

June 14, 1938.

G. ROTH

2,120,789

METHOD OF PACKING DISKS IN PILES AND DISCHARGING THE PACKETS OBTAINED

Filed Nov. 11, 1935

3 Sheets-Sheet 1

Fig. 1.

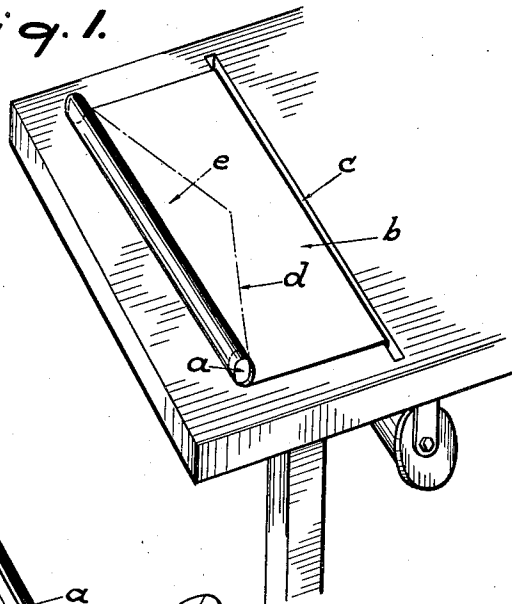


Fig. 4.

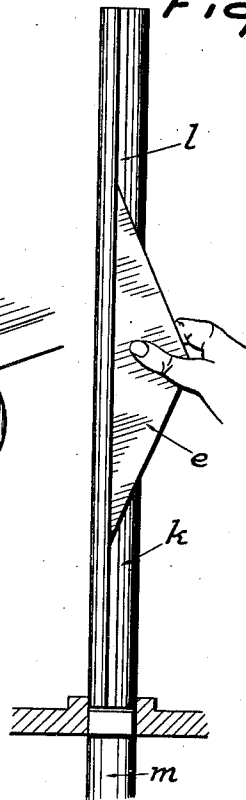
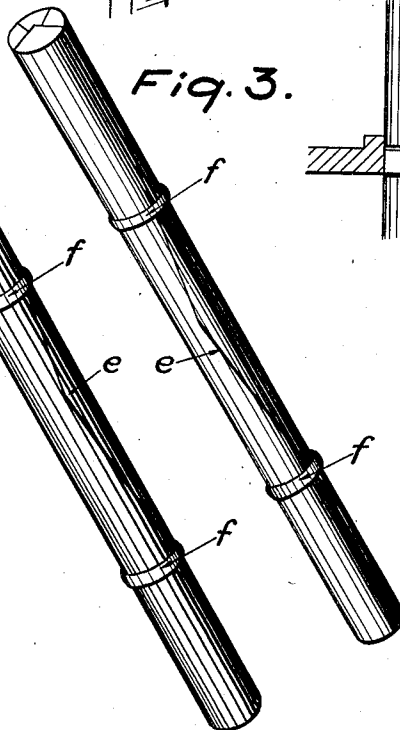


Fig. 2.



Fig. 3.



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Fig. 3.a.

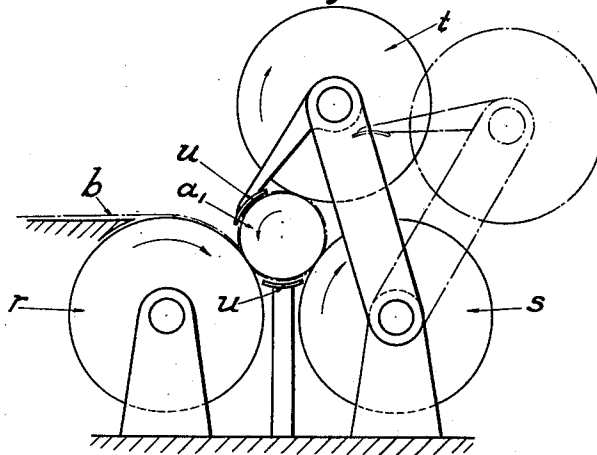
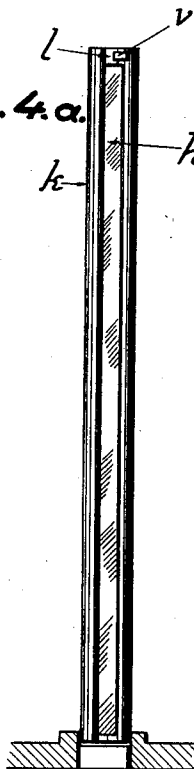


Fig. 4.a.



