E. D. SMITH.

CIGARETTE TIPPING MACHINE.

APPLICATION FILED JAN. 9, 1918.

1,305,313.

Patented June 3, 1919.

5 SHEETS—SHEET 1.

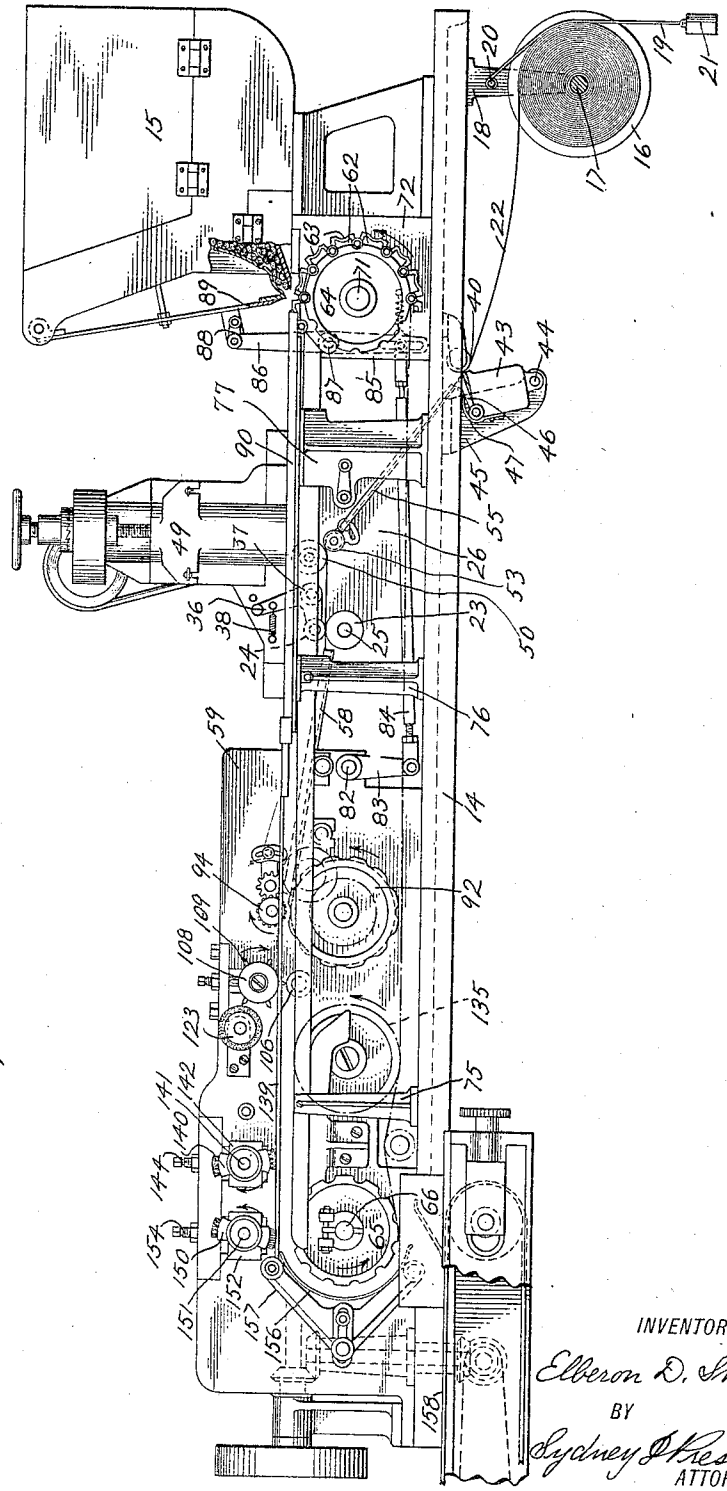


Fig. 1.

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Fig. 3.

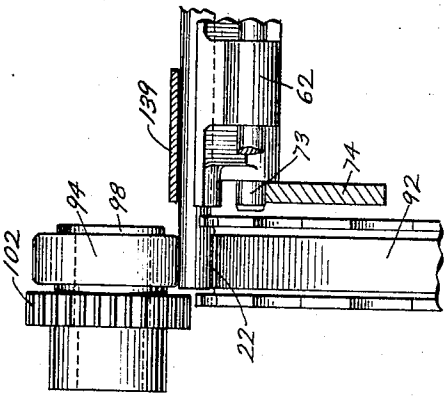


Fig. 2.

