

No. 716,537.

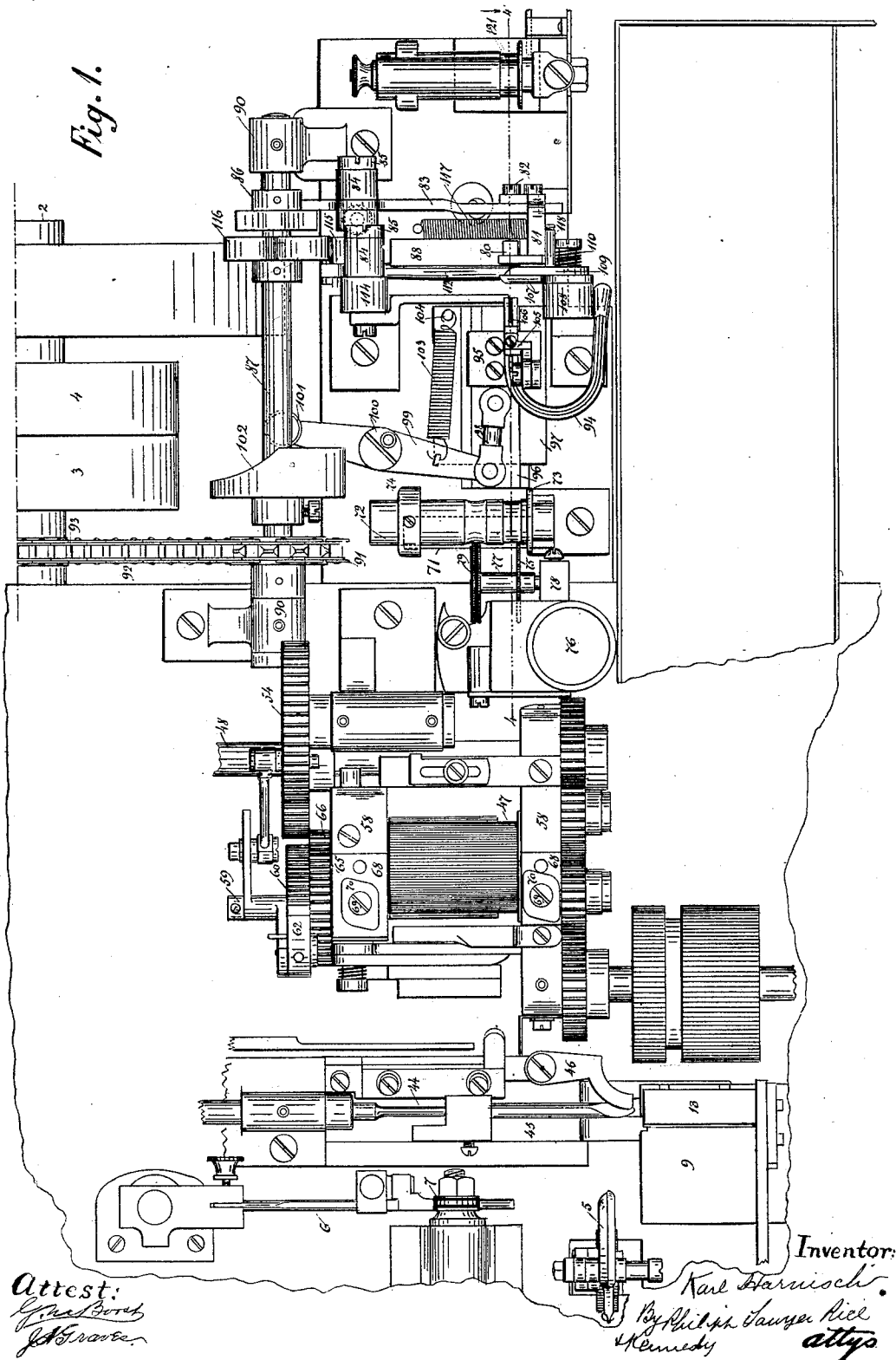
Patented Dec. 23, 1902.

K. HARNISCH.
MACHINE FOR FORMING CIGARETTE TUBES

(Application filed May 14, 1902.)

(No Model.)

4 Sheets—Sheet 1.



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4 Sheets—Sheet 2.

Fig. 2.

