

A. L. BOUCHER.
CIGARETTE TIPPING MACHINE.
APPLICATION FILED NOV. 20, 1908.

933,359.

Patented Sept. 7, 1909.

3 SHEETS—SHEET 1.

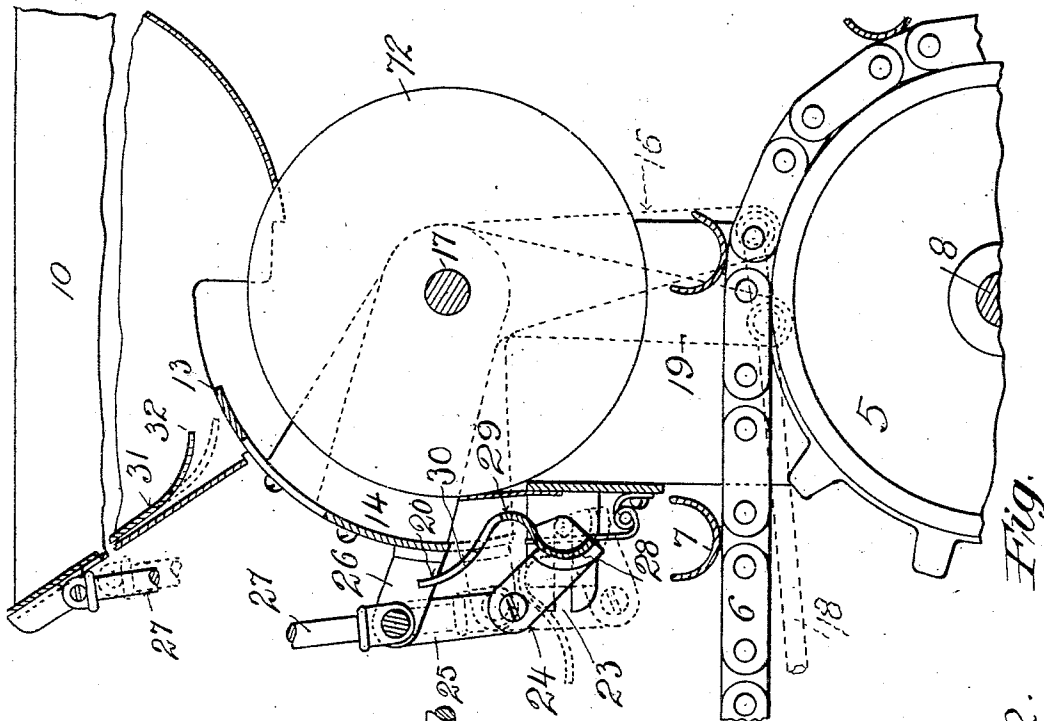


Fig. 1.

