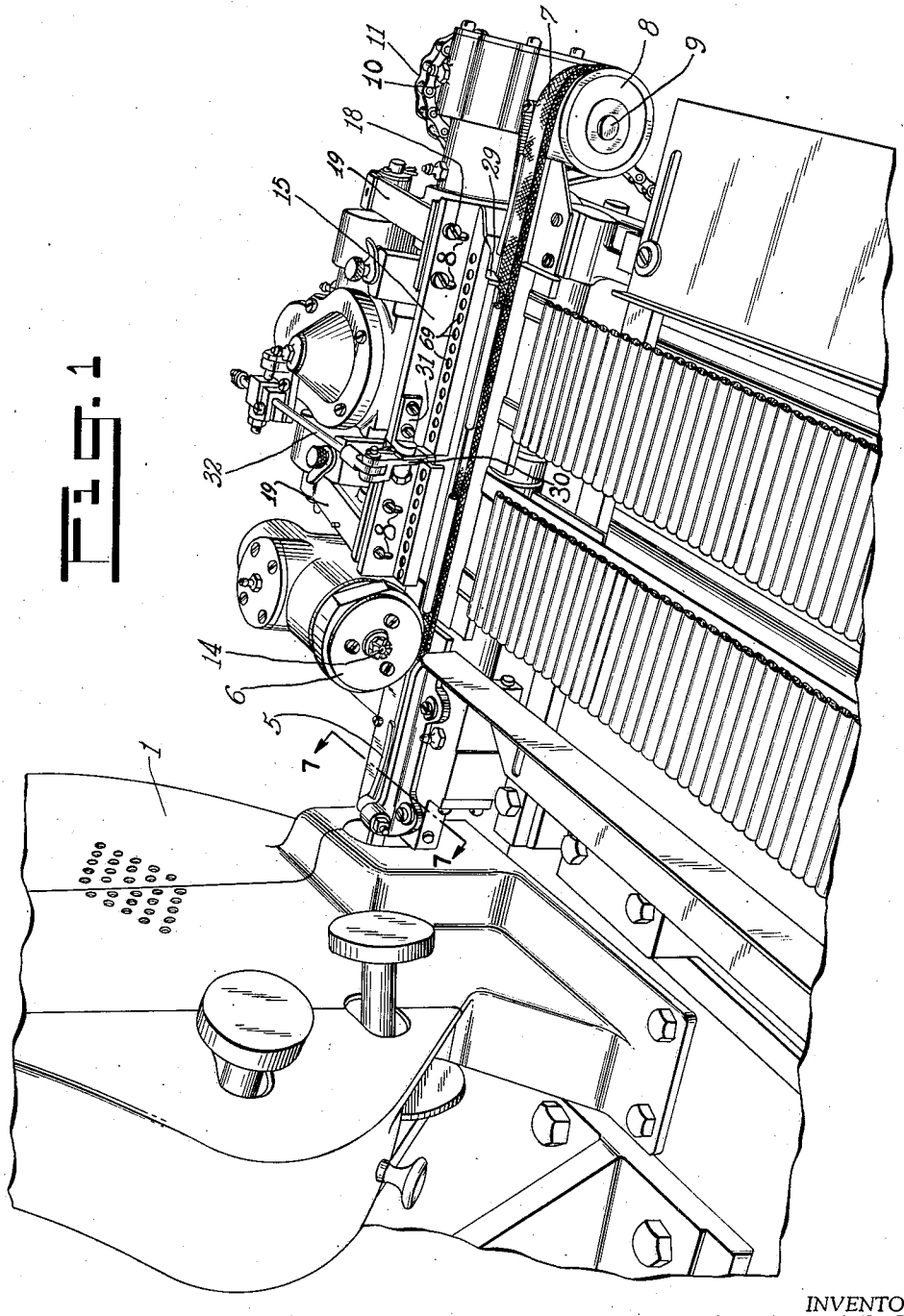
Dec. 10, 1940. J. W. LEARY 2,224,735

CIGARETTE CATCHER

Filed Oct. 6, 1937 4 Sheets-Sheet 1

FIG. 1



