(No Model.) 3 Sheets—Sheet 1.

D. B. STROUSE.

MECHANISM FOR DISPOSING AND ARRANGING CIGARETTES AS DELIVERED FROM CIGARETTE MACHINES.

No. 589,873. Patented Sept. 14, 1897.

Fig. 7

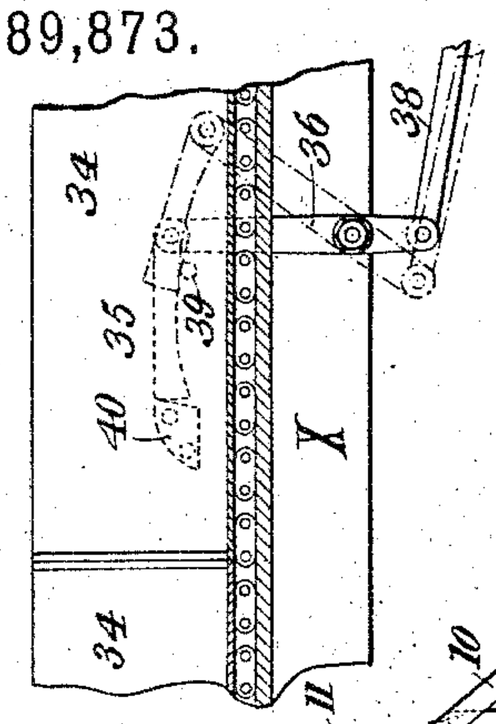

Fig. 1

Fig. 8

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by Robt. H. Duncan Att'y

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Fig. 2

