint and has been discharged into the cavity 12 thereby to allow the articles in the chute to move forwardly and to permit the bottom article in the chute to drop into the opening 8 of the holder.

The means for giving the hold-down roll 9 its vertical movement from its lowest operative position to its raised inoperative position is similar to that illustrated in said application Serial No. 563,329. The arm 18 by which the head 17 is carried is mounted on the end of a lever 20 which is pivoted at 21 to the frame of the machine, the end 22 of said lever being connected by a link 23 to the end of the arm 24 of an elbow lever 25 that is pivoted to the frame at 26. The other

arm 27 of the elbow lever rests against and is operated by a cam 28 which is fast on the shaft 2.

The cam 28 is so constructed and disposed that it acts on the arm 27 of the elbow lever thereby to raise the hold-down roll 9 just after the cavity 12 has received the printed article from the pocket 8 of the holder 6 and after the printing roll has rotated sufficiently to carry the cavity out of register with the pocket 8 as shown in Fig. 4. When the hold-down roll is thus elevated, the stack of articles will gravitate down the chute and the end article in the chute will drop into the opening 8 of the holder and come to rest upon the periphery of the printing roll.

As the high point of cam 28 passes off from the end 34 of the elbow lever, the head 17 with the hold-down roll will be moved downwardly into its lowered operative position in contact with the article which is now occupying the opening 8 and is resting on the printing roll as shown in Fig. 5. As the hold-down roll 5 reaches its lowered position, it engages the end article 5 in the chute and forces the column of articles backward slightly from the position shown in Fig. 4 to that shown in Fig. 5, said roll at this time acting again as a stop to hold the end article in the chute separated or spaced somewhat from the article which is occupying the holder 6. With the present invention all the operator has to do is to maintain the chute 14 filled with cylindrical articles to be printed, the mechanism here shown operating automatically to feed the articles successively to the pocket 8 in the holder 6 and also operating automatically to discharge the printed articles from the holder and from the printing roll.

We will preferably extend upwardly the side wall of the pocket or opening 8 which is opposite to the chute as shown at 33 so as to provide a suitable stop for the lower article 5 when it gravitates into said pocket 8.

While we have illustrated herein a selected embodiment of the invention, yet we do not wish to be limited to the constructional features shown as various changes in the detailed construction of the device might be made without departing from the invention.

We claim:

A machine for marking cylindrical articles comprising a cylindrical printing roll carrying a printing plate, a stationary holder situated directly above the printing roll closely adjacent thereto, and having an opening extending vertically therethrough of a size to loosely receive a cylindrical article to be printed, such article resting on and being supported by the peripheral surface of the printing roll while it is occupying said opening, a feed chute leading to the holder for delivering thereto the cylindrical articles to be printed, means to rotate the printing roll, a hold-down member to engage a cylindrical article occupying said opening and hold it pressed against the printing roll as the latter rotates and by its rotation moves the printing plate beneath the article thereby to make a printed impression on the article while it is occupying said opening, said hold-down when thus engaging the article in the holder constituting a stop for the unprinted cylindrical articles in the chute, said printing roll having in its periphery an article-receiving cavity adjacent the trailing end of the printing plate into which the printed article drops when the cavity comes into register with the opening in the holder, and means operative after the article-receiving cavity has moved out of

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register with the holder to raise the hold-down member thereby to let the end cylindrical article in the chute gravitate into the opening of the holder.

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