

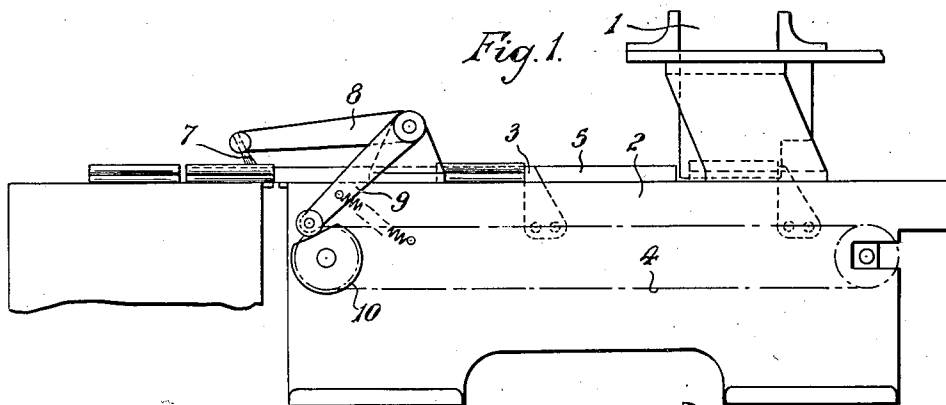
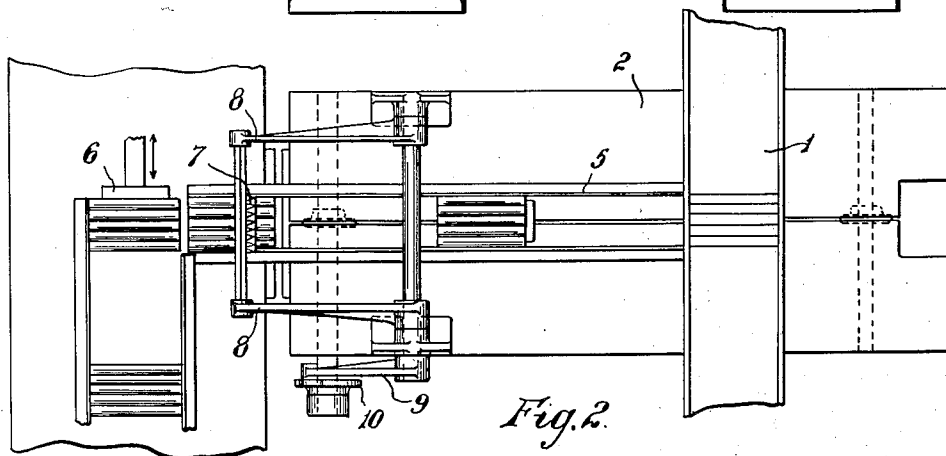
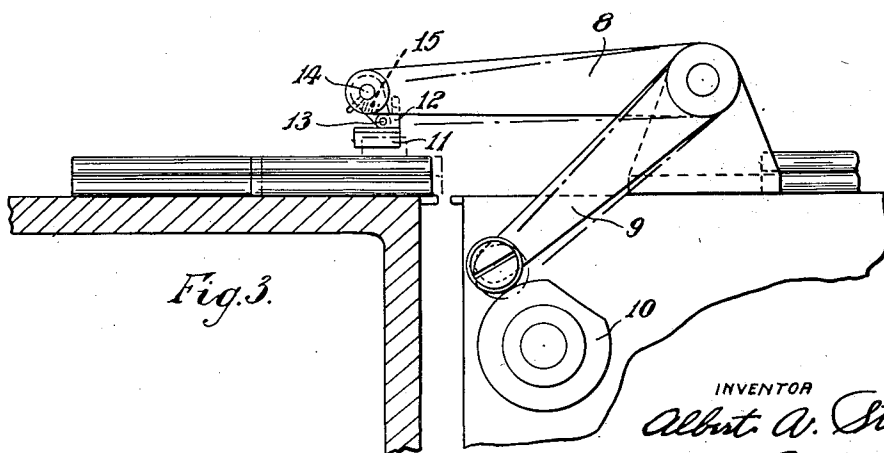
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1,980,641

ARTICLE FEEDER FOR PACKING MACHINES

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UNITED STATES PATENT OFFICE

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ARTICLE FEEDER FOR PACKING MACHINES

Albert Alexander Stone, Deptford, London,
EnglandApplication December 18, 1933, Serial No. 703,023
In Great Britain December 21, 1932

10 Claims. (Cl. 198—24)

This invention is for improvements in or relating to packing machines, and refers more particularly to that type of packing machine wherein articles are fed in succession by means of conveyors to a point at which they are left stationary, and from which they are moved into the path of a further conveyor or plunger which operates in a direction transverse to that of the first mentioned conveyor, the foremost article being removed from the stationary position above referred to by the next succeeding article engaging with the rear portion of the foremost article, and pushing it forward. For the sake of brevity herein and in the appended claim 1, the word "article" shall include "a batch of articles," e. g., a batch of cigarettes.

It is found in practice that as the transversely moving conveyor or plunger removes the foremost article or batch of articles out of engagement with the succeeding article or batch of articles which moves it into the path of the said conveyor or plunger, the ends of the article or batches of articles which are in engagement with each other frequently become damaged. It is an object of the present invention to provide in or for a packing machine of the type described, means operative to engage with the article next succeeding the foremost article and move it rearwardly out of engagement with the foremost article.