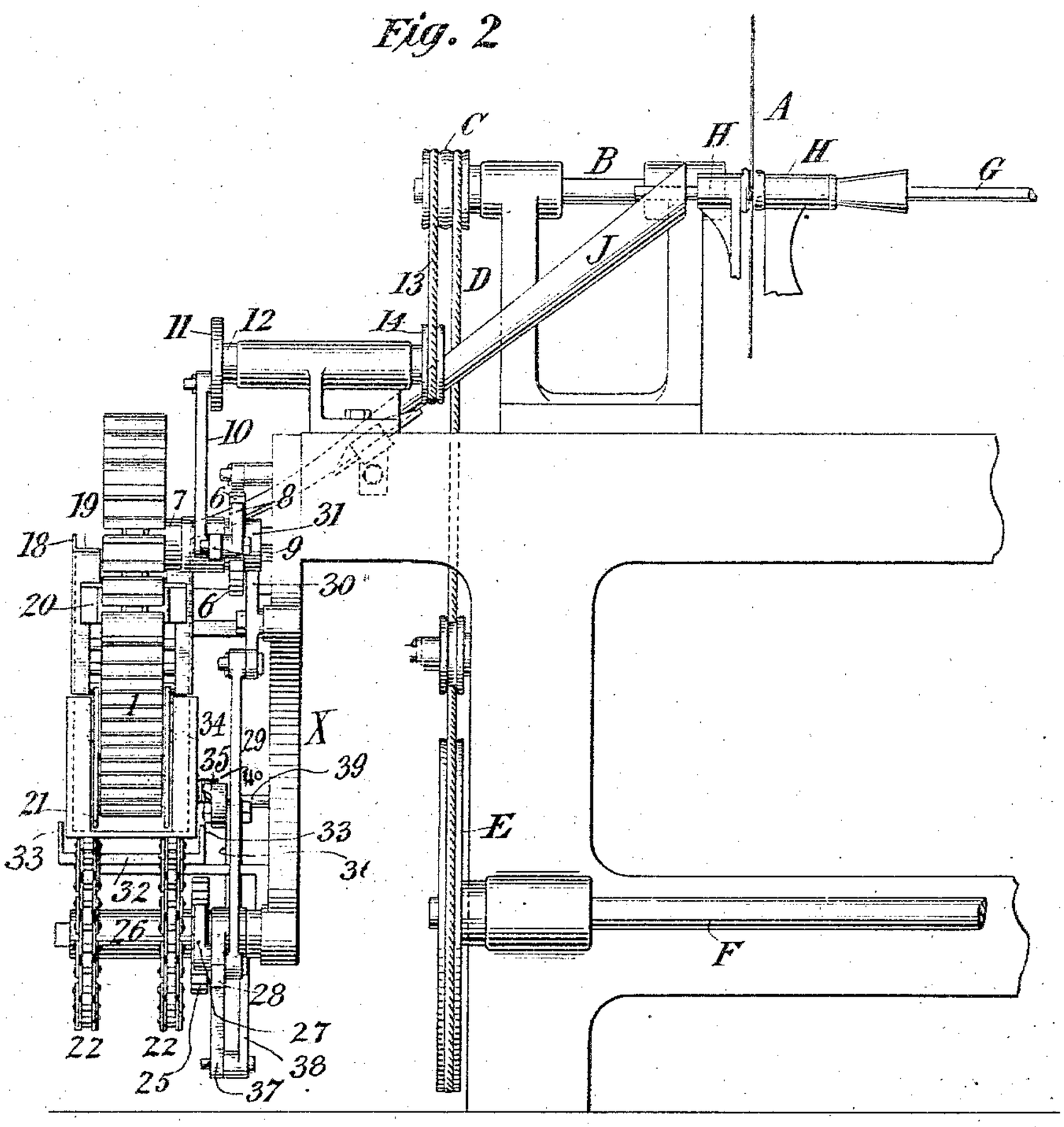

Fig. 3

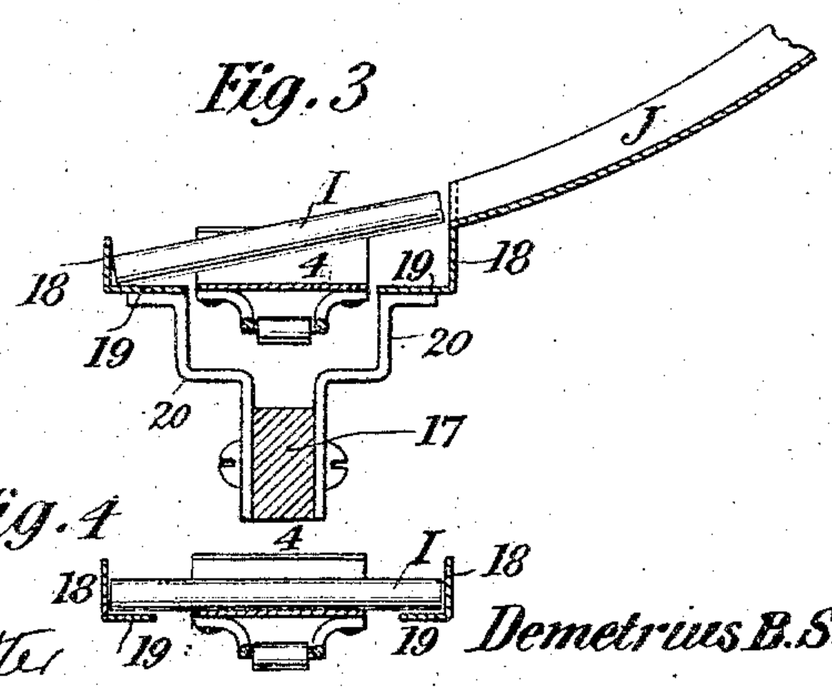

Fig. 4

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(No Model.) 3 Sheets—Sheet 3.

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MECHANISM FOR DISPOSING AND ARRANGING CIGARETTES AS DELIVERED FROM CIGARETTE MACHINES.

