

Dec. 16, 1947.

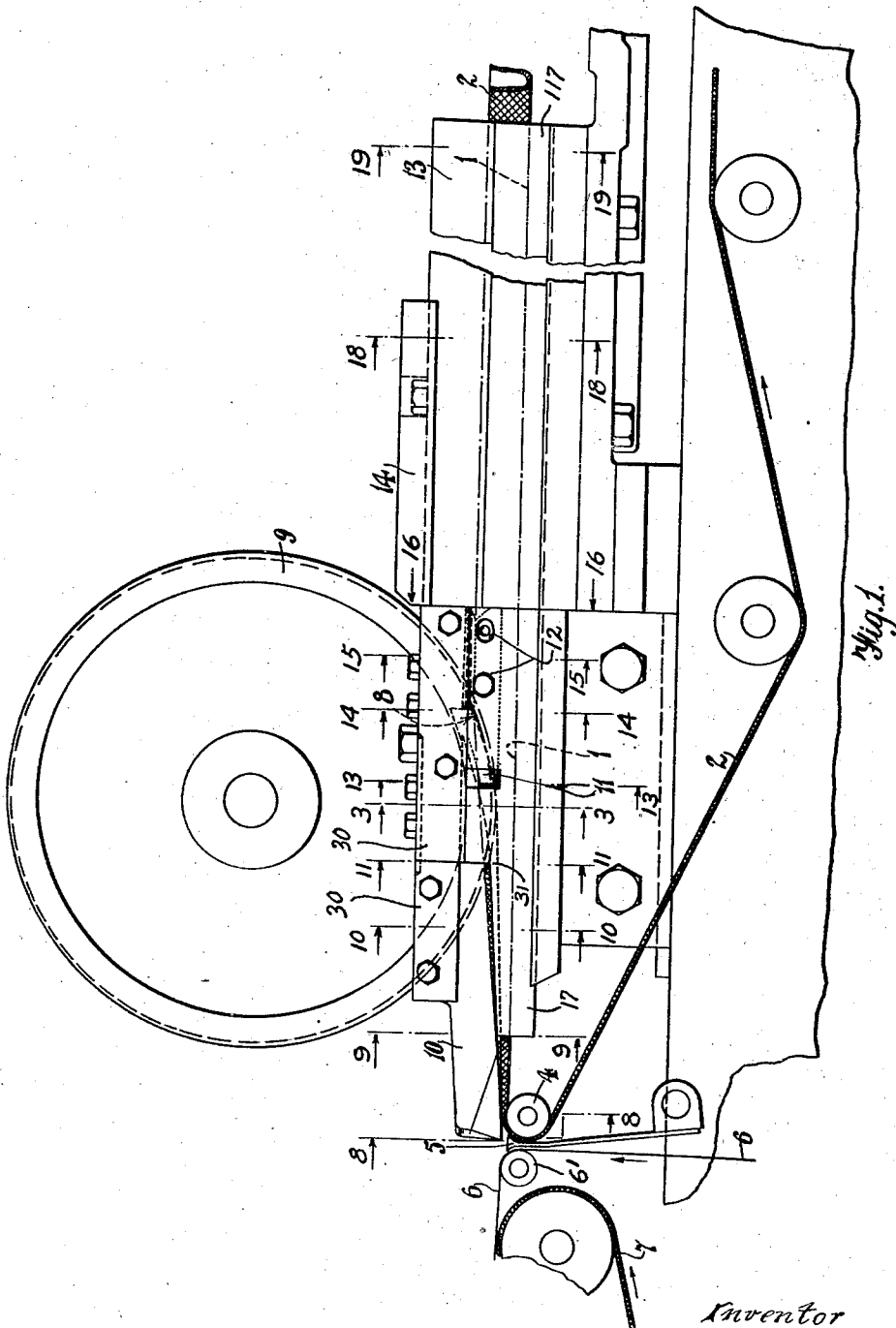
F. F. RUAU

2,432,938

ROD FORMING MECHANISM

Filed Aug. 4, 1942

3 Sheets-Sheet 1



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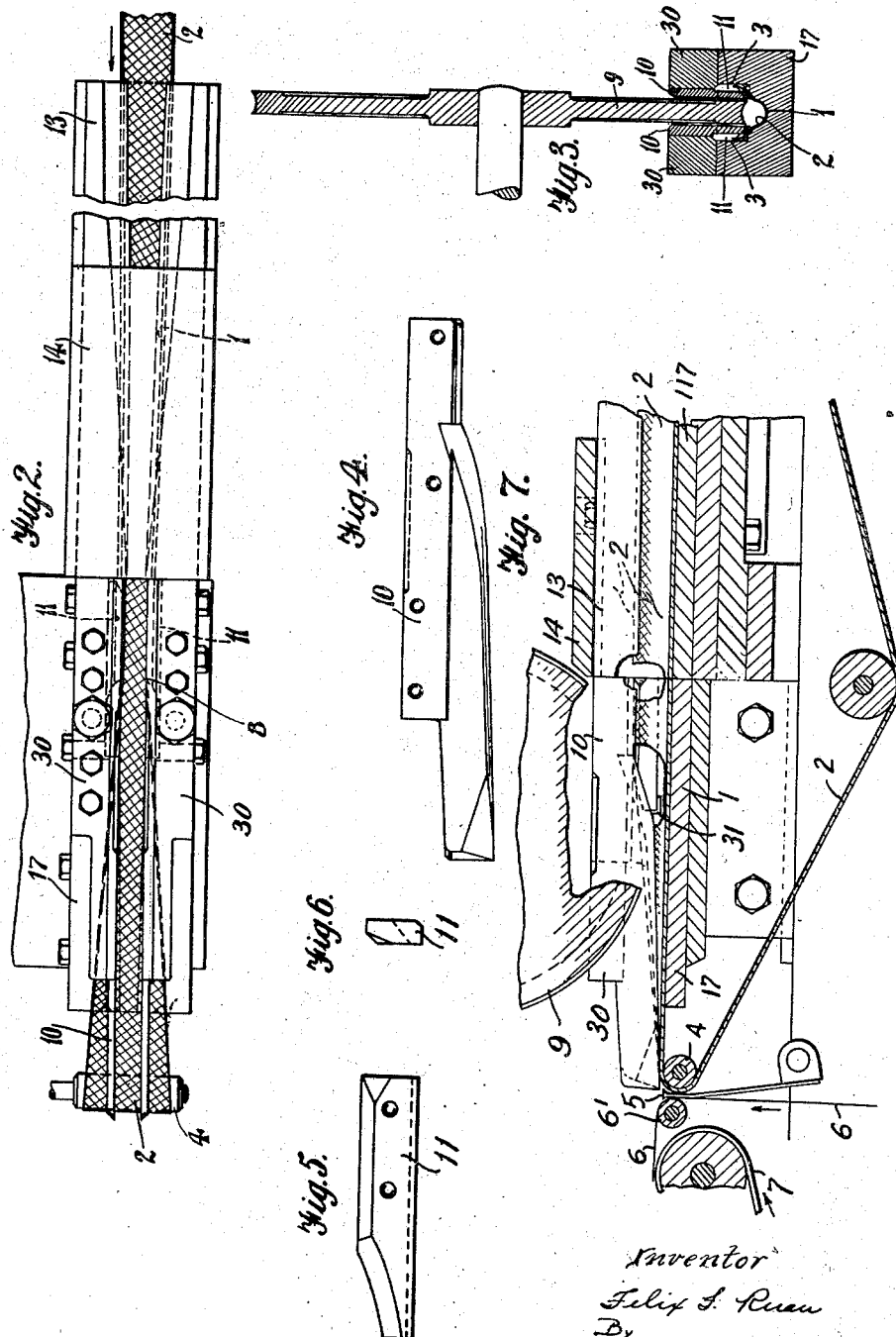
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ROD FORMING MECHANISM

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3 Sheets-Sheet 2



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ROD FORMING MECHANISM

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3 Sheets-Sheet 3

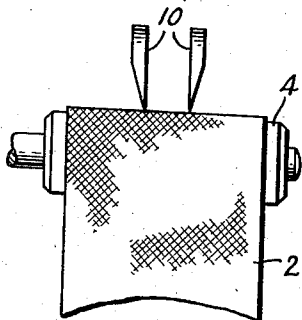


Fig. 8.

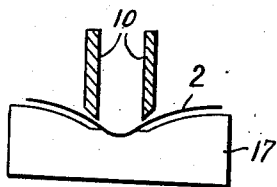


Fig. 9.

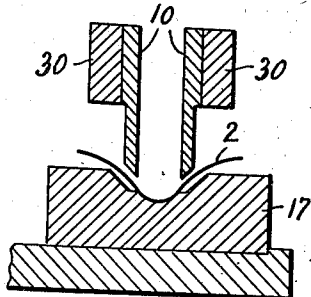


Fig. 10.

