May 1, 1945. C. S. STEPHANO ET AL 2,375,144

FOLDING MECHANISM

Filed May 28, 1943

Fig.1.

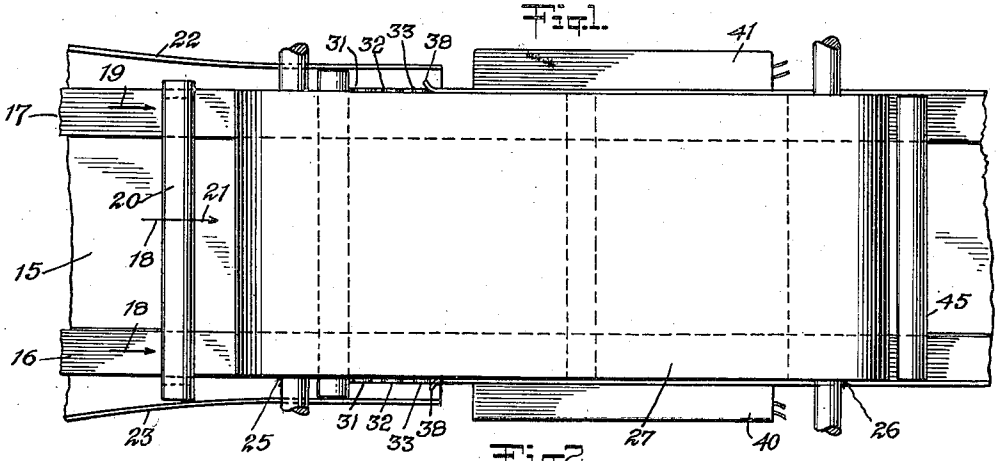


Fig.2.

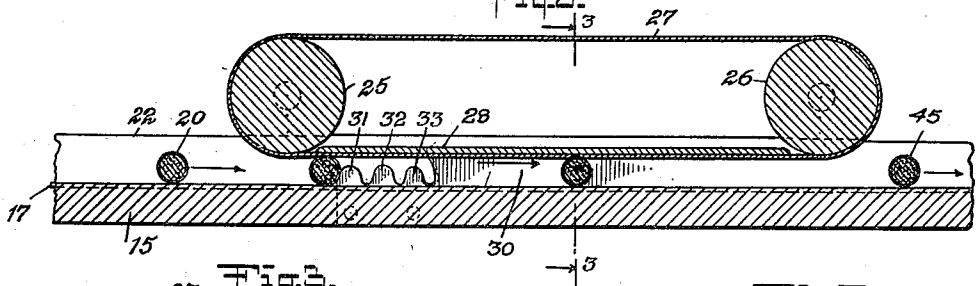


Fig.3.

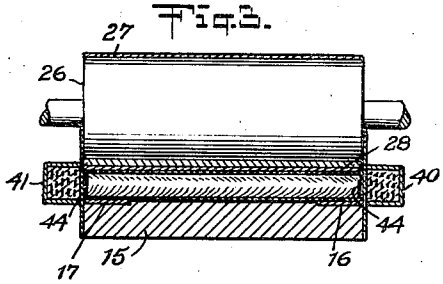


Fig.5.

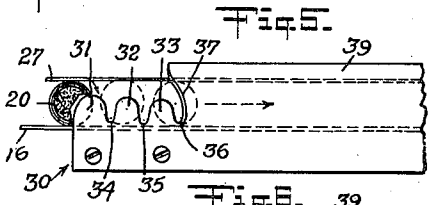


Fig.8.

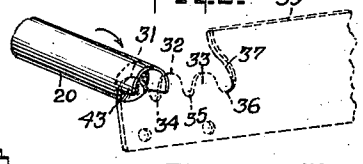


Fig.4.

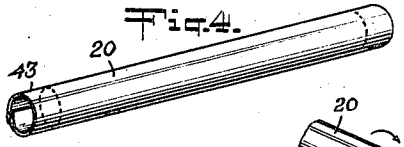


Fig.6.

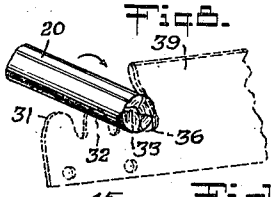


Fig.7.

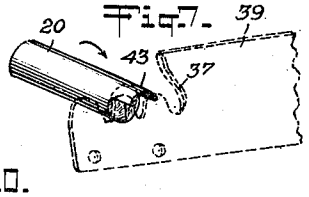


Fig.9.

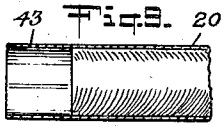


Fig.10.

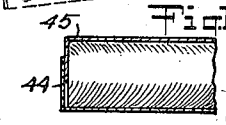
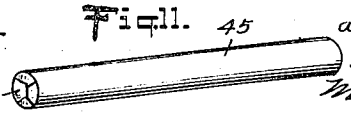


Fig.11.