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Fig. 5

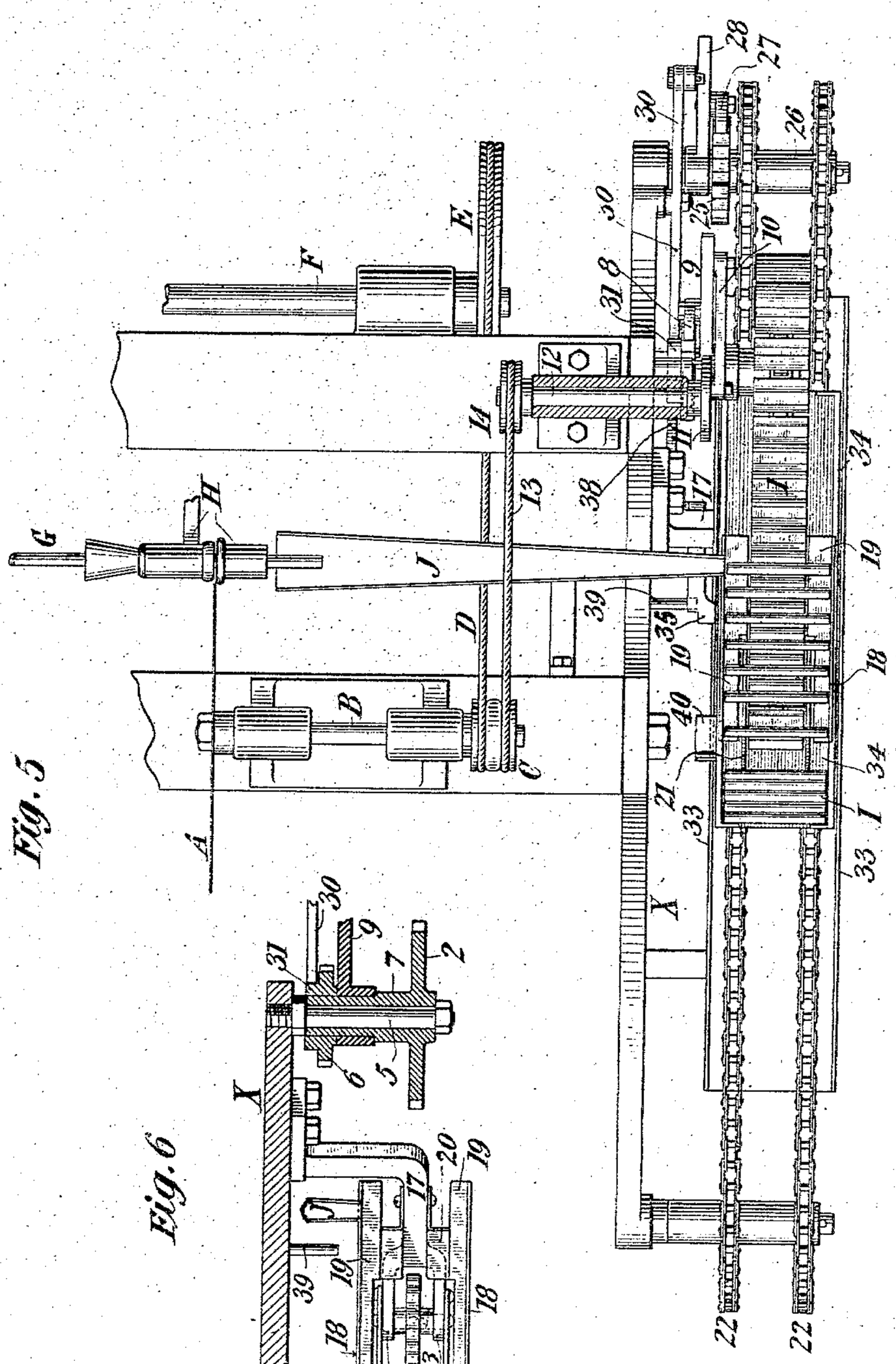

Fig. 6

Witnesses:
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UNITED STATES PATENT OFFICE.

DEMETRIUS B. STROUSE, OF SALEM, VIRGINIA, ASSIGNOR TO THE BONSACK MACHINE COMPANY, OF SAME PLACE.

MECHANISM FOR DISPOSING AND ARRANGING CIGARETTES AS DELIVERED FROM CIGARETTE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 589,873, dated September 14, 1897.

Application filed September 29, 1896. Serial No. 607,337. (No model.)

To all whom it may concern:

Be it known that I, DEMETRIUS B. STROUSE, a citizen of the United States, residing in the city of Salem, county of Roanoke, and State of Virginia, have invented certain new and useful Improvements in Mechanism or Devices for Disposing and Arranging Cigarettes as They are Delivered from Cigarette-Machines, fully described and represented in the following specification and accompanying drawings, forming a part of the same.

The present invention relates to that class of cigarette-machines which operate by the continuous method to make long or continuous cigarettes and sever them into short marketable lengths.

