June 24, 1930. W. B. BRONANDER ET AL 1,765,820

HOPPER FOR CIGARETTE PACKAGING MACHINES

Filed Sept. 19, 1928

Fig. 1.

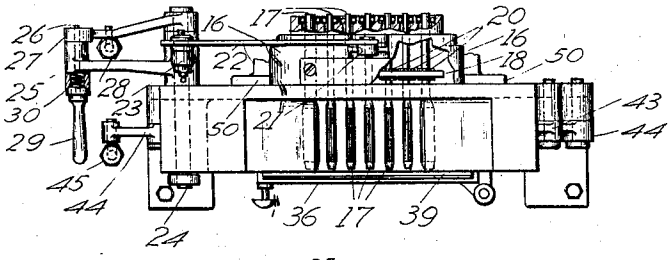


Fig. 2.

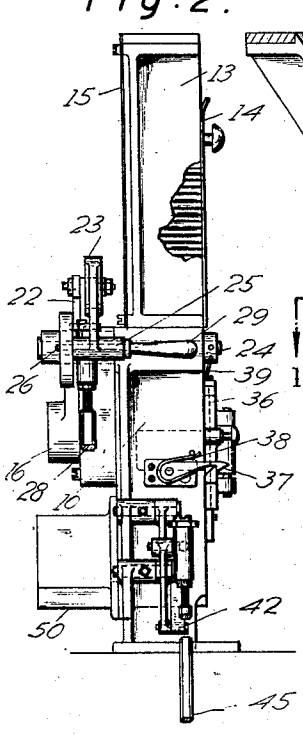


Fig. 3.

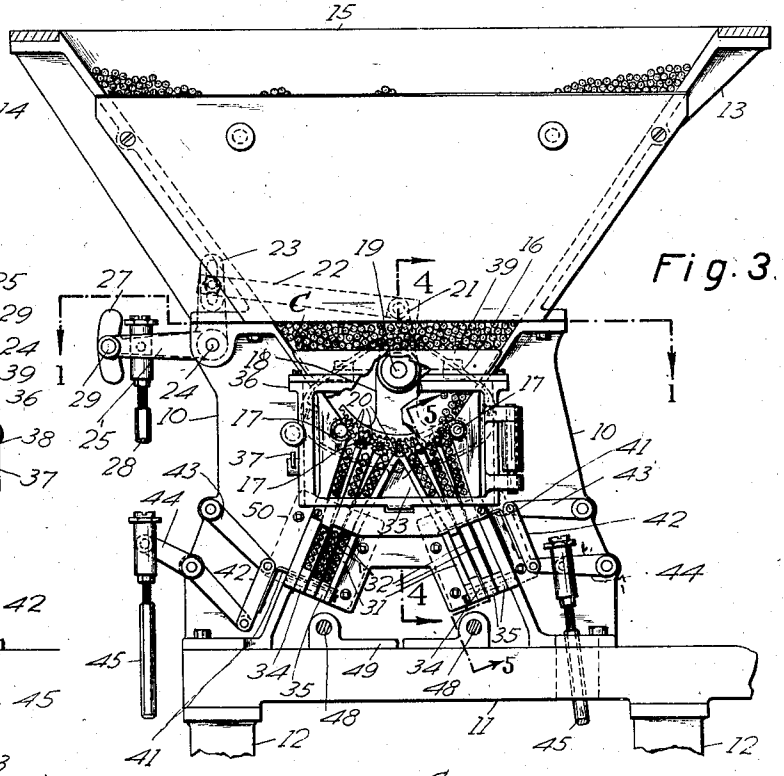


Fig. 4.

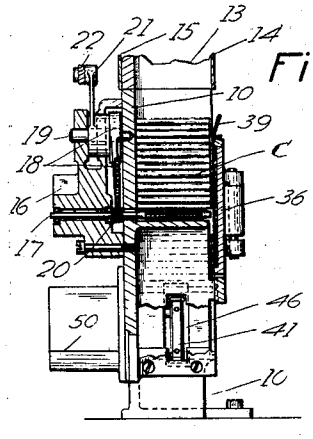
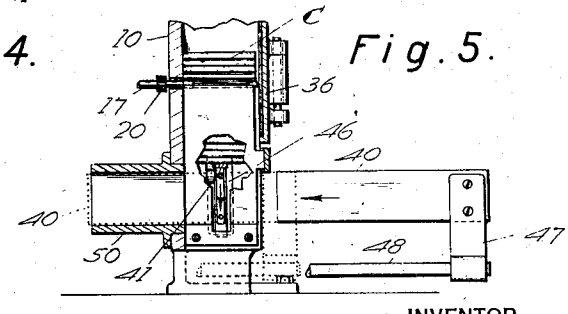


Fig. 5.