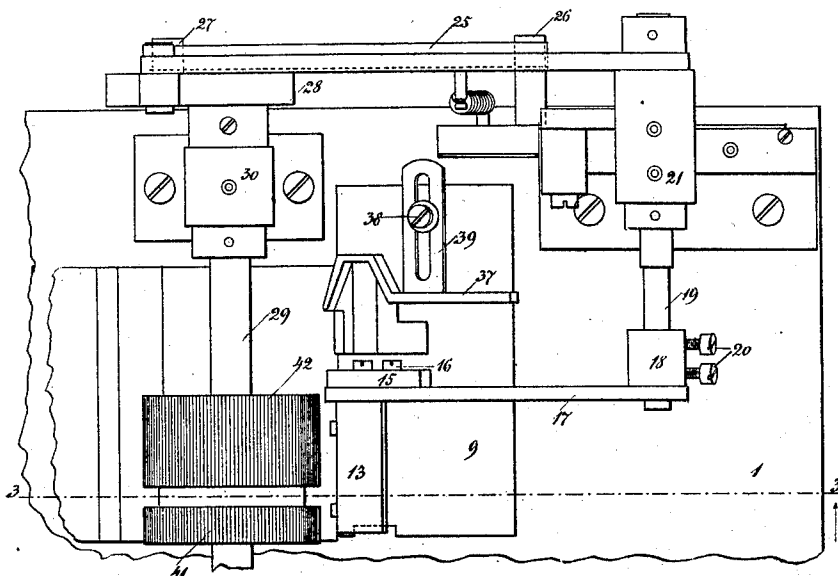
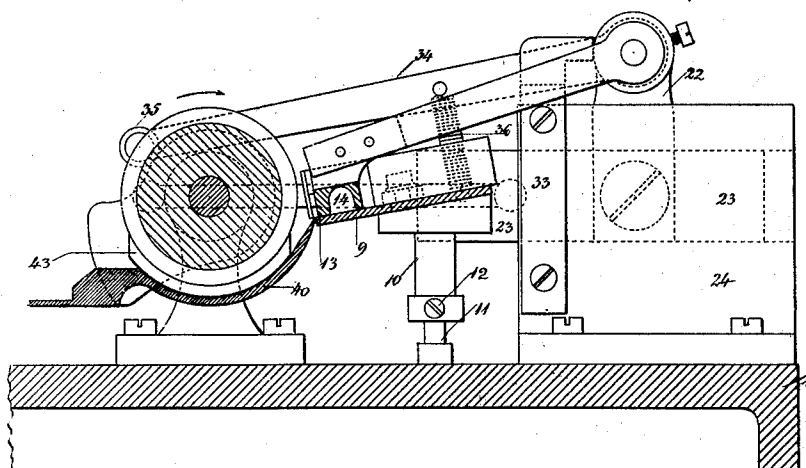


Fig. 3.



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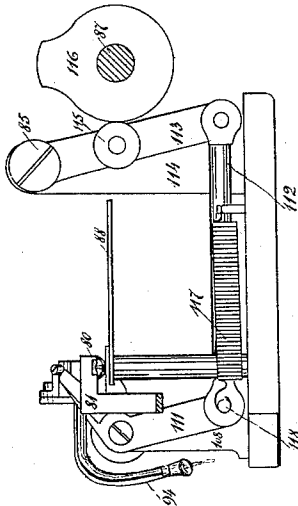


Fig. 5.

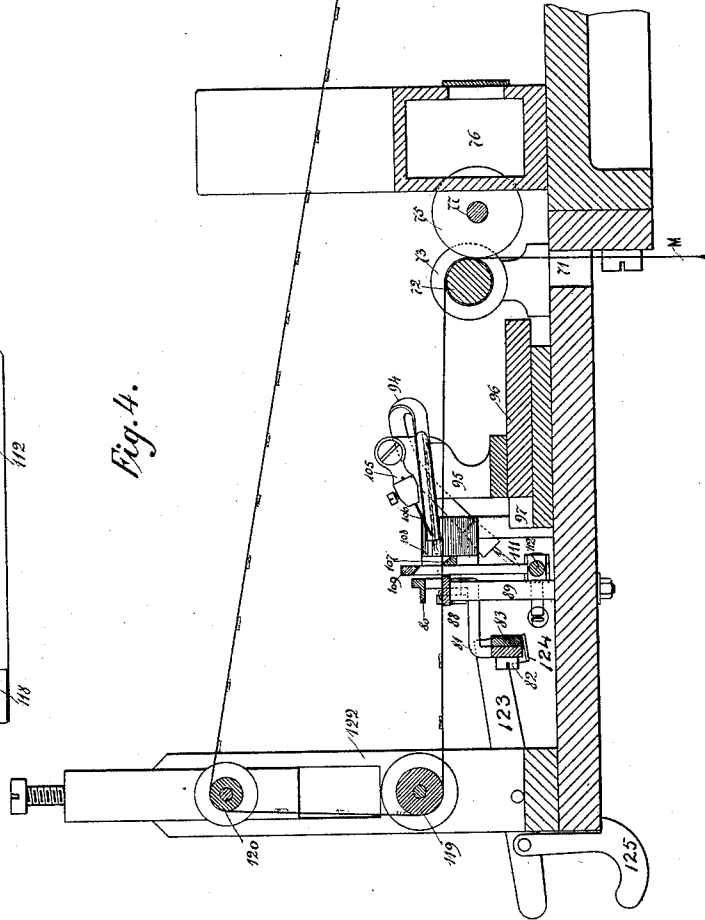


Fig. 4.

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Fig. 6.