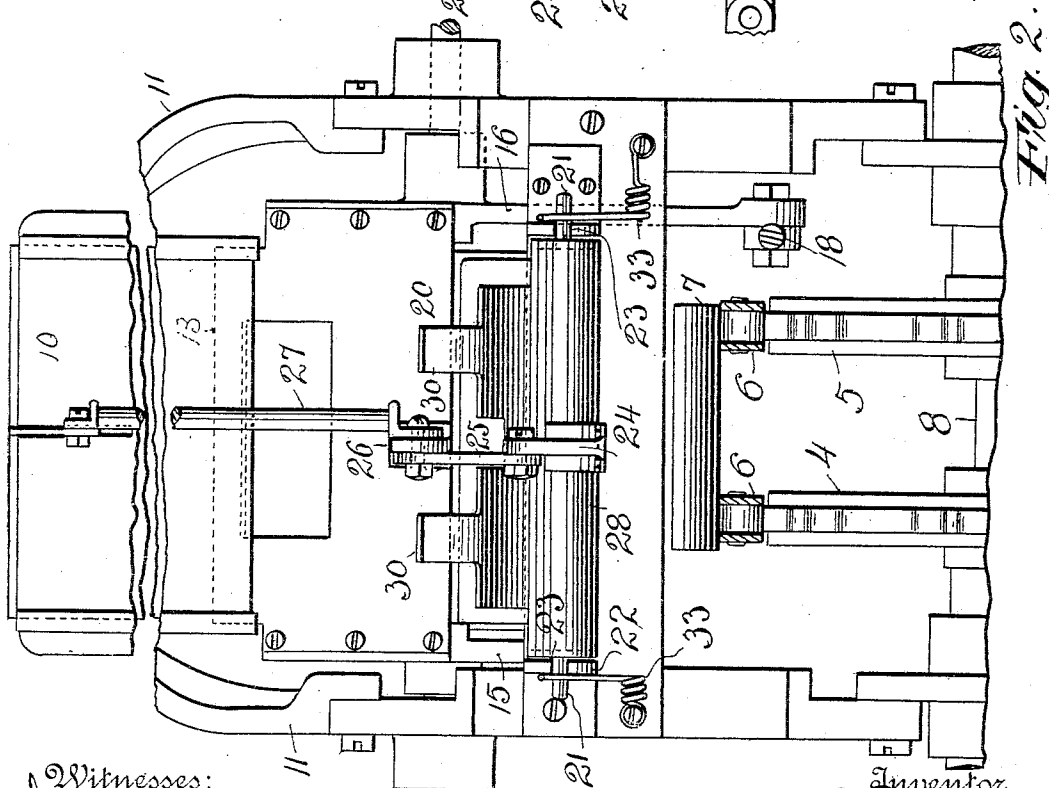


Fig. 2.