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UNITED STATES PATENT OFFICE

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HOPPER FOR CIGARETTE-PACKAGING MACHINES

Application filed September 19, 1928. Serial No. 306,929.

This invention relates to hoppers for cigarette packaging machines, its principal objects being to provide, in a hopper which feeds cigarettes through passageways to the packaging mechanism, improved means for preventing the cigarettes from becoming jammed or misaligned at the entrance of the passageways, and means for preventing cigarettes from becoming injured, or jamming, as a result of falling too rapidly to their ejecting position in the lower ends of the passageways. A hopper of the type which this invention is designed to improve, and the relation of such a hopper to the compacter and other parts of the cigarette packaging machine, is fully disclosed in Patent No. 1,608,163, patented November 23, 1926, to Wilhelm B. Bronander, to which reference is made.

In the present device, jamming or misalignment at the entrance of the cigarette passageways is prevented by pairs of oscillating rollers. It has been found that by oscillating the rollers, that is, rotating them alternately in opposite directions, these rollers will shake the cigarettes and prevent them from sticking together, or entering between the rollers two at a time or at an angle, as sometimes happens with rollers operating in one direction.

Also, in feeds of this general type hitherto used, the cigarettes in the passageways dropped freely to ejecting position at the bottom of the passageways. This sometimes caused injury or jamming of the cigarettes, especially when a cigarette fell endwise.

With the object of preventing this in the present device, a finger is provided projecting into the passageways, which finger is operated to lower the cigarettes in the passageway relatively slowly, instead of permitting them to fall.

From the uninjured and properly aligned cigarettes which have thus arrived in the lower portions or ejecting chambers of the passageways, groups containing the desired number of cigarettes are alternately ejected by two reciprocating plungers which push them into the receiving chambers of a compacter, such as that disclosed in the above mentioned patent, which performs the first stage of the packaging operation.

With these and other objects in view, the invention consists of certain constructions and combinations which will be hereinafter fully described and then specifically set forth in the hereunto appended claims.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a sectional view in elevation of the improved cigarette hopper, taken on line 1—1 of Fig. 3;

Fig. 2 is a side elevation of the hopper shown in Fig. 3;

Fig. 3 is a front elevation of the improved hopper, with parts broken away to show the agitating rollers;

Fig. 4 is a sectional side elevation of the hopper, on line 4—4 of Fig. 3; and

Fig. 5 is a sectional side elevation of the hopper on line 5—5 of Fig. 3, showing the arrangement of the cigarette lowering fingers and ejecting plungers.

In carrying the invention into effect, there is provided in a feed for cigarette packaging machines a holder for a supply of cigarettes, a plurality of parallel rollers on which a portion of said supply rests, said rollers being spaced apart to permit passage of only one cigarette at a time between adjacent rollers, and means are provided for oscillating said rollers to prevent jamming or misalignment of the cigarettes as they are fed from the holder. In the best constructions carrying out the invention there is provided a source of supply of cigarettes, together with a passageway leading downwardly from said supply and means are provided coacting with the passage to lower cigarettes therein, thus preventing injury or jamming of the cigarettes due to uncontrolled falling in the passageway. The means above referred to may be widely varied in construction within the scope of the claims, for the particular machine 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.

In the device shown, a hopper body 10 is mounted on a base plate 11 supported by stands 12. The hopper body carries a receptacle 13 providing a source of supply of cigarettes, which has a removable front wall 14 and a fixed rear wall 15. A housing 16 attached to hopper body 10 carries, in ball bearings, knurled agitating rollers 17 extending into and through the hopper body. A gear segment 18, mounted on a shaft 19 supported in the housing 16, rocks spur gears 20 mounted on the rollers 17. An arm 21 of this segment is connected by a link 22 with a bell crank lever 23 fixedly mounted on shaft 24. An arm 25 of the bell crank lever 23 carries a transverse pin 26 by which it is coupled to a lever 27, which is loosely mounted on the shaft 24 and is actuated by the cam operated rod 28. The coupling pin 26 is provided with a handle 29 and is held in engagement with the lever 27 by means of a spring 30 (Fig. 1). In case the hopper feeding mechanism should temporarily fail, or the cigarettes in the hopper should become jammed from any other cause and require a quick shaking, the pin 26 can be readily disengaged from lever 27 by pulling handle 29, whereupon arm 25 can be actuated manually.

The rollers 17, supporting a portion of the supply of cigarettes, are so placed as to form the lips of the mouths of the passageways 31 into which the cigarettes are to be fed. Adjacent rollers are spaced apart to permit only one cigarette at a time to pass between them. The passageways 31 are formed by partition plates 32 held in position by the bracket 33 and the stop bars 34 and 35 fastened to the hopper body 10. The upper ends of the partition plates of adjacent passageways are joined together and fit partly around the rollers 17. A door 36 having a transparent front plate is hinged to the hopper body 10 and is kept closed by latch 37 having a spring 38. The outwardly bent plate 39 mounted on top of door 36 guides the cigarettes into the hopper body. By opening the door 36, any accidentally misplaced or damaged cigarette may be removed.

