G. B. HUTTON.

MACHINE FOR TIPPING CIGARETTES.

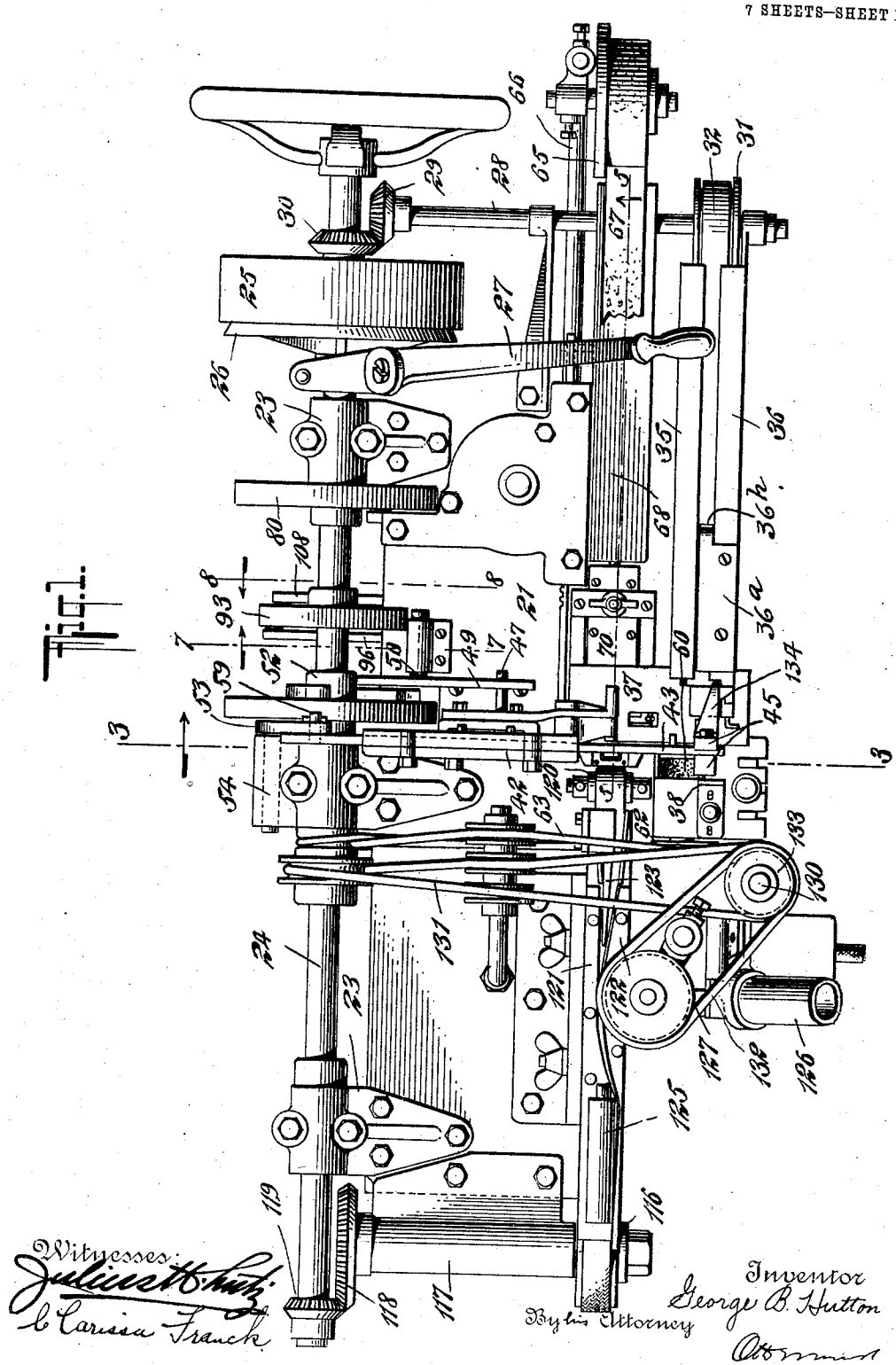
APPLICATION FILED SEPT. 21, 1907.

977,015.

Patented Nov. 29, 1910.

7 SHEETS—SHEET 1.

Fig. 1.



