Dec. 2, 1924. 1,517,307

W. E. MOLINS

MACHINE FOR WRAPPING CIGARETTES AND SIMILAR ARTICLES

Filed Feb. 20, 1924 2 Sheets-Sheet 1

Fig. 1.

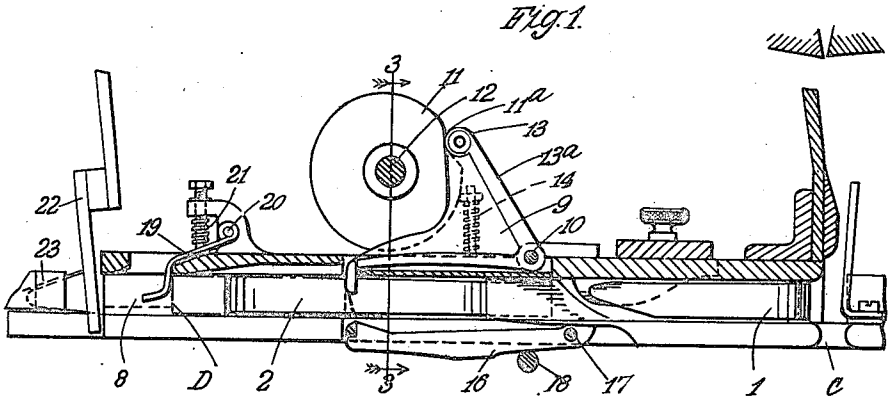
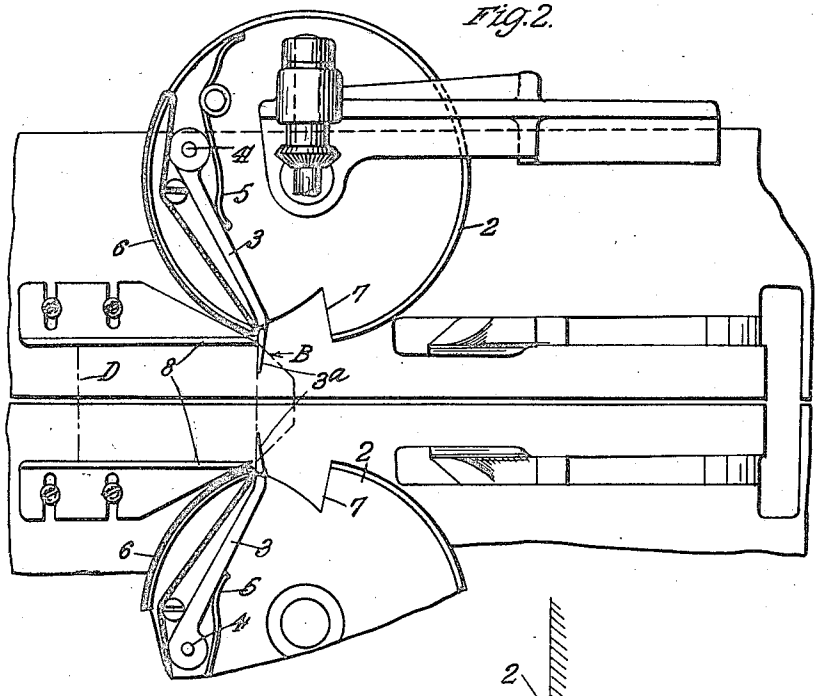


Fig. 2.



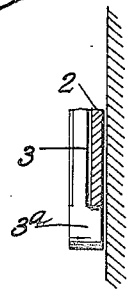


Fig. 4.

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Fig.3.

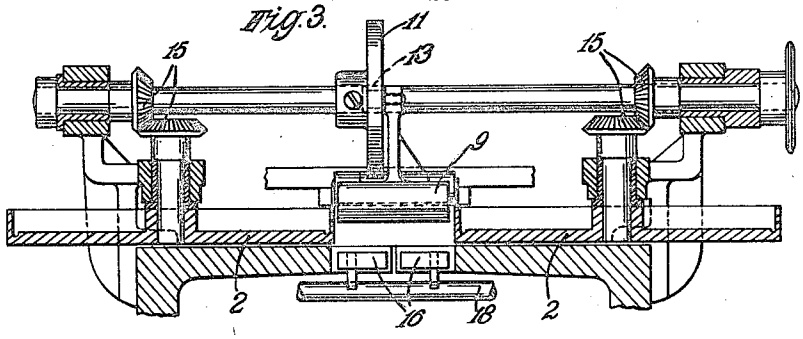


Fig.5.