Heretofore, as a rule, the severed cigarettes as they are cut from the continuous cigarette have been allowed to drop from the cutting mechanism into a box or other receptacle in a haphazard manner, forming an irregular pile or heap in which the cigarettes lie in almost every direction, and resulting in great inconvenience in handling them for inspection and packing.

It is the object of the present invention to provide a construction by which the individual cigarettes as they are cut from the continuous cigarette shall be conveyed laterally and deposited in a regular manner in convenient receptacles; and to this end my invention consists, generally stated, of an endless conveyer adapted to receive the cigarettes and devices by which the cigarettes are arranged, so that their ends will overhang the edges of the conveyer; also an endless conveyer adapted to receive and transport the cigarettes having its discharge end arranged to move within a box or other receptacle adapted to receive and retain the cigarettes in regular relation to each other, and means for discharging the cigarettes from the conveyer also located within the box, and also means for quickly moving the receiving-boxes forward to bring a rear box into proper position beneath the discharge of the conveyer, all of which features and combinations of devices, together with other details of construction, being hereinafter fully described.

My invention may be considered as a combination of devices capable of attachment to or use in connection with the delivery end of a cigarette-machine of any of the ordinary types which makes continuous cigarettes and cuts them into individual or short lengths, and it is unnecessary to describe or illustrate any part of such machine other than the end where the cutting-off device is located and the finished cigarettes are delivered.

A detailed description of the devices in their preferred form embodying the features of my invention will now be given in connection with the accompanying drawings, forming a part of this specification, as follows:

In the drawings, Figure 1 is a side elevation of my construction in connection with the delivery end of a cigarette-machine, certain parts being removed or broken away to show the parts beyond. Fig. 2 is an elevation of the same viewed in the direction of the arrow in Fig. 1. Fig. 3 is a detail section of certain parts on line *x x* of Fig. 1. Fig. 4 is a detail section of certain parts on the line *y y* of Fig. 1. Fig. 5 is a plan or top view. Fig. 6 is a horizontal section through the line *z z* of Fig. 1, looking downward. Fig. 7 is a detail view of portions of the receiving-boxes and mechanism for moving them rapidly, and Fig. 8 is a plan view of the same.

Referring to the drawings, A represents a cutting-off knife, shown as disk-shaped, of a cigarette-machine mounted upon a properly-supported shaft B, driven by pulley C, which in turn is driven by a belt D, passing over wheel E on shaft F.

G is a continuous or long cigarette (made by any mechanism adapted for this purpose, but not shown in the drawings) passing through a supporting-tube H, which is divided by a narrow slit in which the disk-shaped cutter works to sever the cigarette into smokable lengths, as I, and J is a guide or spout extending from the delivery end of tube H to the endless conveyer, hereinafter particularly described.

Having referred to so much of a cigarette-machine proper as is necessary for an understanding of the construction and operation of the devices to which my invention especially relates, I will now describe those devices in

connection with the accompany drawings, as follows:

1 represents an endless conveyer passing over wheels 2 and 3 and arranged to move transversely or laterally to the line of the continuous cigarette. Preferably this endless conveyer is of the usual construction of chain belt, and the wheels 2 and 3 are the usual form of sprocket-wheels for supporting and driving such belts. Preferably, also, the wheels 2 and 3 are of such size and so mounted relatively to each other that the upper branch of the chain belt will move down an incline, as shown in Fig. 1.

The endless conveyer 1 is preferably provided with shallow receptacles or cups 4, having open ends, these receptacles being preferably shorter than the cigarettes to be received and carried therein and being secured to the conveyer at equal distances from each other and in any desired number, the number varying according to the length and speed of the conveyer and circumstances of use. If the conveyer is a chain belt, one receptable may be secured to each link, as shown in the drawings. The receptacles are conveniently bent or struck from sheet metal and riveted in place, and their top edges are preferably bent backward from the direction of their advance, so that if they should come in contact with the cigarettes as they pass over the wheel 3 they would be less liable to tear or injure them. The conveyer 1 may be of any suitable construction and may be mounted and driven in any desired way to accomplish its purposes. As shown in the drawings, it is a chain belt passing over the sprocket-wheels 2 and 3, which may be arranged in any proper relation to each other and driven at the desired speed by suitable connection with the driving mechanism of the cigarette-machine, or they may be driven by means independent of such machine.