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L. Carissa Franck

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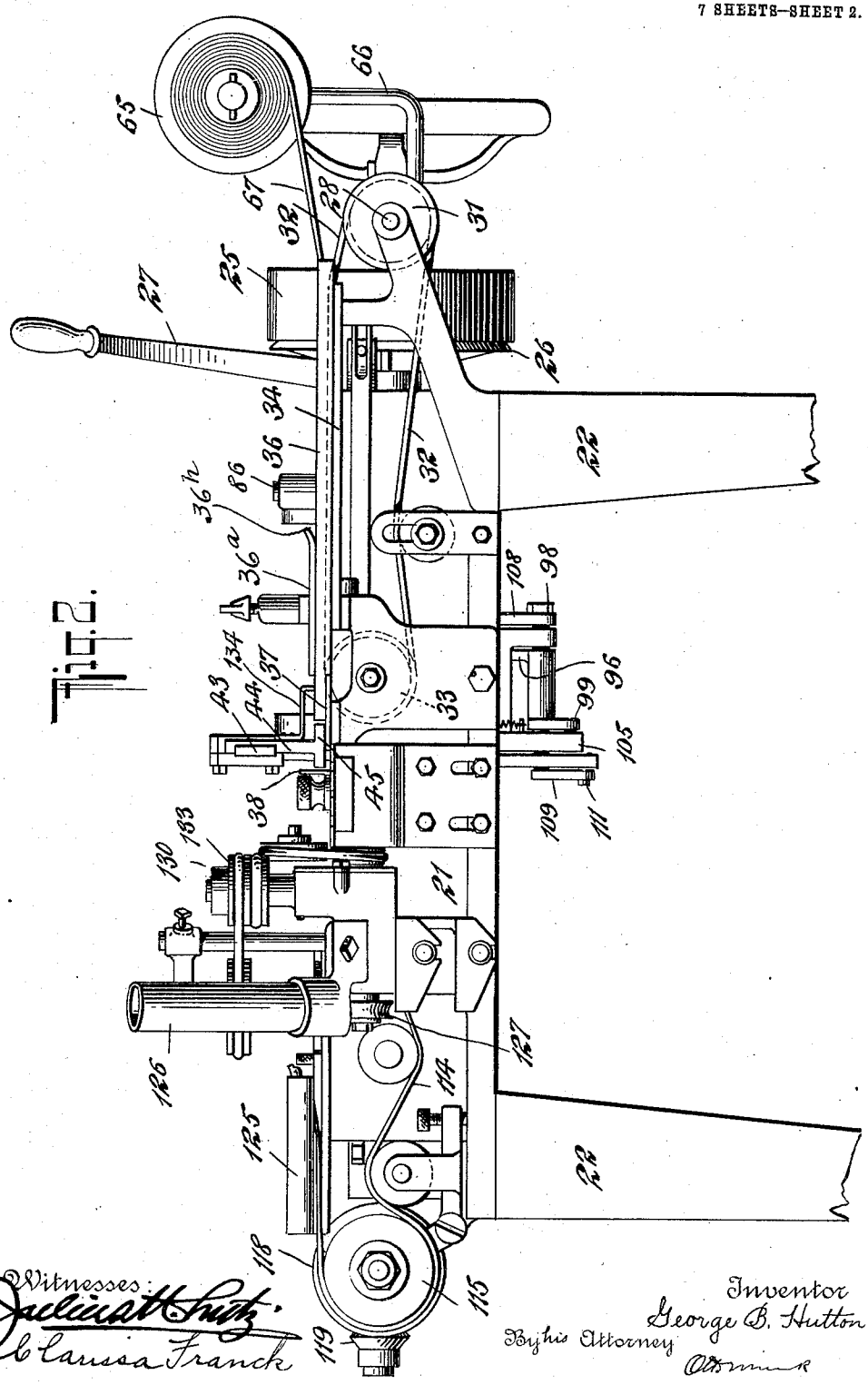

Fig. 2.

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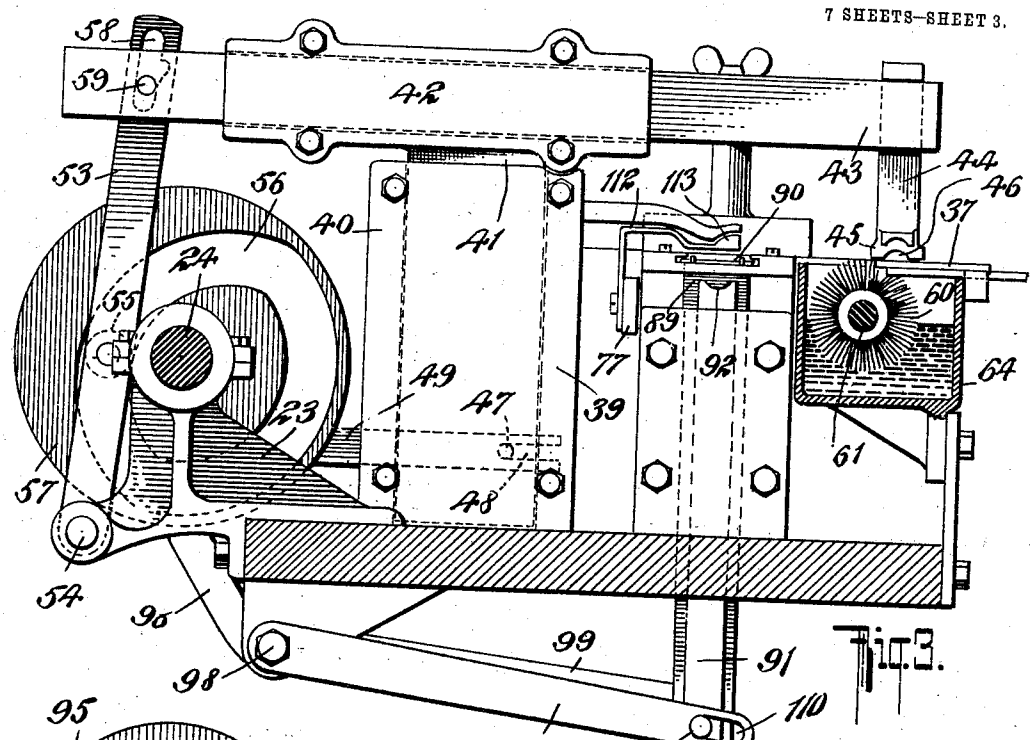

Fig. 3.

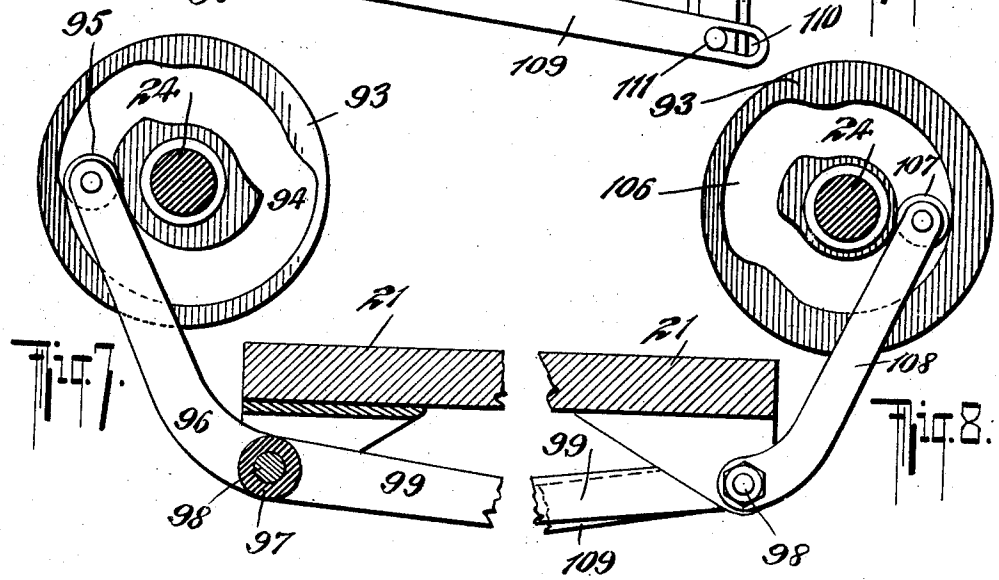

Fig. 7.