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CIGARETTE CATCHER

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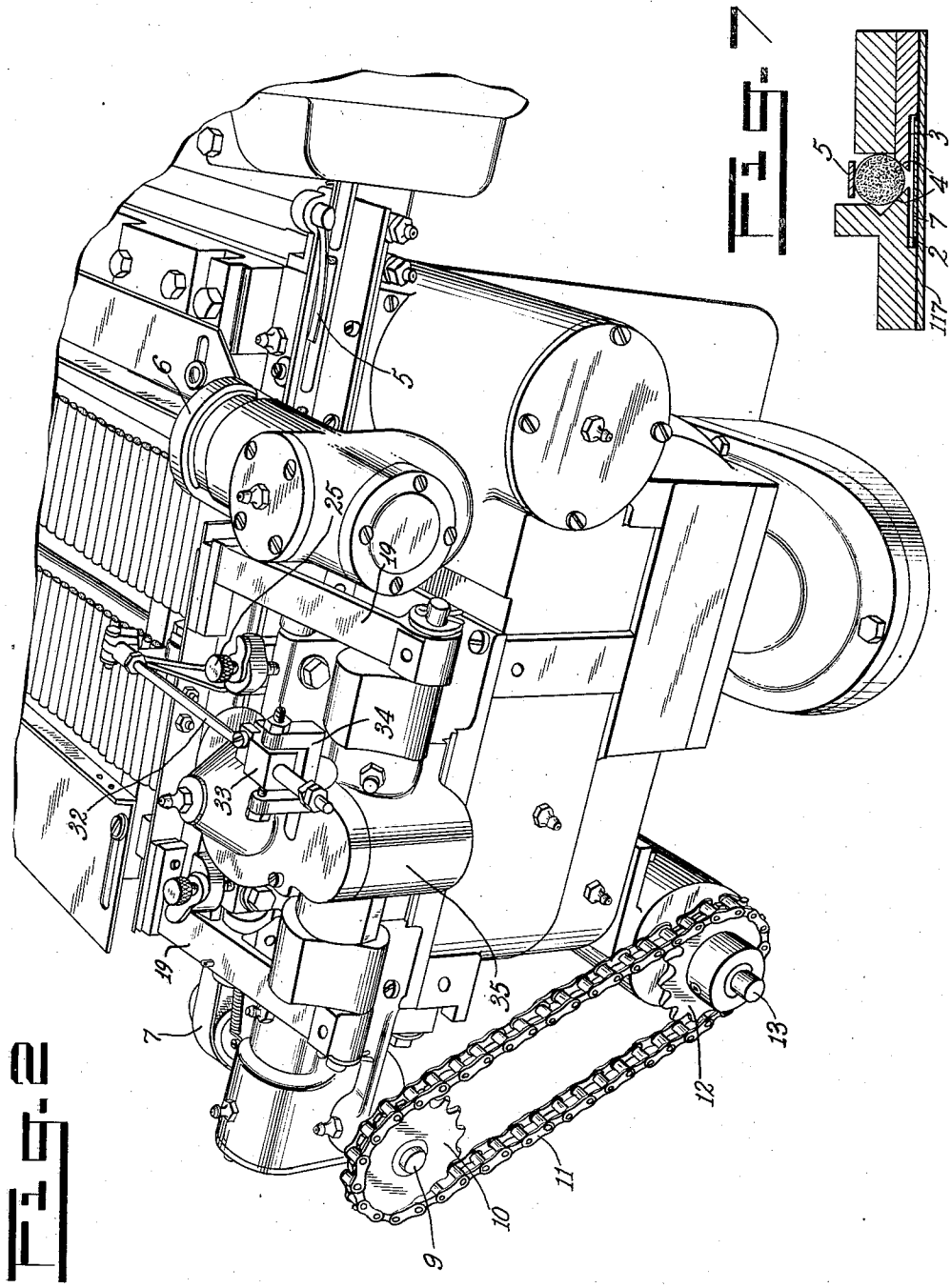


Fig. 2.