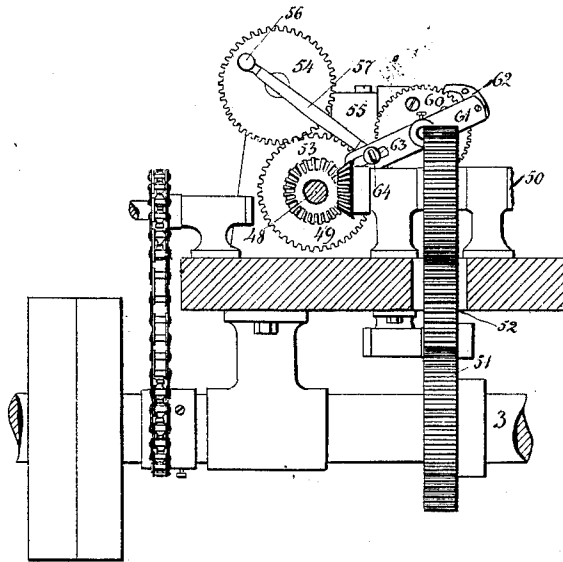
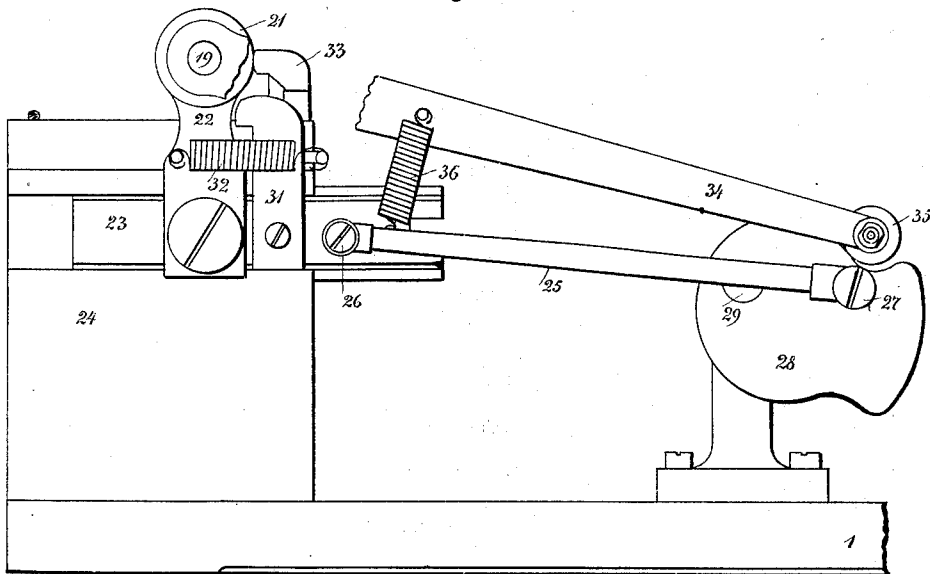


Fig. 7.



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UNITED STATES PATENT OFFICE.

KARL HARNISCH, OF ST. PETERSBURG, RUSSIA, ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MACHINE FOR FORMING CIGARETTE-TUBES.

SPECIFICATION forming part of Letters Patent No. 716,537, dated December 23, 1902.

Application filed May 14, 1902. Serial No. 107,334. (No model.)

To all whom it may concern:

Be it known that I, KARL HARNISCH, a citizen of the Swiss Republic, residing at St. Petersburg, Russia, have invented certain new and useful Improvements in Machines for Forming Cigarette-Tubes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 In a certain class of machines for forming cigarette-tubes the mouthpiece material is fed to the mouthpiece-forming mechanism by constantly-running rolls, one of which has a segmental feeding-surface, so that the mouth-
15 piece material is given an intermittent movement, the length of which corresponds to the length of the segmental surface. With this construction it is not possible to vary the amount of feed of the mouthpiece material
20 except by removing the segmental feed-surface referred to and replacing it with another of different length. It is usual, furthermore, in machines of this class to transfer the cut cigarette-tube length in which the mouth-
25 piece is to be inserted from a position in front of the tube-forming device to a position in front of the mouthpiece-inserting mechanism by means of a forked pusher. After the tube length has reached its position in front
30 of the mouthpiece-inserting mechanism it is given up by the pusher to a forked holding device, the function of which is to hold the tube during the operation of the mouthpiece-inserting mechanism. This forked holding
35 device is provided with a pair of narrow tines, which in practical operation only hold the cigarette at two diametrically opposite points. The employment of the forked pusher and the holding device not only increases the
40 number of parts of the machine, but is further objectionable because the tube length is liable to twist or slew in the forked holder, so that the mouthpiece does not enter the tube. Furthermore, some machines of this class
45 have been equipped with devices for inserting a wad or plug of cotton in the mouthpiece, the function of the cotton being not only to prevent the tobacco, which is afterward inserted in the tube by a stuffing mechanism, from being pushed too far into the

tube, and thus passing into the mouthpiece-chamber, but also to purify the smoke, a portion of the nicotine being retained by the cotton. The cotton-inserting mechanism which has been heretofore used operates to insert a
55 small piece or plug of cotton into the mouthpiece after the mouthpiece has been formed and inserted into the cigarette-tube by pushing the cotton through the open end of the mouthpiece.
60

The present invention has for one of its objects to produce an improved feeding mechanism for the mouthpiece material which shall be certain and efficient in its operation and which shall be readily adjustable, so that
65 different lengths of mouthpiece material may be fed when desired.

A further object of the invention is to improve and simplify the mechanism by which the tube lengths are transferred from the
70 tube-forming mechanism to the mouthpiece-inserting mechanism and held in position while the mouthpiece is inserted.

A further object of the invention is to improve the devices by which fibrous material,
75 such as cotton, is positioned in the mouthpiece.

A further object of the invention is to generally improve the details of construction of cigarette-tube-forming machines, thus cheap-
80 ening their construction and rendering them more certain and efficient in operation.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described, and then pointed out in the claims
85 hereunto appended.

In the drawings which constitute a part of this specification, and in which like numerals
90 of reference indicate the same parts, Figure 1 is a plan view. Fig. 2 is a detail plan view, on an enlarged scale, of the transferring device and the mechanism operating it. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4
95 is a section, the section being taken on the line 4 4 of Fig. 1. Fig. 5 is a detail view illustrating more particularly the mechanism for operating the shears. Fig. 6 is a detail sectional view illustrating the mechanism for
100

operating the shears for cutting the cotton or fibrous material. Fig. 7 is a side view of the construction shown in Fig. 2.

Referring to the drawings, which illustrate 5 one embodiment of the invention, the improvements are shown as applied to a machine of the type disclosed in the application of Sruel David S. Rackowitzky and Selman S. D. Rackowitzky, filed on April 1, 1902, serially numbered 100,900.

In the drawings, 1 indicates a table which serves to support the working parts of the machine. This table may be supported on the usual standards or legs. (Not shown.) The 15 main shaft of the machine is indicated at 2, the said shaft being supported in hangers (not shown) dependent from the table of the machine and being supplied with the usual fast and loose pulleys 3 and 4.