Fig. 8.

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7 SHEETS—SHEET 4.

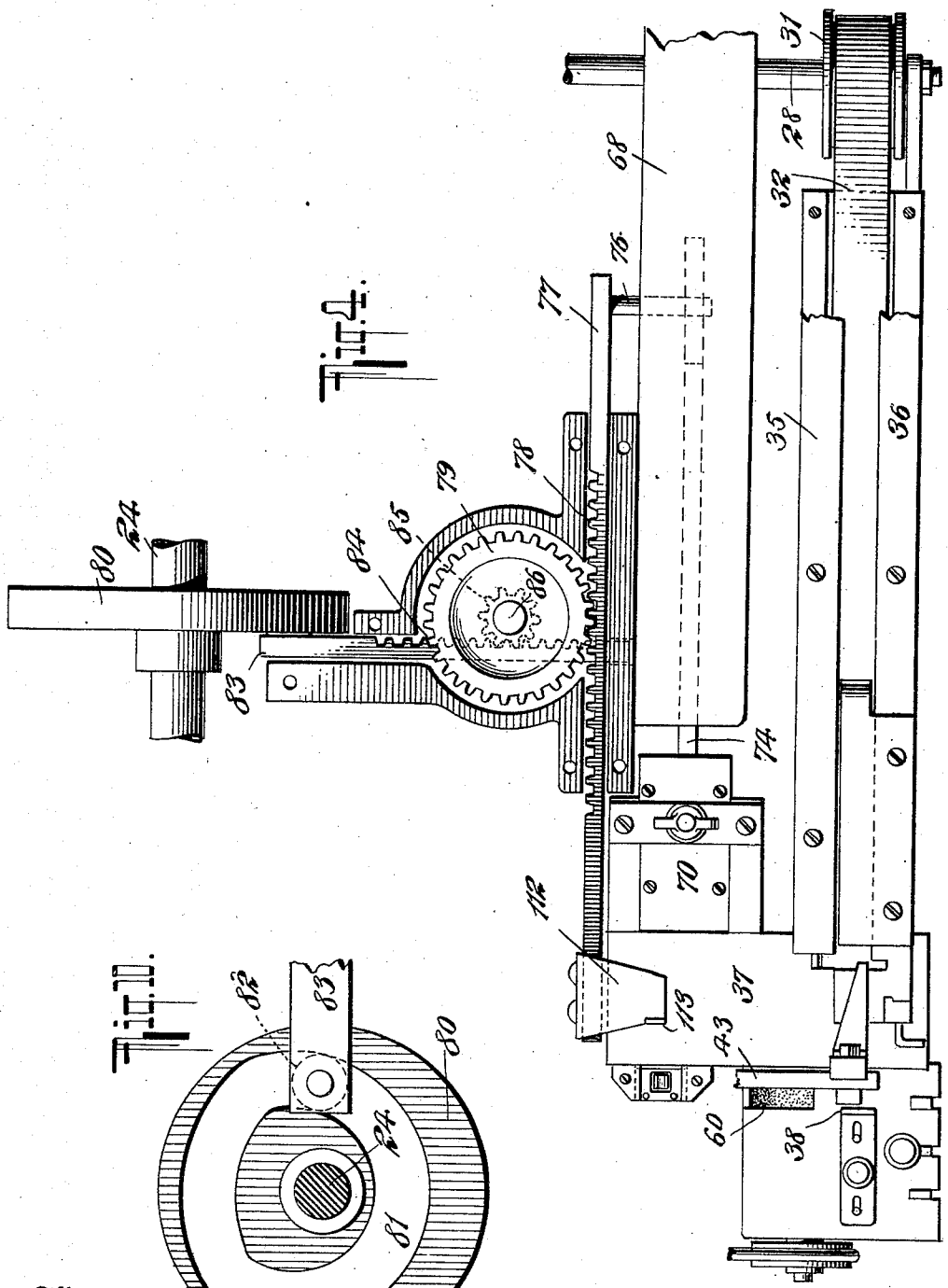

Fig. 4.

Fig. 11.

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7 SHEETS—SHEET 5.

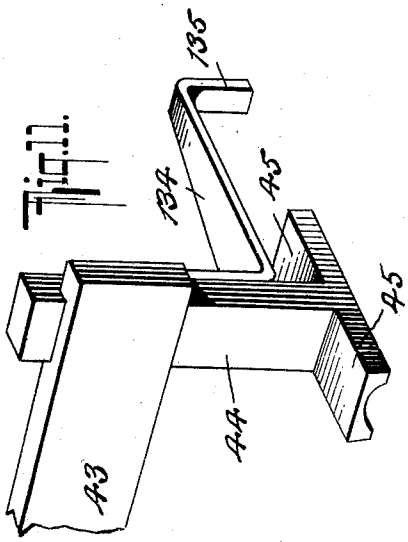

Fig. 11.

Fig. 5.

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7 SHEETS—SHEET 6.