Fig. 7.

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CIGARETTE CATCHER

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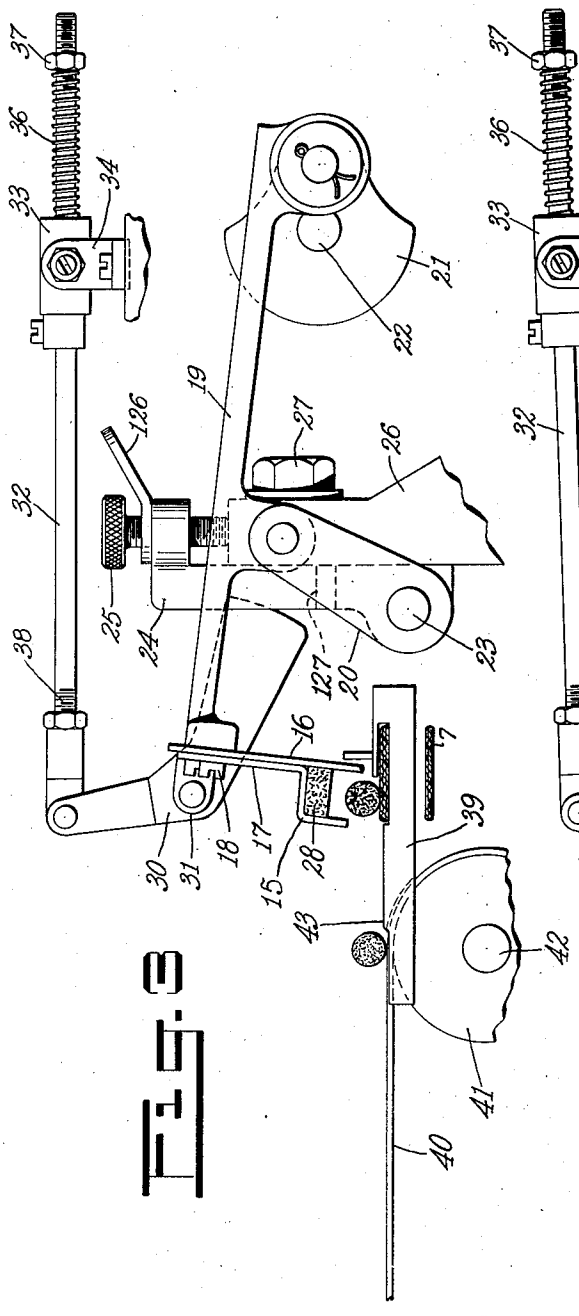