As shown in the drawings, the parts to which my invention specially relates are secured to a plate X, which is fixed by bolts or otherwise to the delivery end of a cigarette-machine, and the endless conveyer is connected with the cutter-shaft of the cigarette-machine and is driven in unison with the revolution of such shaft, the construction and connection of the parts being as follows: The wheel 2 (which is the driving-wheel for the chain belt) is, as shown in the drawings, arbored upon a stud 5, fixed to plate X, which is bolted or otherwise secured to the delivery end of a cigarette-machine. The wheel 2 and the chain belt passing over the same are driven by ratchet-wheel 6, secured to the extended hub 7 of wheel 2, and is operated by a pawl 8, pivoted to pawl-lever 9, one of whose ends is loosely secured to hub 7, while its other end is pivotally attached to a connecting-rod 10, which in turn is pivoted to a crank-arm of wheel 11, which latter is mounted on shaft 12 and is driven by belt 13, passing over pulleys 14 and C, which latter pulley revolves the cutting-off blade A, these pulleys being preferably of equal diameters, whereby the wheel 11 makes one revolution and moves the ratchet-wheel 6 one notch and the chain belt one link forward at each revolution of the cutter-disk A. The teeth of the ratchet-wheel 6 are equal in number to the receptacles 4 on the chain belt or conveyer 1, whereby each receptacle can be brought opposite the delivery end of the guide J to receive a cigarette as often as the cutter-blade operates to sever or cut off a cigarette. A retaining-pawl 15 (shown in Fig. 1) is pivoted to the plate X to prevent any backward rotation of the ratchet-wheel.

The small sprocket-wheel 3, over which the conveyer 1 passes, is conveniently arbored in a fork 16, formed on the free end of a bent arm 17, which is secured to plate X, as fully shown in Fig. 6.

As before stated, the conveyer-receptacles 4 are preferably considerably shorter than the length of the cigarettes to be transported therein, and it is desirable to center the cigarettes, so that their ends will overhang the ends of the receptacles equally. For this purpose vertical guide-plates 18 are arranged on each side of the conveyer, extending from the exit end of the guide or spout J downward with and parallel to the edges of the conveyer and operate, in the first place, to furnish abutments on the one hand for the forward ends of the cigarettes as they are discharged from the guide J into the receptacles 4 and on the other hand for the rear ends of the cigarettes to prevent them from rebounding too far toward the guide J, whereby the cigarettes will be centered in the receptacles with their ends overhanging; and, in the second place, to provide side guides for the cigarettes as they are conveyed downwardly to near the point of their discharge from the conveyer. In Fig. 1 the rear plate 18 is shown extending from the end of the guide J to the sprocket-wheel 3, the corresponding front plate having been removed to show the parts beyond. The positions of plates 18 relatively to each other, the edges of the conveyer, and the ends of the cigarettes are shown in Figs. 3 and 4. The side guides 18 are preferably provided with foot-plates 19, which lie nearly in a plane with or slightly below the bottom of the receptacles 4 and operate to prevent the ends of the cigarettes from being caught between the edges of guides 18 and the ends of receptacles 4, especially the forward ends of the cigarettes as they are discharged from the guide J. The plates 18 and 19 are conveniently formed from a single strip of sheet metal by bending the same into L shape, and are secured in place by riveting or soldering them to pieces 20, which in turn are secured to the arm 17 or to any other fixed part of the mechanism.

On each side of the smaller sprocket-wheel 3 and conveniently secured to the arms of the fork in which the wheel is arbored are the discharge-plates 21, which are separated from each other sufficiently to permit the conveyer, but not the cigarettes, to pass between them. These plates are so shaped at their forward ends that as the conveyer is deflected from its path to pass over the wheel 3 the overhanging ends of the cigarettes will be brought in contact with the edges of the plates and retained thereby while the conveyer moves from under them, and the discharged cigarettes will drop down the inclined edges of the plates 21, as seen in Fig. 1.