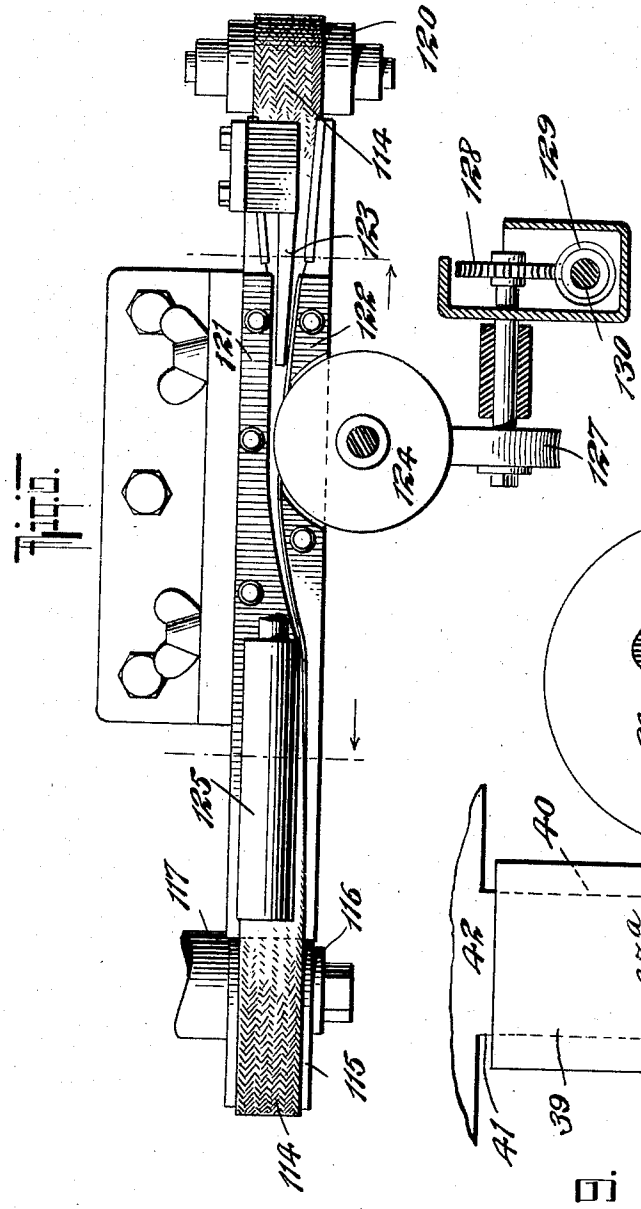

Fig. 1.

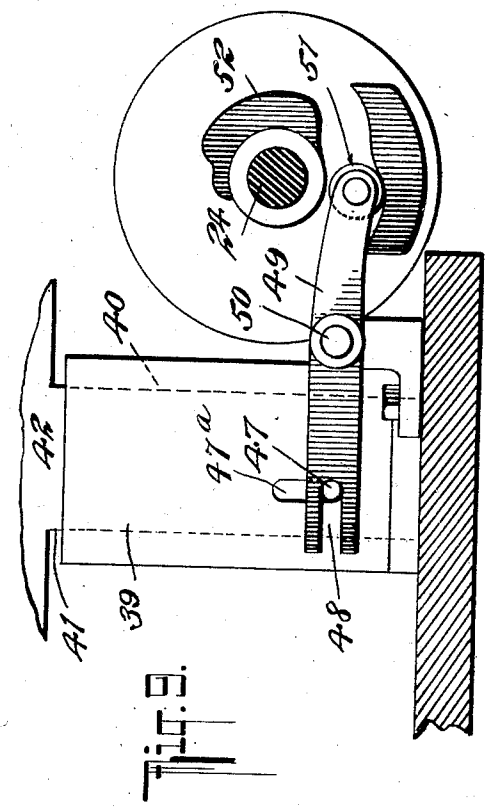

Fig. 5.

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7 SHEETS—SHEET 7.

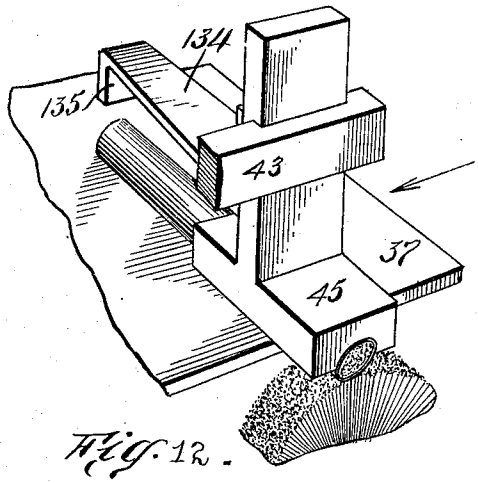

Fig. 12.

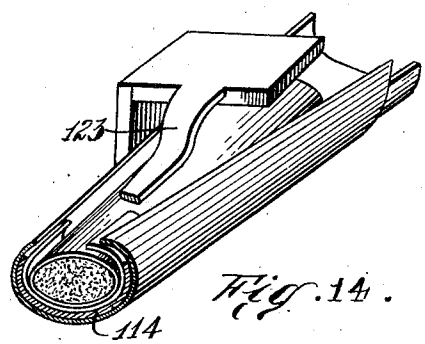

Fig. 14.

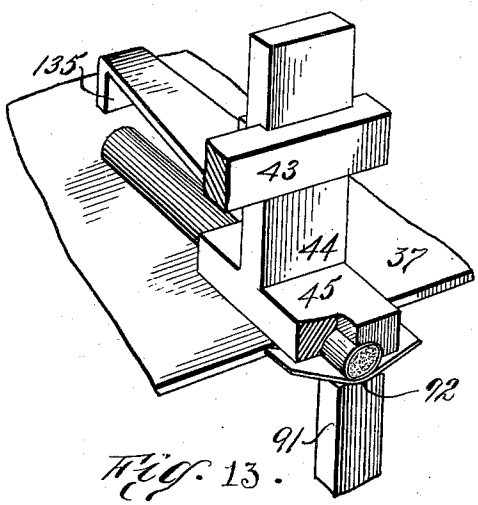

Fig. 13.