Fig. 3

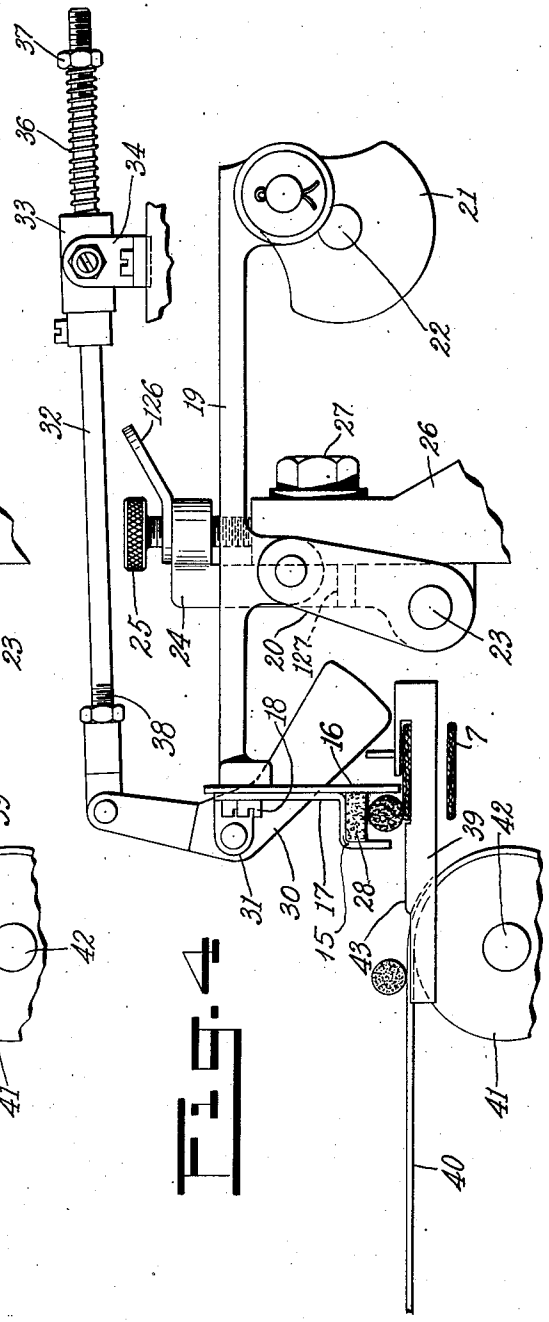


Fig. 4

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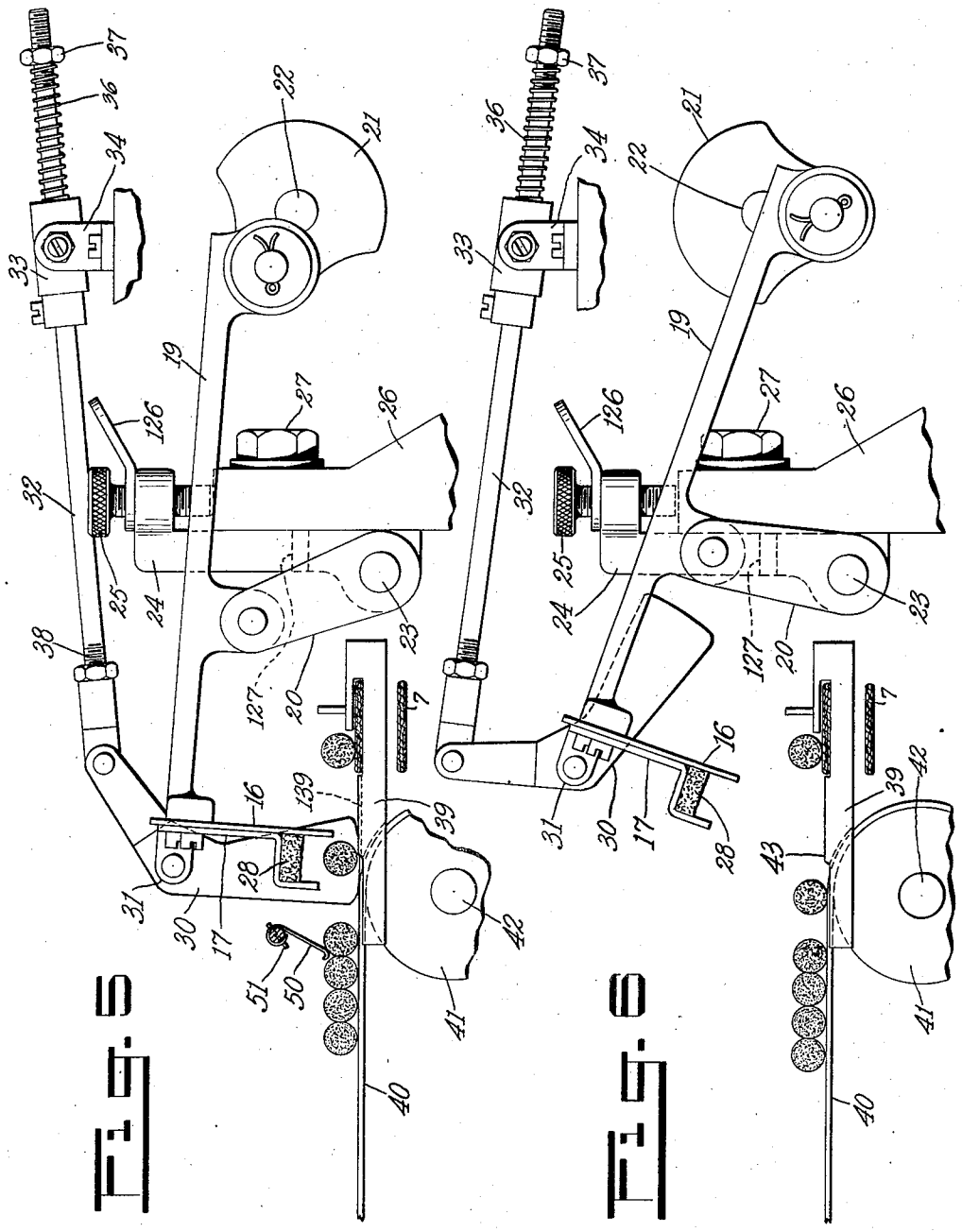