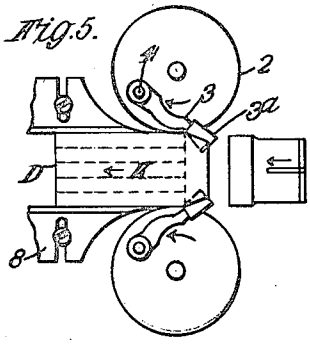


Fig.6.

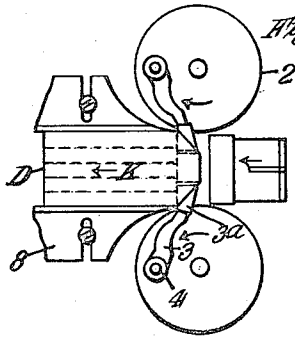


Fig.7.

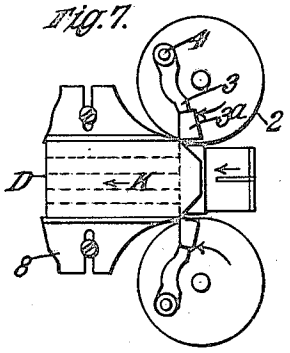


Fig.8.

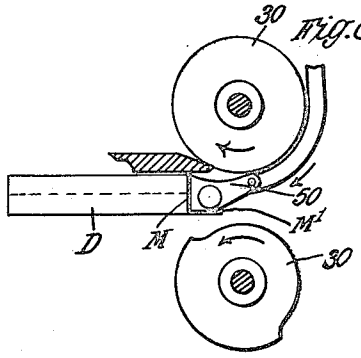


Fig.9.

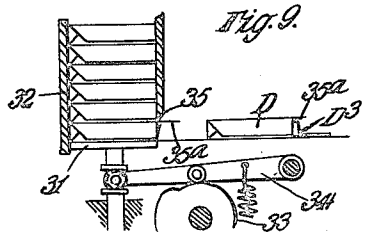


Fig.10.

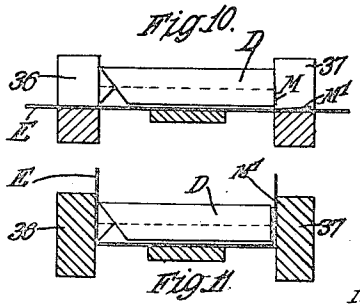


Fig.11.

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Patented Dec. 2, 1924. 1,517,307

UNITED STATES PATENT OFFICE.

WALTER EVERETT MOLINS, OF LONDON, ENGLAND.

MACHINE FOR WRAPPING CIGARETTES AND SIMILAR ARTICLES.

Application filed February 20, 1924. Serial No. 694,136.

To all whom it may concern:

Be it known that I, WALTER EVERETT MOLINS, a citizen of the United States of America, residing in London, England, have invented certain new and useful Improvements in Machines for Wrapping Cigarettes and Similar Articles, of which the following is a specification.

This invention relates to improvements in machines for wrapping bunches of cigarettes, confectionery or other articles of "block" form in foil, paper or similar material.

A machine for these purposes is described in the specification of Letters Patent of the United States of America No. 1,468,246, but in this case the completion of the folding of the foil wrapper around the bunch or article has been performed after the wrapper has been introduced into the outer packet and the tops of the wrapper and outer packet have been consequently interleaved and folded down together.

In certain cases it is desirable to wrap the articles completely in the foil or the like before insertion into the outer packet for the purpose of securing better protection from the air, or for achieving a particular artistic effect.

The present invention has for its object to provide a method whereby this complete prior wrapping of the article may be carried out in conjunction with wrapping machines of the kind described in the aforesaid specifications.

To this end according to the invention, high speed rollers are arranged to grip the partially folded packet as it issues from the folder box and to drag it in advance of its pusher or conveyor piece, thus gaining time for tucking mechanism combined with the rollers to operate on the open end of the packet to tuck in the narrow end folds.

The broad upper and lower flaps are then folded by suitable mechanism timed to operate at the moment the packet is clear of the rollers and is stationary.

After the packet is completely wrapped it may pass through a rectangular tunnel of substantially its own dimensions to smooth it, this tunnel being formed by a top plate mounted on guides, which run close up to the centre line of the rollers.

If the wrapped article is to be packed in a two-piece slide and shell box, the apparatus for turning in the top and bottom flaps may be dispensed with and the wrapped bunch with the narrow tucks made in it can be finished off in the machine described in the specification of United States Letters Patent No. 1,473,496, for example.

In this latter specification a pair of rollers is mentioned which feed the cigarettes on to the slide. A pusher, operated by a cam, may be arranged to follow the cigarette bunch as it goes through these rollers and to depress the upper broad side on to the ends of the cigarettes. The remaining lower broad side is turned up at the same time as the end flaps of the slide and a completely wrapped bunch is obtained enclosed in a carton.