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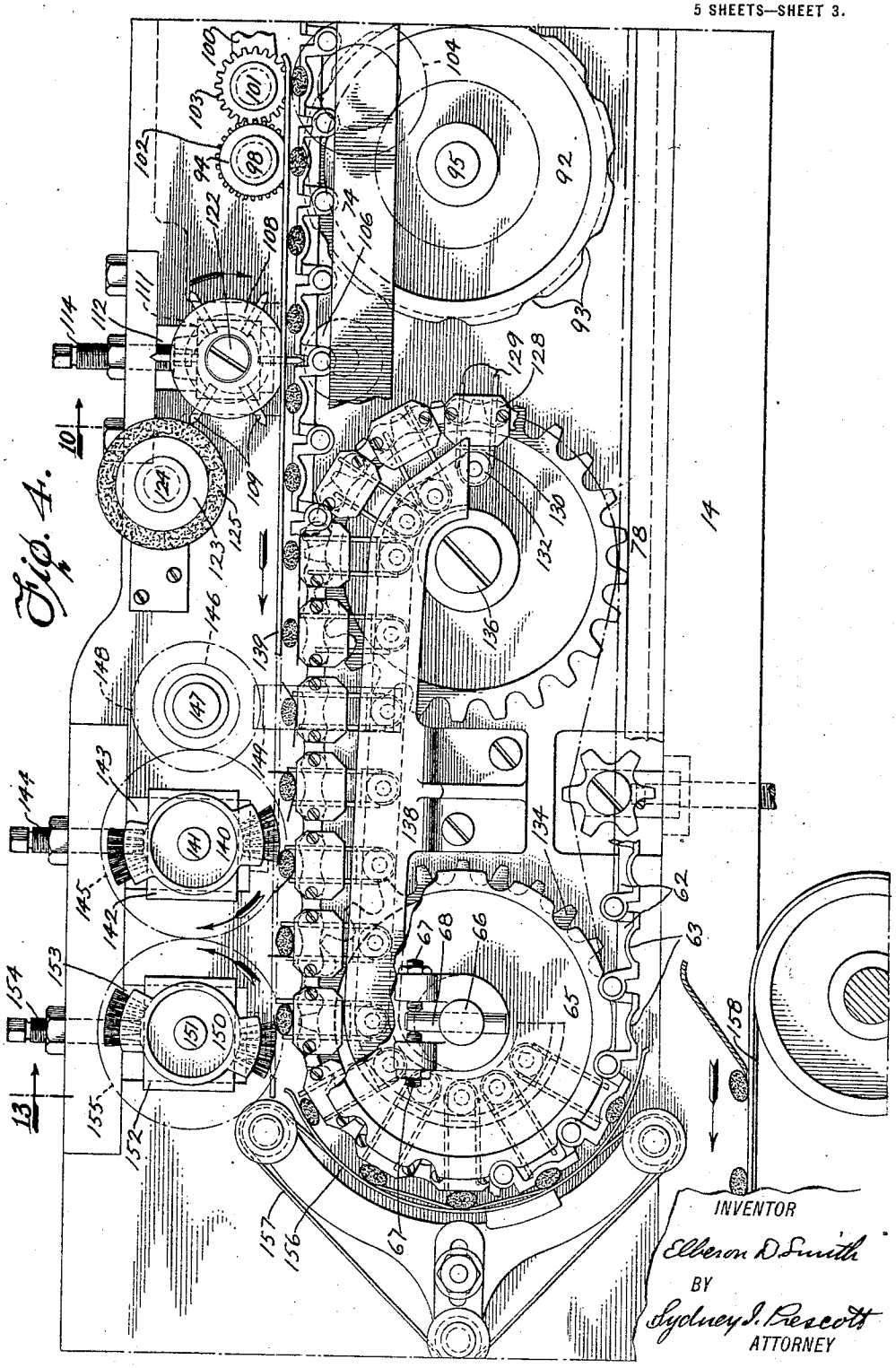


Fig. 4.

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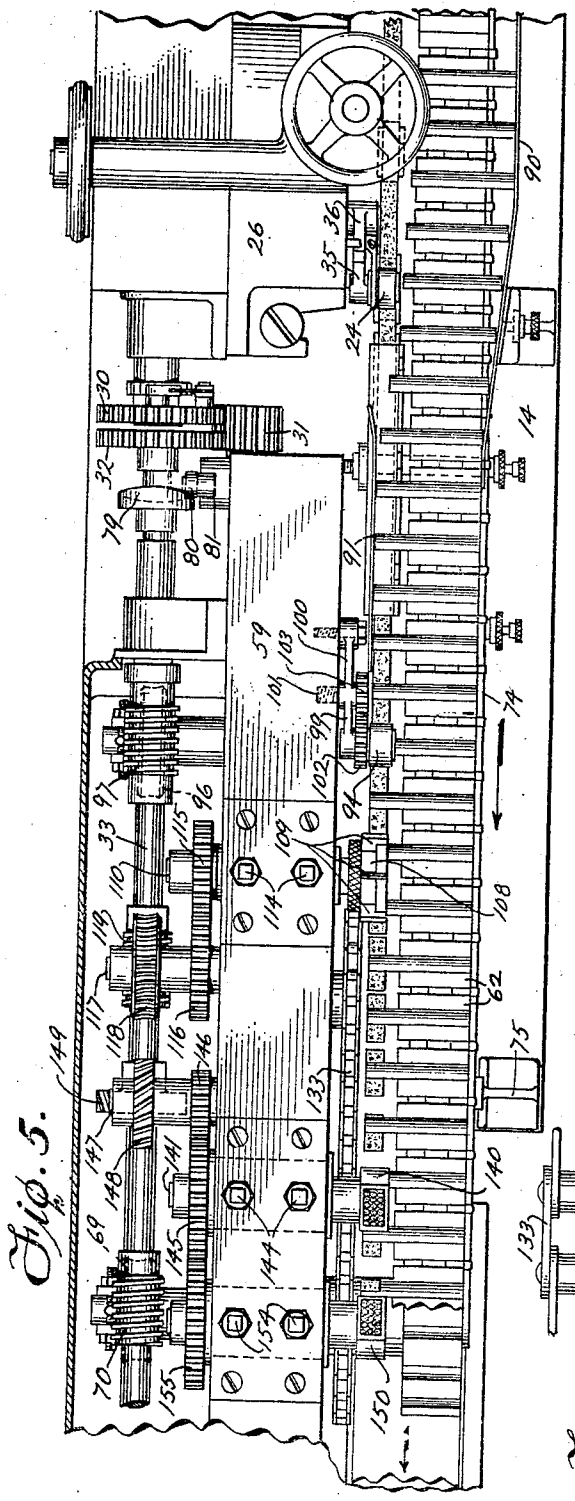


Fig. 5.

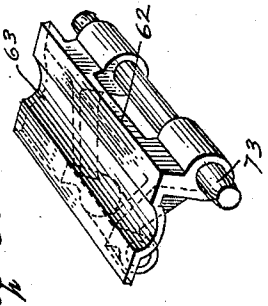


Fig. 9.

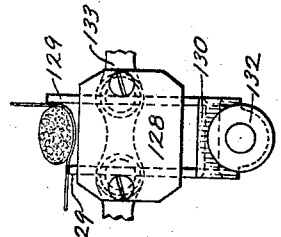


Fig. 8.