Fig. 5

Fig. 6

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UNITED STATES PATENT OFFICE

2,224,735

CIGARETTE CATCHER

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Application October 6, 1937, Serial No. 167,547

11 Claims. (Cl. 198—31)

This invention relates to continuous rod cigarette machines, more particularly to cigarette collectors or catchers for the same. The main object of the invention is to retard and stop the cigarettes issuing endwise from a cigarette machine cutoff, without injuring their ends. Heretofore the cigarettes have been gripped between stationary and/or moving surfaces which coacted to retard or halt them. In practice, however, it has been found that the cigarettes were harmed by rubbing against the gripping surfaces, with the result that "brush ends" or the like were formed thereon.

With this purpose in view, the cigarettes are advanced from the cigarette machine cutoff onto a traveling surface on which they are displaced sidewise and retarded by a member moving transversely of the cigarettes. This member is provided with a surface engaging the rear side of the cigarettes and thereby displacing them. Said member may also be provided with an abutment arranged to stop the cigarettes and have a face overlying the top of the cigarettes and spaced sufficiently therefrom so that it will not grip the same and yet will be adapted to engage and retard the cigarettes as they rebound from said abutment.

A further object of the invention is to displace pairs of cigarettes simultaneously into spaced rows, without the use of diverging belts as heretofore.

Still another object of the invention is to provide an adjustment of the displacing member or trough which permits the same to be adjusted close enough to the cigarettes to retard them as they rebound from the stop, or closer, to grip the cigarettes, and thereby retard them.

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 perspective view of the front of a collector embodying the invention;

Fig. 2 is a similar view of the rear of the same;

Fig. 3 is a detail end elevation of the displacing member in its initial position;

Fig. 4 is a similar view of the same member during displacement of a cigarette;

Fig. 5 is a similar view of the displacer in its extreme position;

Fig. 6 is a similar view of the displacer at an intermediate position during retraction thereof; and

Fig. 7 is a detail view taken on the line 7—7 of Fig. 1, showing an improved construction for guiding the cigarettes from the cigarette machine cutoff to the segment roll.

