Oct. 23, 1928. 1,688,982

W. E. MOLINS

APPARATUS FOR FEEDING CIGARETTES AND ARTICLES OF A SIMILAR SHAPE

Filed March 13, 1926

FIG. 1.

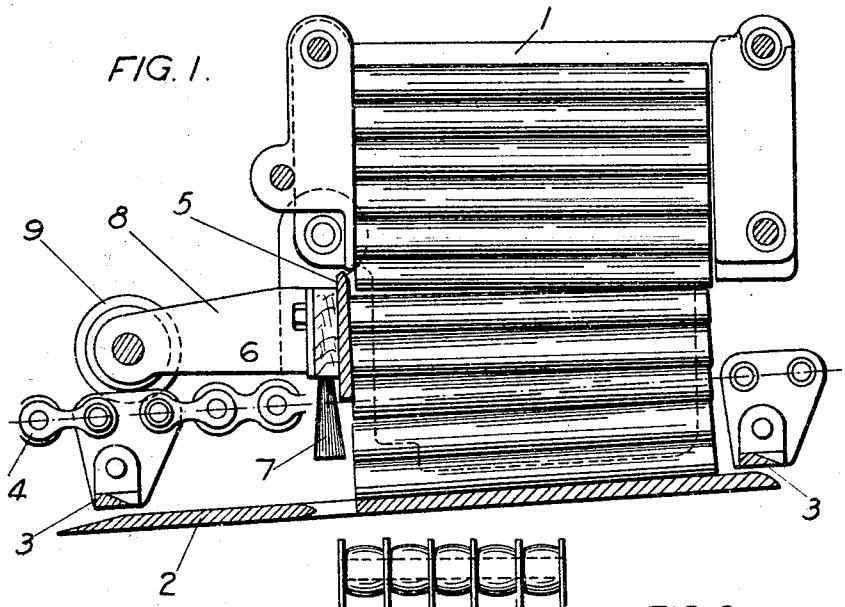


FIG. 2.

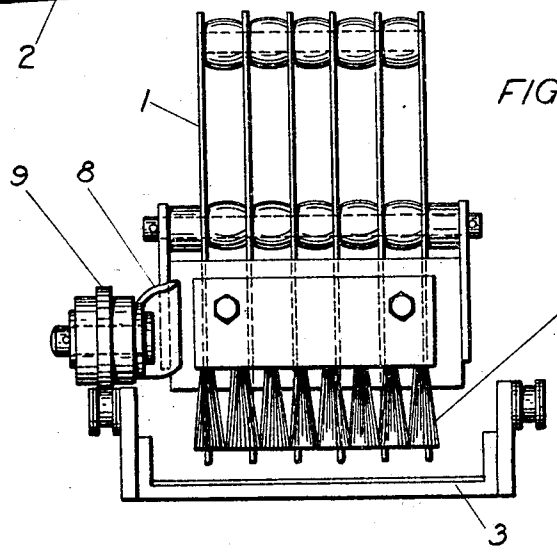
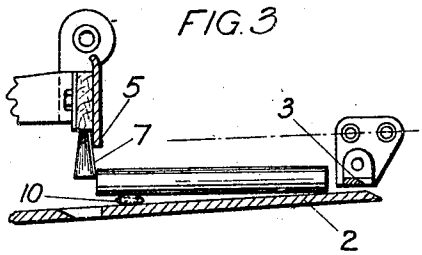


FIG. 3



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FEEDING CIGARETTES AND ARTICLES OF A SIMILAR SHAPE.

Application filed March 13, 1926, Serial No. 94,483, and in Great Britain April 22, 1925.

This invention is for improvements in apparatus for feeding cigarettes and articles of a similar shape, and relates more particularly to hoppers of the vane type, examples of which are illustrated and described in my British patent specifications Nos. 216326, 238355, 23614/25 and 31477/25. In such examples of hoppers provided with vane slots, the slots are closed at the ends, through which the cigarettes or like articles issue by a gate which is so positioned that it permits only the desired number of rows of cigarettes to be removed by a conveyor. With this arrangement it is found in cases where only one row of cigarettes is to be moved at a time that the clearance between the end of the gate and the base upon which cigarettes fall from the vane is of necessity small, thereby rendering a tilted cigarette liable to foul the edge of the gate as it is moved in the direction of its axis.

When a hopper of the above character is used with a continuously running machine it is found that the cigarettes have little time to adjust themselves from a tilted to a horizontal position, with the result that cigarettes are often broken or damaged and a considerable amount of time is lost in removing the obstruction caused by a damaged cigarette.

It is the object of the present invention to provide means whereby the disadvantages hereinbefore referred to are obviated.