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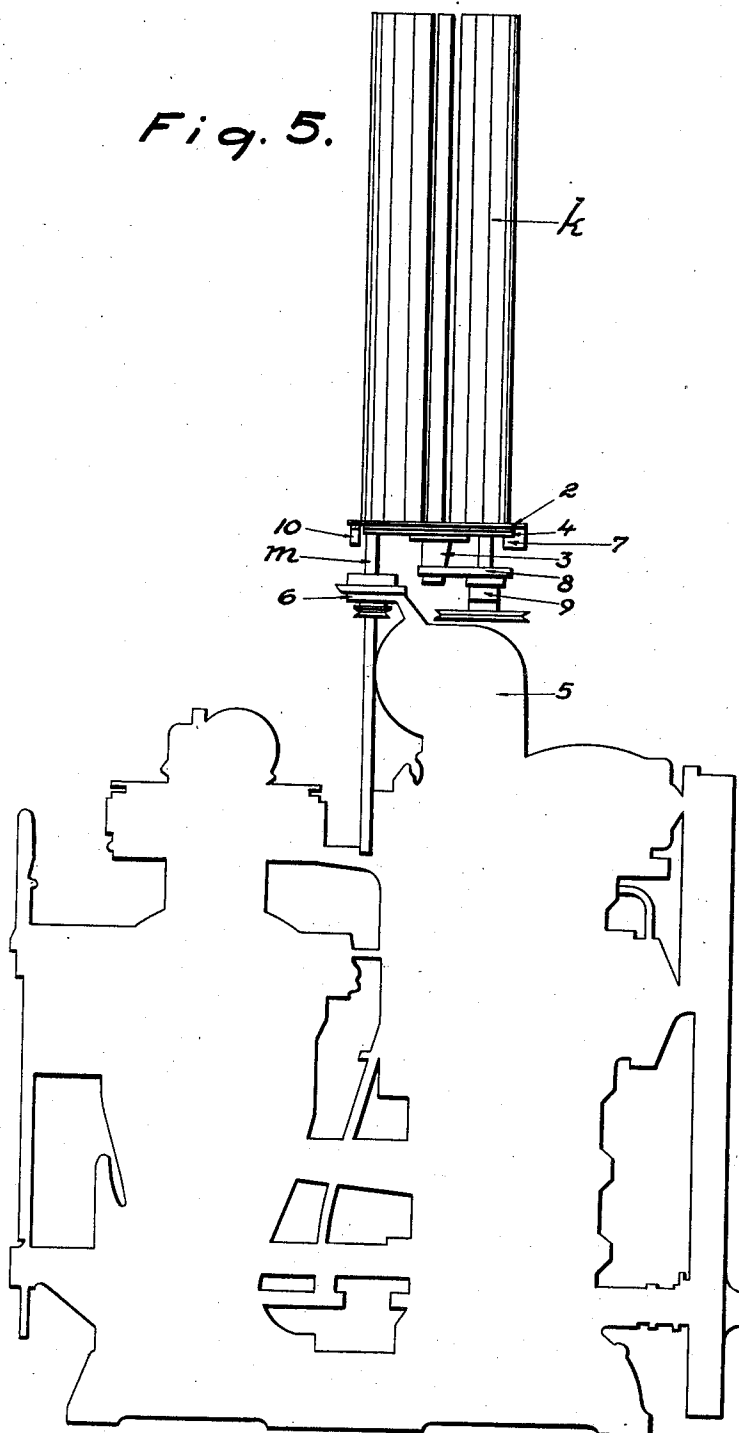
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METHOD OF PACKING DISKS IN FILES AND DISCHARGING THE PACKETS OBTAINED

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3 Sheets-Sheet 3

Fig. 5.