In the particular embodiment of the invention illustrated herein, the cigarettes issuing endwise from cutoff 1 of a cigarette machine of conventional construction are delivered onto plates 2 and 3 having ledges 4 against which the cigarettes are held by a leaf spring 5 (Fig. 7) until they reach and are engaged by a segment roll 6 (Figs. 1 and 2). The latter acts to clamp the cigarettes against an endless belt 7, and as both the belt and the segment roll are traveling at a speed in excess of the cigarette rod speed, a longitudinal acceleration and separation of successive cigarettes is obtained. The leaf spring 5 prevents acceleration of the cigarette until it is engaged by the segment roll 6. If this were not done the cigarettes would get out of timed relationship, as the traction of the belt 7 on the cigarettes would vary at different speeds. The belt 7 is driven by a pulley 8 carried by a shaft 9 provided with a sprocket 10 driven by chain 11 from a sprocket 12 on a shaft 13 driven from the cigarette machine or otherwise. The segment roll 6 is fastened on a shaft 14 which may be suitably driven from the cigarette machine at the same speed as the belt to clamp successive cigarettes thereon and thereby establish spaces between the same. The belt 7 advances the spaced cigarettes across the path of the displacing member 15. The latter may be constructed in the form of an inverted trough, if desired, comprising a flat plate 16 and an angular plate 17 (Figs. 3–6) fastened by bolts 18 (Fig. 1) to connecting rods 19 pivotally mounted on rocker-arms 20 and actuated by cranks 21 fixed on a shaft 22 driven from the cigarette machine. The crank shaft 22 may be suitably driven from the counter shaft 9 through a reduction gear or otherwise, so that their dead centers will coincide with the entry of the cigarettes into the trough and their release from the same.

The pivots 23 of the rocker arms 20 are preferably mounted in vertically adjustable brackets 24 which are equipped with adjusting screws 25 abutting the pedestal 26 whereon the brackets are mounted. Upon adjustment of the latter, the connecting rods 19 will be raised or lowered with the trough 15, and the lock nuts 126 may be turned to maintain the brackets 24 in the desired position. In this manner the motion of the trough may be regulated to avoid gripping the cigarettes forwarded into the trough. Moreover, the adjustable mounting of the trough may be readily regulated to accommodate various di-

ameters of cigarettes which come within the range of sizes of the cigarette making machine. After the requisite adjustment has been made the brackets 24 may be locked in position by the bolts 27. Slots may be provided in the plates 16 and 17 as indicated at 8 in Fig. 1, to permit adjustment thereof vertically upon the bolts 18 to avoid interference with the belt 7 at the various adjustments obtained with the adjusting screws 25. To prevent adjustment of the trough into gripping engagement with the cigarettes, the brackets 24 may be immovably fastened to the pedestal 26 by dowel pins 127 after being adjusted to the proper position.

At its remote end the trough is preferably provided with a stop or abutment 29 (Fig. 1) which serves to halt a cigarette in a predetermined position after it has been displaced sidewise out of the path of the following cigarette. As the cigarettes are pushed sidewise by the rear side of the trough, it is believed that a current of air is created under the front edge of the trough which tends to lift the cigarettes into contact with the inner face of the top of the trough and thereby retard their endwise movement. To promote this mode of operation, the trough may be suitably perforated, for example as seen at 9 at the top in Fig. 1, to vent the air currents created during the transverse displacement of the trough, so that the cigarettes will be carried up against the inner face of the top of the trough, and thereby retarded. This trough may be lined with a strip 28 of sponge rubber, cork, or other suitable friction material which will assist in retarding the cigarettes. When it is preferred to displace a pair of cigarettes simultaneously, as is the case with high speed cigarette machines, the trough may have a gap wherein is arranged a stop 30 movable periodically into position to halt the second cigarette of each pair of cigarettes (see Fig. 5). For this purpose on a bracket 31 fastened to the plate 17 may be pivoted a stop finger 30 which is pivotally connected to a rod 32 mounted in a block 33 swiveled in a pedestal 34 fastened to the housing 35 for the bearings of the crank shaft 22 (Fig. 2). On the end of the rod 32 projecting through the block 33 is arranged a compression spring 36 bearing against a collar 37 threaded on the rod, the spring normally urging the rod backward and preventing sliding movement of the rod in the block. At the end of the return movement of the trough the finger 30 assumes a position behind the trough, the necessary adjustment of the collar 37 and the threaded connection 38 of the rod being made to permit the finger 30 to be swung into this initial position about its pivot on the rod 32. During its forward movement the trough comes down into a position overlying a pair of cigarettes advanced by the belt 7 in the spaced relation created by the segment roll 6, the trough assuming a more or less vertical position at this point and the finger 30 being swung into the median transverse gap in the trough (Fig. 1), to intercept the second cigarette of the pair therein (Fig. 5). The cigarettes are not retarded while still aligned with the cigarette rod, but are moved sidewise toward the back in Fig. 1, about one-half inch before contacting the abutment 29 and the finger 30. Following the rebounding of the cigarettes therefrom the air current produces a momentary contact of the cigarettes with the strip 28 and thereby retards and halts them while the trough continues its forward movement and displaces the pair of cigarettes across the support or table 39, and onto the collecting belt 40, the trough moving upwardly and thereby swinging the finger 30 clear of the cigarettes (Fig. 6). Following this the trough is moved back to initial position together with the stop 30 (Fig. 3).