When, as in the present case, the improvements are applied to a machine in which a continuous tube is formed and cut up into lengths, the tube-forming mechanism may be of any desired construction. As shown, the 25 spool or ribbon of paper from which the tube is made is mounted on a standard, (not shown,) which is located on the table of the machine, and the paper is directed by suitable guides to a former 6, around which the tube is folded, 30 the edges of the tube being joined by means of a crimping-wheel, located, as is usual, in the former and cooperating with an abutment-wheel 7. As the tube passes off on the former 6 it is cut into cigarette lengths by a cutting mechanism, which may be of any desired description. As shown, this cutting mechanism comprises a pair of shears 5, which are 35 operated to cut the tube, after which they are or may be given a movement in the direction of the travel of the tube in order to advance the lengths.

Inasmuch as the construction so far described, specifically considered, forms no part of the invention, the operating mechanism 45 for the parts has been omitted from the drawings in the interest of clearness. The construction may, however, be similar to that illustrated in the application of Sruel David S. Rackowitzky and Selman S. D. Rackowitzky, heretofore referred to.

The cut lengths of tube are deposited on a table 9, which is preferably slightly inclined and which is supported on the main table of the machine in any suitable manner. Preferably the table has depending from its under side a boss 10, which takes over a post or spindle 11, secured to the table 1. The boss is secured to the spindle by means of the set-screw 12 or in any other simple manner, so that 60 the table may be readily and accurately adjusted in position. After the cut lengths of tube are deposited on the table 9 they are taken by a transferring mechanism, which operates to move them from the point where they are deposited into the position where they are to receive the mouthpieces. The transferring mechanism referred to may be

varied in construction. It will, however, embody a tube-engaging device which will be constructed so as to engage the tube at successive points along its length. In the preferred form of the construction this tube-engaging device consists of a block 13, which is provided with a substantially semicircular recess or groove 14, this groove being preferably of such a size as to enable the tubes to fit easily therein, the fit, however, being sufficiently close so that the tube will not shift in the groove of the block. This tube-engaging device operates not only to take the 80 cut lengths of tube from the tube-cutting mechanism and to transfer them to the mouthpiece-inserting mechanism, but it also remains stationary while the mouthpiece-inserting mechanism operates. 85

The mechanism by which the tube-transferring mechanism is given its movement may vary within wide limits. As shown, the block 13 is provided with an upwardly-projecting piece 15, through which pass screws 16, said screws serving to secure the projection and block to an arm 17. This arm 17 is provided with a circular boss 18, by which it is secured to a rock-shaft 19, this being effected by means of screws 20 or in any other 95 desired manner. This rock-shaft 19 is journaled in a bearing 21, which is fast on a standard 22, said standard being pivoted to a slide 23, which is shown in Fig. 7. This slide 23 moves in ways in a block 24, which rises 100 from the bed-plate of the machine. The reciprocating movements of the slide 23 move the tube-engaging device or transferer from the position in front of the tube-advancing mechanism to the position in front of the 105 mouthpiece-inserting mechanism. The reciprocating movement of the slide may be produced in any desired manner. Preferably, however, there is connected to the slide a link 25, said link being secured at one end 110 to a pin 26, fast on the slide, and at its other end to a crank-pin 27, mounted on a cam-disk 28, which disk is in turn carried by a shaft 29, one end of which shaft is shown as supported in a suitable bearing 30, mounted on the 115 bed-plate of the machine. The slide 23 is provided with an upright stop-piece 31, which is rigidly secured to the slide, and a stiff spring 32 tends to hold the standard 22 against the upper end of this stop-piece. A stop 33 is secured to the block 24, and the upper end of this stop is struck by the bearing 21 at the time when the transfer-block 13 comes into register with the mouthpiece-inserting device, which is slightly before the crank-pin passes 125 the center. The slide has a slight forward movement as the crank-pin passes from one side of the center to the other independently of the standard 22, which at this time rocks slightly on its pivot, this movement being permitted by the spring 32, before referred to. 130 By this construction a dwell is produced in the movement of the transferring-block, which holds the tube, and it is during this dwell that

the mouthpiece-inserting mechanism operates to insert the mouthpiece in the tube.

In addition to the transferring movement before referred to the tube-engaging device or transferring device is given vertical movements to engage and release the tube lengths. These vertical movements may be produced in any desired manner. In the construction shown, however, the shaft 19 is provided with an arm 34, which carries a cam-roll 35, said roll running on the periphery of the cam-disk 28, which carries the crank-pin 29, before referred to. This arm 34 has connected to it a spring 36, the other end of said spring being secured to a pin fast on the slide, which serves to hold the arm in such position that its bowl is always in contact with the cam, thus preventing any jumping. The contour of the cam is such that the block 13 is allowed to descend on the tube length just about the time when the same is cut off by the shears, the lower face of the block after it has engaged the tube length coming to rest on the table 9. Since the cam permits the block to remain on the table not only until it has moved from the position where it takes the tube to the position in front of the mouthpiece-inserting mechanism, but also until the mouthpiece-inserting mechanism has completed the insertion of the mouthpiece, the tube is firmly held by the block during the time when the mouthpiece-inserting mechanism operates, and there is no chance for the tube to twist or slew.

The table 9 is preferably provided with an adjustable angular stop 37, said stop being secured to the table by means of a screw 38, which passes through a slot in an extension 39 of the stop. This stop is a common feature of machines of this class and limits the movement of the tube during the operation of the mouthpiece-inserting mechanism.

