June 24, 1958 W. G. PALMER 2,840,222

APPARATUS FOR TURNING CIGARETTES

Filed Jan. 3, 1956

FIG. 1

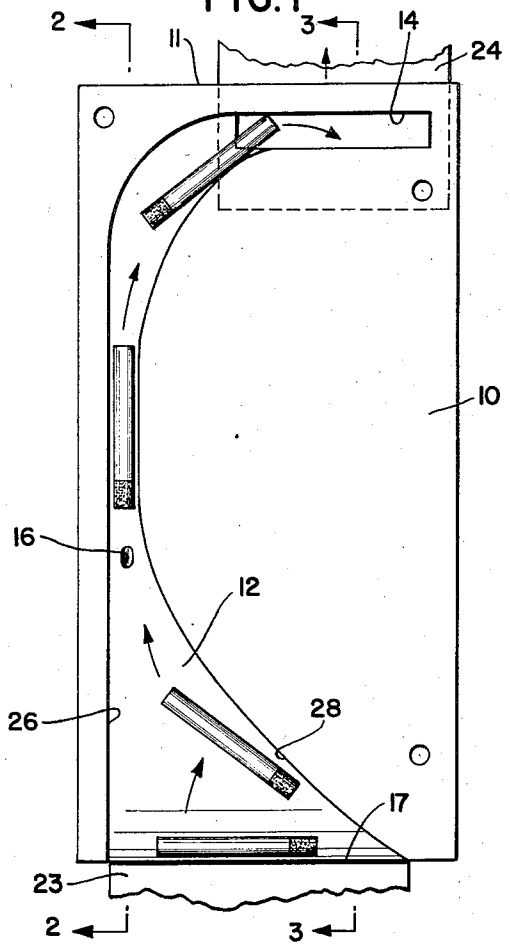


FIG. 2

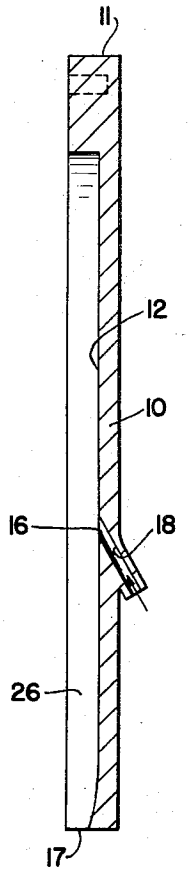


FIG. 3

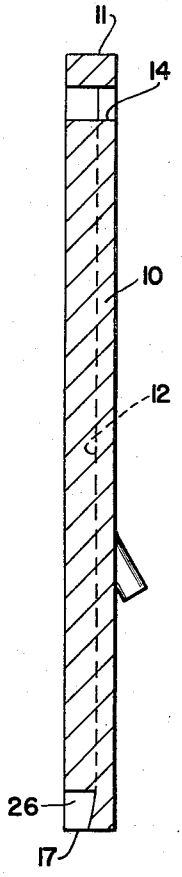
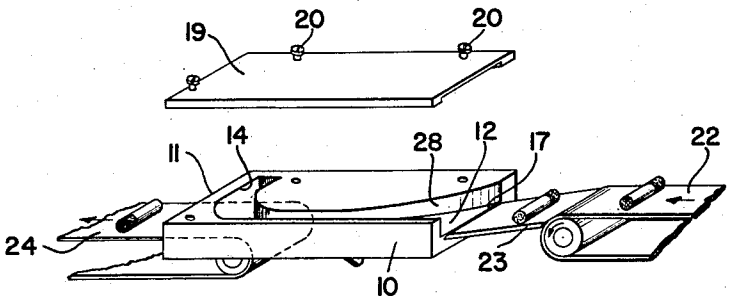


FIG. 4



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APPARATUS FOR TURNING CIGARETTES

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6 Claims. (Cl. 198—33)

This invention relates to cigarette making, and more particularly to a device and method for turning cigarettes received by a collector in a cigarette machine so as to cause the tip ends of all cigarettes to face in the same direction.

When the filter tip cigarettes or cork tip cigarettes are manufactured, they are frequently discharged in two rows onto a collector belt. Due to the method of manufacturing and cutting that is employed in making such cigarettes, the tip ends of the cigarettes in each row face in opposite directions. The cigarettes in one row then have to be turned so that the tip ends of these cigarettes will face in the same direction as the tip ends of the cigarettes of the other row, preliminary to their being transferred in suitable containers to a cigarette wrapping machine.

Various devices have been made for doing this. Some of these devices have been found expensive to construct while others handle the cigarettes so roughly that the cigarettes have undesirable indentations formed thereon during the turning process.

It is an object of this invention to provide a cigarette turning device which is equally adaptable to receive cigarettes delivered axially or transversely to the turning device.

Another object is to provide a device which will turn tipped cigarettes facing in one direction to face in another direction.

It is an object of this invention to provide a cigarette turning device which will avoid having the cigarette contact any moving parts to effect a turning of the cigarette.

A further object is to provide a pneumatic means for turning a tipped cigarette.

A further object is to provide a cigarette turning device which will impart a gradual acceleration to the cigarette in effecting a turning operation on the same.

A further object is to provide a simple and reliable device for turning tipped cigarettes so that the tip ends will be facing in the direction desired.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses. In the accompanying drawings, which form a part of this specification, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings.

Fig. 1 is a plan view of my cigarette turning device.

Fig. 2 is a cross-sectional side elevation of my cigarette turning device taken on line 2—2 of Fig. 1.

