E. KOERNER.

MACHINE FOR APPLYING MOUTHPIECE FORMING SHEETS TO CIGARETTE PAPER STRIPS.

APPLICATION FILED OCT. 5, 1921.

1,417,609. Patented May 30, 1922.

Fig. 1.

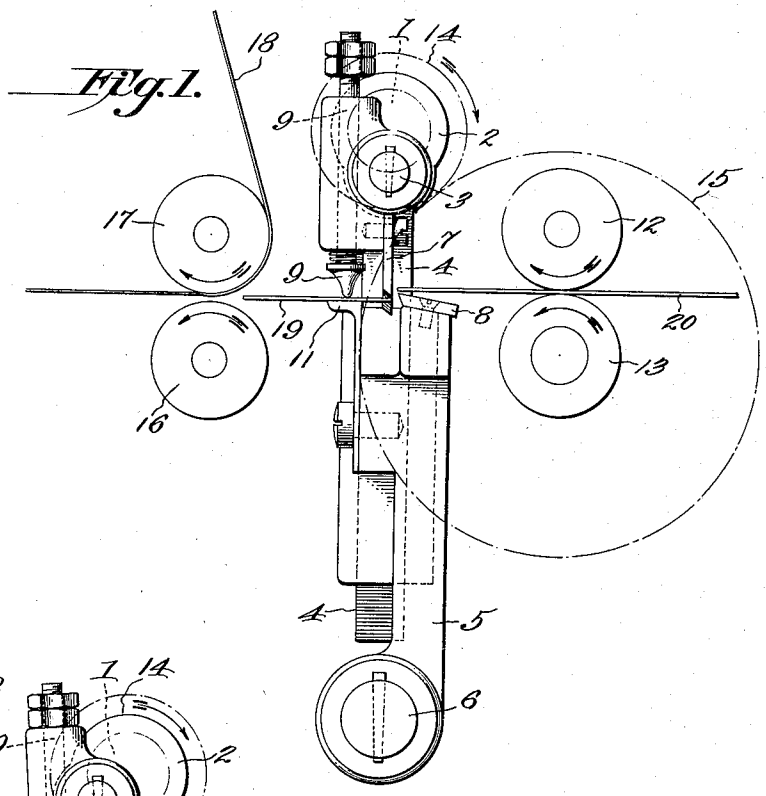
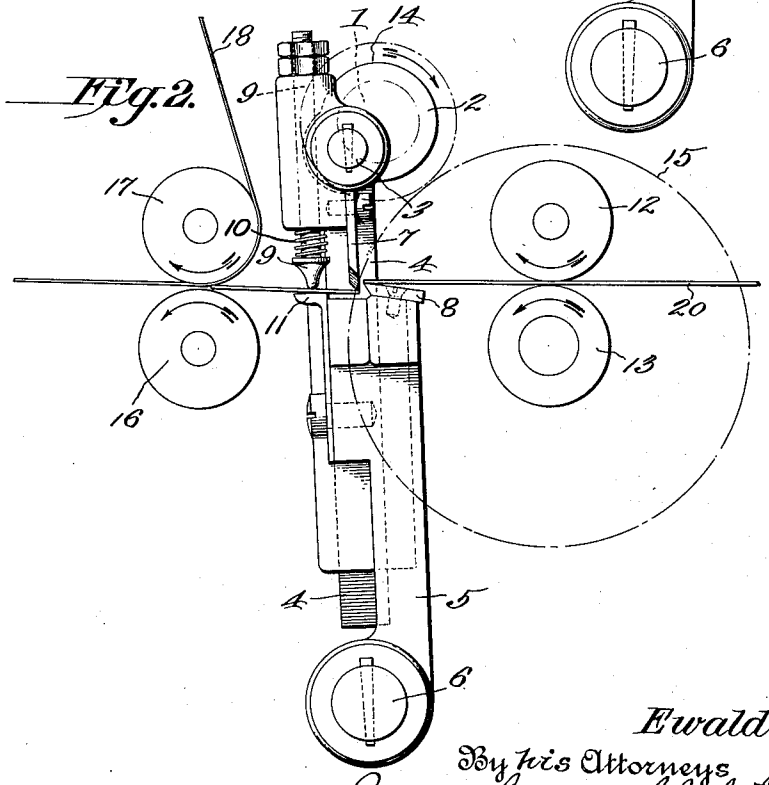


Fig. 2.



Inventor
Ewald Koerner,
By his Attorneys
Meyers, Cavanagh, Whitehead & Hyde.

UNITED STATES PATENT OFFICE.

EWALD KOERNER, OF DRESDEN, GERMANY, ASSIGNOR TO UNITED CIGARETTE MACHINE CO., INC., OF LYNCHBURG, VIRGINIA, A CORPORATION OF VIRGINIA.