After the mouthpiece has been inserted in the tube the tube is delivered to a rerolling device, which operates to open and properly shape the coiled mouthpiece. In the construction shown this rerolling device comprises a curved guide 40 and a pair of milled rolls 41 42, these rolls being provided with a feeding segmental surface 43, which serves to insure the tubes being forwarded between the rolls and the curved surface 40.

The mouthpiece-forming mechanism employed may be of any desired description. Preferably, however, it will be of the construction shown in the Rackowitzky application before referred to—that is to say, it will comprise a spindle 44, which is given an intermittent rotary movement through a mechanism (not shown) and which has cooperating therewith a slotted introducing-tube 45. A pawl 46 is mounted so that its forward end engages the slot in the tube 45 as the tube moves backward, said pawl serving to insure the delivery of the mouthpiece from the tube. Inasmuch as this mouthpiece-forming mechanism, specifically considered, forms no part

of the present invention, the mechanism by which the same is operated is omitted in the interest of clearness.

When, as in the present machine, the mouthpiece material is in the form of a continuous strip, from which sections sufficient for a mouthpiece are cut, it is apparent that the devices which present the material to the mouthpiece-forming mechanism should be intermittent in their action in order to give the mouthpiece-forming mechanism time to act. The devices by which the intermittent feeding movement is effected may vary in construction. According to the present invention these devices will include a pair of feeding-rolls 47, which are preferably milled in order to give them a good grip on the material.

Any suitable means may be employed for giving the rolls their intermittent movement, though these means will be of such a character as to permit the amount of movement of the rolls, and consequently the length of strip fed to be adjusted. In the construction shown there is provided a counter-shaft 48, said shaft being driven by a pair of intermeshing crown-gears 49 from a short shaft 50, which is journaled above the bed-plate and which is driven by gears 51 52 from the main shaft of the machine. The counter-shaft 48 is provided with a gear 53, which meshes with a gear 54, the shaft of which is journaled in a bracket 55, rising from the bed-plate. This gear 54 is provided with a crank-pin 56, and journaled on this pin is a connecting-rod 57.

The feed-rolls 47 are journaled in standards 58, which rise from the bed-plate, and extending from the side of one of these standards is a short shaft 59, which is provided with a ratchet-wheel 60. Also mounted on the shaft 59 is a pawl-carrier 61, having a pivoted pawl 62, which engages the ratchet-wheel before described. The hub of this pawl-carrier has a slotted arm 63 extending therefrom, and the connecting-rod 57, before described, is adjustably secured to this slotted arm by means of a nut 64 or in any other suitable manner. It is apparent that by shifting the position of the connecting-rod with respect to the slotted arm the stroke of the pawl will be varied, and consequently the amount of arc through which the ratchet-wheel is turned will vary. The ratchet-wheel has connected to it rigidly a gear 65, which meshes with a pinion 66 on a shaft 67, which is the shaft which carries the lower feed-roll. The upper feed-roll is driven by the lower one by friction, though it might be positively driven, if desired. In the construction shown the shaft which carries the upper feed-roll is held in position by blocks 68, these blocks being in turn held by screws 69. The screws 69 bear against spring-plates 70, said plates being interposed between the screws and the blocks 68. This construction allows the upper roll to yield somewhat, if necessary.

The spool or other source of supply from

which the mouthpiece paper is drawn may be located at any suitable point in the machine, and the strip may be directed to the feed-rolls by any desired arrangement of guides. The present machine is, however, designed to apply small sections of fibrous material, such as cotton, to the mouthpiece material before the mouthpiece is formed, and in this machine, therefore, the guides are so arranged as to permit the devices which apply the fibrous material or cotton to operate. The arrangement and construction of the devices which apply the cotton to the mouthpiece material may be varied within wide limits. According to the present embodiment of the invention the mouthpiece material is first gummed. In the construction shown the mouthpiece material, which is marked M, is shown as passing through a slot 71 in the table of the machine, after which it runs over a stationary guide 72, which is or may be provided with flanges 73 74 to insure that the material travels in the straight line. In the machine shown as the mouthpiece material passes over the guide 72 it has a line of paste applied to it by means of a paste-wheel 75, which runs in a paste-fountain 76 of ordinary construction. This paste-wheel 75 is mounted on a short shaft 77, said shaft being journaled in a projection 78, which extends from the side of the paste-fountain 76. This shaft 77 is also provided with a milled friction-wheel 79, which bears against the mouthpiece material running over the guide 72 and is turned thereby, the movement of the material thus serving to drive the paste-wheel. After having had the line of paste applied thereto the mouthpiece material passes to the devices for supplying the cotton or other fibrous material, which devices, as before indicated, may be much varied in construction. As shown, these devices include a movable presser, which is formed of a small plate 80, which projects from the side of a bent arm 81, this arm being best shown in Fig. 4. The arm 81 is connected by means of screws 82 or in any other suitable manner to a rock-arm 83, said arm having a hub 84, which is journaled on a bracket rising from a bed-plate, the hub being held in position on the bracket by means of the screw 85. The rear end of the arm extends under and is operated by a cam 86, this cam being carried on a shaft 87. As the cam 86 rotates the presser 80 is given a rising-and-falling movement toward and away from an abutment, which is formed by a plate 88, said plate being supported by a standard 89, rising from the bed-plate.

The shaft 87, before referred to, is journaled in bearings 90 and is provided with a sprocket-wheel 91, over which passes a chain 92, driven by a sprocket-wheel 93 on the main shaft 2.

In the preferred form of the construction the cotton or fibrous material will be deliv-

ered to the applying devices in rope-like or sliver form, and pieces will be cut therefrom, said pieces being applied to the mouthpiece material by the presser before described or by its equivalent.