Witnesses

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UNITED STATES PATENT OFFICE

2,375,144

FOLDING MECHANISM

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Application May 28, 1943, Serial No. 488,828

2 Claims. (Cl. 93—2)

This invention relates to a folding mechanism and more particularly to a mechanism adapted to fold the ends of tubular material and to seal them into place.

While our invention contemplates the folding and sealing of material which is more or less thermo-setting in its nature, it is not to be restricted to such and may be applied to materials to which an adhesive has been applied. An object of this invention is to provide a means for closing the ends of tubular members in mass production, sealing said ends and delivering the closed tube in a sealed condition. While in the drawing, we have disclosed a tube sealed at both ends, it will be appreciated that either or both ends of the tube may be sealed in the same manner. While we have shown our invention as applied to a tube containing a cigarette this is for the purposes of illustration only. Our invention may well be used to provide hollow tubes opened at one end, however, for the purposes of the disclosure and description we will describe our invention as it may be used with cigarette machinery in producing cigarettes described and claimed in (Constantine S. Stephano) copending application Serial No. 483,393.

In the accompanying drawing,

Fig. 1 is a top plan view of our device.

Fig. 2 is a cross sectional view thereof.

Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a view of the tube containing the cigarettes as it is delivered to the machine.

Figs. 5, 6, 7, and 8 are views of the tube in the various stages of folding.

Fig. 9 is a cross sectional view of a tube bearing the cigarettes as they enter the machine.

Fig. 10 is a cross sectional view showing the tube and cigarettes in section as it leaves the machine.

Fig. 11 is a perspective view of the sealed tube.

As is set forth in the copending application Serial No. 483,393 individual cigarettes are fed into a cigarette wrapping machine at spaced intervals and wrapped longitudinally in moisture-proof material such as Cellophane to form a continuous tube having cigarettes enclosed therein at spaced intervals. The tube is then cut between the cigarettes and delivered to the flat bed 15. Bed 15 is provided on either side with a pair of belts 16 and 17 which move in the direction of the arrows 18 and 19 to carry the tube 20 in the direction of the arrow 21. Guide members 22 and 23 center the tube 20 on the belt 16 and 17.

We provide a pair of rollers 25 and 26 on which are mounted a soft belt 27 made of rubber or other suitable material which rotates in the same direction as the belts 16 and 17 but at a slightly greater rate of speed. A bed member 28 is provided to give the bottom of the belt 27 a firm basis. Mounted on either side of the bed member 15 and extending slightly beyond the belt 27 is a folding member 30 provided with rounded teeth on fingers 31, 32, and 33 defining rounded notches or grooves 34, 35, and 36 therebetween. The edge 37 defining the rear of the notch 36 is bent slightly outwardly at 38.

Adjacent to the locking portion 39 of the folding member 30 are positioned heaters 40 and 41. As the tubes 20 are fed along on the belts 16 and 17 and contact the belt 27 they are caused to rotate in view of the fact that the belt 27 is moving at a faster rate of speed than the belts 16 and 17 and they accordingly roll forward along the belts 16 and 17. As the end of the tube 43 engages the round tooth 31 a portion of the tube is folded inwardly as shown in Fig. 5 and the edge of the remaining portion rolls into the notch 34 while another fold is made by the tooth 32 as shown in Figs. 6 and 7.

As the open portion of the tube rolls into the notch 35 and engages the tooth 33, a third fold is made, the fourth and final fold is made as the last portion of the open tube is enclosed in the notch 36 against the edge 37 as shown in Fig. 8 thus forming a complete fold. If adhesives have already been applied, they will have a chance to set as the tube travels along under the belt 27. If thermo-setting materials such as moisture proof Cellophane are used, the heaters 40 and 41 will deliver heat to the closed end 44 to seal the closure and the finished tube 45 is delivered to a tray by the belts 16 and 17.

While we have shown the folders 30 on either side of the machine, it will be appreciated that were only one end to be closed only one folder will be used. It will also be appreciated that other devices may be added and substituted in our machine for bringing the tube into contact with the folding mechanism.

We claim:

1. Mechanism for closing the ends of tubular material including a bed, a relatively slowly moving belt above said bed for carrying said material along said bed, a relatively fast moving belt above said slow moving belt for engaging and rotating said tubular material as it is carried along said bed, a folding member adjacent each edge of said bed, said folding member having a

plurality of raised portions positioned to engage one of the ends of said tubular material and to make successive folds in said material as it is rotatingly moved along said bed, and means for sealing said folds.

2. In combination with a cigarette rolling machine for rolling tubular wrappers around finished cigarettes, including a bed, a relatively slowly moving belt above said bed for carrying said tubular wrapped cigarettes along said bed and a relatively fast moving belt above said slow belt for engaging and rotating said cigarettes as they are carried along said bed, of a folding member adjacent each edge of said bed, said folding member having a plurality of raised portions positioned to engage one of the ends of the tubular wrapping of the cigarettes and to make successive folds in said tubular wrapping as the tubular wrapped cigarettes are rotatingly moved along said bed and means for sealing said folds.

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ROBERT ROLAND BRIGHTWELL.