Fig. 3 is a cross-sectional side elevation taken on line 3—3 of Fig. 1.

Fig. 4 is an isometric view of the invention wherein the cover plate has been lifted from the cigarette turning device.

My cigarette turning invention is equally adaptable for handling cigarettes that are delivered axially or laterally to the device and turning the cigarette as it is conveyed through the turning device, so that it will be

discharged therefrom facing in the direction desired. To illustrate the invention I have shown how cigarettes delivered laterally thereto from a collecting belt are handled.

The apparatus employed to illustrate the invention consists of block 10 having an air passageway 12 formed therein and an exit window 14 through which cigarettes are ejected.

The block 10 may be made from a casting or extrusion of metal or plastic with the channel 12 formed therein at the time the block is formed. Any other suitable method of forming and shaping the air passageway could likewise be employed to carry the invention into effect such as by milling or forming it from sheet metal.

An orifice 16 is provided in the passageway 12 and is formed at an incline 18 shown in Fig. 2, so as to project a jet of high velocity air in the direction in which the cigarettes are to be moved in the passageway. This jet of air creates a suction at the entrance 17 to the air passageway 12.

The casting 10 is covered by a suitable cover plate 19 which may be made from a transparent plastic material and is secured by suitable fastening screws 20 threaded into suitable threaded holes formed in the casting 10. When the cover plate 19 is secured to the casting 10 the air passageway 12 is enclosed on all four sides, leaving open only the entrance 17 and the exit window 14. Air is caused to flow through the passageway by means of the air jet just described.

In a cigarette making machine manufacturing tipped cigarettes, the tipped cigarettes are discharged onto a collecting device in two rows, so that the cigarettes in each row have the tipped ends facing in opposite directions as shown in U. S. Patent Reissue 19,375, granted November 20, 1934, to W. B. Bronander, and U. S. patent application, Serial No. 509,293 filed by George Dearsley on May 18, 1955.

By turning the cigarettes in one of these rows end-for-end they will be lined up in the same direction as the cigarettes in the other row. If alternate cigarettes are received axially from the cut-off, they would be turned in a similar manner, but not necessarily 180 degrees, since in such a case a 90 degree turn would be wholly adequate. My device has therefore been designed and adapted for receiving cigarettes and turning them to whatever degree is required to discharge them so that all of the tipped ends will be facing in the desired direction.

In this embodiment the cigarettes from one row are received by catcher belt 22 and transferred by a chute 23 to the intake entrance 17 of the air passageway 12. As soon as the cigarette gets in front of the air intake entrance 17, suction will cause the end of the cigarette closest to the wall 26 to be pulled in at a faster rate than the ends of the cigarette closest to the curved wall 28, thereby swinging the cigarette around so that it travels axially.

When the cigarettes pass beyond the air jet, they are caused to travel with the air stream to the ejecting window 14 where they drop one at a time down upon the second collecting conveyor 24.

It will be appreciated that the cigarette could have been ejected upwardly as well as outwardly so that instead of being pushed down through the window it would have been pushed upwardly or sidewise through a suitable opening formed in the end 11 of the block 10, or through a suitable opening formed in the cover plate 19.

The invention just described does not have any hammering effect on cigarettes which leaves objectionable imprints thereon. Also, where the term "tipped cigarettes" has been used herein, it is intended to include within its meaning either cork tipped, filter tipped, or

hollow mouthpiece cigarettes, any of which may be readily used with this invention.

The invention hereinabove described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. A device for turning cigarettes comprising an air passageway, means for delivering cigarettes transversely to the entrance to said air passageway, means for causing more air to flow through one side of said entrance than the other side to thereby cause cigarettes to commence turning around at the air entrance to said passageway, said air passageway having a funnel shaped entrance and an arcuate configuration which will cause the cigarette to continue its turning until the cigarettes have been turned into the direction desired, and a collecting belt for receiving said turned cigarettes.

2. A cigarette turning device comprising an air passageway having a 180 degree arc formed therein, an orifice projecting an air stream into said passageway to cause a stream of air to flow through said arc, a discharge window formed at the far end of said passageway through which cigarettes are discharged facing in a direction opposite to the direction in which cigarettes are received by said air passageway.

3. A device for turning cigarettes end-for-end comprising a source of supply of cigarettes which are to be turned end-for-end, an air passageway formed in said device for receiving cigarettes which are to be turned

end-for-end, pneumatic means for advancing cigarettes through said air passageway, said air passageway having a funnel shaped entrance and an arcuate configuration which will result in the cigarettes following a turning path so that each cigarette will be facing in the direction desired when discharged from said cigarette turning device.

4. A device for turning cigarettes comprising a funnel entrance converging to an offset throat, an exit section and a duct connecting said offset throat with said exit section, said throat having a nozzle with an orifice located angularly thereto for directing a jet of air longitudinally through said passageway.

5. A cigarette turning device comprising, an air passageway formed into venturi having a flattened cross section and an arcuate shape, a discharge opening at an angle to said passageway, an orifice introducing a jet of air at an acute angle to the throat of said venturi causing suction at the entrance and pressure at the discharge opening of said passageway.

6. Apparatus for turning articles comprising, an arcuate air passageway having a funnel mouth entrance, a discharge station for discharging turned articles and a duct connecting the funnel mouth of said entrance with said discharge station, and means causing a flow of air through the entire length of said air passageway.

References Cited in the file of this patent

UNITED STATES PATENTS

2,344,461 Hermani ---------- Mar. 14, 1944