The presenting devices for the cotton may vary widely in construction. As shown, they embody a curved guide 94, to the lower end of which the sliver is led from any suitable source of supply—as, for instance, a spool located under the table. This sliver-guide 94 is carried on a standard 95, which is in turn supported by a reciprocating plate 96, said plate moving in suitable guides 97, located on the bed-plate of the machine. The plate 96 may be given its reciprocating movement in any desired manner. As shown, it has connected to it a link 98, said link being in turn connected to a lever 99, pivoted to the bed-plate of the machine by means of a screw 100. This lever carries on its outer end a cam-roll 101, which contacts with a cam 102, mounted on the shaft 87, before referred to. A spring 103, secured to the lever and to a bracket 104, produces the movement of the lever in opposition to the cam.

Pivoted on the standard 95 is a holder 105, in which is secured a pin 106, the holder and pin forming a gravity-pawl which rests on the sliver in the guide. In the operation of the machine as the slide 96 moves toward the presser 80 and the abutment 88, the presser being at this time in its raised position, the end of the sliver will be fed by the pawl and guide in between the presser and the abutment. The presser is now permitted to descend, clamping the end of the sliver to the strip of mouthpiece material, the end so clamped being caused to adhere to the mouthpiece material by the line of paste which has been applied thereto. Cutting devices, which may vary in construction, are now brought into operation to cut a section from the sliver. In the construction shown these cutting devices comprise a stationary shear-blade 107, said blade being mounted on a standard 108, which rises from the bed-plate of the machine, and a movable cooperating blade 109, which is pivoted on the same standard and which is held up to its duty by means of a spring 110. The construction by which this movable shear-blade is operated may be of any suitable description. As shown, this blade has depending from it and below its pivotal point an arm 111, to which is pivoted a connecting-rod 112. This connecting-rod has its other end secured to a rock-arm 113, which is journaled on a bracket 114, rising from the bed-plate. This rock-arm 113 is provided with a roll 115, which runs on a cam 116, mounted on the shaft 87, before referred to. A spring 117, which is secured to a pin 118 on the arm 111, holds the roll against the cam. In the operation of this part of the construction after the slide 96, carrying the sliver-guide and feed-pawl, has moved forward and has placed the projecting end of

the sliver under the presser 80 the presser descends, the strip of mouthpiece material of course being at this time stationary. The sliver-guide now retreats, the feed-pawl sliding over the length of sliver in the guide, and as soon as the guide has cleared the shears the movable blade 109 is operated through the connections described to cut off a section of the sliver. The presser is now raised and the mouthpiece material is given its forward movement. After leaving the abutment 88 the mouthpiece material passes over guides 119 120, these guides being preferably channeled, as shown at 121, and being provided with flanges. The channels in the guides permit the cotton to pass around the guides without being wiped off from the strip. The guides 119 120 are supported in a bracket 122, which is secured to the table of the machine, and the upper guide is preferably made adjustable by means of the well-known construction indicated in the drawings.

Should it be desired to throw the cotton-feeding device out of operation, this may be effected by means of a pivoted lifter 123, which has a bent end 124. This bent end takes under the lever 83 and raises it and the presser. The lifter may be locked in its raised position by means of a pivoted latch 125.

It will be noted that the lower feed-roll of the pair of rolls 47 is made somewhat shorter than the upper roll, so that it does not bear against that part of the mouthpiece material to which the cotton has been applied.

It is to be understood that changes and variations may be made in the constructions by which the invention is carried into effect, and it is also to be understood that certain features of the invention may be used independently of other features and that such independent use is contemplated. The invention is not, therefore, to be limited to the specific details of construction hereinbefore described.

What is claimed is—

1. The combination with means for advancing empty cigarette-tubes, of a mouthpiece-inserting mechanism, and a transfer device operating to receive the empty tube from the advancing mechanism and hold it while the inserting mechanism inserts the mouthpiece therein, and means for operating the transfer device.

2. The combination with means for advancing empty cigarette-tubes, of a mouthpiece-inserting mechanism, a transfer device operating to receive the empty tube from the advancing mechanism, and means for moving the transfer device from the advancing mechanism to the inserting mechanism and for holding it stationary while the mouthpiece is inserted therein.

3. The combination with means for advancing an empty tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a transfer device operating to receive the tube from the advancing mechanism and

hold it while the inserting mechanism inserts the mouthpiece therein, and means for operating the transfer device.

4. The combination with means for advancing an empty tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a transfer device operating to receive the tube from the advancing mechanism, and means for moving the transfer device from the advancing mechanism to the inserting mechanism and for holding it stationary while the mouthpiece is inserted therein.

5. The combination with means for advancing cigarette-tubes, of a mouthpiece-inserting mechanism, a table, on which the tubes are deposited, a transfer device operating to hold the tubes at successive points along their length and serving to move them along the table from the advancing mechanism to the inserting mechanism and to hold them while the inserting mechanism operates, and means for operating the transfer device.

6. The combination with means for advancing cigarette-tubes, of a mouthpiece-inserting mechanism, a carriage, a transfer device mounted on the carriage and operating to hold the tubes at successive points along their length, a table with which the transfer device coöperates, and means for moving the carriage to cause the transfer device to move across the table from the advancing mechanism to a position in front of the inserting mechanism, said means operating to hold the carriage and transfer device stationary while the inserting mechanism operates.

7. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a carriage, a transfer device mounted on the carriage and operating to hold the tubes at successive points along their length, a table with which the transfer device coöperates, and means for moving the carriage to cause the transfer device to move across the table from the advancing mechanism to a position in front of the inserting mechanism, said means operating to hold the carriage and transfer device stationary while the inserting mechanism operates.