As the cigarettes are fed by the oscillating rollers into the passageways 31, they are, in each group of passageways, arrested and supported according to the time in the cycle of the machine, either by one of the ejecting plungers 40, as when at the end of its forward stroke shown in dotted lines in Fig. 5, or by one of the projecting fingers 41 in its up position, as when the respective plunger is at the end of its return stroke shown in full lines in Fig. 5.

The fingers 41 which lower the cigarettes into the collecting chambers forming the lower portion of the passageways, are attached to the links 42 held by the parallel levers 43 and 44, which are cam operated by means of the rods 45, reciprocated by suitable cam and cam follower means. The fingers 41 project transversely into the passageways through suitable slots 46 in the partitions and in their lowest position fit also in grooves across the stop bars.

When the cigarettes in one set of passageways have been lowered by the respective finger 41, a group of cigarettes arranged to form one package being then positioned in the respective collecting chambers, one of the forked plungers 40 which are mounted for reciprocation on a bracket 47 held by a shaft 48 sliding in bearings 49, traverses a set of passageways and ejects the entire group through one of the guide compartments 50 attached to hopper body 10 into the previously mentioned compacter (not shown) in which it is compacted into a pack preliminary to its advance into the wrapping mechanism. In the preferred form, in its retreat or backward movement, the plunger, having the cigarettes in the passageways resting on it, stops for a moment after passing the finger 41, thus providing ample time for movement to cigarette supporting position of the finger 41 while the cigarettes in the passageways are still supported by the plunger extending part way across the passageway. The plunger then completes its return stroke, clearing the passageway for the downward movement of the finger, lowering the next group of cigarettes into the collecting chamber. Suitable means for imparting this motion of the plunger is provided, as for instance a conventional cam of proper contour operating a cam-follower connected to the shaft 48.

What is claimed is:

1. In a feed for cigarette packaging machines, the combination with a holder for a supply of cigarettes, of a plurality of parallel rollers on which a portion of said supply rests, said rollers being spaced apart to permit passage of only one cigarette at a time between adjacent rollers, and means for oscillating said rollers, whereby said rollers alternately move cigarettes to adjacent passages.

2. In a feed for cigarette packaging machines, the combination with a holder for a supply of cigarettes, of a plurality of parallel rollers on which a portion of said supply rests, said rollers being spaced apart to permit passage of only one cigarette at a time between adjacent rollers, and means for oscillating said rollers, said means including pinions on the rollers and a swinging gear sector in engagement with said pinions, whereby said rollers alternately move cigarettes to adjacent passages.

3. In a feed for cigarette packaging machines, the combination with a holder for a supply of cigarettes, of a plurality of parallel rollers on which a portion of said supply rests, said rollers being spaced apart to permit passage of only one cigarette at a time between adjacent rollers, passageways leading from the spaces between the rollers for directing cigarettes to the packaging machine in predetermined row formation, and means for oscillating said rollers, whereby said rollers alternately move cigarettes to adjacent passageways.

4. In a feed for cigarette packaging machines, the combination with a holder for a supply of cigarettes, of a plurality of parallel rollers on which a portion of said supply rests, said rollers being spaced apart to permit passage of only one cigarette at a time between adjacent rollers, means for oscillating said rollers, passageways leading downwardly from the spaces between the rollers, and means coacting with said passageways to lower cigarettes therein.

5. In a feed for cigarette machines, the combination with a source of supply of cigarettes, of a passageway leading downwardly from said supply, and means coacting with said passageway to lower the cigarettes therein including a cigarette supporting member projecting through an apertured wall of said passageway to engage cigarettes therein, and parallel motion actuating mechanism for said member.

6. In a feed for a cigarette packaging machine, the combination with a source of supply of cigarettes, of a downwardly directed passageway leading therefrom, means for lowering cigarettes in said passageway having movement to a position supporting the cigarettes in the passageway, a plunger reciprocating across said passageway to eject a group of cigarettes therefrom, and operating in its retreat to support the cigarettes in the passageway during the movement to position of said lowering means.

7. In a feed for cigarette machines, the combination with a source of supply of cigarettes, of a passageway leading downwardly from said supply, and means coacting with said passage to lower the cigarettes therein, said lowering means including a finger extending transversely under the cigarettes in the passage and means for lowering said finger including parallel link motion actuating mechanism for said finger.

In testimony whereof, we have signed our names to this specification.

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