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UNITED STATES PATENT OFFICE

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METHOD OF PACKING DISKS IN PILES AND
DISCHARGING THE PACKETS OBTAINED

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Application November 11, 1935, Serial No. 49,223
In Sweden November 16, 1934

2 Claims. (Cl. 93—2)

The present invention relates to a method of packing plates or disks of equal shape and size to be sold in unbroken cartridges of the kind that the opening and discharging of the cartridges may be carried out by a single manipulation.

The invention will be of importance in many cases and particularly for inserting sealing disks into bottle cap shells. The said inserting operation usually takes place mechanically in connection with the cap making. The machines used for this purpose have special magazines for the disks, from which the same, synchronously with the production of cap shells, are fed to the place in the machine, where they are inserted into the cap shells, one into each shell. Hitherto they have been sorted and inserted by hand. By the present invention the disks are piled already in the cartridge, the piles being introduced into the magazines in the desired position. Hereby the above mentioned sorting and filling operation is eliminated.

However, the invention will have its greatest importance as a means by which a centralized production of plates or disks will make a low price possible for a quality well suited for each purpose, especially in such cases, in which they are made of porous material, for instance, of cork, and are to be prepared to become tight and resistant to acids and salts or for the same purpose are to be provided with a coating in the form of disks of tinfoil, parchment paper or the like, so-called facing disks or spots or a stiffening material such as metal or the like. Other advantages are also connected with a centralized production.

As regards the said disks, which are provided with spots or stiffening material, it is necessary that all disks of the pile have their spots or stiffening material either facing up or down in the magazine, in which they are collected before being inserted into the cap shells. The present invention facilitates the arranging in general, and in the cases, in which after having been finished, the disks are arranged in the mentioned manner completely automatically, which is easily effected, when carrying out the packing operation, besides which it is secured that the disks will be kept in the obtained position during transport and storing and when charging the above mentioned magazine.

The method according to this invention comprises two integral steps, viz, packing the disks and discharging the cartridges into the above mentioned magazine. Principally the packing step consists in piling the disks into tubes, de-

positing each tube and its contents in a suitable wrapping apparatus, removing the tube from the disks, rolling the disks into packing material such as paper, and sealing the cartridge thus obtained.

The discharging step consists therein that the cartridge, which contains the disks, is moved into position in the tubular magazine and at the same time a flap, preferably the outer end or edge of the paper or the like forming the cartridge, is put through a longitudinal slit in the wall of the magazine tube, so that access is provided to the said paper flap or edge outside the wall of the tube, after which the paper is pulled out of the magazine through the slit. To facilitate the opening of the cartridge one end of the magazine tube may be formed into or provided with a paper knife to cut off the gummed strip tape or slit open the cartridge.

For illustrating the invention reference is made to the accompanying drawings.

Figures 1 and 2 show different phases of the packing operation, and

Figure 3 shows a complete cartridge.

Figure 3a shows a modification of the packing operation.

Figure 4 shows the last phase in the discharging of the cartridge into a tubular magazine.

Figure 4a shows a modification of said last phase.

Figures 2, 3, 3a, 4, and 4a are drawn to a larger scale than Figure 1.

Figure 5 is a diagrammatical view of a battery of such tubes, mounted on a machine for the making of caps.

In Figures 1 and 2, *a* indicates the tube, in which a number of disks *a*₁ are piled. The said piling is preferably effected in such a manner that the disks are automatically fed into the tube after they have been punched out or after operations, if any, such as preparation against acids or salts, or completing by so-called spots or the like, have been made. During the packing operation the said tube, which is filled with disks, is put on a table on a wrapping paper *b* of a width adapted to the length of the tube, or vice versa, and a sufficient part of the paper is rolled around the tube. In order that the roll, from which the paper is unrolled shall not make any trouble and in order that the paper for the rest should be easily accessible during the work, the roll is changeably mounted under the table and the paper runs through an opening *c* provided in the top of the table.

Finally, the paper is cut off along the dash-and-dot line *d*. The flap *e* obtained in this man-

ner is secured around the cartridge, for example by means of gummed paper strips or the like *f*. After that the cartridge is closed at one end and the tube is drawn off at the other end over a mandrel *g*, which may be solid or tubular. During this operation the disks are kept in position within the cartridge by means of the mandrel. After the tube has been drawn off also the other end of the cartridge is closed, after which the packing operation is finished. The cartridge has now the appearance shown in Figure 3.