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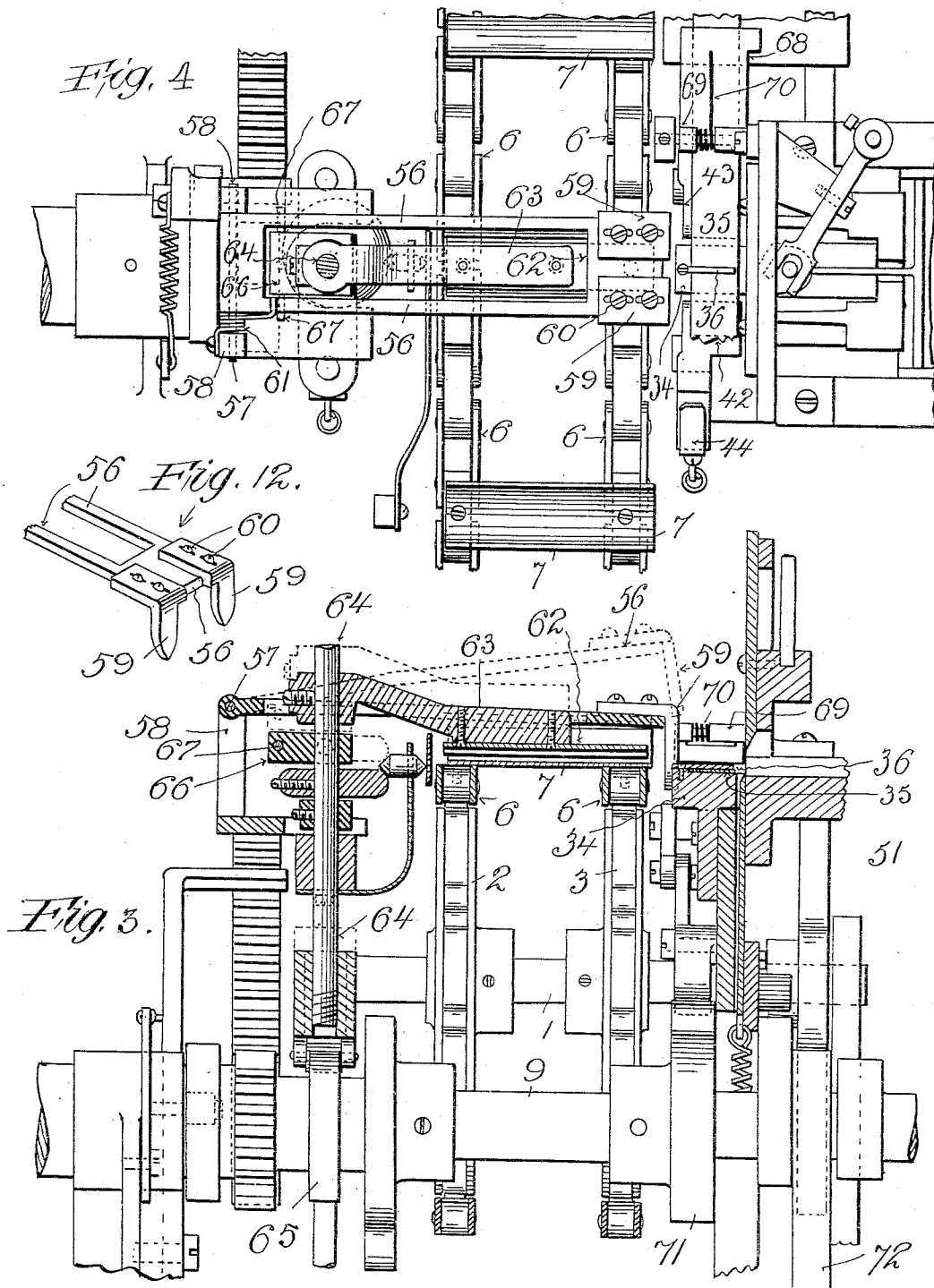
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By his Attorney
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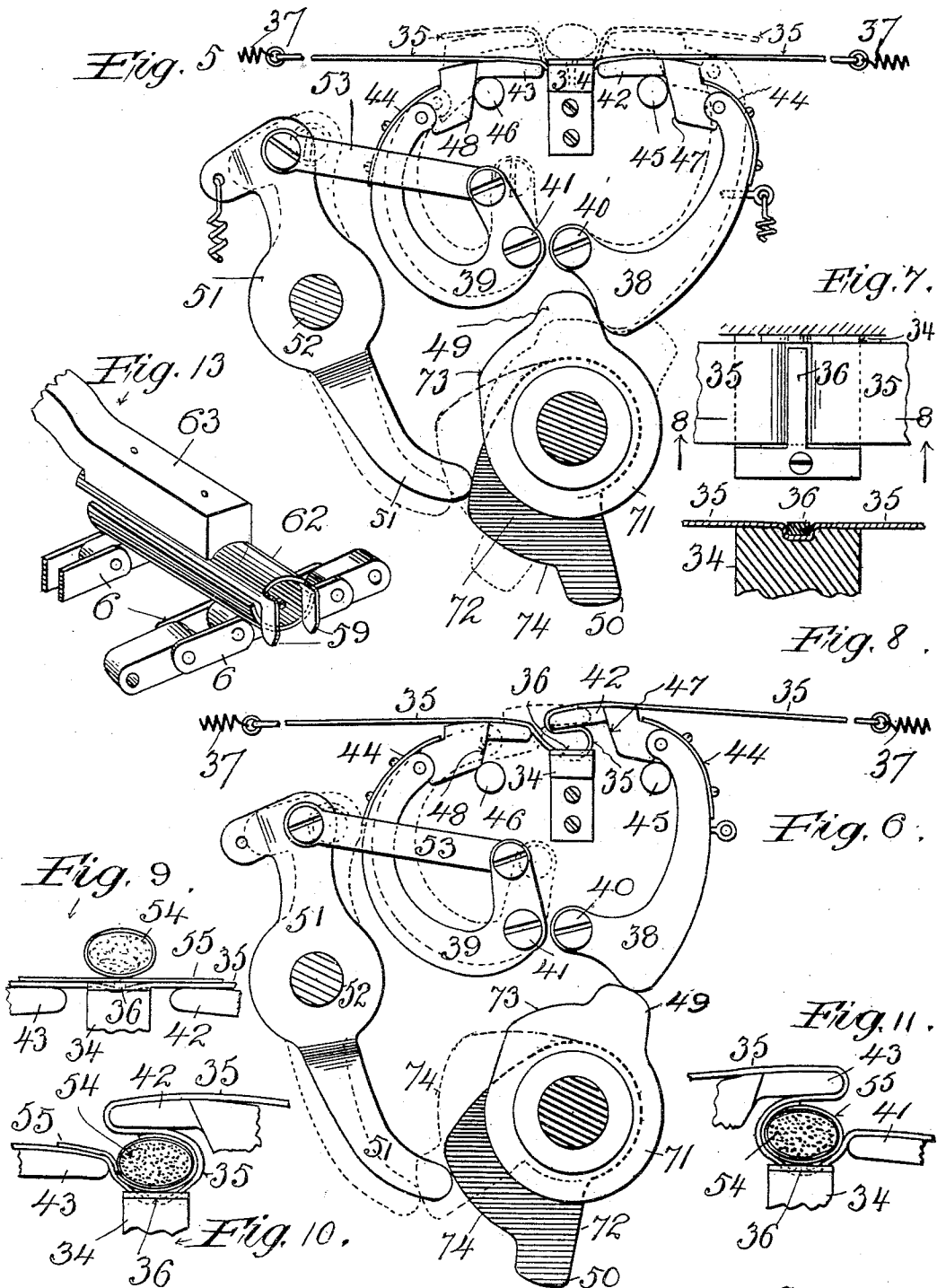
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ARTHUR L. BOUCHER, OF NEW YORK, N. Y.

CIGARETTE-TIPPING MACHINE.

933,359.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed November 20, 1908. Serial No. 463,545.

To all whom it may concern:

Be it known that I, ARTHUR L. BOUCHER, a citizen of the United States, and a resident of the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Cigarette-Tipping Machines, of which the following is a specification.