The cigarettes as they are discharged from the conveyer may be deposited in regular order in receiving-boxes which are preferably moved step by step under the conveyer, the boxes being of such construction that the discharge end of the conveyer works within them. A construction for this purpose is shown in Figs. 1, 2, and 5, and consists of two endless chains 22, passing over sprocket-wheels 23 and 24, the upper branches of these chains running horizontally and at the desired distance beneath the lower edges of plates 21 to enable the bottom of a box carried by the chains to pass freely beneath plates 21. These chains, as shown in the drawings, are driven from wheels 24, which are arbored on a stud fixed to plate X and are conveniently driven by a ratchet-wheel 25, secured to hub 26 and rotated step by step by pawl 27, pivoted to arm 28, which is loosely secured to the wheel-stud and is operated by pawl-lever 29, pivoted to arm 30, which in turn is pivoted to plate X and is operated by a double cam 31, secured to the hub of ratchet-wheel 6, as shown in Figs. 1, 2, 5, and 6. The upper branches of the chains 22 are kept in horizontal position by passing over a supporting-table 32, secured to plate X, and this table is provided with guides 33 upon its edges to keep the receiving-boxes properly alined as they are advanced along and beneath the conveyer 1.

A receiver or box 34, adapted to be placed upon and fed along by the chain belts under the conveyer 1 and of such construction that the discharge end of the conveyer will be contained and operate within the box to discharge the cigarettes with regularity therein, is shown in Figs. 1, 2, and 5, and consists of a rectangular box with an open top having its interior width slightly greater than the length of the cigarettes and having its ends contracted so that the end openings will be only wide enough to clear the plates 21 when the box is fed along.

It will be understood from the drawings that as the box is fed along the opening in its contracted forward end will admit the plates 21 and the portion of the conveyer between said plates, and thereafter throughout the length of the box the discharge end of the conveyer 1 and the plates 21 will remain inside the box and operate to discharge and deposit the cigarettes therein. It will also be perceived that by the action of the double cam 31, which, through the connections described and shown, operates the pawl 27 to advance the chain belts 22, the box 34 is fed forward the distance imposed by two ratchet-teeth of wheel 25 during each complete revolution of the conveyer 1, so that the number of cigarettes deposited in the box at each of its stations will be equal to one-half of the cigarettes carried by the conveyer during one complete revolution. When the forward end of the box is slightly advanced beyond the forward edge of the plates 21, it is in position to receive the cigarettes as they are discharged from the conveyer, and they will be disposed and arranged with regularity in a pile or vertical row between the forward end of the box and the forward edges of the plates 21, the walls of the contracted opening in the forward end of the box sustaining the pile in front and the edges of the plates 21 in the rear. As the box is moved along additional steps to make additional stations empty spaces will be left for additional rows or piles of cigarettes, and so on throughout the length of the box, the box being easily filled with cigarettes arranged in regular order to a height nearly equal to that of the discharging-plates 21.

When one of the receivers is advancing beneath the conveyer to receive cigarettes, another receiver may be placed in position on the chain belts 22, with its forward end in contact with the rear end of the advance receiver, so as to be in position to receive the cigarettes as soon as possible after the advance receiver has passed the forward end of the conveyer. To prevent the contracted ends of the receivers as they pass the discharge end of the conveyer from displacing the cigarettes and to prevent the cigarettes from being deposited on the end walls of the receivers, it is desirable that the receivers at this point should have a quick forward movement to bring the forward end of the rear receiver almost instantaneously into position to receive the cigarettes. This may be effected in any suitable way, as by suddenly shoving or pushing the receivers forward by hand, or by the application of mechanism which will rapidly advance them the desired distance.

A convenient form of mechanism is illustrated in Figs. 1, 7, and 8 of the drawings, and consists generally of a device constructed and arranged to reciprocate along the line of movement of the receivers and at the proper time to be brought into contact with them, so that they will be quickly pushed forward. As shown in the drawings, 35 is a pawl construction pivoted to the upper end of an arm 36, which in turn is pivoted to plate X, while its lower end is pivotally connected to arm 37 through rod 38, the arm 37 being rigidly fixed

to arm 28, which has a reciprocating vertical movement, as and for the purpose hereinbefore set forth. Means, as pin 39, is provided for keeping the pawl in an operative position. The receivers are provided with a lug or projection 40, secured in proper position relatively to the position of the pawl, so that as the receivers are advanced on the chain belts and just as the rear end of the forward receiver is filled with cigarettes the reciprocating pawl will drop behind the projection 40 on the rear box and its next forward throw will almost instantly shove both of the receivers forward the desired distance, which will depend largely upon the thickness of their end walls. Generally the forward and backward throw of the pawl should be about two inches, and the mechanism above described is preferably located between the plate X and the chain belts.