8. The combination with means for advancing cigarette-tubes, of a mouthpiece-inserting mechanism, a carriage, a shaft mounted thereon, a transfer device on the shaft and operating to hold the tubes at successive points along their length, a table with which said transfer device coöperates, means for operating the carriage to shift the transfer device across the table from the advancing mechanism to the inserting mechanism and to cause it to remain stationary while the inserting mechanism operates, and means for rocking the shaft to raise and lower the transfer device.

9. The combination with means for advancing cigarette-tubes, of a mouthpiece-inserting mechanism, a carriage, a shaft mounted thereon, a transfer device mounted on the

shaft and operating to hold the tubes at successive points along their length, a table with which the transfer device coöperates, a rerolling mechanism to which the table delivers, means for reciprocating the carriage so as to shift the transfer device from a position in front of the advancing mechanism to a position in front of the inserting mechanism, said means causing the carriage to remain stationary while the inserting mechanism operates, and means for rocking the shaft to raise and lower the transfer device.

10. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a carriage, a shaft mounted on the carriage, an arm carrying a transfer device mounted on the shaft, a table with which the transfer device coöperates, a rerolling mechanism including a roll to which the table delivers, a crank mechanism actuated from the shaft of the roll and serving to reciprocate the carriage, said mechanism being arranged to produce a dwell in the movement of the carriage while the inserting mechanism operates, a second arm on the shaft and a cam actuated from the shaft of the roll for operating said arm, said arm and cam serving to control the movement of the transfer device.

11. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a transfer device constructed to engage the tubes at successive points along their length, a continuously-operating crank mechanism serving to move the transfer device from the advancing mechanism to the inserting mechanism, means for producing a dwell in the movement of the transfer device and means for giving the transfer device movements to enable it to engage and release the tubes.

12. The combination with means for advancing cigarette-tubes, of a mouthpiece-inserting mechanism, a transfer device including a recessed block, in the recess of which the tube fits snugly, a table, means for moving the block over the table from the advancing mechanism to the mouthpiece-inserting mechanism, and means for holding the block stationary while the mouthpiece mechanism operates.

13. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a transfer device including a recessed block, in the recess of which the tube fits snugly, a table, means for moving the block over the table from the advancing mechanism to the mouthpiece-inserting mechanism, and means for holding the block stationary while the mouthpiece mechanism operates.

14. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism a transfer device including a recessed block, in the recess of which the tube fits

snugly, means for moving the block from the cutting and advancing mechanism to the mouthpiece-inserting mechanism and for holding it stationary while the mouthpiece-inserting mechanism operates, and a rerolling mechanism to which the tube is delivered after the mouthpiece has been inserted.

15. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a carriage, a recessed transferring-block, connections between said block and the carriage, a table with which the transferring-block coöperates, suitable operating devices for the carriage and block, and a rerolling mechanism to which the tube is delivered after the mouthpiece has been inserted.

16. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a slide, a transfer device movably mounted on the slide, a crank mechanism for operating the slide, a stop for limiting the forward movement of the transfer device said stop being arranged to come into operation before the slide completes its forward movement, and means for giving the transfer device vertical movements.

17. The combination with means for advancing a tube and cutting it into cigarette lengths, of a mouthpiece-inserting mechanism, a slide, a standard pivoted on the slide, a rock-shaft carried by the standard, a transfer device constructed to engage the tubes at successive points along their length, said device being carried on the shaft, a yielding connection between the standard and the slide, a crank mechanism for operating the slide, a stop arranged to check the forward movement of the standard before the slide completes its forward movement, and means for operating the rock-shaft to give the transfer device vertical movements.

18. The combination with means for forming mouthpieces, of means for applying fibrous material to the mouthpiece material before the mouthpieces are formed.

19. The combination with means for forming mouthpieces, of an adhesive-applying mechanism and means for supplying fibrous material to the mouthpiece material before the mouthpieces are formed.

20. The combination with a mouthpiece-forming mechanism, of means for feeding a strip of mouthpiece material, cutting devices for the mouthpiece material, and means for applying fibrous material to the mouthpiece material.

21. The combination with a mouthpiece-forming mechanism, of means for forwarding a strip of mouthpiece material, means for applying adhesive thereto, means for supplying fibrous material to the strip, and cutting devices for the mouthpiece material.

22. The combination with a mouthpiece-forming mechanism, of means for feeding mouthpiece material thereto, means for feed-

ing a sliver of fibrous material, and means for cutting short lengths therefrom and applying them to the mouthpiece material.

23. The combination with a mouthpiece-forming mechanism, of means for feeding mouthpiece material thereto, means for applying an adhesive to said material, means for feeding a sliver of fibrous material, and means for cutting short lengths therefrom and applying them to the mouthpiece material.

24. The combination with a mouthpiece-forming mechanism, of means for advancing a strip of mouthpiece material, means for feeding a sliver of fibrous material, devices for cutting off and applying short lengths of said material to the mouthpiece material, and cutting devices for the mouthpiece material.

25. The combination with a mouthpiece-forming mechanism, of means for advancing a strip of mouthpiece material, means for applying an adhesive thereto, means for feeding a sliver of fibrous material, devices for cutting off and supplying short lengths of said material to the mouthpiece material, and cutting devices for the mouthpiece material.

26. The combination with a mouthpiece-forming mechanism, of means for supplying mouthpiece material thereto, feeding means for fibrous material said means including a sliver-guide, and devices for cutting off and applying sections of the sliver to the mouthpiece material.