My invention relates to machines for placing cork or other tips on cigarettes, the machine being of the class which tips the individual cigarettes.

The present invention is an improvement upon the machine shown and described in an application for patent filed by Alexander Boucher, on the 31st day of January, 1908, and serially numbered 413,553, to which cross reference is made; and the present case contains an illustration and description of only so much of a complete machine as is necessary to illustrate the application of my present invention to a machine of the character contained in said application.

The object of my present invention is to provide a hopper for feeding the cigarettes individually to a carrier, which will at all times feed the cigarettes singly and without causing any damage to the cigarettes and in which the cigarettes in the hopper will be properly cut off as a cigarette is being fed to the carrier.

There is also improvement in the means for preventing choking of the cigarettes as they enter between the revoluble drum and oscillating guard as they feed to the carrier.

My object is also to improve the means for applying the tips by providing a plurality of fingers for wrapping the ends of the tips upon the cigarettes, which fingers lie below the path of the cigarettes and are raised to a position above the bottom of the cigarette as it is presented for tipping and which are then alternately moved further to wrap the tip ends on the cigarette.

I also provide a flexible member, such as an apron, which lies between the fingers and the tip so that the fingers do not contact directly with the tip but withdraw under the apron, leaving the latter to be separated from the tip by a peeling action, whereby the tip will not be removed upon the withdrawal of the fingers, as might otherwise happen.

I have also provided means for laterally positioning the cigarettes on the carrier as they come in position for tipping so that there will be perfect registering of the machine and all tendency of the machine to improperly tip the cigarettes or to distort the latter during the tipping is avoided.

Other features of improvement such as the spring pressed wiping plate for wiping the cigarettes as they leave the applying means will appear hereinafter.

In the drawings forming a part of this application, Figure 1 is a longitudinal section through the hopper showing the feeding means, Fig. 2 is an end view of the device shown in Fig. 1, Fig. 3 is a cross section through the tip applying means with the cigarette omitted, Fig. 4 is a plan view thereof, in both of which views the preferred form of lateral adjusting means is shown, Fig. 5 is a sectional view showing the operation of the tip applying fingers, Fig. 6 is a similar view showing one of the movements of the fingers during the application of the tip, Fig. 7 is a plan view of the apron, where the cigarette end is presented for tipping, Fig. 8 is a section taken on the line 8—8 of Fig. 7, Fig. 9 is an elevation showing how the tip and the cigarette are placed upon the apron ready for the tipping operation, Fig. 10 is a similar view showing the movement which follows the one shown in dotted lines in Fig. 5 and being an enlarged view of some of the parts in the position illustrated in Fig. 6, Fig. 11 is a similar view showing the next successive step, Fig. 12 is a perspective view of the end of the preferred form of guide for the lateral adjustment of the cigarette on the carrier, and Fig. 13 is a similar view of a modified form thereof showing the same attached to the gripping finger.

In the construction of a machine for the utilization of my present improvements many of the parts, such as the conveyer or carrier, the operating shaft, the cork feeding and cutting means and the frame may be the same as that shown in the application herein referred to and the parts herein shown which are inconsistent with, or additional to the parts there shown, may be applied to such machine.

As the general construction of the machine may be understood from said application I

will here refer to only such parts as may be necessary to show the application of my present invention.

For the purpose of conveying the cigarettes from the hopper to the tipping means I have shown an endless carrier, consisting of endless, parallel chains 6, which are provided with transverse holders 7, which receive the cigarettes from the hopper and convey them to the tipping means, the chains being adapted to travel around the sprockets 2 and 3 on the shaft 1, and on the sprockets 4, 5, on the shaft 8, at the other end of the machine. The carrier is adapted to be moved intermittently by power derived from the main operating shaft through a set of gears as described in the application cited. The hopper or feeding means for discharging the cigarettes on the carrier is preferably disposed some distance from the tipping means and is adapted to discharge the cigarettes successively into the holders 7 and preferably with the ends to be tipped projecting beyond the carrier. The hopper and its parts are shown in Figs. 1 and 2 and are as follows; a reservoir or hopper 10 is mounted on brackets 11, preferably above the carrier and under the hopper there is a revoluble drum 12, having an uninterrupted periphery which will not destroy the cigarettes; and the drum is intermittently revolved as shown in the said application. A guard 13, is mounted so as to lie a sufficient distance from the drum 12 to allow the cigarettes to pass, flatwise, through the space 14, the guard being curved to correspond with the periphery of the drum. The guard is supported upon the arms 15 and 16, which are mounted upon the shaft 17, and a rod connected to an arm 19 on the arm 16, oscillates the guard 13 as in the said application. There is a discharge and cut off plate 20 which is mounted with trunnions 21 upon guides 22 at opposite ends of the cut off plate, the pins or trunnions 21 being adapted to move in the slots 23 in the guides 22, so that the cut off plate may be moved on its axis away from the drum in case a cigarette should become wedged between the drum and cut off, preventing any clogging, or destruction of the cigarettes. An arm 24 on the cut off is connected by a link 25 with an arm 26 on the oscillating guard, so that when the latter oscillates it will oscillate the cut off plate on its pins 21. The cut off plate is so shaped that only one cigarette will pass at a time and without injury, while the others above it are properly cut off, it being understood that the cut off is located above the carrier, which latter is so arranged that the holders 7 will be positioned below the cut off at each stop of the carrier. The cut off may be better understood from the cross section shown in Fig. 1. The lower part 28 is curved, preferably