MACHINE FOR APPLYING MOUTHPIECE-FORMING SHEETS TO CIGARETTE-PAPER STRIPS.

1,417,609. Specification of Letters Patent. Patented May 30, 1922.

Application filed October 5, 1921. Serial No. 505,681.

To all whom it may concern:

Be it known that I, EWALD KOERNER, a citizen of the Republic of Germany, and resident of Dresden, Germany, have invented certain new and useful Improvements in Machines for Applying Mouthpiece-Forming Sheets to Cigarette-Paper Strips, of which the following is a specification.

My invention relates generally to machines for forming cigarettes by the continuous rod method, and is particularly directed to apparatus for applying to the strip of paper employed in such machines sheets of tip forming material at fixed intervals.

My general object has been to improve on the type of machine for this purpose which operates on the paper strip in advance of the point where it is curled to receive the tobacco, such machines being adapted to cut from a continuous strip of mouth piece forming sheet material pieces of suitable size, and to apply such pieces to the cigarette wrapper strip at spaced intervals upon areas to which adhesive has been applied. The function of such machines is therefore three-fold; to pull a suitable amount of mouth piece strip from a roll; to cut off the proper length; and to apply such length accurately to the moving wrapper strip.

A principal object of my invention is to simplify substantially the apparatus required for this purpose and provide a mechanism which can readily be actuated by the standard drive of cigarette machines.

More particularly, an important object is to provide such an apparatus in which a single actuating element having a forward and return movement will suffice to operate all the moving parts of the device, which generally consist of a moving support, a cutter, and strip clamping means.

More specifically, my object also is to produce a mouth piece sheet applying apparatus which can be operated entirely by a device mounted on a single continuously rotating shaft, such as a crank or its equivalent.

A further purpose has been to devise a mouth piece sheet cutting and applying mechanism in which the mouth piece material may be drawn off continuously from the supply roll, as distinguished from intermittent withdrawal thereof, without materially jamming or distorting the material in the cutting and applying apparatus.

Other objects, such as strength, compactness, ease of manufacture, ready replacement of parts, and the like, will be apparent from the following description taken in connection with the accompanying drawings, in which:

Fig. 1 is a somewhat diagrammatic side elevation of a preferred form immediately subsequent to the strip cutting operation; and

Fig. 2 is a similar view at a slightly later stage of operation at which the cut sheet is applied to the cigarette wrapper strip.

In the preferred form illustrated, the entire apparatus is actuated through continuously rotating shaft 1 carrying a crank disk 2 upon which crank pin 3 is mounted. The main frame comprises an upper vertical bar 4 and a lower vertical arm 5, arm 4 being mounted on arm 5 in suitable guideways to slide longitudinally thereon. Bar 4 is pivotally mounted on the crank pin 3, while arm 5 is pivoted on stud 6 carried by a fixed portion of the cigarette machine frame.

The cutting mechanism comprises a knife 7 mounted on bar 4, and cooperating with a knife 8 mounted on arm 5 to form shears extending transversely across the mouth piece strip 20.

In order to hold the severed portion of mouth piece forming material in position for accurate application to the cigarette wrapper strip, I provide means for clamping such severed portion subsequent to the cutting operation. For this purpose, I employ members mounted on bar 4 and arm 5, so arranged that when the bar approaches lowermost position, such members will cooperate to engage the advance portion of the mouth piece material. To this end I prefer to employ a fixed abutment and a yielding abutment, the form illustrated being provided with a clamp rod 9 mounted in a longitudinal guideway connected to bar 4, and movable vertically therein, spring 10 serving to yieldably retain the clamp in lowermost position. The fixed abutment or table 11 is mounted on arm 5 in register with clamp 9.

The strip of mouth piece material 20 is fed to the device by any preferred means, the one illustrated comprising rollers 12 and 13, the shaft of the latter carrying a pinion 15 meshing with pinion 14 on shaft 1. The

cigarette wrapper strip 18, after passing through suitable adhesive-applying mechanism well known in this specific art and therefore not shown, passes downwardly and to the left about roller 17, any suitable pressure device such as roller 16 being preferably provided adjacent roller 17 to press the mouth piece sheet into forming engagement with the cigarette wrapper strip 18.

In the form shown roller 16 is slightly spaced from roller 17 in position to escape the application of adhesive in case no mouth piece sheet is fed, but sufficiently close to apply suitable pressure to the mouth piece sheet.

The operation of the machine is as follows. As shaft 1 rotates in a clockwise direction, crank pin 3 alternately raises and lowers cutter knife 7 and clamp 9. It also oscillates bar 4 and arm 5 about the pivot 6, producing the feeding movement of the apparatus.

