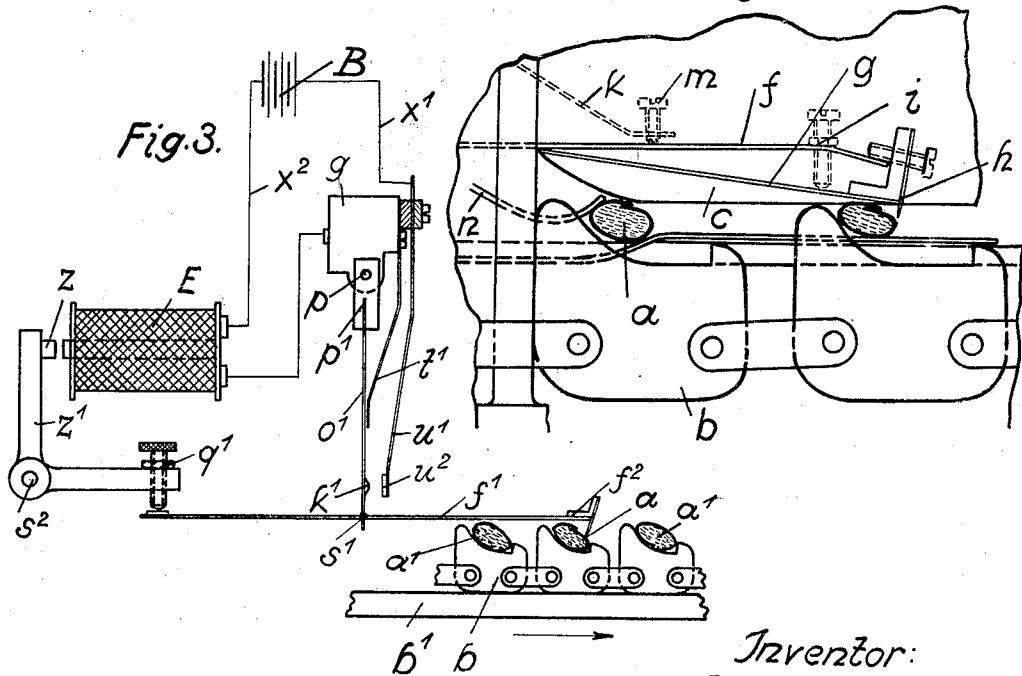
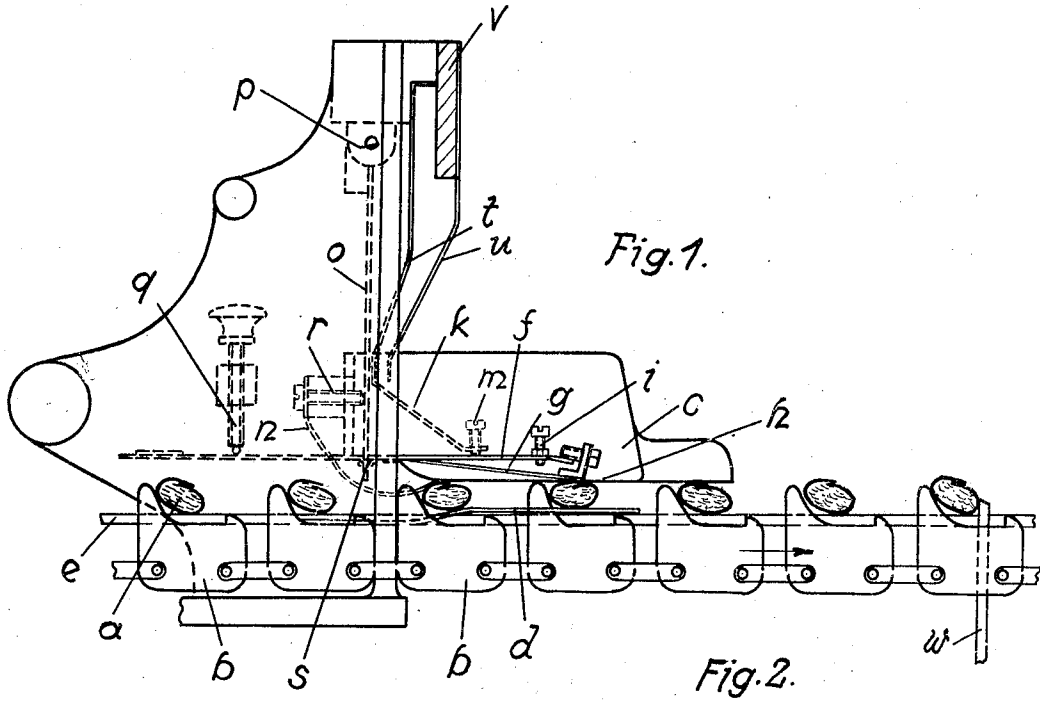