To enable the invention to be fully understood it will now be described by reference to the accompanying drawings in which:—

Fig. 1 is a sectional elevation of an apparatus constructed according to the invention, and

Fig. 2 is a plan view thereof.

Fig. 3 is a part sectional elevation on line 3—3, Fig. 1,

Fig. 4 is a part sectional view of a portion of one of the side rollers and its pawl mechanism, looking in the direction of the arrow B, Fig. 2,

Figs. 5, 6 and 7 are diagrammatic views showing the operation of the apparatus and

Figs. 8, 9, 10 and 11 are views of modifications.

Various parts have been omitted from the drawings for the sake of clearness.

The apparatus is similar in some respects to that shown in the specification of United States Letters Patent 1,468,246, the methods of feeding the foil, forming the side folds and pushing the cigarettes being identical.

The bunch of cigarettes, carried on an endless conveyor with pusher pieces (not shown) is pushed into contact with the foil and wrapped at C (Fig. 1) and the covered

bunch then passes between the folders 1 which fold the bottom in the manner described in the aforesaid specification.

As the wrapped bunch D emerges from the bottom folders 1 it is gripped by the rotating side rollers 2, which rotate about vertical axes and are driven at a higher peripheral speed than the linear speed of the conveyor.

In the present example the peripheral speed of the rollers 2 is twice the linear speed of the conveyor.

The wrapped bunch is, therefore, drawn through the rollers 2 ahead of the pusher piece on the conveyor and when the bunch passes out of contact with the rollers it is stationary.

As shown in Fig. 3 the rollers 2 are shaped like shallow cups, and each roller contains a pawl 3 pivoted at 4 and pressed by a spring 5. The ends 3^a of these pawls are shaped suitably to form the narrow side tucks at the rear end of the packet (Fig. 4). Bands 6 of rubber or other material are stretched round part of the roller circumference to afford a better gripping surface, or the surface of the roller may be knurled.

A portion of each roller is cut away at 7 as shown, to allow the pawl 3 to retire within the periphery of the roller when necessary.

The operation of the pawls 3 is clearly indicated in Figs. 5, 6, 7, the packet D moving in the direction of the arrow K.

In Figs. 5 and 6, the pawls 3 are shown as pressing down the narrow tucks of the packet as the rollers 2 rotate, moving the packet forward.

In Fig. 7 the pawls 3 have finished the tucking operation and are engaged by the ends of the angle guides 8 between which the packet has been fed by the rollers. Further motion of the rollers 2 causes the pawls to slip past the guides, the spring 5 pushing the pawls into working position again as soon as they are clear of the guides 8. The packet is now stationary between the guides 8 and the top and bottom broad flaps of the rear of the packet are now folded or tucked. The top flap is tucked by one arm of a tucker 9, pivoted at 10 (Fig. 1) and operated by a cam 11 on a spindle 12 through a cam roller 13 on the arm 13^a of the tucker. A spring 14 depresses the tucker when the roller 13 meets the drop 11^a in the cam.

The bottom flap is tucked by a tucker 16, pivoted to the machine bed at 17. The underside of this tucker is shaped as shown to form a cam surface and when a spindle 18 on the conveyor pusher piece meets this cam surface it causes the tucker to rise into operation. The tucker may return to its original position by gravity or by means of a spring. Other means may be devised for operating this tucker. A stop or check 19 pivoted at 20 steadies the packet as it leaves the rollers 2. This stop is pressed down by an adjustable spring 21 which allows the stop to rise when the packet is pushed through by the conveyor piece.

When the above described operations have been completed the pusher piece on the conveyor carries the packet away for any desired further treatment.

The packet at this stage is closed at both ends.

In the drawings a mouthpiece 22 and an outer paper shell 23 are shown into which the wrapped bunch of cigarettes may be passed.

If the cigarettes are to be packed in a two-piece slide and shell box the tuckers 9, 16, are omittted and the broad end flaps on the rear end of the packet may be folded in the following manner:—

The rollers 30 described in the specification of United States Letters Patent No. 1,473,496 for delivering the cigarettes on to the slide are arranged as in Fig. 8. The pusher 50 which is cam-operated follows the foiled bunch D as it goes through the rollers and depresses the top flap M and feeds the bunch on to the slide E, (Figs. 10, 11).

The slide and packet are then carried along by the conveyor through curved folding blocks 36, 37 as described in the aforesaid specification. As the ends E of the slide are turned up, the bottom flap M′ of the foil is also turned up as shown in Fig. 11.

In some cases, the tuckers 9 and 16 may have rollers at their ends to tuck the flaps and either may gum a flap at the same time as it turns it in.