concentric with the trunnions 21, so that the convex side faces toward the cigarette passageway, which convex portion is sufficient, together with the space between it and the drum to allow a cigarette to pass between the cut off and the drum, when the cut off plate is oscillated. Above this convex portion the plate curves inwardly at 29, sufficiently close to the drum to cut off the cigarettes when the same is in the position shown in Fig. 1; and it then curves outwardly and upwardly at 30 and preferably extends beyond the limits of the guard 13. There is connected to the arm 26 of the guard, a link 27, which extends upwardly and is fulcrumed through the wall of the reservoir to a reciprocating plate 31. The plate 31 lies against the inside wall of the reservoir with its curved lower edge 32, near the point where the cigarettes enter between the drum and guard 13; and the plate is reciprocated by the link 27 at each operation of the guard. Springs 33 press the trunnions 21 inwardly to keep the cut off plate in its normal position.

The operation of so much of my invention is as follows: The carrier presents a holder 7 for the reception of a cigarette when the guard 13 will be rocked on its shaft. This will work the cigarettes down between the drum and guard. As the guard thus oscillates, it will, through the link connection, oscillate the cut off. The cigarette lying immediately above the cut off will be allowed to drop when the part 29 moves away from the drum, until it falls on the concave portion 28, which has moved into the path of the cigarette. The return oscillation of the cut off will allow the cigarette to drop from the part 28 onto the carrier and the part 29 will cut off the remaining cigarettes. When this oscillation takes place the plate 31 moves up and down, which agitates the cigarettes and tends for a time to cut off the cigarettes near the entrance to the passageway 14, as well as aiding in turning over oval cigarettes, to cause them to enter the passageway edgewise. When the cigarettes are fed on the carrier they are moved successively into position for tipping with their ends projecting beyond the carrier.

On the shaft 9 there are two cams 71 and 72, the former of which operates the arm 38 and the latter the lever 51. The arm 38 starts to rise on the part 49 of cam 71 and the lever 51 is at the same time rising on the cam 72 until the arm 51 is on the top of the part 74. While the lever 51 is riding on the surface 74, the arm 38 is continuing to rise on the part 49 of cam 71 until the parts are in the position shown in Fig. 6. Upon the continued movement of the cams the arm 38 moves down to the face 73, after which the lever 51 meets the rise 50 of cam 72 and

rides up on it. When the lever 51 is riding down from the part 50 the arm 38 rides down from the part 73 of cam 71. The effect of these movements on the tipping parts will appear hereafter.

There is a plate 34 opposite one of the stopping stations of the carrier holders over which the ends of the several cigarettes are successively presented and when so presented the carrier stops long enough for the tip to be applied to the cigarette. This plate is preferably placed just under the path of the cigarette so that the latter will be prevented from being pressed down and distorted. The plate is provided with a slight depression and passing over the plate is a flexible member 35, which I have termed an apron and which may be made of canvas or other flexible material. The apron is held down on the plate by a pin 36, placed over the depression in the plate so that the top of the pin and the apron on the sides thereof are flush. The ends of this apron are pulled taut by the springs 37, which have their free ends secured to a stationary part of the machine. Below this apron there is a pair of tipping fingers which lie below the path of travel of the cigarettes but which move upwardly and apply the tip ends about the cigarette, the apron at such times remaining between the fingers and the tip, so that the fingers do not contact directly with the tip. The tipping fingers and their action are clearly shown in Figs. 5, 6, and 9 to 11.