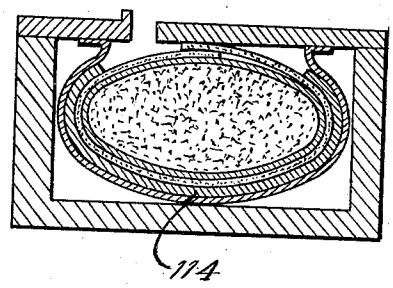

Fig. 15.

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UNITED STATES PATENT OFFICE.

GEORGE B. HUTTON, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM H. BUTLER, OF NEW YORK, N. Y.

MACHINE FOR TIPPING CIGARETTES.

977,015. Specification of Letters Patent. **Patented Nov. 29, 1910.**

Application filed September 21, 1907. Serial No. 393,877.

To all whom it may concern:

Be it known that I, GEORGE B. HUTTON, citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Machines for Tipping Cigarettes, of which the following is a specification.

This invention relates to machines for tipping cigarettes with a non-adhesive, substantially cylindrical band, of material such as cork, straw or waxed paper, for the purpose of providing a mouth-piece which will eliminate the objectionable features of ordinary cigarette paper which, upon being slightly moistened, not only becomes fragile and is easily broken, but has a tendency to adhere to the lips of the smoker.

The above and other reasons for providing a mouth-piece of the character mentioned are well known, and the object of the present invention is the provision of a machine into which the cigarettes may be fed and which will automatically and rapidly provide each with the desired tip or mouth-piece and deliver the tipped cigarette to any suitable receptacle. To provide this tip or mouth-piece before the paper is rolled and the tobacco placed therein, tends to make the manufacture of cigarettes a comparatively difficult process, yet the objections to present known methods of attaching the tip or mouth-piece to the completed cigarette are so serious that they outweigh the objections to rolling the cigarette from paper which has already been provided with a suitable strip or band which in rolling provides such tip or mouth-piece.

It is well known that cigarette paper, while suitably tough and strong in a dry state, is exceedingly weak and fragile when moistened, and the objections to tip the completed cigarette consists most largely in the fact that the paste employed, whether applied to the end of the cigarette or to the strip of cork or the like which is designed to provide the tip, weakens the paper where the paste is applied to the same, and in any process of machine tipping the paper too frequently breaks and too large a proportion of the stock is ruined.

Further objects of my invention, therefore, are to tip the cigarette through the employment of a minimum amount of adhesive material covering the smallest possible area and contacting with the cigarette paper at the fewest possible points; to complete the tipping operation, after application of the paste or adhesive compound, with such rapidity that the cigarette paper has not time to become saturated to the point of too easy breakage; to handle the cigarette in such a manner as to subject it to the fewest possible breaking strains; and, incidental to the above, to construct a machine for this purpose which is simple in construction and dependable in operation.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a top view of a cigarette tipping machine embodying my invention; Fig. 2 is a side elevation thereof; Fig. 3 is a section taken substantially on the line 3—3 of Fig. 1; Fig. 4 is an enlarged plan view, partly in section, of the middle portion of the machine; Fig. 5 is an enlarged vertical section substantially on the line 5—5 of Fig. 1; Fig. 6 is an enlarged top plan view of the mechanism for completing the tipping operation and delivering the tipped cigarette; Figs. 7 and 8 are enlarged sectional detail views through the driving shaft, on the lines 7—7 and 8—8, respectively, of Fig. 1 and Figs. 9 and 10 are enlarged sectional views, and Fig. 11 an enlarged perspective view, of details hereafter described. Fig. 12 is a perspective view showing the cigarette in transit and the application of paste thereto, the direction of motion being indicated by the arrow; Fig. 13 is a similar view showing a cigarette and parts engaging the same while a tip blank is being brought into contact with the cigarette; Fig. 4 is a similar view showing the blank receiving its initial fold about the cigarette; and Fig. 15 is a similar view showing the gummed blank being folded against the cigarette.

Referring now to the drawings in detail, numeral 21 refers to a suitable frame body, preferably provided with legs 22 22 and with brackets 23 in which is journaled the main driving shaft 24. I have shown this shaft 24 driven by means of a constantly rotating loose pulley 25 with which coöperates the clutch 26 slidable on and rotating with the shaft 24 and controlled by the lever 27.

Journaled in suitable brackets mounted upon the frame 21 is the shaft 28, driven

by means of a bevel gear 29 in permanent intermeshed relation to a similar gear 30 on the shaft 24. This shaft 28 is provided with a pulley 31 driving the belt 32 which extends to and around the idler 33. This belt 32 is designed to provide an endless carriage for conveying the cigarettes longitudinally to the tipping mechanism. To this end, a plate 34 is suitably secured to the frame of the machine and provides a longitudinally disposed support for a section of said belt, and upon said plate are mounted the inverted L-shaped guides 35 and 36 which provide a channel of proper dimensions to permit of the free passage therethrough of an endwise disposed cigarette. Secured to the upper face of the guide 36 at the rear end thereof, is a deflector plate 36[a] having an upwardly curved finger 36[b] (Fig. 2), the function of this plate being to prevent the cigarettes from riding out of the channel formed by the guides 35 and 36 as the cigarettes approach the idler 33.

Suitably mounted upon the frame 21 is the plate 37, which may be designated the operating table. This plate 37 is so positioned as to receive the cigarette which is delivered thereupon by the belt 32, a stop 38 limiting forward movement of the cigarette.