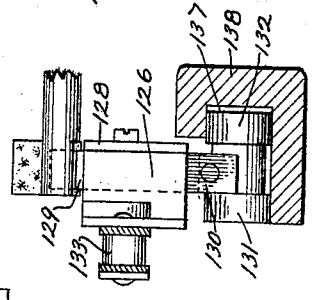


Fig. 7.

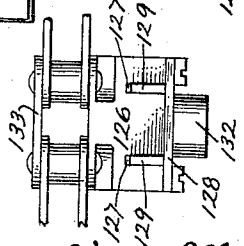


Fig. 6.

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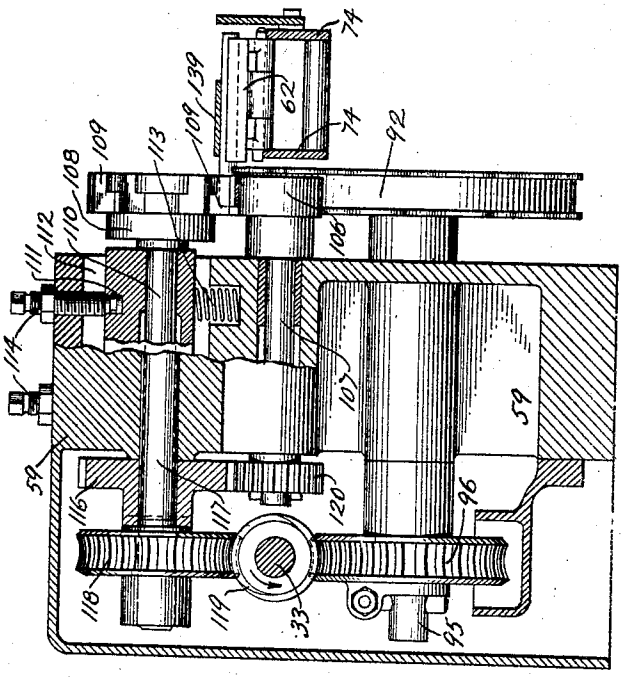
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5 SHEETS—SHEET 5.



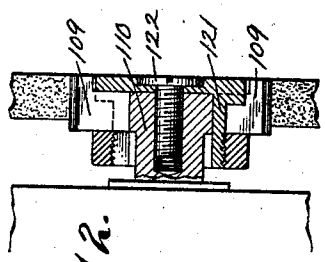


Fig. 12.

Fig. 10.

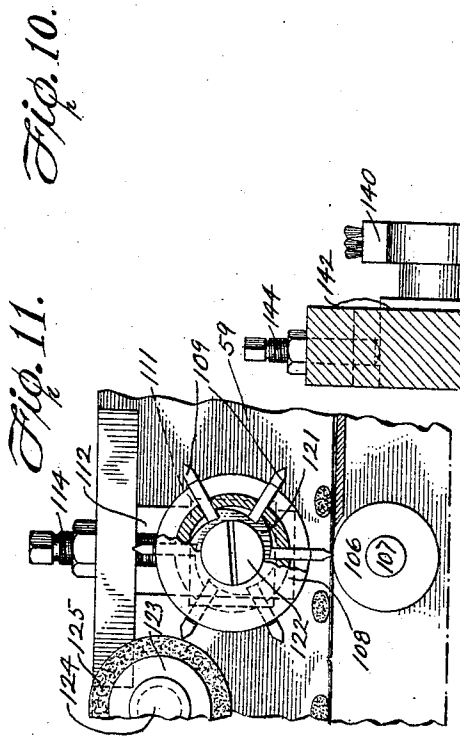


Fig. 11.

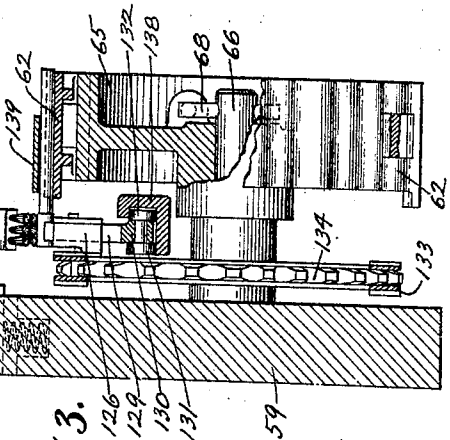


Fig. 13.

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UNITED STATES PATENT OFFICE.

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CIGARETTE-TIPPING MACHINE.

1,305,313. Specification of Letters Patent. Patented June 3, 1919.

Application filed January 9, 1918. Serial No. 210,968.

To all whom it may concern:

Be it known that I, ELBERON D. SMITH, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Cigarette-Tipping Machines, of which the following is a specification.

This invention relates to an improvement in cigarette tipping machines, particularly to that general type in which the tips are applied to the cigarettes by adhesion.

In machines of this general type heretofore in commercial use, the tip material used has been in the form of an adhesive strip from which individual tips are cut and then applied to the cigarettes, or, in the form of individual tips stacked in a magazine from which they are taken one by one and then applied to the cigarettes. In cigarette tipping, it is very desirable that the tip be squared exactly with the cigarette end, neither overhanging it, nor falling short of reaching it, nor applied thereto in relative angularity. In the use of tipping machines applying tips to cigarettes individually considerable difficulty has been experienced in accomplishing the desired result for various reasons, such for example as slight variations in the cigarette lengths, slight variations in the action of the mechanism for presenting the tips to the cigarettes, the tendency of the wet adhesive to slip on the cigarette, the susceptibility of the tips to displacement during the applying operation due to abrupt changes in the movements of the applying parts and devices, machine vibration, etc., and the tendency of the tip to curl because the wet adhesive is on one side only. The main object of the present invention is the production of a machine in which such difficulties are overcome; and with this and other objects not specifically mentioned in view the invention consists in certain constructions, combinations and parts which will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts, Figure 1 is a front elevation of a machine constructed in accordance with the invention; Fig. 2 is a front elevation, upon an enlarged scale, of the tip material feeding mechanism with adhesive applying and moistening devices; Fig. 3 is a detail side view of the device for pressing the tip material and cigarettes together to produce their adhesion; Fig. 4 is a front elevation of the mechanism for wrapping the tips about the cigarettes; Fig. 5 is a fragmentary view in plan illustrating the driving mechanism; Figs. 6, 7 and 8 are respectively plan, side and front views of the mechanism for partially wrapping the tips about the cigarettes; Fig. 9 is a perspective view of one of the cigarette advancing chain links: Fig. 10 is a cross-sectional view of the mechanism for severing the strip of tip material into individual tips; Fig. 11 is a front elevation of the same; Fig. 12 is a detail cross-sectional view of the mechanism for adjusting the knives of the severing device; and Fig. 13 is a cross-sectional view of the mechanism for completing the wrapping operation.