There are two curved arms or levers 38 and 39 which are fulcrumed at 40 and 41 respectively to suitable supporting means and they are provided on their upper ends with the presser fingers 42 and 43 which are fulcrumed to the levers and springs 44 on the levers press the free ends of the fingers downwardly. There are stationary abutment pins 45, 46, with which the fingers engage, the pins serving to prevent the fingers dropping out of place; and when the fingers move with their carrying arms the shoulders 47, 48, contacting with the pins force the fingers upwardly against the action of the springs. When a cigarette is presented for tipping the parts are in the position shown in Figs. 5 and 9. The apron lies immediately over the plate 34 and the cork or other tipping material is fed out over the apron by means shown in the application cited and the cigarette end to be tipped is held over the cork, by the carrier. The ends of the fingers 42 and 43 lie below the apron and to each side of the plate 34, where they are out of the path of the cigarette when the latter moves to and from the tipping means. Upon a partial revolution of the cams the arms 38, 39 are each rocked, when the fingers 42, 43, will rise slightly until they carry the apron part way around the cigarette and of course with it the tipping material. The

further revolution of the cam 71 will cause the arm 38 by reason of the raised cam face 49, acting on the arm 38, to rock the latter, when the finger 42 will rise over the top of the cigarette and, pressing the apron therewith, cause one end of the tip to adhere to the cigarette. During this movement the other finger 43 remains idle, in the position last described; where it will brace the cigarette and prevent any distortion thereof by the action of the finger 42. The finger 42 next recedes to the position shown in dotted lines in Fig. 5; and the finger 43 is then raised to carry the opposite and free end of the tip upon the cigarette where it will overlap the first end. This latter action is caused by the cam face 50 moving the end of lever 51, which latter is fulcrumed at 52 to a support, when the upper end operating through a link 53 connected with a part of the arm 39, will rock the latter. The lever 39 then recedes to its position previously assumed, when both arms or levers 38 and 39 will ride down on their cams and the fingers 42 and 43 will recede simultaneously to their lower positions shown in Fig. 5.

The cam actions are as follows: When the arm 38 rises on one side of the part 49 of cam 71, the lever 51 is rising on one side of the part 74 of cam 72, this causing both tipping fingers to move up until they are on opposite sides of the cigarette. When the lever 51 reaches the part 74 it travels thereon, when the finger 43 remains on one side of the cigarette. During this the arm 38 is being further raised until it reaches the top of 49 when the finger 42 will reach over the cigarette and apply one end of the tip as shown in Fig. 10. It (the lever 38), then rides down to the part 73 of its cam, withdrawing the finger 42 to the side of the cigarette. Lever 51 by that time goes up on the rise 50 and causes finger 43 to go on further and apply the other end of the tip when both arms 38 and lever 51 ride down on their cams together.

During the actions just described, the apron contacts directly with the tip, which apron being flexible, and held taut by the springs cause a perfect adhesion of the tip to the cigarette. If the fingers contacted directly with the tip, they would, either by suction, or a wiping action, be liable to remove or displace the tip which had been applied to the cigarette and the paste of which has not had time to dry. When the fingers recede after forcing the ends of the tip on the cigarette the apron being held taut by its springs it gradually leaves the tip, by a peeling action, which will prevent any tendency on the part of the tip to follow the fingers.

The cigarette in the previous explanations is numbered 54 and the tipping material 55. The feeding and cutting means for the tip

material may be the same as in the application referred to.

As a means for adjusting the cigarette laterally on the carrier holder when it comes up for tipping and for holding it against lateral displacement during the tipping I employ a simple device, the preferred form of which is shown in Figs. 3, 4, and 12. I have provided an arm 56 which is hinged upon a pin 57 to suitable supporting ears 58, the arm extending over the carrier and located so that its depending guiding fingers 59 will straddle a cigarette on the carrier when it is presented for tipping. The fingers 59 may be adjusted on the arm 56 by means of the screws 60, to bring them in proper position. There is a coil spring 61 on the pin 57, having one end secured to one of the ears 58 and the other pressing on the arm 56, so that the latter will be forced downwardly thereby, to the position shown in Fig. 3, full lines. There is an annular presser foot 62 which is positioned over the carrier and it is adapted to clamp the cigarette on the holder 7 when opposite the tipping means, to prevent any dislocation of the cigarette on the carrier during tipping, the same as in the cited application. This foot is carried upon an arm 63 which in turn raises and lowers on the rod 64, being actuated by a cam 65. Each time a cigarette is presented on the carrier for tipping the presser foot is brought down on the same to hold it on the carrier during the tipping and is raised immediately thereafter by the cam 65. On the rod 64 there is a block 66, on which there is a lateral pin 67, the ends of which engage the arm 56, underneath, and preferably not far from the latter's hinge. The presser foot 62, while the carrier is moving a cigarette up, is raised, and the arm 56 is sufficiently raised by the pin 67 to hold the positioning fingers 59 free of the cigarette. When the carrier stops the presser foot 62 moves down and at the same time the pin 67, when the spring 61 will rock the arm 56, until the fingers 59 straddle the cigarette, when the latter will be properly positioned, if it is not already so. The arrangement of the parts is such that the fingers 59 will position the cigarette before the presser foot engages the cigarette. Upon the completion of the tipping the foot will be raised by the cam action and also the arm 56, when the carrier will move to present another cigarette. As the carrier moves, the seam of the tip which has just been applied will be wiped by the plate 68, which is hinged at 69 and pressed down by a spring 70.