It is observed that the guide J may be inclined at a much less angle than that shown in the drawings, so that the cigarettes will not descend rapidly and by gravity alone, but may be slowly pushed along the guide and onto the conveyer by the following cigarettes. So, also, by making slight changes in the delivery end of the cigarette-machine the guide J may be dispensed with and the conveyer be made to run directly beneath the cutting mechanism to receive the cigarettes as they are discharged therefrom.

In the construction shown in the drawings it is assumed that the cutting-off mechanism operates to sever a cigarette at each revolution of the cutter A, and the conveyer 1 is advanced a step as often as a cigarette is severed. It is not, however, essential to my invention that the cutter sever a cigarette at each of its revolutions, but the movement of the conveyer should be so timed relatively to the operation of the cutting-off mechanism that it shall be advanced to receive a severed cigarette as often as one is cut off from the continuous cigarette, although the cigarette delivered to the conveyer at any instant need not be the identical one which at that instant is severed, as explained above.

I do not wish to limit my invention to the special construction of the various parts and devices as shown in the drawings and described herein, particularly the construction of the chain-belt conveyer, the receptacles 4, and the means for operating the same and the receivers, as the construction and operation of these and many other parts may be materially varied and the principal and important features of my invention be retained, which consists, essentially, in means for delivering a cigarette to an endless conveyer as often as a cigarette is severed by the cutting mechanism and conveying the cigarettes laterally and depositing them with regularity.

What is claimed as new is—

1. The combination with an endless conveyer adapted to receive and convey cigarettes and an inclined guide, as J, connecting the conveyer with the cutting-off mechanism of a cigarette-machine, of an abutting-plate 18 and foot-plate 19 arranged to act upon the forward end of the cigarettes as they are delivered from the guide to the conveyer, substantially as and for the purpose set forth.

2. The combination with an endless conveyer adapted to receive and carry cigarettes and of less width than the length of the cigarettes, of means for centering the cigarettes transversely on such conveyer, and devices arranged on each side of the conveyer and in the path of the overhanging ends of the cigarettes to remove the cigarettes from the conveyer.

3. The combination with an endless chain belt provided with a series of receptacles, as 4, secured thereto and adapted to receive and carry cigarettes and of a less width than the length of the cigarettes, of devices for centering the cigarettes in the receptacles, as they are delivered thereto, so that their ends will overhang, devices for maintaining the cigarettes in such centered position as the conveyer is advanced and devices arranged in the path of the overhanging ends of the cigarettes to remove them from the receptacles and deposit them in regular relation with each other.

4. The combination with an endless conveyer adapted to receive and transport cigarettes and devices, as plates 1, arranged on each side of the discharge of the conveyer to remove the cigarettes therefrom, of a receiver adapted to contain the cigarettes and constructed and arranged to permit the discharge end of the conveyer and devices for removing cigarettes therefrom to operate within the receiver, substantially as and for the purpose set forth.

5. The combination with a conveyer adapted to receive and carry cigarettes, of a receiver and means for advancing the same relatively to the conveyer and additional means for quickly advancing the receiver, whereby its forward end will quickly pass the discharge end of the conveyer, for the purpose set forth.

6. The combination with a conveyer for cigarettes, of two receivers, means for advancing the same relatively to the conveyer, and additional means for quickly advancing the receivers, whereby the rear end of one receiver and the forward end of the other will quickly pass the discharge of the conveyer, for the purpose set forth.

7. The combination with a conveyer for cigarettes, boxes or other receptacles for receiving the same from the conveyer and means for advancing the boxes relatively to the conveyer, of a device constructed and arranged to reciprocate along the line of movement of the boxes and at the proper time to engage the boxes and push them quickly forward, for the purpose set forth.

8. The combination with a box or other re-

ceptacle adapted to receive cigarettes from a conveyer or other source of supply and provided with a projection or lug as 40, means for advancing the box relatively to the source of supply, of a device, as pawl 35, means for reciprocating the same along the line of movement of the box and means for bringing the reciprocating device into engagement with the projection on the box to suddenly push it forward, for the purpose set forth.

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