In carrying the invention into effect, there is provided means for spacing and supporting a plurality of cigarettes, means for applying an adhesive strip of tip material to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes. In the best constructions, the cigarette supporting means also acts as advancing means for a succession of cigarettes, and there is further provided means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for thereafter severing said strip between the cigarettes, means for progressively wrapping the free ends of the tips partially about the cigarettes, and dual means for completing the wrapping operation, all of said means having a continuous revolving movement. All of the above means and parts thereof, and their arrangement, may be varied in many ways within the scope of the claims.

The particular machine selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention therefore is not to be restrict-

ed to the precise details of the structure shown and described. Furthermore, certain parts of the invention are capable of use independent of other parts, and such independent use is contemplated.

The particular machine selected to illustrate the invention is provided with a source of cigarette supply, and a source of tip material supply. Although in certain constructions the source of cigarette supply and the source of tip material supply may be otherwise arranged; as shown, the source of cigarette supply consists in a hopper 15 mounted on and above a bed plate 14, and the source of tip material supply includes a reel 16 mounted upon a stud 17 carried by a bracket 18 secured to the under side of the bed plate. For the purpose of preventing improper rotation of the reel 16 there is provided a brake band 19, the upper end of which is secured to a pin 20 fast in the bracket 18 and the lower end of which carries a weight 21. This brake band is of a type well known in the art. Means are provided for feeding the strip of tip material marked 22 from the reel. This means includes a roller 23 and a relatively small roller 24 which co-act to pull or draw the strip from the reel 16. The roller 23 is fast upon a shaft 25 journaled in suitable bearings in a casing 26 mounted upon the bed plate 14. The shaft 25 carries at its rear end and is rotated by a spiral gear 27 indicated by the double dotted circles in Fig. 2, and this spiral gear is in mesh with and is driven by another spiral gear 28, both of these spiral gears being housed within the casing 26. The spiral gear 28 is mounted upon a shaft 29 rotated by a spur gear 30. The spur gear 30 is in mesh with an idle pinion 31 which is also in mesh with a spur gear 32 fast on a shaft 33 which is the main power shaft of the machine. The roller 24 is mounted upon a suitable stud 34 carried by the arm 35 of the bell-crank lever 35—36. The bell-crank lever is fulcrumed on a stud 37 fast to the side wall of the casing 26, and the roller 24 is held to its duty by the action of a spring 38, one end of which is fast to the arm 36 of the bell-crank lever, and the other to a pin 39 secured in the side of the casing 26.

The strip of tip material 22, as it comes to the machine, is not adhesive; but adhesive is applied to one side thereof by suitable mechanism, and the other side is moistened by suitable mechanism, so that there will be no tendency of the strip to curl either before or after it is applied to the cigarettes. As shown, both the moistening and the adhesive applying devices are located between the reel 16 and the feed rollers 23—24. The moistening device includes a guiding roller 40 rotating on a stud 41 fixed in a bracket 42 secured to the under side of the bed plate 14. The strip of tip material runs over this guiding roller. Coöperating with the roller 40 is a moistening device including a water fountain 43 clamped upon a stud 44 carried by a bracket 45 secured to the under side of the bed plate 14. The fountain 43 is provided with a hinged cover 46 normally held in closed position by means of a spring 47. Reaching into the water within the fountain 43 is a wick 48. This wick protrudes from the water fountain and is held in position opposite the guiding roller 40 by the action of the spring pressed cover 46 which clamps the wick between itself and one of the walls of the fountain. As the feeding means draws the strip of tip material between the guiding roller 40 and the wick 48, moisture will be applied to one side of the strip of tip material, and this moistened side is the side which will be outside when the strip is applied to the cigarettes. Located between the moistening device and the feed rollers 23—24 is a paste applying mechanism operative upon the other side of the strip of tip material. This adhesive applying mechanism includes a paste reservoir 49 mounted upon the casing 26 before referred to, and a paste applying wheel marked 50, this paste applying wheel being mounted upon and rotated by a shaft 51. For the purpose of causing the strip to contact with the paste applying wheel 50 there is provided a swinging arm 52 carrying a strip guiding roller 53, the arm being held in proper adjusted position in a well known manner by means of a screw 54. The paste reservoir 49, as well as the driving mechanism housed within the casing 26, is of a type well known in the art and its particular construction lies wholly outside of the present invention. Further description thereof is therefore omitted in the interest of brevity and clearness. For the purpose of controlling the strip between the guiding roller 40 and the guiding roller 53, there is provided a strip guiding runway 55 having side flanges 56. This runway is carried by a bracket 57 secured to the bed plate 14. For the purpose of guiding the strip to a position where it may be applied to cigarettes, there is provided a second strip guiding runway beyond and into which the feeding means delivers the strip. This runway is marked 58 and is secured to a frame 59 rising from the bed plate 14 by means of two angle plates 60 and bolts 61. The runway 58 guides the adhesive strip into the path of movement of the cigarettes to be tipped. The feed rollers 23—24 rotate continuously, and the structure so far described is therefore operative to feed the strip of tip material from the reel 16 to a point beyond the feed rollers 23—24 and to apply moisture to one side of said strip and adhesive to the other in transit.