A modification of the lateral positioning fingers is shown in Fig. 13. In this case the fingers 59 are placed on the presser foot and move with it. I prefer, however, to use the first form as the positioning will be better and the presser foot need not rise so far.

The operation of the machine may be understood from the foregoing.

By means of my present improvements I accomplish much better results than heretofore. The cigarettes are properly fed to the carrier from the hopper and should they jam, or turn over in passing through the passageway 14, the cut off plate will be swung out on its trunnions against the action of the springs. When the cigarette is presented for tipping the fingers 59 will position the cigarette laterally, when the presser foot will grip it and hold it during tipping. The tip applying fingers 42, 43, will then move up until the apron partly surrounds the cigarette. The fingers then alternately rise and carry the tip ends over and press them onto the cigarette. As they alternately perform their functions they recede to their half raised positions and then recede below the path of the cigarette. Instead of the fingers contacting directly with the tip, the apron intervenes between the two and when the fingers recede the apron withdraws from the tip by a peeling action which will not remove the tip from the cigarette. The partial raising of the fingers and the retention there of one while the other applies its end of the tip to the cigarette prevents either finger from distorting the cigarette during the tipping.

While I have shown and described in detail the preferred form of my invention I do not wish to be limited thereto, but to include all structures coming within the scope of the following claims.

While my invention as a whole is novel and valuable some of the features may be used singly for their individual advantage.

Having described my invention what I claim is:

1. In a cigarette tipping machine, the combination of means for tipping cigarettes, means for carrying the cigarettes to the tipping means and means for discharging the cigarettes on the said carrier, comprising a receptacle, means forming a passageway for the discharge of the cigarettes therefrom and a rocking plate mounted on movable trunnions and provided with a plurality of means for alternately engaging a cigarette in said passageway and means for rocking said plate to discharge the cigarettes singly, through said passageway.

2. In a cigarette tipping machine, the combination of means for tipping cigarettes, means for carrying the cigarettes to the tipping means and means for discharging the cigarettes on the carrier, comprising a receptacle, means forming a passageway for the discharge of the cigarettes therefrom and a rocking plate mounted on movable trunnions, a spring adapted to retain said trunnions in a normal position, said plate having a plurality of means for alternately engaging a

cigarette in said passageway and means for rocking said plate to discharge the cigarettes singly through said passageway.

3. In a cigarette tipping machine means for conveying cigarettes to be tipped and means for supplying cigarettes to the conveying means, comprising a hopper, and a revoluble drum and oscillating guard, the guard and drum being disposed so as to permit the cigarettes from the hopper to be received between them and a reciprocating plate having a curved portion 32 near the place where the cigarettes enter between the drum and guard and means for reciprocating said plate.

4. In a cigarette tipping machine the combination of means for presenting cigarettes for tipping, and means for tipping the cigarettes comprising, a flexible apron, means for feeding a piece of tipping material to the apron, retractable elements adapted to alternately wrap the apron about the cigarette to cause the ends of the tipping material to be alternately applied to the cigarette and means for alternately operating the said retractable elements.

5. In a cigarette tipping machine the combination of means for presenting cigarettes for tipping, and means for tipping the cigarettes comprising, a flexible apron, means for feeding a piece of tipping material to the apron, retractable elements adapted to alternately wrap the apron about the cigarette to cause the ends of the tipping material to be alternately applied to the cigarette, means for alternately operating the retractable elements and means whereby the said apron will be withdrawn from contact with the tipping material after the applying operation of the retractable elements, by a peeling action.

6. In a cigarette tipping machine, the combination of a carrier for presenting cigarettes for tipping, and means for tipping the cigarettes as they are presented comprising, a flexible apron normally lying below the path of the cigarettes, means for feeding tipping material over the apron, retractable elements lying below the apron and adapted to move the apron about the cigarette from opposite sides thereof, means for operating the retractable elements so that they will operate alternately upon the apron to apply the tip ends to the cigarette alternately and means for causing the apron to withdraw from the applied tip by a peeling action upon the retraction of the said retractable elements.

