May 17, 1938. A. C. PRIOR 2,117,625

PACKING MACHINE

Filed Jan. 31, 1935 2 Sheets-Sheet 1

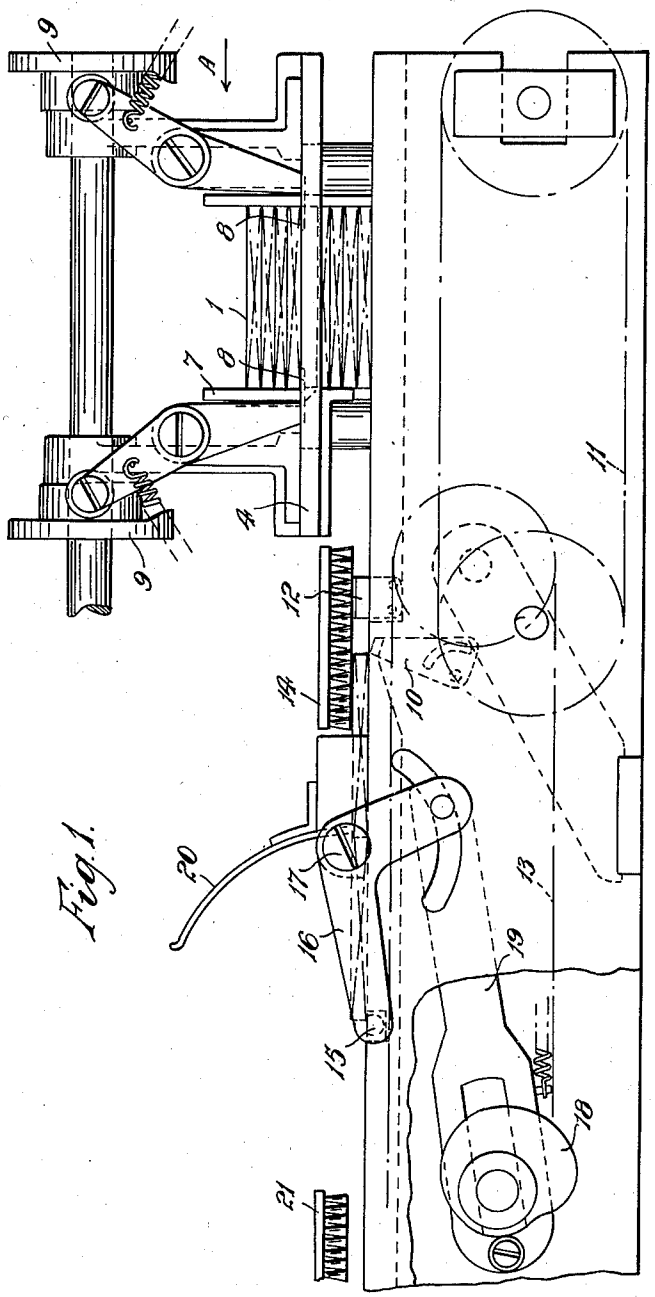

Fig. 1.

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Fig. 2.

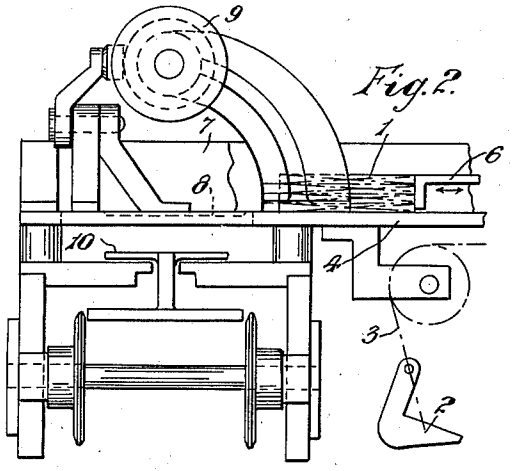


Fig. 3.

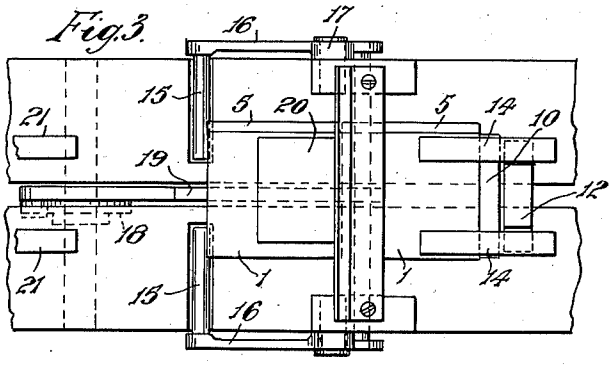


Fig. 5.