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ARTICLES WHEN PACKING SAME  
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1,800,290

2 Sheets-Sheet 1



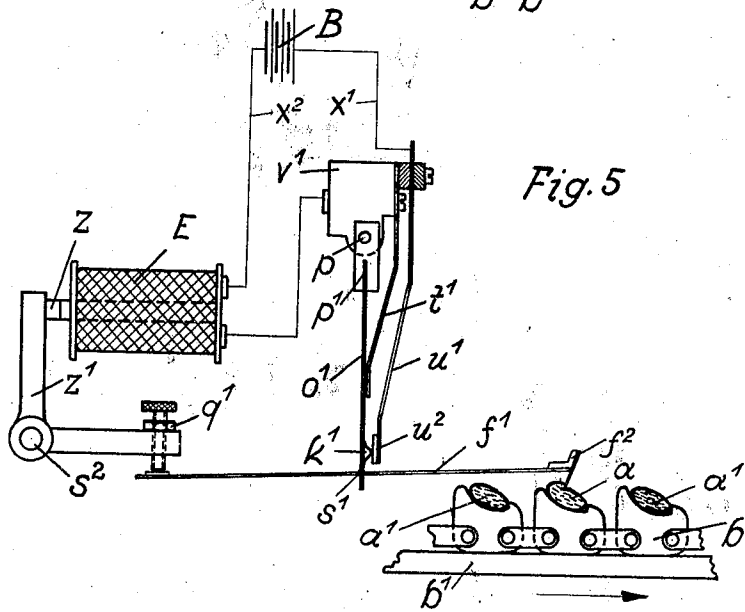
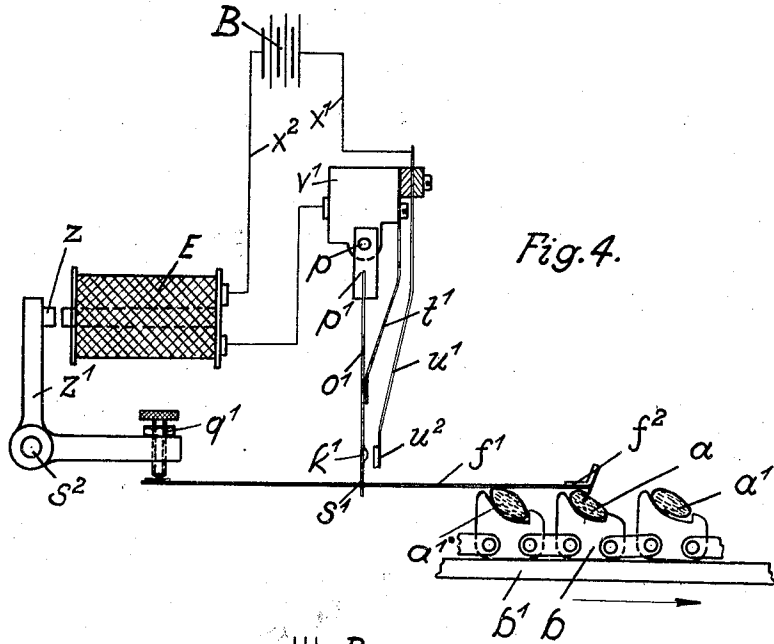
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# UNITED STATES PATENT OFFICE

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## MEANS FOR TURNING CIGARETTES AND LIKE SHAPED ARTICLES WHEN PACKING SAME

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In automatic cigarette packing machines it is necessary to arrange the cigarettes, or at least the top layer, in such a manner that the printed lettering on the cigarette is directed upwards. For this purpose, it has already been proposed to have the seam of the cigarette engage with a finger, a catch or the like, and then to employ the catch directly for turning the wrongly placed cigarettes, or for releasing mechanism which in its turn effects the turning of the wrongly placed cigarettes.

In such apparatus difficulties arise in finding a suitable design for the catch. In particular it becomes necessary for the catch to be held in contact with the cigarette for some time before it actually engages with the seam. Moreover, the catch drags on the cigarette paper, and if it bears too firmly on the paper it may happen that the latter will be ripped off and the cigarette completely ruined. On the other hand, if the catch is made to engage the cigarette with too light a pressure, there is a risk that it will ride over the seam, as the front surface of the seam is very small, generally not higher than 0.05 mm. The present invention overcomes this drawback by having two springs placed under the catch. At the commencement of the operation, that is to say immediately the catch rests on the cigarette, it is held in position very lightly, so that it merely slides on the latter. Immediately before it comes into contact with the seam, however, it is held down under greater pressure, resulting in a reliable grip on the seam.