Suitably mounted upon the frame 21 are the vertical guides 39 and 40 between which the support 41 vertically reciprocates. At the upper end of the support 41 is provided a head 42 in which the bar 43 has free horizontal sliding movement. At the end of the bar 43 is provided a downward projecting arm 44 carrying a horizontal plate 45 at its base, the plate 45 being provided with a longitudinal groove 46 of a size sufficient to coöperate with the plate 37 to loosely contain a cigarette of standard size. The support 41 is vertically reciprocated by means of a pin 47 projecting therefrom through a slot 47[a] in the vertical guide 39 and into a slot 48 in the end of the lever 49 pivoted at 50 and provided at its other end with a roller 51 coöperating with the cam 52 on the shaft 24 to oscillate said lever and vertically reciprocate the support 41 and the head 42, (Fig. 9). The bar 43 is horizontally reciprocated through the head 42 by means of the lever 53 pivoted to the frame of the machine at 54 and oscillated by means of the roller 55 riding in the cam-groove 56 in the disk-wheel 57 fixed upon the shaft 24. The lever 53 is provided with a slot 58 into which projects a pin 59 at the end of the bar 43.

Referring now, for convenience of illustration, more particularly to Fig. 3, the cam 52 and the cam-groove 56 are so relatively shaped and operated that the support 41 and the head 42 are raised when the bar 43 has made its complete stroke or movement to the left. Therefore, the plate 45, is at this point, raised clear of the table or plate 37, and while the bar 43 is in this raised position, it is, as explained, under action of the lever 53, moved to the right until it reaches a position immediately above the point of delivery upon the table 37 of a cigarette which has been conveyed thereto by the belt 32. At this point, the lever 49 operates to depress or lower the support 41 and the head 42, which brings the grooved plate 45 down to contact with the table or plate 37 with a cigarette within said groove. Immediately thereafter the bar 43 is reciprocated to the left, with the grooved plate 45 sliding over the surface of the table 37. When the cigarette is delivered by the belt 32 upon the table 37, its forward movement is arrested, as stated, by the stop 38 which is so located that the end of the cigarette projects over the lefthand edge of the table or plate 37 (referring to Figs. 1 and 2). As stated, when in this position, depression of the bar 43 brings the plate 45 into contact with the table 37 with the cigarette lying within the groove 46 and projecting from each end thereof. Obviously, as the plate 45 slides along the plate 37, the cigarette in the groove 46 will be carried therewith. Located in the path of movement of the end of the cigarette which projects over the edge of the table 37 is the rotating brush 60, which is mounted upon a shaft 61 carrying the pulley 62 which is rotated from the shaft 24 by means of the belt 63. This brush 60 constantly dips into suitable paste, or other adhesive semi-fluid material contained within the pot 64 suitably mounted in the frame of the machine. The edges of the brush 60, in rotating, contact with the end of the cigarette which is being conveyed along the table by the grooved plate 45, and by such contact deposit a small quantity of paste upon the under-side of the projecting end of the cigarette.

While such a mouth-piece for cigarettes as I have in mind may be made from any one of various materials, a thin strip of cork is most commonly employed, and in proceeding to describe the following elements of my tipping mechanism, I shall describe my invention as applied to a machine for applying tips of cork to the cigarette. This material is usually supplied to the manufacturer in the form of a rolled strip which I have shown mounted upon a spool 65 carried by a bracket 66 on the frame 21. From this spool 65 the cork strip 67 is fed over the guide-plate 68, and through the feeding or advancing mechanism. This feeding mechanism comprises a sliding carriage 69 between which and the fixed plate 70 (one end of which is preferably vertically adjustable) the strip 67 passes. This carriage 69 is provided with a slot 71 at its forward end within which is pivoted the dog 72 move-

ment of which is controlled by the downwardly projecting arm 73. This arm 73 is pivoted to the end of the sliding bar 74, the other end of which is provided with a slot 75 into which projects a pin 76 mounted on the sliding bar 77. This bar 77 is provided with a rack 78 in coöperative positional relation to a pinion 79 by means of which the bar 77 is reciprocated.

There are many well known mechanical movements by means of which a bar may be longitudinally reciprocated from a rotating shaft which is mounted parallel thereto. I prefer, however, to provide the shaft 24 with a disk-wheel 80 having a cam-groove 81 therein coöperating with a roller 82 at the end of the bar 83 to reciprocate the latter. This bar 83 is provided with a rack 84 which coöperates with a similarly toothed pinion 85 fixed upon the shaft 86 which also carries the pinion 79. It will thus be apparent that rotation of the shaft 24 will cause the horizontal reciprocation of the bar 77.

Referring now more particularly to Fig. 5, it will be apparent that as the bar 77 is moved to the left, its first effect upon the feeding mechanism referred to will occur when the pin 76 reaches the end of the slot 75 and starts movement of the bar 74. The first effect of movement to the left of the bar 74 will be to operate through the arm or lever 73 to raise the dog 72 into engagement with the strip 67 with constantly increasing pressure until, further upward movement of said dog being arrested, the carriage 69 will start upon its movement and carry the strip 67 forward until the end thereof contacts with the stop 87, which is so located that the portion of said strip 67 which now projects beyond the edge of the plate or table 37 is of sufficient length to form, cut from said strip and rolled around the end of cigarette, the desired tip or mouthpiece for the latter. When the end of the strip 67 has been fed or advanced to proper position, said strip is clamped in this position by the raising of the bar 88, and immediately thereafter the bar 89, carrying the knife 90, is raised, the latter cutting from the strip 67 a blank of suitable dimensions to form the tip. During this operation the bar 91 is being raised, and immediately upon the cutting of the blank from the strip 67 the upper end of this bar 91, which is provided with a suitably-formed recess 92, contacts with the cut blank and raises the same into contact with the projecting end of the cigarette which, as has been explained, has been carried to a point immediately thereover and the underside of which has been provided with a small quantity of paste or similar adhesive compounds. The cork blank, therefore, in slightly curved form, due to the recess 92 in the end of the bar 91, will adhere to the end of the cigarette, in proper position to be curled therearound and form the desired tip. To effect these operations and properly time the same, I provide a disk-wheel 93, mounted on the shaft 24, one face thereof being provided with the cam-groove 94 operating through the roller 95 therein to reciprocate and properly time reciprocations of the lever 96 integral with or secured to the sleeve 97 which rotates on the shaft 98. From this sleeve 97 projects the lever-arm 99 carrying the pin 100 near its end.