According to the present invention there is provided hopper apparatus of the kind referred to wherein the gate located at the delivery end of the vanes is provided with an element pendent from the lower edge thereof and adapted to yield in the direction of the axial movement of a cigarette.

Further the present invention consists of a hopper apparatus of the kind referred to wherein the gate located at the delivery end of the vanes and through which each cigarette is moved by a conveyor in an axial direction is provided with a yieldable element which tends to direct each cigarette with the axis thereof located in the direction of the path of the conveyor.

Thus if the advancing ends of one or more cigarettes in the row which is being removed from the vanes in an axial direction are not low enough, they will be forced against the flexible or yielding element which gives in the direction of the movement of the cigarette, and allows the same to pass from the hopper vane, at the same time preventing the cigarettes of succeeding rows from being removed from the vanes.

The flexible or outwardly yielding element may be constructed in various forms (for example it may be constructed as a brush or a series of fingers of spring steel or other suitable material, e. g., rubber or a like composition.) The brush or like flexible element may extend the full width of the vane slots, or a separate brush or element may be provided for the space between each pair of vanes.

Similarly the spring or other fingers may be arranged one to each pair of vanes, or a large number forming a comb may be mounted across the vane openings.

Further a hinged element or elements held in position by a spring or like yieldable member may be employed.

The invention is more particularly described with reference to the accompanying drawings, in which Fig. 1 illustrates the present invention applied to the type of vane hopper illustrated in my Brit. Pat. specification No. 238355, and Fig. 2 is an end view of Fig. 1: Fig. 3 illustrates how the invention obviates the cigarettes from being destroyed.

Referring to the drawings, 1 comprises vibrating vanes between which the cigarettes pass to a sloping table 2 arranged beneath the bottom of the vanes. Mounted above the vanes 1 is a hopper, preferably constructed according to the hopper described in my Brit. Pat. specification No. 216326. The space between the bottom of the vanes 1 and the table 2 is preferably arranged to be approximately half the diameter of a cigarette, and adapted to move through the space between the vanes and the table are bars 3 carried upon a continuously rotating endless chain 4, which bars are adapted to remove a row of cigarettes from the table 2. The chains 4 are preferably driven in the manner described in my Brit. Pat. specification No. 238355.

Mounted at the forward end of the vanes 1 is a gate 5, to which is secured a brush holder 6 from which extend brushes 7. The ends of the brushes 7 are preferably arranged so as to just clear one row of cigarettes and are formed of bristles of a consistency sufficient to withstand the forward pressure of the second row of cigarettes. The brush holder 6 is preferably connected to an arm 8, the free end of which carries a wheel 9 adapted to engage with the chain 4 in such a manner that as the

chain is moved forwardly the wheel 9 vibrates in a vertical direction so as to vibrate the brush 7 in the direction of the axis of the cigarettes.

Referring to Figs. 3 and 4, it will be observed that when the gate is of a rigid character and is adapted to extend towards the table 3 so as to permit only sufficient clearance for one cigarette to pass through the space below the gate 5, if a fragment 10 of tobacco becomes lodged under the lowermost row of cigarettes the conveyor bar 3 would move the cigarette into engagement with the gate 5 and cause the same to be damaged, whereas with the lower end of the gate being formed of a flexible character as in Fig. 4, the brush 7 would yield to the pressure of a cigarette and thereby save the same from being damaged.

It is to be understood that the invention may be applied to vane hopper of devices different to those described in my four prior specifications hereinbefore referred to.

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

1. A hopper apparatus which comprises in combination a series of vanes adapted to be arranged beneath the delivery end of a cigarette hopper, and adapted to arrange the cigarettes in superimposed rows, a gate located at the delivery end of said vanes arranged to permit one or more rows of cigarettes to be removed therefrom by a conveyor, and yieldingly controlled means pendent from the lower edge of said gate adapted to yield in the direction of the axial movement of said cigarettes.

2. A hopper apparatus which comprises in combination a series of vanes adapted to be arranged beneath the delivery end of a cigarette hopper, and adapted to arrange the cigarettes in superimposed rows, a gate located at the delivery end of said vanes arranged to permit one or more rows of cigarettes to be removed therefrom by a conveyor, and a brush pendent from the lower end of said gate adapted to yield in the direction of the axial movement of said cigarettes.

3. A hopper apparatus which comprises in combination a series of vanes arranged beneath the delivery end of a cigarette hopper, and adapted to arrange the cigarettes in superimposed rows, a gate located at the delivery end of said vanes arranged to permit one or more rows of cigarettes to be removed therefrom by a conveyor, a brush pendent from the lower edge of said gate arranged to yield in the direction of the axial movement of said cigarettes, and means operable to vibrate said brush as the cigarettes are being fed forwardly.

In testimony whereof I hereunto affix my signature.

WALTER EVERETT MOLINS.