27. The combination with a mouthpiece-forming mechanism, of means for supplying mouthpiece material thereto, an adhesive-applying mechanism, feeding means for fibrous material said means including a sliver-guide, and devices for cutting off and applying sections of the sliver to the mouthpiece material.

28. The combination with a mouthpiece-forming mechanism, of means for feeding a strip of mouthpiece material, cutting devices for said strip, feeding means for fibrous material said means including a sliver-guide, and means for cutting off sections from the sliver and applying them to the strip.

29. The combination with a mouthpiece-forming mechanism, of means for feeding a strip of mouthpiece material, an adhesive-applying mechanism, cutting devices for the strip, feeding means for fibrous material said means including a sliver-guide, and means for cutting off sections from the sliver and applying them to the strip.

30. The combination with a mouthpiece-forming mechanism, of means for feeding mouthpiece material thereto, an adhesive-applying mechanism, feeding means for fibrous material said means including a movable sliver-guide, and means for cutting off and applying sections of the sliver to the mouthpiece material.

31. The combination with advancing mechanism for mouthpiece material, of a feeding means for fibrous material said means includ-

ing a sliver-guide, and means for cutting off and applying sections of the sliver to the mouthpiece material.

32. The combination with advancing mechanism for mouthpiece material, of means for supplying adhesive thereto, feeding means for fibrous material said means including a movable sliver-guide, and means for cutting off and applying sections of the sliver to the mouthpiece material.

33. The combination with means for advancing a strip of mouthpiece material, of means for supplying adhesive thereto, feeding means for fibrous material said means including a sliver-guide, and means for cutting off and applying sections of the sliver to the mouthpiece material.

34. The combination with means for advancing a strip of mouthpiece material, of an adhesive-applying mechanism, means for feeding fibrous material said means including a sliver-guide, and means for cutting off and applying sections of the sliver to the strip.

35. The combination with means for intermittently advancing a strip of mouthpiece material, of an adhesive-applying device, means for feeding fibrous material, a presser for applying the fibrous material to the mouthpiece material, and means for cutting said material.

36. The combination with means for advancing a strip of mouthpiece material, of means for applying adhesive thereto, feeding devices for fibrous material, a presser for applying the same to the mouthpiece material and a cutting mechanism located between the feeding devices and the presser.

37. The combination with means for intermittently advancing a strip of mouthpiece material, of means for applying adhesive thereto, feeding devices for fibrous material said devices including a movable guide, a presser for applying the fibrous material to the mouthpiece material and cutting devices located between the feeding devices and the presser.

38. The combination with means for intermittently advancing a strip of mouthpiece material, of means for applying adhesive thereto, feeding devices for fibrous material including a movable guide and a pawl, a presser for applying the fibrous material to the mouthpiece material and cutting devices located intermediate the feeding devices and the presser.

39. The combination with means for intermittently advancing a strip of mouthpiece material, of means for applying adhesive thereto, a carriage, a curved sliver-guide mounted on the carriage, a feed-pawl cooperating with the guide, means for reciprocating the carriage, a presser for applying the sliver to the mouthpiece material and cutting devices located intermediate the guide and the presser.

40. The combination with means for intermittently advancing a strip of mouthpiece ma-

terial, of means for applying adhesive thereto, a carriage, a curved sliver-guide mounted on the carriage, a feeder cooperating with the guide, means for reciprocating the carriage, 5 a presser for applying the sliver to the mouthpiece material, a pair of shears located intermediate the presser and the guide, and means for operating the shears.

41. The combination with a mouthpiece-forming mechanism, of means for intermittently feeding a strip of mouthpiece material thereto, cutting devices for the strip, an adhesive-applying mechanism, a carriage, feeding devices for fibrous material said devices 15 including a guide mounted on the carriage, a presser for applying the fibrous material to the mouthpiece material and cutting devices for the fibrous material located between the guide and the presser.

42. The combination with a mouthpiece-forming mechanism, of means for intermittently feeding a strip of mouthpiece material thereto, an adhesive-applying mechanism, a carriage including a slide, means for reciprocating the slide, a guide for fibrous material 25 mounted on the carriage, a feeder cooperating with the guide, a presser, means for operating the presser to apply the fibrous material to the mouthpiece material, a pair of shears 30 located between the presser and the guide, and means for operating the shears.

43. The combination with means for feeding a strip of mouthpiece material, of means for applying sections of fibrous material thereto, 35 and a guide or guides for directing the movement of the strip after the fibrous material has been applied said guide or guides being

cut away so as not to disturb the position of the fibrous material on the strip.

44. The combination with a pair of rolls for feeding a strip of mouthpiece material, of means for applying sections of fibrous material to the strip, and a guide or guides for directing the movement of the strip after the fibrous material has been applied one of said 45 feed-rolls and said guide or guides being cut away so as not to disturb the position of the fibrous material on the strip.

45. The combination with means for advancing a tube and cutting it into cigarette 50 lengths, of a mouthpiece forming and inserting mechanism, a recessed transferring-block, in the recess of which the tube fits snugly, means for moving the block from a position in front of the advancing mechanism to a position in front of the inserting mechanism and 55 for holding it while the inserting mechanism operates, means for advancing a strip of mouthpiece material, means for applying an adhesive thereto, means for feeding a sliver of fibrous material, means for cutting off short 60 lengths of said material and applying them to the strip, guides for the strip, a pair of feed-rolls for advancing the strip said guides and feed-rolls being cut away so as not to disturb the position of the fibrous material on 65 the strip, and cutting devices for said strip.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

KARL HARNISCH.

Witnesses:

JAMES Q. RICE,
ERNST LOEWENSTEIN.