In order to prevent the catch from damaging the seam, at the end of its forward motion, when it slides over the upper edge of the seam, it is advisable to provide a further stop lever or the like preferably directly operated by the control of the turning device, which lever positively disengages the catch from the cigarette at the end of the forward motion.

The appended drawing shows diagrammatically by way of example, two forms of the invention.

Fig. 1 is a side view of an apparatus for straightening cigarettes to form the top layer.

Fig. 2 is a portion of Fig. 1 enlarged to show another position of the catch in operation.

Figs. 3 to 5 show diagrammatically side views, in three different working positions, of a modified form of the apparatus, in which, in accordance with the invention, means are provided by which the catch at the end of its forward motion is positively disengaged from the cigarette seam.

In the drawings *a* represents the cigarette to be fed to the packing machine, which cigarettes, as usual lie separately on the links *b* of a conveyor chain. At the point where the cigarettes engages with the catch or the finger which turns the wrongly placed cigarettes, a holding guide or the like is arranged as shown in Figs. 1 and 2. This guide lies on top of the cigarette and holds it down. However, as the cigarettes are of various thicknesses and it is also necessary, if the finger is to work properly, that the seam should be presented to it always at the same height, below the guide *c* there is disposed a spring *d* which, as shown in the drawing, projects a little out of the plane in which the cigarettes slide along and off the rail *e* on which the cigarettes are fed forward by the chain links *b*, and which rail presses the cigarettes passing under the guide *c*, upwards against the said guide, in an elastic manner.

The finger or the catch consists of two springs *f* and *g*. To the lower spring *g* is fixed the knife edge *h*. The spring *g* is weak, the spring *f* is stronger. The spring *f* is provided with a stop screw, or other stop *i* which is preferably adjustable, while a further spring *k* engages the spring *f* through an adjusting screw *m*, by which the effective strength of the spring *f* can be adjusted. Furthermore, on the frame of the machine there is a spring *n* the lower free end of which slides over the cigarette as it arrives. The object of this spring is to adjust such cigarettes as do not lie at a right angle to their line of movement.

The springs *f* and *g* are connected to each other at one end, and are mounted on a vertically disposed spring *o* and jointly pivoted,

the spring  $o$  in turn being supported on the frame of the machine and pivoted on the spindle  $p$ . A stop screw  $g$ , also carried by the frame serves the purpose of securing the springs  $f$  and  $g$  in the position of rest, the spring  $f$  extending at the rear beyond the pivot  $p$ .

The operation is as follows:

The cigarettes are fed forward by the conveyor chain  $b$ , sliding along on the rails  $e$ . Those cigarettes which are shown at the extreme left in the drawing, and are disposed obliquely to the line of their movement, are straightened directly they pass under the springs  $n$  so that they lie with their longest axis in a horizontal direction. The spring  $n$  holds the cigarette in this position until, on being conveyed further on, the spring  $d$  placed under it presses it upwards against the guide  $c$ . If now the cigarette lies in the correct position, that is to say with the printed lettering pointing upwards, the sharp edge  $h$  will rest on the cigarette as the latter travels, and it can then slide smoothly over it, with the result that the cigarette passes to the packing machine.

If on the other hand, as shown in the drawing, the cigarette lies with its seam pointing upwards, the catch under the action of the thin spring  $g$  first rests on the cigarette at a point some distance in front of the seam. As the cigarette travels further it now slides over the catch; the spring  $g$  naturally is thereby raised, the stop  $i$  being adjusted in such a manner that the spring  $g$  engages it immediately the sharp edge arrives right in front of the front edge of the seam. Now both the weak spring  $g$  and the strong spring  $f$  press on the catch. The catch is therefore held down, with the result that it engages with the front edge of the seam. As the cigarette travels further, it is therefore carried along with it and the whole catch device consisting of the parts  $f$ ,  $g$ ,  $h$ , and  $o$  pivots round the spindle  $p$ , another oscillating motion of the spring  $f$  round its fulcrum  $s$  taking place at the same time. As the part pivots round the spindle  $o$  the contact springs  $t$  and  $u$  engage with each other. These two springs are electrically insulated from each other, for example, by means of insulating material  $v$  and form part of an electric circuit. When they are in contact, the circuit is closed, and in the known manner a device which turns the cigarette; for example a stop  $w$  can at the proper moment be brought into the path of the conveying device which then turns the cigarette over, also in the usual manner. Obviously the device for turning over the cigarettes can be of any suitable form. For example, the catch may be employed to actuate the catch for operating a mechanical or pneumatic or other relay. The stop  $g$  serves the purpose of preventing the catch or the finger from de-

scending too far when the cigarette has passed on.