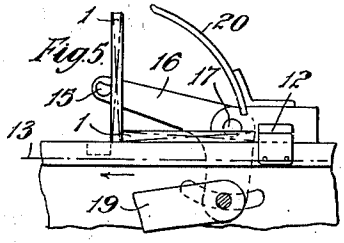


Fig. 6.

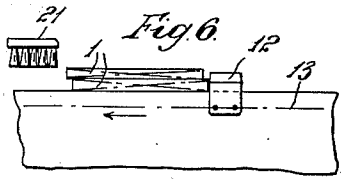


Fig. 4.

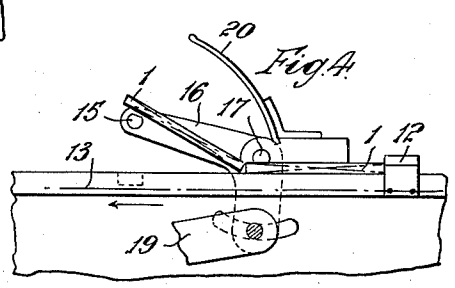
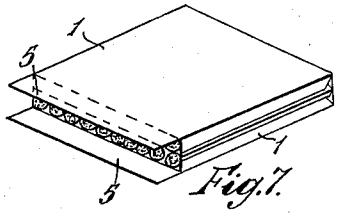


Fig. 7.



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UNITED STATES PATENT OFFICE

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PACKING MACHINE

Alfred Charles Prior, Deptford, London, England

Application January 31, 1935, Serial No. 4,420
In Great Britain February 27, 1934

12 Claims. (Cl. 93—3)

This invention is for improvements in or relating to packing machines, and refers more particularly to apparatus for use on a packing machine of the type in which two pockets are secured together by closure flaps provided at their open ends to produce a double pocket packet. A machine of the type described is disclosed in the U. S. patent to Molins 1,795,666, granted March 10, 1931, and in the machine shown in this prior patent, open-ended pockets are delivered from the forming mechanism into a stacker from which the pockets are removed in pairs by the pusher pieces of an endless conveyor. The endless conveyor carries a pair of pockets over guide rails, and the position of the pockets is such that the closure flap of the lower pocket is adjacent the guide rails, whilst the closure flap of the upper pocket is connected to that side of the pocket which rests upon the upper surface of the lowermost pocket. As the conveyor carries the pair of pockets over the guide rails, the upper pocket of the pair is engaged by turning mechanism which is operative to rotate the upper pocket through 180°, and to again deposit the upper pocket upon the lower pocket in a manner such that the closure flap of the upper pocket is now on that side of the pocket which is furthest from the lower pocket.

It is an object of the present invention to provide in a machine of the type described, apparatus for the purpose of closing a pair of pockets one upon the other in a manner such that when the operation is completed the faces of the pockets opposite the faces to which the closure flaps are connected are adjacent each other so that the pockets may be secured together by the closure flaps to form a packet of the kind described and illustrated in the patent hereinbefore referred to.

According to the present invention, there is provided apparatus in or for a machine of the type described, comprising means to deliver onto the bed of the machine, a succession of single pockets open at one end, those faces of the pockets with which the closure flaps are connected resting on the bed of the machine and the open ends of the pockets being arranged to face to the same side, means (e. g., an endless conveyor) to move each pocket along the bed of the machine and means operative upon each successive pair of pockets to close the pockets one upon the other for the purpose specified.

One way of carrying the invention into effect will be more particularly described with reference to the accompanying drawings, in which:—

Figure 1 is a side elevation of apparatus constructed in accordance with the invention.

Figure 2 is an end elevation of Figure 1, taken in the direction of the arrow A, Figure 1.

Figure 3 is a plan view of a portion of Figure 1.

Figure 4 is a detail illustrating the manner in which one pocket is superimposed upon another.

Figure 5 is a view similar to Figure 4, showing the various parts in different positions.

Figure 6 is a view showing the pockets just after they have been superimposed one upon the other.

Figure 7 is a perspective view illustrating the arrangement of a pair of pockets after one has been superimposed upon the other.