The packing may also be carried out mechanically in the following manner:

The tube *a* is held against a fixed support placed between two cylinders *r*, *s*. The tube is drawn over a mandrel as for instance in Figure 2, and the disks *a*₁ are deposited in the groove between the two cylinders as shown in Figure 3a. The disks *a*₁ are kept in such a position that they remain at a right angle to the axis of the cylinders *r*, *s*, where they can be easily inspected. The wrapping paper *b* is inserted between the disks, and the cylinder *r*. An upper cylinder *t* is moved against the disks. By revolving the two cylinders *r*, *s* in the direction of the arrows the wrapping paper is fed around the disks assisted by guides *u*. After the wrapping paper has been cut to suitable length a suitable number of gummed paper strips is inserted between the wrapping paper now rolled around the disks, and one of the revolving cylinders.

The gummed paper strip follows the wrapping paper and closes the side of the cartridge containing the disks. The cylinder *t* is removed from the cartridge for instance to the position shown by dash-and-dot lines in Figure 3a, and the end of the wrapping paper is folded in a suitable manner to prevent the disks from falling out of the cartridge.

When introducing the cartridge into the magazine tube *k*, which in Figure 4 is shown to be connected to a feeding tube *m*, the workman should pay attention to the flap *e* or edge *h*, which must extend outside the slit *l* in the wall of the tube, after the cartridge has reached its final position in the tube. He then grasps the flap (as is shown in Figure 4), or the edge *h* of the paper (as is shown in Figure 4a), and draws out the paper. The disks are now ready to sink through the tube *m* down to a conveyor (not shown) and gradually one disk after the other is fed by the conveyor to the place, where they are inserted into the cap shells. In Fig. 4a the reference character *v* indicates a fixed paper knife for opening the cartridge.

In the tube battery exemplified in Figure 5 about twenty magazine tubes *k* are mounted to a unit. All of them are secured to a holder 2 consisting of two horizontal plates in holes drilled along the periphery of the upper plate. The holder is secured to a vertical shaft, which is revolvable in a bearing 3, provided on the under-

side of the underlying stationary plate 4, which forms the bottom of the tubes *k* and by means of brackets is secured to the upper side of the machine 5. The said stationary plate is provided with one hole, to which the feeding pipe *m* is connected.

In the shown embodiment the battery is mounted on a capping machine with a cork feeding mechanism 6 of a known type, which has been put out of function. This arrangement shows that the invention may be used also in machines already being in use in plants or the like, as well as in such machines of special constructions and also in machines of different constructions. For revolving the battery, so that each tube will come above the tube *m* in its proper turn, for example, the following provision may be made:

Into each battery tube a loose weight or some other part moving with the disks is put on the pile of cork disks, the said weight, when the tube has been discharged, cutting in an electric contact 10, by which an electromagnet is put into function. The electromagnet first actuates a locking pin 7, which holds the battery in correct position, and then a draw bar 8 of a blocking device on the battery shaft, so that the said bar is moved aside and is then grasped by a peg on the vertical shaft 9, which is in permanent rotation, by which the battery is revolved one step, so that the next filled tube will come right above the feeding pipe *m*, the locking pin returning to locking position. Alternatively, the driving device for the battery may be driven mechanically throughout and in driving connection with some shaft in the machine. The tubes *k* are detachable, so that they may be filled while the machine 5 is in operation and from either end.

Of course, the above described packing method may be used for plates of varying shape and size in various piles but substantially of equal shape and size in one and the same pile.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The method of packing sealing disks for bottle cap shells, which method consists in placing a tube containing juxtaposed disks upon a continuously rotating support thereby imparting a rolling movement to said tube and disks, removing the tube to expose the rolling disks, introducing a wrapper about the rolling disks between the latter and the rotating support and removably pressing the wrapper against the rolling disks beyond the support to produce a tightly wound cartridge for introduction into a tubular magazine.

2. A method of packing sealing disks for bottle cap shells, as claimed in claim 1, in which the disks, being different on one side than on the other, are turned while being exposed to place corresponding sides in the same direction.

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