The spring  $t$  also serves to return the parts to their original position.

In order to prevent the catch from damaging the seam of the cigarette, it has been found advisable in certain cases to provide special means by which the catch at the end of its forward travel is positively disengaged from the seam of the cigarette. A form of such a device is shown in Figs. 3-5. In these figures, as in the form previously described,  $a$  represents the cigarettes lying separately on the links  $b$  of a conveyor, in the present instance in the form of an endless chain, which cigarettes move along on a guide  $b^1$ . Of the three successive cigarettes shown in the drawing, the two outer ones marked  $a^1$  are in the present case in the correct position, that is to say, in the position where the printed lettering is directed upwards, while the centre cigarette marked  $a$  is wrongly turned, so that the printed lettering points downward and the seam upwards. Over the cigarettes, just as in the form first described, there is a catch or a lever  $f^1$ , which preferably consists of a thin spring plate and has at its front end a sharp edge or a hook  $f^2$ . The catch  $f^1$  is pivoted round the fulcrum  $s^1$  at the lower end of a spring or blade  $o^1$ , the upper end of which is held by a clamp  $p^1$  fixed to a stationary part  $v^1$  and pivotable around a spindle  $p$ . Engaging the side of the blade or spring  $o^1$ , which faces the front end of the catch  $f^1$ , is the free lower end of a leaf spring  $t^1$  fixed to the part  $v^1$ , by which end the spring  $o^1$  is normally, as shown in Fig. 3, held in a vertical position. Near the lower end of the spring  $o^1$  is a contact  $h^1$  facing a contact plate  $u^2$  arranged at the lower end of a contact spring  $u^1$ . The upper end of the contact spring  $u^1$  is fixed to the part  $g$  and insulated from it. The contact spring  $u^1$  is connected through a conductor  $x^1$  to one pole of an electric battery B, the other pole of which is connected across an electro-magnet E through a lead  $x^2$  with the part  $g$  consisting of electrically conducting material. The part G is electrically connected to the spring  $o^1$  with the result that when the parts  $f^1$  and  $o^1$  are in the position shown in Fig. 3 the circuit is only broken at the contacts  $h^1$  and  $u^2$ . The armature  $z$  is mounted on an angle lever  $s^1$  which pivots around a spindle  $s^2$ . This lever carries an adjustable stop screw  $q^1$  which, like the stop screw  $g$  in the form represented in Figs. 1 and 2 lies over the rear end of the catch  $f^1$ .

As in the case of the catch  $f$  in the form of the invention first described, the catch  $f^1$  slides over and away from the cigarettes  $a^1$  that lie on the links  $b$  of the conveying chain in the correct position i. e., with the printed lettering pointing upwards. However, immediately a wrongly positioned cigarette  $a$

arrives at the front end  $f^2$  of the catch  $f^1$  the catch engages with the seam of the cigarette and is carried along with the latter. Consequently the spring  $o^1$  turns on its point of suspension  $p$ , Fig. 4, against the action of the leaf spring  $t^1$  until finally the contact  $z^1$  meets the contact  $u^2$  and the circuit of the battery B is closed. The closing of this circuit, through the electro-magnet E, or another electro-magnet, not shown in the drawing, causes an apparatus of known form to be set in operation, which turns the wrongly positioned cigarette into the correct position. At the same time, through the energizing of the electro-magnet E, the angle lever  $s^1$  is turned round the spindle  $s^2$ , with the result that the stop screw  $q^1$  is caused to lie on the rear end of the catch  $f^1$  and the catch is turned round the spindle  $s^1$  in such a manner that the hook  $f^2$  is positively dis-engaged from the seam of the cigarette Fig. 5. Immediately this occurs the catch  $f^1$  is returned to the position shown in Fig. 3 by the leaf spring  $t^1$  in which position the circuit is broken.

The device shown in Figs. 3-5, for the purpose of positively raising the catch at the end of its forward travel, may be employed in conjunction with the arrangements represented in Figs. 1 and 2. To this end all that is necessary is to arrange the stop screw  $q$  of Figs. 1 and 2, on a movably mounted lever or the like, which, by means of an electro-magnet or the like introduced in the circuit of the turning apparatus, is operated in such a way that on mutual contact of the two contact springs  $t$  and  $u$ , that is to say, when the circuit is closed, the stop screw  $q$  moves downwards and the catch  $f$  turns round the fulcrum, whereby the catch is positively dis-engaged from the seam of the cigarette.