Like references refer to like parts throughout the specification and drawings.

Referring to the drawings, the pockets 1 are delivered from the pocket making or the pocket making and/or filling mechanism by means of a pusher piece 2 carried on an endless conveyor 3. The pusher piece 2 is arranged so that it delivers four pockets at a time and places them on a table 4, as illustrated in Figure 2, the closure flaps 5 of the pockets being arranged on those sides of the pockets which are endmost when they are delivered onto the table 4. When the batch of pockets has been left in a stationary position, a conveyor, illustrated in Figure 2 as a reciprocating plunger 6, is arranged to move the batch to the left of Figure 2 and place them in position in a stacker or magazine 7 (see Figure 1). The batch of pockets is held in the magazine 7 by a pair of supporting elements 8 which are arranged to be moved into or out of the magazine 7 by cams 9. The cams 9 are arranged to operate in timed relationship with the pusher piece or pieces 10 of an endless conveyor 11 in a manner such that the elements 8 are withdrawn from the magazine and the batch of pockets which is supported by the elements is dropped onto the bed of the machine to replenish the supply supported thereon. When the elements 8 are again moved into the magazine after the operation just described, a further batch of pockets is delivered into the magazine.

The pusher piece 10 is arranged to engage with the lowermost pocket of the pile which is supported upon the bed of the machine, that is to say, the pocket which is resting upon the bed, and moves it along the bed of the machine to a point at which it is left in a stationary position by the pusher piece. The pusher piece, or an-

other pusher piece carried by the conveyor 11, then removes the next pocket from the pile on the bed of the machine, and moves it into engagement with the pocket which has just been left in the stationary position, whereupon a further piece 12 carried by an endless conveyor 13 engages with the rear pocket of the pair and moves the pair of pockets along the bed of the machine. A brush 14 is provided to engage with the upper surfaces of the pockets as they pass beneath it and to ensure that the pair of pockets are in engagement with each other.

As a pair of pockets is moved along the bed of the machine by a pusher piece 12, the forward portion of the leading pocket of the pair of pockets is engaged by a pair of members 15, carried on bell crank levers 16, which are oscillated about the pivots 17 by means of a cam 18 and connecting arm 19. The members 15 are arranged to engage with the underside of the leading pocket, and lift it as shown in Figure 4. It will be seen from this figure that the leading pocket is in engagement with the leading edge of the second pocket of the pair, and that the leading pocket is therefore turned about the point at which the two pockets engage with each other. The leading pocket is raised by the members 15 to the position illustrated in Figure 5, and whilst it is being so lifted the following pocket of the pair is being moved in a forward direction, as illustrated in the drawings. The continued movement of the following pocket causes the leading pocket to be pivoted about the points at which it is supported by the member 15 until the pocket is caused to overbalance and fall by gravity onto the upper surface of the following pocket of the pair. A guide 20 is provided to guide the falling pocket onto the upper surface of the following pocket. It will be seen that the leading pocket has by these means been lifted from the bed of the machine, rotated substantially one half of a revolution and deposited upon the upper surface of the other pocket of the pair.

When the pockets have been superimposed one upon the other in the manner just described, it is usually found that they assume a position with respect to one another similar to that illustrated in Figure 6, that is to say, the leading edge of the upper pocket of a pair projects slightly beyond the leading edge of the lower pocket which is engaged by the pusher piece 12. In order to align both pockets correctly with respect to each other as illustrated in Figure 7, a brush 21 may be provided adjacent the path of the pockets, and may be arranged to engage with the upper pocket of the pair, and move it rearwardly in order to align it against the face of the pusher piece 12.

It will be appreciated that there are many ways other than that described with reference to the accompanying drawings, for carrying the invention into effect, thus for example, the pockets may, as above described, be moved in pairs along the bed of the machine, and means may be provided to rotate each pocket through 90° about those edges of the pockets which are adjacent so that the pockets stand on the said adjacent edges and are arranged one against the other for the purpose specified.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In apparatus for forming cigarette containers, the combination with means for feeding individual cigarette pockets in series of pairs in a predetermined path, the pockets of each pair being arranged side by side in the same plane, of means to engage the pockets of a pair during movement of the pockets in said path and to effect the positioning of adjacent pockets in face to face relation, said means including mechanism for rotating one pocket of each pair of pockets thus fed to superimpose the rotated pocket on the other pocket of the pair.