It will be understood that the trough may be adjusted through the agency of the adjusting screws 25 to grip the cigarettes while displacing them transversely, as indicated in Fig. 4. In that event the lining strip 28 will be formed of resilient material such as sponge rubber or the like, so that it may be compressed sufficiently to prevent injury to the cigarettes. In either case the cigarettes will be delivered in two spaced rows.

The collecting belt 40 is continuously driven by a pulley 41 fastened on a shaft 42 driven from the cigarette machine or otherwise. The rear plate 16 of the trough disengages the cigarettes shortly before they reach the end of a ridge 43 (Fig. 4) which is formed on the table 39 and is slightly higher than the upper run of the collecting belt. Due to the fact that the crank 21 is at a dead center at this stage, the trough is momentarily stationary. Therefore the cigarette will roll off the edge of the ridge 43 very slowly, and there will be no likelihood of slippage thereof on the collecting belt. Heretofore, when the cigarettes reached the collecting belt while being displaced sidewise at a substantial speed, slippage of the cigarettes on the collecting belt would occur and cause the cigarette to remain in position to be engaged by the following cigarette with the consequent danger of misplacement. Moreover, the cigarettes enter the trough while the crank 21 is passing through the other dead center, so that there is less likelihood of misplacement or injury thereof as with a member moving rapidly at this point.

In the event that a cigarette should enter the trough out of the desired timed relationship and obstruct the movement of the stop finger 30, the spring 36 is weak enough to permit the stop to yield. The obstructing cigarette, instead of being ripped open, will be displaced sidewise by the trough to a position wherein it may be conveniently removed.

The individual cigarettes delivered on the collecting belt 40 may be held back by yielding fingers 50, as shown in Fig. 5, until the following cigarette is advanced against it, whereby their combined resistance will be sufficient to raise the fingers 50 and permit passage of the first cigarette. Heretofore, particularly at high speeds, the cigarettes were advanced so rapidly on the collecting belt 40, that there were no cigarettes left to stop following cigarettes, wherefore the latter were sometimes misplaced or turned askew. The motion of the fingers 50 may be limited by cross-pins 51 to prevent raising or flinging of the same into an ineffective position.

The top of table 39 may be grooved, as indicated by the dotted line 139 in Fig. 5, to permit the stop 30 to move into a position wherein its bottom edge is flush with or slightly below the bottom of the cigarette halted by it.

What is claimed is:

1. In a cigarette collector, the combination with means arranged to support a line of cigarettes issuing endwise from a cigarette machine cutoff, of an inverted trough moving transversely of the line of cigarettes to displace the cigarettes transversely and provided with a forward wall extending into the proximity of said means, and a surface arranged to overlie the line of cigarettes on said means and retard their endwise move-

ment as they are carried into contact therewith by the air current created during the transverse displacement of said trough.

2. In a cigarette collector, the combination with traveling means arranged to receive and advance cigarettes issuing endwise from a cigarette machine cutoff, of an inverted trough adapted to admit endwise and confine a cigarette advanced on said means and displace the cigarette transversely therefrom, and mechanism for imparting a transverse motion to said trough which increases from a minimum speed at the position at which the trough engages the cigarette to a maximum and then diminishes to a minimum speed at the position at which the trough disengages the cigarette.