I claim:

1. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising means adapted to engage the cigarettes and with the seam of the cigarette to be correctly positioned; means for pressing said means against the cigarette under slight pressure while resting on the cigarette in front of the seam; and further means for holding the first-named means against the cigarette under a stronger pressure immediately that it comes near the seam.

2. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising an edge adapted to engage the cigarettes and the seam of the cigarette to be correctly positioned; means for pressing the edge against the cigarette under slight pressure while resting on the cigarette in front of the seam; and further means for holding the edge against the cigarette under a stronger pressure immediately

that it comes near the seam to thereby turn the cigarette into the correct position.

3. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising an edge adapted to engage the cigarettes and the seam of the cigarette to be correctly positioned; a spring for pressing the edge against the cigarette under slight pressure while resting on the cigarette in front of the seam; and a more powerful spring for holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position.

4. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising an edge adapted to engage the cigarettes and the seam of the cigarette to be correctly positioned; a spring for pressing the edge against the cigarette under slight pressure while resting on the cigarette in front of the seam; a more powerful spring for holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position, said springs being connected at one end; and a stop to which one of the springs is connected which at a given moment permits the operation of both springs.

5. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising an edge adapted to engage the cigarettes and the seam of the cigarette to be correctly positioned; a spring for pressing the edge against the cigarette under slight pressure while resting on the cigarette in front of the seam; a more powerful spring for holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position, said springs being connected at one end; and an adjustable stop to which one of the springs is connected which at a given moment permits the operation of both springs.

6. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising a frame; a guide suspended from the frame; and a finger consisting of two springs and an edge pivotally suspended in the guide, one of said springs pressing the edge against the cigarette under slight pressure while resting thereon in front of the seam and the other spring holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position.

7. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising a frame; a guide vertically suspended as a pendulum in the frame; a conveyor chain for the cigarettes adapted to be moved horizontally under the guide; and a finger consisting of two springs and an edge pivotally suspended in the guide around a spindle, one of said springs pressing the edge against the cigarette under slight pressure while resting thereon in front of the seam and the other spring holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position. 70
8. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising a frame; a guide vertically suspended as a pendulum in the frame; a conveyor chain for the cigarettes adapted to be moved horizontally under the guide; a finger consisting of two springs and an edge pivotally suspended in the guide around a spindle, one of said springs pressing the edge against the cigarette under slight pressure while resting thereon in front of the seam and the other spring holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position; and an adjustable stop mounted on the frame for limiting the pivotal movement of the finger in the guide. 75
9. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising a frame; a guide vertically suspended as a pendulum in the frame; a conveyor chain for the cigarettes adapted to be moved horizontally under the guide; a finger consisting of two springs and an edge pivotally suspended in the guide around a spindle, one of said springs pressing the edge against the cigarette under slight pressure while resting thereon in front of the seam and the other spring holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position; and a spring mounted on the frame for turning or holding the cigarette in a horizontal position to be more readily acted on by the edge of the finger when the cigarette reaches it. 80
10. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising a frame; a guide vertically suspended as a pendulum in the frame; a conveyor chain for the cigarettes adapted to be moved horizontally under the guide; a finger consisting of two springs and an edge pivotally suspended in the guide around a spindle, one of said springs pressing the edge against the cigarette under slight pressure while resting thereon in front of the seam and the other spring holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position; a holding guide mounted on the frame arranged adjacent the finger and adapted to aid in a uniform engagement of the seam of the cigarette by the edge of the finger; and a spring arranged adjacent the conveyor and under the holding guide to press the cigarettes against the holding guide. 85
- In testimony whereof I affix my signature.  
PAUL GOTTSCHALK. 90
11. A device for actuating a turning apparatus for cigarettes and similar elongated articles to form a correctly-positioned top layer when packing, comprising a frame; a guide vertically suspended as a pendulum in the frame; a conveyor chain for the cigarettes adapted to be moved horizontally under the guide; a finger consisting of two springs and an edge pivotally suspended in the guide around a spindle, one of said springs pressing the edge against the cigarette under slight pressure while resting thereon in front of the seam and the other spring holding the edge against the cigarette under a stronger pressure immediately that the edge is adjacent the seam to thereby turn the cigarette into the correct position; a holding guide mounted on the frame arranged adjacent the finger and adapted to aid in a uniform engagement of the seam of the cigarette by the edge of the finger; and a spring arranged adjacent the conveyor and under the holding guide to press the cigarettes against the holding guide. 95
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