The bar 88 is constantly subjected to a yielding force tending to raise the same, preferably due to the action of a spring 101 in tension between the pin 102 on the bar 88 and the pin 103 suitably located on the frame of the machine. The bar 88 is provided with an elongated slot 104 and is held in its depressed position, under action of the spring 101, by contact of the pin 100 with the lower end of said slot 104. The pin 100 on the lever-arm 99 projects through the slot 104 and into the slot 105 in the knife-bar 89. This slot 105 is sufficiently elongated to provide for a necessary time element, and it will be noted that when the lever-arm 99 is raised, its first effect will be to release the bar 88 for elevation of the same under action of the spring 101, and, immediately thereafter, the end of the pin 100 engages the top of the slot 105 to positively raise the bar 89 and effect, through the knife 90, the cutting operation referred to. The other face of the disk-wheel 93 is provided with a cam-groove 106, similarly coöperating with the roller 107 therein to reciprocate the lever 108, the other end of which is fixed to the shaft 98. By reciprocation of said lever 108, therefore, the shaft 98 is rocked, and to the other end of said shaft is keyed or otherwise fixed the lever-arm 109. At the free end of said arm 109 I provide a slot 110 into which projects a pin 111 on the bar 91. The cam-groove 106 is of such configuration, relative to the cam-groove 94, that the timing of the raising of the bar 91 is made to effect contact between the recessed top thereof and the end of the strip 67 immediately following the cutting operation of the knife 90. As explained, the cut blank is raised by the bar 91 to contact with the pasted or gummed under surface of the end of the cigarette, to which said blank adheres when the bar 91 is again depressed.

The bar 77, which, as has been explained, is longitudinally reciprocated by means of the pinion 79 in mesh with the rack 78 on said bar, is provided with an arm 112 having an upwardly projecting lug 113 thereon so positioned that upon reciprocation of said bar 77 to the left (referring now to Fig. 4) said lug will engage the end of the

cigarette, which has been brought to proper position over the blank cutting and affixing mechanism and in line with the lateral reciprocation of said lug, and push said cigarette, longitudinally, upon the conveyer belt 114. This conveyer-belt 114 is driven by the pulley 115 on a shaft 116 journaled in the sleeve 117, the end of said shaft being provided with a bevel gear 118 in mesh with a similar gear 119 on the shaft 24. This belt 114 passes over an idler 120 so positioned that the belt is in position to receive the cigarette when pushed by the arm 112 from the tip-affixing mechanism. As the belt 114 leaves the idler 120, it passes between guides 121 and 122 which curl the edges of said belt gradually upward. As has been shown, the blank which has been affixed to the end of the cigarette is substantially flat and secured to said cigarette end at its middle portion. The material of said blank being flexible, as the cigarette is carried along by the conveyer-belt 114, the blank will be gradually wrapped around the end of the cigarette, conforming to the gradually increasing curvature of said belt due to the guides 121 and 122. The width of this blank is slightly greater than the circumference of the cigarette, whereby a narrow margin will be left for overlapping and pasting. As the cigarette, with its gradually formed tip advances, one edge of said blank is curled against the side of the cigarette by the action of the belt 114 and the cigarette is held in place on said belt by the finger 123. The other edge of said blank remains temporarily in a substantially vertical position, and is brushed past the edge of the wheel 124, from which it receives a thin layer of paste and is then by the guide plate 121 curved down against its opposite edge and held in such position until sufficiently dried by passing in close proximity to or against the box 125, which is heated by steam, a jet flame, or in any other desired manner. As the belt 114 passes over the driving pulley 115, the now completely tipped cigarette will be delivered into a receptacle or chute for the packers.

To supply paste to the edge of the wheel 124, I provide a container 126 provided with a sufficient quantity of suitable liquid or semi-liquid paste. The bottom of this container is open to the wheel 127, driven at slow speed by means of the gear 128 in mesh with the worm 129 on the shaft 130 driven from the shaft 24 by means of the belt 131. The pasting edge of the wheel 124 receives paste which is delivered thereto from the container 126 by means of the wheel 127. The wheel 124 is rotated by means of the belt 132 driven by the pulley 133 on the shaft 130.

It will be noted that the downwardly projecting arm 44 which carries the grooved plate 45, is provided with a horizontally extending arm 134 with a stop 135 which prevents delivery of the next succeeding cigarette until the one within the groove 46 is carried on to the pasting and tip-affixing mechanism.

Many modifications of minor details of my improved cigarette tipping machine will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific construction herein shown and described.

I claim as my invention:

1. In a machine of the character described, the combination with a platform, of means for feeding cigarettes thereto with a portion of each cigarette projecting beyond the edge of the platform, means for forming and applying mouth piece blanks, means for moving the cigarettes across the platform from the feeding means to the mouth piece blank applying means, and means for applying adhesive to the cigarettes while the latter are being moved across the platform.

2. In a machine of the character described, the combination with a platform, of means for successively feeding a plurality of cigarettes end on to said platform with a portion of each cigarette projecting beyond the edge of the platform, means adjacent the platform for providing the cigarettes with adhesive, means for forming and applying mouth piece blanks, and means for moving the cigarettes across the platform from the feeding means to the mouth piece blank applying means.

3. In a machine of the character described, the combination, with the tip forming and attaching mechanism, of a platform, means for successively delivering cigarettes upon said platform each with a minor portion projecting over the edge thereof, means for moving said cigarette across the platform to said forming and attaching mechanism and thereby bringing its projecting end into contact with means for delivering thereto an adhesive compound.