Starting with crank pin 3 in its uppermost position, with clamp 9 and knife 7 above the plane of the mouth piece sheet strip 20, rollers 12 and 13 feed the advance end of such strip over knife 8 and onto table 11, while the apparatus is swinging to the right as pin 3 descends. At about the time when the pin is at the limit of its movement to the right, or sufficiently thereafter to prevent uneven pull on the strip 20, clamp 9 presses the advance end of strip 20 onto table 11, and knife 7 commences to sever the strip. The continued descent and advance of pin 3 completes the severing, the knife 7 advancing as strip 20 is fed forward by rolls 12 and 13 to prevent buckling of the strip, and at the same time feeding the severed sheet 19 forward toward roll 17. This position is shown in Fig. 1.

The continued advance of the pin feeds sheet 19 between rollers 16 and 17 into engagement with the adhesively coated portion of the wrapper strip 18, roller 16 serving to insure thorough engagement between the sheet and strip. At the same time knife 7 rises, and after spring 10 has expanded to the limit permitted, clamp 9 also ascends, permitting rollers 12 and 13 to continue the feed of the strip 20 while pin 3 is swinging from its upper left-hand position to its upper right-hand position about the axis of shaft 1, whereupon the above operation is repeated.

It will be apparent that many variations in the timing of the clamp and knife actions can be employed without departing from my invention. Furthermore, while I have indicated a convenient and obvious method of mounting the knives and clamping apparatus, this may be varied within wide limits.

I have shown my invention as applied to a continuous feed for the mouth piece forming strip; but my invention is not necessarily limited thereto, though it solves the problem of operation with a feed of this type. In particular, it has heretofore been proposed to employ a reciprocating table with a vertical cutter operating at an intermediate portion thereof, with clamps both in advance and to the rear of said cutter, so that the device operates as an intermittent feed. I consider my invention to be applicable to any variations of this or other types which will be apparent to those familiar with this art.

I claim:

1. Apparatus for feeding and applying mouth piece sheets to cigarette paper strips, comprising an upper unit including a cutter and a clamp, a movable feed table, means for imparting to the cutter and clamp movement both longitudinal and transverse to the line of feed, and operative connections between the upper unit and the table for transmitting longitudinal movement from said unit to the table.

2. Apparatus for applying mouth-piece sheets to cigarette paper strips, comprising a pivotally mounted arm, a feed table, a clamp and a cutter on said arm, and means for operating said arm, cutter and clamp.

3. Apparatus for applying mouth-piece sheets to cigarette paper strips, a table pivotally mounted for feeding said sheets, a cutter, a clamp, said cutter and clamp being slidably mounted for movement transverse to the line of feed, and means for actuating said cutter, clamp and table.

4. Apparatus for applying mouth piece sheets to cigarette paper strips, comprising a pivotally mounted arm carrying a feed table, a slide carried thereby movable transversely to the line of feed, a cutter and a clamp mounted on said slide at the opposite side of the table from the line of feed, and means for reciprocating said slide and for imparting forward and return movements to the table.

5. Apparatus for applying mouth piece sheets to cigarette paper strips, comprising a roller about which a strip passes, means for continuously feeding a tape of mouth piece material, and means for cutting mouth piece sheets from said tape and means for clamping the severed mouth piece sheets, and means for conveying said sheets to the portion of said strip passing over said roller.

6. Apparatus for applying mouth piece sheets to cigarette paper strips, comprising a pivotally mounted member carrying a cutter member, a slide on said member, a complementary cutter element carried by said slide, and an actuating member engaging the slide for reciprocating said slide and complementary cutter element and for oscillating said pivotally mounted member.

7. Apparatus for applying mouth piece sheets to cigarette paper strips, comprising a pivotally mounted member carrying a cutter member, a slide on said member, a complementary cutter element carried by said slide, and an off-set actuating member mounted on a continuously rotating shaft engaging the slide for reciprocating said slide and complementary cutter element and for oscillating said pivotally mounted member.

8. Apparatus for applying mouth piece sheets to cigarette paper strips, comprising a pivotally mounted arm carrying a cutter element, a frame member carrying a complementary cutter element, a yieldable clamp mounted on said member, slide connections between said member and arm permitting movement of the member transverse to the line of feed, and an off-set actuating element carried by a rotating shaft and connected to said member.

9. In an apparatus for applying mouth piece sheets to cigarette paper strips, a pivotally mounted arm, means slidably mounted upon said arm for cutting the paper strip, and means for feeding the severed strip including a bodily movement of the arm.

10. In an apparatus for applying mouth piece sheets to cigarette paper strips, a pivotally mounted arm, means slidably mounted upon said arm for cutting the paper strip, and means for gripping the severed strip and feeding it.

Signed at Germany, Saxony this 2nd day of Sept. A. D. 1921.

EWALD KOERNER.