The invention will be more particularly described with reference to a machine for packing batches of cigarettes, and to the accompanying drawing in which:—

Figure 1 is a side elevation of one form of apparatus constructed according to the present invention.

Figure 2 is a plan view of Figure 1.

Figure 3 is a side elevation showing a modified form of the invention.

Like reference numerals refer to like parts throughout the specification and drawing.

The cigarettes are fed from a hopper 1 on to the bed 2 of the machine and are removed by a pusher-piece 3 carried on an endless conveyor 4, said pusher-piece removing from beneath the said hopper, a batch containing a predetermined number of cigarettes and carrying it forwardly between guides 5 until it arrives at a position at which the pusher-piece is tripped backwardly out of engagement with the batch of cigarettes and passes beneath the bed of the machine, the tripping of the pusher piece being effected by conventional means, for instance such as that described in British Patent No. 287,209. As the

next succeeding batch arrives at the position just referred to, it pushes the preceding batch into the path of a conveyor or plunger 6 which is operable in a direction transverse to the direction of movement of the first mentioned conveyor, and just before the second conveyor or plunger 6 moves the foremost batch out of alignment with the succeeding batch, means are provided to engage with the rearmost batch of cigarettes and move it rearwardly towards the hopper 1 from which it has just been removed for a short distance say about $\frac{1}{8}$ " so that the two batches are out of engagement with each other before the second mentioned conveyor or plunger 6 engages with the foremost batch to move it through the succeeding mechanism of the packing machine.

In one form, the means for separating the two batches of cigarettes comprises a brush 7 carried by a pair of pivoted arms 8, and inclined at an angle to the upper surface of the rearmost batch of cigarettes, the angle of inclination being opposed to the direction of movement of the batches. The brush is moved into engagement with the batch by the lever 9 operated by the cam 10. The pressure applied to the upper surface of the batch by the inclined brush causes the batch to be moved in a rearward direction out of engagement with the foremost batch as shown in Figures 1 and 2.

According to the modified form of the invention shown in Figure 3, the brush which acted as the separating medium in the previous construction is dispensed with and is replaced by a metal plate or felt pad or similar gripping medium.

The metal plate 11 is carried by a bracket 12 and is pivoted at 13 and the bracket 12 is carried by the arms 8 and is pivoted at 14. A spring 15 is arranged to hold the plate 11 in its operative position.

As the arm 8 descends the plate 11 is brought into engagement with the batch of cigarettes and as the arm continues its downward movement the plate 11 due to the arrangement of the pivot points 13, 14, assumes the position shown in chain lines in Figure 3, and the batch is moved rearwardly in the manner above described.

It will be appreciated that although the invention has been described with reference to a cigarette packing machine, it is easily applicable to any type of machine in which articles are fed from one position to another by the engagement of the succeeding articles with the foremost article.

Again, many other devices may be used in order

to facilitate the separation of the articles as above described without in any way departing from the spirit of the invention. For instance, a pair of mechanically operated grippers may be arranged to project through the guides 5 which guide the articles along the bed of the machine and engage with the sides of the said articles, to move them backwardly in the same manner as above described or, if desired, means may be provided to engage both with the top and the bottom of the said article in order to obtain the necessary movement.

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

1. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article, as it is delivered to the stationary position, moving the article already in that position into the path of said conveyor element, and an element disposed above said position and pivotally mounted for operative engagement with the uppermost surface of an article in said position to move such article out of engagement with the article last ejected from said position.

2. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, and a flexible element disposed above said position and pivotally mounted and inclined so that it is operative to engage with the uppermost surface of an article in said position to move such article out of engagement with the article last ejected from said position.

3. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, and a brush element disposed above said position and pivotally mounted and inclined so that it is operative to engage with the uppermost surface of an article in said position to move such article out of engagement with the article last ejected from said position.

4. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a brush disposed above said position, pivotally mounted levers carrying said brush, and a cam for operating said levers at intervals,

said brush being arranged to engage with the upper surface of the article and inclined whereby when it engages an article the article is moved out of engagement with the article last ejected from the stationary position.

5. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a gripper disposed above said position to engage with the upper surface of the article, a cam and cam follower, and means including a toggle link operatively connecting said cam follower and said gripper.

6. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a gripper disposed above said position to engage with the upper surface of the article, a cam and cam follower, means including a toggle link operatively connecting said cam follower and said gripper, and a spring to retain the gripper in position relatively to the cam follower.

7. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a plate disposed above said position to engage with the upper surface of the article, a cam and cam follower, and means including a toggle link operatively connecting said cam follower and said plate.

8. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a plate disposed above said position to engage with the upper surface of the article, a cam and cam follower, means including a toggle link operatively connecting said cam follower and said plate, and a spring to retain the plate in position relatively to the cam follower.

9. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary, of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate

of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a pad disposed above said position to engage with the upper surface of the article, a cam and cam follower, and means including a toggle link operatively connecting said cam follower and said pad.

10. In a packing machine the combination with a continuous conveyor having at least one article engaging pusher piece to deliver the articles to a position at which they are left stationary of a conveyor element operative in a path transverse to said continuous conveyor, said stationary position of the articles being situate intermediate of said conveyors, each article as it is delivered to the stationary position moving the article already in that position into the path of said conveyor element, a pad disposed above said position to engage with the upper surface of the article, a cam and cam follower, means including a toggle link operatively connecting said cam follower and said pad, and a spring to retain the pad in position relatively to the cam follower.

ALBERT ALEXANDER STONE.

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20	95
25	100
30	105
35	110
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45	120
50	125
55	130
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65	140
70	145
75	150