In Fig. 3 the method of driving the rollers 2 is shown. The spindle 12 is driven from any suitable part of the machine by a sprocket wheel or in any other manner and drives the rollers 2 through bevel wheels 15.

Although I have described the apparatus as applied to a machine of the continuous conveyor type, the same tucking apparatus could be used with apparatus of the reciprocating plunger type. In this latter case it would not be necessary for the rollers 2 to rotate at such a high speed.

A gum wheel may be fitted to gum either of the flaps at the same time as the tuckers operate, the tuckers being cut away to accommodate the wheel.

In a further modification, one tucker may be omitted and the final tuck may be made by pushing the packet into a stacker as shown in Fig. 9.

In this arrangement the partially folded packet D is pushed by the conveyor piece D^3 on to the platform 31 of the stacker 32.

The platform 31 is reciprocated vertically by cam 33 and link 34 and each upward movement pushes a packet into the stacker. As the packet rises the lip 35 of the stacker bends down the flap 35a. Suitable retaining means are provided for preventing the packets dropping when the platform 31 falls.

It is sometimes desired to wrap cigarettes in a strip which only covers the broad sides of the packet and in such a case the pawls 3 in the wheels 2 would not be used, the broad flaps being tucked as usual.

It will be understood that the above described arrangements may be modified in various details.

Although the invention has been described as applied to a machine for wrapping cigarettes or similar articles in foil or the like to form the inner wrapper of a packet, it will be obvious that the same mechanism may be employed for dealing with the more substantial material required for an outer wrapper. In this latter case paper or other material may be fed across the path of the cigarettes either from a web or in separate sheets, in the same manner as the foil.

The apparatus may also be used to fold a wrapper round cardboard cigarette boxes of the slide and shell type. High class cigarettes packed in such boxes are often wrapped in transparent paper or the like and the apparatus hereinbefore described is suitable for performing this wrapping operation.

Many other uses of the apparatus will present themselves to persons engaged in the packing industry and all such uses are deemed to be within the scope of the present invention.

Having thus described the nature of my said invention and the best means I know of carrying the same into practical effect, I claim:—

1. Wrapping mechanism comprising in combination, a moving conveyor for carrying a wrapped packet open at one end, gripping rollers for the packet, means for rotating said rollers at a speed sufficient to drag the packet in advance of the conveying means and tucking mechanism for operating on the open end of the packet while it is so dragged.

2. Wrapping mechanism comprising in combination, a moving conveyor for carrying a wrapped packet open at one end, gripping rollers for the packet, means for rotating said rollers at a speed sufficient to drag the packet in advance of the conveying means and spring pressed pivoted pawls on the rollers having ends shaped to form tuckers for operating on the open end of the packet while it is gripped between the rollers.

3. Wrapping mechanism comprising in combination, a moving conveyor for carrying a wrapped packet open at one end, gripping rollers for the packet, means for rotating said rollers at a speed sufficient to drag the packet in advance of the conveying means, spring pressed pivoted pawls on the rollers having ends shaped to tuck in the narrow end folds of the open end of the packet as it passes between the rollers and tuckers for folding the upper and lower broad flaps of the open end of the packet after the latter has passed through the rollers.

4. Wrapping mechanism comprising in combination, a moving conveyor for carrying a wrapped packet open at one end, gripping rollers for the packet, means for rotating said rollers at a speed sufficient to drag the packet in advance of the conveying means, spring pressed pivoted pawls on the rollers having ends shaped to tuck in the narrow end folds of the open end of the packet as it passes between the rollers, a tucker pivoted to the machine frame below the packet, a conveyor member for operating said tucker, a tucker pivoted to the machine above the packet and a cam for operating said tucker.

5. Wrapping mechanism comprising in combination, a moving conveyor for carrying a wrapped packet open at one end, gripping rollers for the packet, means for rotating said rollers at a speed sufficient to drag the packet in advance of the conveying means, rims on said rollers, spring pressed pawls pivoted to the rollers within said rims having ends shaped to tuck in the narrow end folds of the open end of the packet as it passes between the rollers, a tucker pivoted to the machine frame below the packet, a conveyor member for operating said tucker, a tucker pivoted to the machine above the packet and a cam for operating said tucker.

6. Wrapping mechanism comprising in combination a moving conveyor for carrying a wrapped packet open at one end, gripping rollers for the packet, rims on said rollers, portions of said rims being removed, spring pressed pawls pivoted to the rollers within said rims, shaped ends on the pawls adapted to project through the openings in the rims to tuck in the narrow end folds of the open end of the packet as it passes between the rollers, means for rotating the rollers at a speed sufficient to drag the packet in advance of the conveying means and means for folding down the remaining broad flaps of the packet end.

In testimony whereof I have signed my name to this specification.

WALTER EVERETT MOLINS.