2. In apparatus for forming cigarette containers, the combination with means for feeding individual cigarette pockets in pairs, one pocket of a pair preceding and engaging the other pocket of the pair, of means for engaging the pockets to effect the positioning of adjacent pockets in face to face relation, said means including mechanism for engaging and lifting the forward portion of the leading pocket of each pair, whereby continued movement of the pockets effects rotation of the leading pocket about the point of engagement of the pair of pockets.

3. In apparatus for forming cigarette containers, the combination with means for feeding individual cigarette pockets in series of pairs in a predetermined path, the pockets of each pair being arranged side by side in the same plane, of means to engage the pockets of a pair during movement of the pockets in said path and to effect the positioning of adjacent pockets in face to face relation, said means including mechanism for rotating one pocket of each pair of pockets thus fed to superimpose the rotated pocket on the other pocket of the pair, and means for thereafter engaging the superimposed pocket of each pair during the feeding thereof to positively contact and align the pair of pockets.

4. In apparatus of the class described, the combination with means for feeding pairs of articles in a predetermined path with adjacent articles one preceding the other in abutting relation, of means for rotating one article to position the same upon the succeeding article, said last named means including a device for engaging and lifting the forward end of the leading article, and means for retaining the device temporarily in article lifting position, whereby the leading article is rotated about said device by continued movement of the following article and allowed to fall on the latter.

5. In apparatus of the character described, in combination, a magazine adapted to receive batches of articles, a bed beneath said magazine, means for periodically releasing uniform batches of articles from said magazine and depositing them on said bed, and means for feeding said articles in pairs horizontally on said bed.

6. In apparatus of the character described, means for feeding a pair of articles along a predetermined path one article preceding and engaging the other article of the pair, means for engaging and lifting the forward end of the leading article of said pair and maintaining it in lifted position while the following article continues to advance, whereby said leading article is rotated about the forward end of said following article, and a guide member adjacent said article lifting means for guiding said leading article during its said rotation.

7. In apparatus of the character described, a magazine adapted to receive batches of articles, a bed beneath said magazine, means for periodically releasing uniform batches of articles from said magazine and depositing them on said bed, means operating in timed relationship with said first named means for advancing pairs of said articles along said bed one article of a pair preceding and engaging the other article of the

pair, and means operating in timed relationship with said other means for superimposing the leading article of each pair upon the following article of said pair.

8. In apparatus of the character described, a magazine adapted to receive batches of articles, a bed beneath said magazine, means for periodically releasing uniform batches of articles from said magazine and depositing them on said bed, means operating in timed relationship with said first named means for advancing pairs of said articles along said bed one article of a pair preceding and engaging the other article of the pair, and means operating in timed relationship with said other means for superimposing the leading article of each pair upon the following article of said pair, said last named means including means for engaging and lifting the forward end of said leading article whereby said leading article is caused to rotate about the forward edge of said following article, and means for guiding said forward article during its said rotation.

9. In apparatus of the character described, a conveyor to feed individual cigarette pockets in pairs, one pocket of each pair preceding and engaging the other pocket of the pair, and means for engaging the pockets to effect the positioning of adjacent pockets in face to face relation, said means including said conveyor and mechanism for engaging and lifting the forward portion of the leading pocket of a pair, said conveyor being movable to effect rotation of the leading pocket about the point of engagement of the pair of pockets.

10. In apparatus of the character described, means for feeding articles in succession, a conveyor to engage each alternate article and to move said alternate article together with the article preceding the alternate article in a predetermined path, and means for engaging the articles to effect the positioning of adjacent articles in face to face relation, said means including said conveyor and mechanism for engaging and lifting the forward portion of the leading article of the pair, said conveyor being movable to effect rotation of the leading article about the point of engagement of the pair of articles.

11. In apparatus of the character described, in combination a conveyor to move articles in pairs in a predetermined path, mechanism to receive articles, means to feed individual articles from said mechanism in succession to a predetermined position in the path of said conveyor, at which position said means leaves the articles, said conveyor engaging each alternate article left by said means and moving such article together with the article preceding such article.

12. In apparatus for forming cigarette containers, the combination with means for feeding individual cigarette pockets in series of pairs in a predetermined path, the pockets of each pair being arranged side by side in the same plane, of means to engage the pockets of a pair during movement of the pockets in said path and to effect the positioning of adjacent pockets in face to face relation.

ALFRED CHARLES PRIOR.