Means are provided for spacing and sup-

porting a plurality of cigarettes to which the adhesive strip is to be applied, and as shown this supporting means also acts as an advancing means. It consists in an endless chain made up of links 62 each provided with a concavity 63 adapted to support a single cigarette. The chain runs over sprockets 64 and 65. The sprocket 65 is the driving sprocket and is mounted upon a shaft 66 and is rotatably adjusted thereon by means of two adjusting screws 67—67 and a pin 68 passing transversely through the shaft 66. This shaft 66 is journaled in suitable bearings in the frame 59, and to the rear of said frame it is provided with a worm wheel 69 in mesh with a worm 70 fast on the shaft 33. It is driven continuously by this shaft. The sprocket 64 is fast upon a stud 71 fast in a bracket 72 rising from the bed plate 14 before referred to. Each of the links 62 has a pintle 73, and the upper run of the chain is prevented from sagging by engagement of the pintle 73 with a fixed track 74 suitably supported from the bed plate 14 by means of brackets 75, 76 and 77. The lower run of the chain is similarly prevented from sagging by engagement of the pintle 73 with a fixed track 78 mounted upon the bed plate 14 before referred to. Mounted upon the power shaft 33 is a cam 79 engaged by a bowl 80 mounted upon an arm 81, which arm is mounted upon a short shaft 82 journaled in the frame 59 before referred to. Fixed upon the other end of the shaft 82 to the front of the frame 59 is an arm 83, and this arm 83 is pivotally connected with a link 84 also adjustably connected in a well known manner with a lever 85—86 fulcrumed at 87 to the bracket 72. The arm 86 is connected by means of a link 88 with a cigarette agitator 89 of well known construction and coöperating with the hopper 15 to cause cigarettes to feed from the hopper one by one to the concavities 63 of the chain links 62. The cigarettes are delivered to the chain in the position shown at the right in Fig. 5, and means are provided for moving the cigarettes transversely with respect to the path of movement of the chain to cause proper alinement of the cigarette ends to be tipped before the adhesive strip is applied thereto. This means consists of a spring plate 90 which engages the end of the cigarettes toward the front of the machine and moves them over on the chain as the chain advances, and as clearly shown in Fig. 5. The spring plate 90 moves the cigarettes over into contact with a fixed alining plate 91, and by this construction all of the cigarette ends to be tipped are caused to overhang the spacing and advancing chain and are accurately alined. It will be readily understood that the spacing and advancing chain constitutes means for advancing a succession of cigarettes.

After the cigarettes have been advanced in succession to a position just beyond the alining means and the adhesive strip has been delivered to the path of movement of the overhanging and alined cigarette ends, the adhesive strip is caused to adhere to a plurality of the alined cigarettes so that it will lie exactly square with the ends of said cigarettes, and means are provided for causing the strip to adhere to a plurality of the cigarettes. As shown, this means operates to progressively press the adhesive strip against the advancing cigarettes and it consists of two co-acting presser devices, one of which is a large wheel 92 provided with a series of concave cigarette supporting depressions 93, and the other is a smaller wheel or roller 94. The wheel 92 is mounted upon a shaft 95 journaled in suitable bearings in the frame 59 before referred to. Upon the rear end of the shaft is adjustably mounted a worm wheel 96 in mesh with a worm 97 fast on the power shaft 33. The smaller wheel 94 is mounted on a stud 98 fast in one end of a two-armed lever 99—100 fulcrumed on a stud 101 screwed into the frame 59 before referred to. The wheel 94 has a gear 102 in mesh with an idle gear 103 on the stud 101, and this idle gear is in turn in mesh with a gear 104 deriving its motion from the shaft 95 through the train of gearing indicated by the broken lines in Fig. 2 and in a manner well known to mechanics. The lever 99—100 is adjustably held in position in a well known manner by means of a screw 105. It will be readily understood that the train of gearing connecting the large wheel 92 and the small wheel 94 produces substantially equal surface speed of the two wheels, and that the strip of adhesive material and the cigarettes as they pass between the wheels will be progressively pressed together and the strip thereby caused to adhere to a plurality of cigarettes with the strip exactly squared with the cigarette ends. It will be further understood that from this point on it is the cigarettes themselves which further advance the adhesive strip by reason of the adhesion of said strip thereto.

After the strip has been applied to a plurality of cigarettes and sufficient time has elapsed to permit the adhesive in contact with the cigarettes to set and thus prevent later displacement of the strip with respect thereto, the strip must be severed between the cigarettes preparatory to wrapping the severed tips about the cigarettes, and means are provided for performing this severing function. As shown, the severing means includes two rotating devices co-acting to sever the strip between the cigarettes. One of said devices is a roller 106 fast on a shaft 107 journaled in suitable bearings in the frame 59 before referred to. The upper point on

the periphery of the roller 106 is in contact with the strip of tip material as it is advanced by the cigarettes themselves. The other rotating device is in the form of a turret 108 carrying a plurality of radial knives 109. The cutting edges of these knives co-act with the roller 106 to sever the strip between the advancing cigarettes, the action of the two being a biting action. The turret 108 is fast on a shaft 110 journaled in suitable bearings in an adjustable block 111, this block being mounted in a suitable slot 112 in the frame 59 before referred to. The block 111 is adjusted by means of a pair of springs 113, only one of which is shown, and a pair of adjusting screws 114. The shaft 110 projects beyond the rear end of the block 111 and upon its projecting end is secured a gear 115. This gear is in mesh with another gear 116 mounted upon a shaft 117, said shaft being rotated by means of a worm wheel 118 carried thereby, the worm wheel 118 being driven by a worm 119 fast on the power shaft 33. The gear 115 is in mesh with the gear 120 fast on the shaft 107. The roller 106 and turret 108 are thus rotated continuously and the radial knives 109 successively engage the strip of tip material adhering to and advanced by the cigarettes at points between the cigarettes, thus forming individual tips adhering to and further advanced by the cigarettes. For the purpose of adjusting the knives radially outward, their rear ends contact with a multiple cam 121 rotatably mounted in the turret 108. This cam 121 is held in adjusted position by means of a clamping screw 122. It will be understood that the cutting edges of the knives engage the side of the strip of tip material which carries wet adhesive. Some of this adhesive may adhere to the cutting edges of the knives and means are provided for removing such adhesive. As shown, this means consists in an idle wheel 123 mounted upon the stud 124 secured in the frame 59, the periphery of the wheel 123 being covered with a moistened felt pad 125 in the path of movement of the cutting edges of the knives 109. Contact of these cutting edges with the felt pad serves to remove any adhesive picked up by the knife edges and thus keep the knife edges clean.