4. In a machine of the character described, the combination, with an operating platform of means for successively delivering individual cigarettes upon said platform each with a minor portion projecting over the edge thereof, means for moving each cigarette in turn laterally along said edge across the platform and applying an adhesive compound to the bottom side of said projecting end, means for bringing a suitable blank into proper positional contact with the gummed part of the cigarette, and means for wrapping said blank around said cigarette, securing the same in cylindrical form and discharging the tipped cigarette from the machine.

5. In a machine of the character described, the combination with a platform, of means for feeding cigarettes thereto with a portion of each cigarette projecting beyond the edge of the platform, means for feeding a strip of mouth piece material, means for severing mouth piece blanks from the strip, means for applying adhesive to the cigarettes, and means for moving the cigarettes across the platform against the adhesive applying means to the blank severing means.

6. In a machine of the character described, the combination with an operating platform, of means for feeding cigarettes thereto with a portion of each cigarette projecting beyond the edge of the platform, means for feeding a strip of mouth piece material in parallelism to the line of cigarette feed, means for severing mouth piece blanks from the strip, means for moving the cigarettes across the platform to the blank severing means, adhesive applying means in the path of the cigarette during its movement across the platform, and means for applying the severed blanks to the cigarettes.

7. In a machine of the character described, the combination with cigarette feeding mechanism, of an operating table to which the cigarettes are delivered with a portion projecting beyond the table, means for applying adhesive to a spot near the projecting portion of each cigarette, means for forming mouth piece blanks, means for moving the cigarettes across the table from the adhesive applying means to the mouth piece blank forming means and means for applying the blanks to the cigarettes at the end provided with adhesive.

8. In a machine of the character described, the combination with an operating table to which cigarettes are designed to be fed with a portion of each cigarette projecting beyond the table, of means at one side of the horizontal plane of the table for applying adhesive to a spot on each cigarette near the end thereof, means for forming and applying mouth piece blanks to the cigarettes and means for moving the cigarettes across the table from the adhesive applying means to the means for forming and applying mouth piece blanks.

9. In a machine of the character described, the combination with an operating table to which cigarettes are designed to be fed with a portion of each cigarette projecting beyond the table, of means substantially flush with, and to one side of the horizontal plane of, the table for applying adhesive to a spot on each cigarette near the end thereof, mouth piece blank forming mechanism, means for feeding a strip of mouth piece material to the latter, and means for moving the cigarettes across the table from the adhesive applying means to the mouth piece blank mechanism.

10. In a machine of the character described, the combination with an operating table, of means for feeding cigarettes endwise, means for applying adhesive to one spot near the end of each cigarette, mouth piece forming and applying mechanism, and means for moving the cigarettes sidewise across the table from the adhesive applying means to the mouth piece forming and applying mechanism.

11. In a machine of the character described, the combination with an operating platform, of means for feeding cigarettes thereto, adhesive applying means, means parallel to and to one side of the adhesive applying means for forming and applying mouth pieces, means for feeding a strip of mouth piece material to the forming and applying means, and means for moving the cigarettes sidewise across the platform from the adhesive applying means to the mouth piece forming and applying means.

12. In a machine of the character described, the combination with a table, of cigarette feeding mechanism, means for applying adhesive to a part only of the circumference of each cigarette near one end thereof, means for severing a blank from a strip of mouth piece material, means for feeding a strip of mouth piece material to the severing means in a step by step motion, and means for moving the cigarette sidewise across the table into position to have the blank applied thereto at the portion where the adhesive has been applied.

13. In a machine of the character described, the combination with adhesive applying mechanism for cigarettes, of means for forming mouth piece blanks, comprising a pair of reciprocating bars, one of said bars being designed to retain a strip of mouth piece material against movement and the other bar carrying a knife adapted to sever a blank from the strip.

14. In a machine of the character described, the combination with adhesive applying mechanism for cigarettes, of means for forming mouth piece blanks comprising a pair of reciprocating bars, one of said bars acting to retain a strip of mouth piece material against movement and the other bar carrying a knife adapted to sever a blank from the strip, and means for applying the blanks to the cigarettes.

15. In a machine of the character described, the combination with adhesive applying mechanism for cigarettes, of means for forming mouth piece blanks comprising a reciprocable retaining bar and a reciprocable blank severing bar, and means for moving cigarettes from the adhesive applying mechanism to the mouth piece blank forming means.

16. In a machine of the character described, the combination with adhesive ap-

plying mechanism for cigarettes, of means for forming mouth piece blanks comprising a reciprocable retaining bar and a reciprocable blank severing bar, means for moving cigarettes from the adhesive applying mechanism to the mouth piece blank forming means, and means for applying the severed blanks to the cigarettes.

17. In a machine of the character described, the combination with cigarette feeding means, of means for applying adhesive to the cigarettes, means for forming and applying a blank to each cigarette and a vertically and horizontally reciprocating bar provided with an arm designed to move the cigarettes from the adhesive applying means to the blank forming and applying means.

18. In a machine of the character described, the combination with means for applying adhesive to cigarettes, means for forming mouth piece blanks from a strip of mouth piece material, means for applying a blank to each cigarette leaving the ends of said blank projecting, means for folding one of said ends upon the cigarette, and means for applying adhesive to the other end of said blank.

19. In a machine of the character described, the combination with means for applying adhesive to cigarettes, means for forming mouth piece blanks from a strip of mouth piece material, means for conveying cigarettes from the adhesive applying means to the blank forming means, means for applying a blank to each cigarette leaving the ends of said blank projecting, means for folding one of said ends upon the cigarette, means for applying adhesive to the other end and means for folding the latter to complete the mouth piece.

20. In a machine of the character described, the combination with means for applying adhesive to one spot on a cigarette, means for forming mouth piece blanks, means for applying the blanks to the cigarettes leaving the ends of the blanks projecting, means for applying adhesive to one of said projecting ends, means for folding the said ends upon the cigarette, and means for drying the adhesive.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE B. HUTTON

Witnesses:

CLARISSA FRANCK,

OTTO MUNK.