7. In a cigarette tipping machine the combination of means for presenting a cigarette for tipping, and means for tipping the same comprising, a flexible apron, means for gripping said apron, means for feeding a piece of tipping material over the said apron where the latter is gripped and means for alternately wrapping the apron about the

cigarette from different sides thereof to apply the said tipping material to the cigarette.

8. In a cigarette tipping machine the combination of a plate and an apron secured to the plate, means for feeding tipping material over said apron and plate, means for presenting a cigarette for tipping, means for wrapping the apron about the cigarette to alternately apply the ends of the tipping material thereto and means for placing a resilient tension on the ends of said apron.

9. In a cigarette tipping machine the combination of means for presenting cigarettes for tipping, means for feeding tipping material and means for applying the ends of the tipping material to the cigarette comprising a plurality of rocking arms having fingers adapted to engage the tipping material and lying normally out of the path of the cigarettes and means adapted to rock said arms to bring their fingers on opposite sides of the cigarette and to then further and alternately rock said arms to cause their fingers to apply the ends of the tipping material to the cigarette.

10. In a cigarette tipping machine the combination of means for presenting cigarettes for tipping, means for feeding tipping material and means for applying the ends of the tipping material to the cigarette comprising a plurality of rocking arms having fingers adapted to engage the tipping material and lying normally out of the path of the cigarettes and means whereby said arms will be rocked simultaneously to bring their fingers on opposite sides of the cigarette and whereby the said fingers will be further and alternately moved around the cigarette to apply the ends of the tipping material thereto.

11. In a cigarette tipping machine the combination of means for presenting cigarettes for tipping, means for feeding tipping material and means for applying the ends of the tipping material to the cigarette comprising a plurality of rocking arms having fingers adapted to engage the tipping material and lying normally out of the path of the cigarettes and means whereby said arms will be rocked to bring their fingers on opposite sides of the cigarette and whereby said fingers will be further and alternately moved around the cigarette to apply the ends of the tipping material thereto, said rocking arms being adapted to be retracted simultaneously.

12. In a cigarette tipping machine the combination of means for presenting a cigarette for tipping and means for feeding tipping material thereto and means for applying the tip thereto comprising a plurality of fingers, means for alternately operating the fingers to move the tip ends on the cigarette and a flexible apron interposed between the

said fingers and tipping material adapted to be removed from said tip by a peeling action.

13. In a cigarette tipping machine the combination of a plate, means for feeding tipping material thereover, means for presenting a cigarette thereover and means for applying the tipping material about the cigarette comprising a flexible apron secured to said plate and having its ends drawn by springs, or the like, and a plurality of fingers normally lying below the path of the cigarette and means for raising said fingers simultaneously to carry said apron partially around the cigarette and for alternately giving a further movement to said fingers to move said apron and cause the tip ends to be applied to the cigarette.

14. In a cigarette tipping machine the combination of means for tipping cigarettes, a carrier adapted to present cigarettes successively to the tipping means, and means adapted to straddle a cigarette when presented to the tipping means and position the same laterally to make the cigarette register with the tipping means.

15. In a cigarette tipping machine the combination of means for tipping a cigarette, a carrier adapted to present cigarettes thereto for tipping and a movable member having depending fingers adapted to straddle the cigarette on said carrier and position it for the tipping means.

16. In a cigarette tipping machine the

combination of means for tipping a cigarette, a carrier adapted to present cigarettes thereto for tipping, a presser foot adapted to hold the cigarettes on said carrier during the tipping and means having depending fingers adapted to straddle the cigarette and position it laterally on the holder before said presser foot engages the cigarette.

17. In a cigarette tipping machine the combination of means for tipping a cigarette, a carrier adapted to present cigarettes thereto for tipping, a presser foot for holding the cigarette on the carrier and carried by a movable arm, means for operating said arm, another and hinged arm having depending fingers adapted to straddle the cigarette on the carrier, means on said foot carrying arm adapted to raise said second arm and a spring adapted to return the latter arm.

18. In a cigarette tipping machine the combination of means for tipping cigarettes, a carrier adapted to present cigarettes thereto and a presser foot adapted to hold a cigarette on said carrier during the tipping operation and provided with fingers adapted to straddle a cigarette on the carrier to position the same.

Signed at the city, county and State of New York, this 19th day of November, 1908.

ARTHUR L. BOUCHER.

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