3. In a cigarette collector, the combination with means for accelerating cigarettes issuing endwise from a cigarette machine cutoff to establish spaces therebetween, of a member adapted to displace a pair of the spaced cigarettes transversely, mechanism for moving said member to displace pairs of cigarettes simultaneously, an abutment on said member for halting the foremost cigarette of the pair being displaced, a movable stop on said member, and means for periodically moving said stop into position to halt the rear cigarette of the pair being displaced.

4. In a cigarette collector, the combination with means for accelerating cigarettes issuing endwise from a cigarette machine cutoff to establish spaces therebetween, of a member adapted to displace a pair of the spaced cigarettes transversely, mechanism for moving said member transversely to displace pairs of cigarettes simultaneously, an abutment on said member for halting the foremost cigarette of the pair being displaced, a movable stop on said member, and means for periodically moving said stop into position to halt the rear cigarette of the pair being displaced, said member being provided with a face arranged to overlie the cigarettes and retard their endwise movement as they are carried into engagement therewith by the air current created by the transverse movement of said member.

5. In a cigarette collector, the combination with means for advancing a line of cigarettes, of an inverted trough, and means for imparting four-motion movement to said trough, downwardly to confine cigarettes on said means, sidewise to transversely displace the confined cigarettes from said means, upwardly to release the displaced cigarettes and then backwardly to initial position.

6. In a cigarette collector, the combination with traveling means arranged to receive and advance endwise cigarettes issuing endwise from a cigarette machine cutoff, of a hollow member adapted to admit cigarettes endwise and displace the same transversely, said member being movable into a position overlying a cigarette on said means and extending downwardly to both sides of said cigarette to confine the same and having a surface overlying the confined cigarette and in sufficient proximity to said means to engage the underlying cigarette on said means when the confined cigarettes are raised by air currents during their transverse displacement, whereby the endwise movement of the cigarettes is retarded, and mechanism for transversely moving said member to overlie, confine and push cigarettes transversely on said means.

7. In a cigarette collector, the combination with means for advancing a line of cigarettes, of an inverted trough adapted to admit the advancing cigarettes endwise and displace the same transversely, members carrying said trough, and cranks connected to and actuating said members to cause said trough to overlie and displace cigarettes transversely on said means, said cranks being arranged to impart no displacement to said member transversely of the cigarettes at the positions at which it engages and disengages the cigarettes.

8. In a cigarette collector, the combination with means for advancing a line of cigarettes, of an inverted trough adapted to admit the advancing cigarettes endwise and displace the same transversely, members carrying said trough, rocker-arms supporting said members, and means for actuating said members to cause said trough to overlie and grip cigarettes on said means and displace the same transversely.

9. In a cigarette collector, the combination with a device for accelerating cigarettes issuing endwise from a cigarette machine cutoff to establish spaces therebetween, of a member adapted to displace a pair of the spaced cigarettes transversely, mechanism for moving said member to displace pairs of cigarettes simultaneously, an abutment on said member for halting the foremost cigarette of the pair being displaced, a movable stop on said member, and means for moving said stop into position to halt the rear cigarette of the pair being displaced, said means including a yielding connection to said stop which will permit yielding of said stop and the passage of cigarettes which are out of the properly timed relationship.

10. In a cigarette collector, the combination with a device for accelerating cigarettes issuing endwise from a cigarette machine cutoff to establish spaces therebetween, of a member adapted to displace the spaced cigarettes transversely, a movable stop on said member, and means for moving said stop into position to halt a cigarette being displaced, said means including a yielding connection to said stop which will permit yielding of said stop and the passage of cigarettes which are out of the properly timed relationship.

11. In a cigarette machine, the combination with means for accelerating cigarettes issuing endwise from a cigarette machine cutoff, to establish spaces therebetween, of means to be engaged by the leading end of each cigarette whereby the motion endwise of a plurality of spaced cigarettes is arrested simultaneously while the cigarettes are still in axial alignment.

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