After the strip of tip material has been caused to adhere to a plurality of cigarettes and the strip has been cut into individual tips each further advanced by one cigarette, the tips must be wrapped around the ends of the cigarettes, and means are provided for this purpose. With this end in view, there is provided, in addition to the cigarette advancing means, means for partially wrapping the tips about the cigarette ends, and means for producing a relative approaching movement in converging paths of said wrapping means and said advancing means whereby the wrapping means is caused to progressively act upon the tips carried by the advancing cigarettes. As shown, both the cigarette advancing means and the means for partially wrapping the tips about the cigarette ends have right line movements and the wrapping means consists of an articulated series of devices for partially wrapping the tips about the cigarette ends. Each of these devices includes a support 126 provided with a pair of slots 127 and a covering plate 128. Slidably mounted in the slots 127 is a pair of tip bending devices or plates 129 of different lengths and both riveted to a block 130 which carries two cam bowls 131 and 132. All of the supports 126 are riveted or otherwise secured to an endless chain 133. This chain runs over a sprocket 134 fast upon and driven by the shaft 66 before referred to. The chain also runs over another sprocket 135 mounted upon a stud 136 secured in the side of the frame 59 before referred to. The cam bowls 131 and 132 are in engagement with a cam track 137 formed in a cam plate 138 screwed to the side of the frame 59 before referred to. By an inspection of Fig. 4, it will be understood that the tip bending devices, by reason of their engagement with the inclined cam track 137, are caused to progressively act upon the free ends of the tips as they are advanced by the cigarettes, first bending upwardly the rear free ends of the tips. For the purpose of holding the cigarettes down during this action, there may be provided a holding plate 139 overlying the advancing cigarettes although this is not an essential element.

After the free ends of the tips have been partially wrapped about the cigarettes by the mechanism just described, the wrapping operation must be completed by other means and such other means are provided for this purpose. In the preferred constructions, dual means acting successively will be employed with this end in view. As shown, there is provided a rotating double brush 140 fast upon a shaft 141, this shaft being journaled in a suitable box 142 slidably mounted in a slot 143 formed in the frame 59 and adjusted in this slot by means of adjusting screws 144. The rear end of the shaft 141 is provided with a gear 145 in engagement with the gear 146 mounted upon a shaft 147 journaled in the frame 59. The shaft 147 carries a spiral gear 148 in mesh with a spiral gear 149 fast on the power shaft 33 before referred to. The double brush 140 rotates in the direction indicated by the arrow in Fig. 4, and the angular velocity is such that the two brushes successively act upon successive cigarette tips as they are advanced by the advancing means. Located beyond the double brush 140 is a similar double brush 150

mounted upon a shaft 151 journaled in a box 152 slidably mounted in a slot 153 formed in the frame 59, the box being adjusted in said slot by means of the adjusting screws 154. The shaft 151 is provided with a gear 155 which is in mesh with and is driven by the gear 145 before referred to. By an inspection of Fig. 4, it will be understood that the double brush 150 rotates in a direction opposite to the direction of rotation of the double brush 140, and that after the double brush 140 has operated upon the free end of any particular cigarette tip its forward free end is pushed up into upstanding position by the action of the partial wrapping means and then engaged by the double brush 150 which completes the wrapping operation.

After the tips have been completely wrapped about the cigarette ends, the tips are held in position for a time by means of a curved plate 156 engaging the cigarettes and an endless belt 157 engaging the tips, both of these holding devices being old and well known in the art and co-acting with a final delivery belt 158 also well known in the art and therefore needing no detailed description.

Each of the various mechanisms in the machine organization (excepting only the light agitating device for the cigarette hopper) has a continuous revolving movement. By this construction, high speed is made possible without setting up machine vibrations which tend to interfere with the accurate spacing of the cigarette tips about the ends of the cigarettes and exactly squared therewith. The moistened outer surface of one side of the tip material when the inner surface of the same is moistened by wet adhesive prevents curling of the material either before or after application to the cigarettes and the application of the adhesive strip to a plurality of cigarettes before the strip is cut into individual tips insures proper placing of the tips on the cigarettes in exactly squared relation with their ends and the time allowed for the proper adhesion of the tip strip to a plurality of cigarettes before the strip is severed into individual tips prevents the individual tips from being afterward accidentally displaced on the cigarette ends. Moreover, the three-stage operation of wrapping the severed tips about the cigarettes through the agency of devices revolving at constant speed, while the cigarettes are advancing at constant speed, prevents the free ends of the tips from being angularly disposed with respect to the squared ends of the cigarettes as they are bent upwardly and partially wrapped about the cigarette ends and then wrapped completely down thereupon.

In view of the foregoing, a detailed description of the operation of the device is deemed unnecessary and is therefore omitted in the interest of brevity.

What is claimed is:

1. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for applying an adhesive strip of tip material to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes.

2. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for bringing the plurality of cigarettes and an adhesive strip of tip material into juxtaposition, means for applying said strip to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes.

3. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for feeding an adhesive strip of tip material to the cigarettes, means for applying said strip to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes.

4. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for feeding an adhesive strip of tip material to the cigarettes, means for moistening the non-adhesive side of said strip to prevent tip curling, means for applying said strip to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes.

5. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for feeding a strip of tip material to the cigarettes, means for applying adhesive to one side of said strip, means for moistening the other side of said strip, means for applying the adhesive moistened strip to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes.

6. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of alining means engaging the cigarette ends to be tipped, means for feeding an adhesive strip of tip material to the alined ends of the cigarettes, means for applying said strip to the plurality of cigarettes, and means for thereafter severing said strip between the cigarettes.

7. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for applying an adhesive strip of tip material to the plurality of cigarettes, means for thereafter severing said strip be-

tween the cigarettes, and means for wrapping the severed tips about the cigarettes.

8. In a cigarette tipping machine, the combination with means for spacing and supporting a plurality of cigarettes, of means for applying an adhesive strip of tip material to the plurality of cigarettes, means for thereafter severing said strip between the cigarettes, and means for successively acting upon the cigarettes to wrap the severed tips thereabout.

9. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, and means for thereafter severing said strip between the cigarettes.

10. In a cigarette tipping machine, the combination with a source of cigarette supply, of means for spacing and advancing a succession of cigarettes from said source of supply, means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, and means for thereafter severing said strip between the cigarettes.

11. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for moistening the non-adhesive side of said strip to prevent tip curling, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, and means for thereafter severing said strip between the cigarettes.

12. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding a strip of tip material to the path of movement of the cigarettes, means for applying adhesive to one side of the strip, means for moistening the other side of the strip, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, and means for thereafter severing said strip between the cigarettes.

13. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for moving the cigarettes in the advancing means in a direction transverse to its path of movement to aline the cigarette ends to be tipped, means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, and means for thereafter severing said strip between the cigarettes.

14. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for thereafter severing said strip between the cigarettes, and means for wrapping the severed tips about the cigarettes.

15. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for thereafter severing said strip between the cigarettes, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation.

16. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter severing said strip between the cigarettes, a source of tip material supply, of means for feeding tip material therefrom, a moistening device in the path of movement of the tip material for moistening one side of said material, and an adhesive applying device also in the path of movement of said material for applying adhesive to the unmoistened side thereof.

17. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter severing said strip between the cigarettes, a reel for supporting a strip of tip material, of means for feeding the strip from said reel, a moistening device in the path of movement of the strip for moistening one side thereof, and an adhesive applying device also in the path of movement of the strip for applying adhesive to the unmoistened side thereof.

18. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter sever-

ing said strip between the cigarettes, a reel for supporting a strip of tip material, of means for feeding said strip therefrom, a moistening device in the path of movement of said strip for moistening one side thereof, an adhesive applying device also in the path of movement of said strip for applying adhesive to the unmoistened side thereof, and a strip guiding runway between said moistening device and said adhesive applying device.

19. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter severing said strip between the cigarettes, a reel for supporting a strip of tip material, of means for feeding the strip therefrom, a moistening device in the path of movement of the strip comprising a guiding roller over which the strip runs, a wick contacting with the strip opposite the roller, and a water fountain supplying moisture to the wick, and an adhesive applying device also in the path of movement of the strip for applying adhesive to the unmoistened side thereof.

20. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter severing said strip between the cigarettes, a reel for supporting a strip of tip material, of means for feeding the strip therefrom, a moistening device in the path of movement of the strip comprising a guiding roller over which the strip runs, a wick contacting with the strip opposite the roller, and a water fountain supplying moisture to the wick and provided with a spring pressed cover for holding the wick in operative position between itself and one wall of the fountain, and an adhesive applying device also in the path of movement of the strip for applying adhesive to the unmoistened side thereof.

21. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter severing said strip between the cigarettes, a reel for supporting a strip of tip material, of means for feeding the strip therefrom, a moistening device in the path of movement of the strip for moistening one side thereof, an adhesive applying device also in the path of movement of the strip for applying adhesive to the unmoistened side thereof, a strip guiding runway between said devices, and a strip guiding runway into which the feeding means delivers the strip.

22. In a cigarette tipping machine, the combination with means for applying an adhesive strip of tip material to a plurality of cigarettes, of means for thereafter severing said strip between the cigarettes, a reel for supporting a strip of tip material, of means for feeding the strip therefrom, a moistening device in the path of movement of the strip for moistening one side thereof, said moistening device being located between the reel and feeding means, an adhesive applying device also in the path of movement of the strip and between the reel and feeding means for applying adhesive to the unmoistened side of the strip, a strip guiding runway between said devices, and a strip guiding runway beyond and into which the feeding means delivers the strip.

23. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, and two co-acting presser devices whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said devices.

24. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, and two co-acting presser wheels whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said wheels.

25. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, and two co-acting presser wheels whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said wheels, one of said wheels being provided with a series of concave cigarette supporting depressions.

26. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser wheels whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said wheels, and means for thereafter severing said strip between the cigarettes.

27. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of cigarettes as they pass between said devices, and means for thereafter severing said strip between the cigarettes.

28. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means

for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of the cigarettes as they successively pass between said devices, means for thereafter severing said strip between the cigarettes, and means for wrapping the severed tips about the cigarettes.

29. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of the cigarettes as they successively pass between said devices, and two rotating devices co-acting to thereafter sever said strip between the cigarettes.

30. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of cigarettes as they pass successively between said devices, and two rotating devices co-acting to thereafter sever said strip between the cigarettes, one of said severing devices being a roller and the other a turret carrying a plurality of radial knives.

31. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said devices, and two rotating devices co-acting to thereafter sever said strip between the cigarettes, one of said severing devices being a roller and the other a turret carrying a plurality of radial knives and means for simultaneously adjusting said knives in said turret.

32. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said devices, two rotating devices co-acting to thereafter sever said strip between the cigarettes, one of said severing devices being a roller and the other a turret carrying a plurality of radial knives, and means in the path of movement of the cutting edges of the knives for removing adhesive therefrom.

33. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, two co-acting presser devices whereby said strip is caused to adhere to a plurality of cigarettes as they successively pass between said devices, two rotating devices co-acting to thereafter sever said strip between the cigarettes, one of said severing devices being a roller and the other a turret carrying a plurality of radial knives, and a moistened wheel in the path of movement of the cutting edges of the knives for removing adhesive therefrom.

34. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes each carrying a tip by adhesion, of means for partially wrapping the tips about the cigarette ends, and means for producing a relative approaching movement of said wrapping means and said advancing means in converging paths whereby the wrapping means is caused to progressively act upon the tips carried by the advancing cigarettes.

35. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes in a right line and each carrying a tip by adhesion, of means for partially wrapping the tips about the cigarette ends, and means for producing a movement of said wrapping means in a right line converging with the line of movement of the advancing means whereby the wrapping means is caused to progressively act upon the tips carried by the advancing cigarettes.

36. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes each carrying a tip by adhesion, of an articulated series of devices for partially wrapping the tips about the cigarette ends, and means for producing a relative approaching movement in converging paths of said wrapping devices and said advancing means whereby the wrapping devices are caused to progressively act upon the tips carried by the advancing cigarettes.

37. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes each carrying a tip by adhesion, of an articulated series of devices for partially wrapping the tips about the cigarette ends, and cam controlled means for producing a relative approaching movement of said devices and said advancing means in converging paths whereby the wrapping devices are caused to progressively act upon the tips carried by the advancing cigarettes.

38. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes each carrying a tip by adhesion, of an articulated

series of devices for partially wrapping the tips about the cigarette ends, and means for producing a relative approaching movement of said wrapping devices and said advancing means whereby the wrapping devices are caused to progressively act upon the tips carried by the advancing cigarettes, said means including a stationary cam track engaging said devices.

39. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes each carrying a tip by adhesion, of an endless chain, a series of devices carried by the chain for partially wrapping the tips about the cigarette ends, means for operating the chain, and a stationary cam track engaging said devices and inclined from the path of movement of the cigarettes, whereby the wrapping devices are caused to progressively act upon the tips carried by the advancing cigarettes.

40. In a cigarette tipping machine, the combination with means designed for spacing and supporting a succession of cigarettes each overhanging said means and carrying solely by adhesion a tip partially wrapped about its overhanging end, of dual means for completing the wrapping operation, and means for producing a right line movement of the supporting means from cigarette receiving position to and through the range of action of said dual means.

41. In a cigarette tipping machine, the combination with means designed for spacing and supporting a succession of cigarettes each overhanging said means and carrying solely by adhesion a tip partially wrapped about its overhanging end, of dual rotary means adapted to act successively upon advancing tips to complete the wrapping operation, and means for producing a right line movement of the supporting means from cigarette receiving position to and through the range of action of said dual means.

42. In a cigarette tipping machine, the combination with means designed for spacing and supporting a succession of cigarettes each overhanging said means and carrying solely by adhesion a tip partially wrapped about its overhanging end, of a pair of rotary brushes adapted to act successively upon advancing tips to complete the wrapping operation, and means for producing a right line movement of the supporting means from cigarette receiving position to and through the range of action of said rotary brushes.

43. In a cigarette tipping machine, the combination with means designed for spacing and supporting a succession of cigarettes each overhanging said means and carrying solely by adhesion a tip partially wrapped about its overhanging end, of a pair of rotary brushes adapted to act successively upon advancing tips to complete the wrapping operation and spaced apart a sufficient distance to cause them to act simultaneously upon separated cigarettes, and means for producing a right line movement of the supporting means from cigarette receiving position to and through the range of action of said rotary brushes.

44. A device for causing adhesion of a plurality of cigarettes and an adhesive strip of tip material comprising two co-acting presser wheels, means for supporting the cigarettes and strip of tip material, and means for moving said supporting means in a right line from cigarette receiving position to and through the range of action of said presser wheels.

45. A device for causing adhesion of a plurality of cigarettes and an adhesive strip of tip material comprising two co-acting presser wheels one of which is larger than the other and provided with a series of cigarette supporting depressions, means for supporting the cigarettes and strip of tip material, and means for moving said supporting means in a right line from cigarette receiving position to and through the range of action of said presser wheels.

46. A device for partially wrapping tips about cigarettes comprising a traveling articulated series of supports, tip bending devices carried by and slidable in said supports, and a cam engaging said devices for moving them in their supports while traveling.

47. A device for partially wrapping tips about cigarettes comprising a traveling chain, a series of supports secured to the chain, tip bending devices carried by and slidable in said supports, and a cam engaging said devices for moving them in their supports while traveling.

48. In a cigarette tipping mechanism, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for thereafter severing said strip between the cigarettes, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, said advancing means having continuously traveling operating surfaces.

49. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it

to adhere to a plurality thereof and to be further advanced thereby, means for thereafter severing said strip between the cigarettes, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, said feeding means having continuously traveling operating surfaces.

50. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip to tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for thereafter severing said strip between the cigarettes, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, said pressing means having continuously traveling operating surfaces.

51. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, said severing means having continuously traveling operating surfaces.

52. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, said wrapping means having continuously traveling operating surfaces.

53. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, said dual means having continuously traveling operating surfaces.

54. In a cigarette tipping machine, the combination with means for spacing and advancing a succession of cigarettes, of means for feeding an adhesive strip of tip material to the path of movement of the cigarettes, means for progressively pressing said strip against the advancing cigarettes to cause it to adhere to a plurality thereof and to be further advanced thereby, means for progressively wrapping the free ends of the tips partially about the advancing cigarettes, and dual means for completing the wrapping operation, all of said means having continuously traveling operating surfaces.

In testimony whereof, I have signed my name to this specification.

ELBERON D. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."