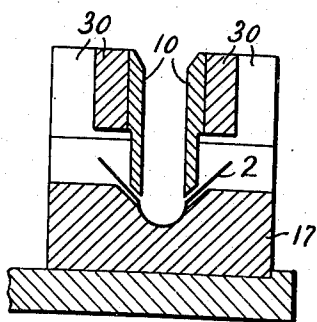


Fig. 11.

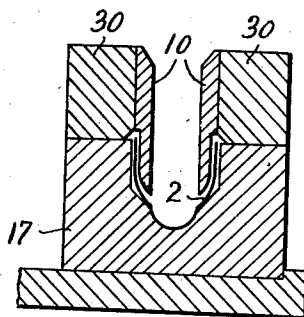


Fig. 12.

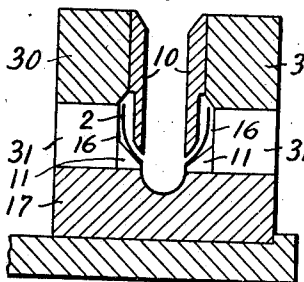


Fig. 13.

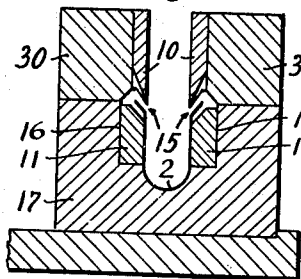


Fig. 14.

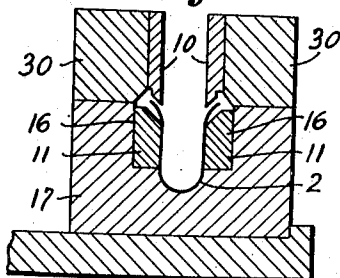


Fig. 15.

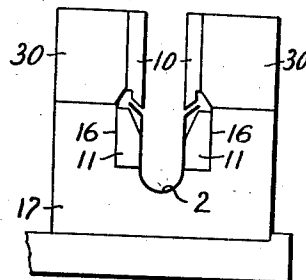


Fig. 16.

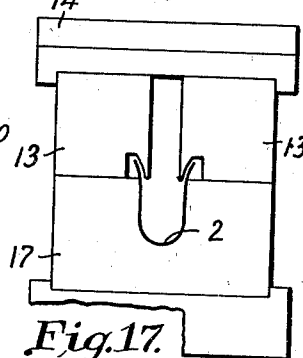


Fig. 17.

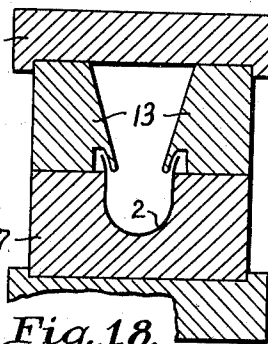


Fig. 18.

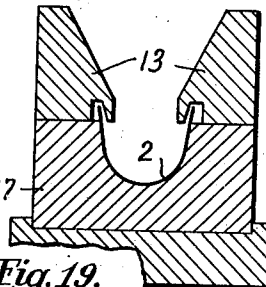


Fig. 19.

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UNITED STATES PATENT OFFICE

2,432,938

ROD FORMING MECHANISM

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Application August 4, 1942, Serial No. 453,574
 In Great Britain July 30, 1941

1 Claim. (Cl. 131—84)

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This invention concerns improvements in or relating to rod forming mechanism for forming a tobacco filler (i. e. an unwrapped filler), in which the tobacco stream is advanced and passed beneath a compression wheel whilst being partly encompassed by a band which from its curved cross-sectional form is flattened out, and in which the band at the curved portion is supported by a fixed member or members which cause it to maintain the desired cross-sectional shape and in which the side portions of the band pass through spaces between side guides and said member or members after commencing to flatten out. Such mechanism will be referred to hereinafter as "rod forming mechanism as specified."

In such mechanism the band may be arranged to commence its opening out to the flat cross-section prior to the engagement of the tobacco filler with the compression wheel, or it may start to open out just after the compression point. In the latter case, which, it is considered, provides more satisfactory compression, it is desirable in order to prevent injury or undue wear on the band to shield the upstanding walls thereof by side guides. These save wear on the edges of the band by the wheel and also tend to prevent the edges of the band from curling over and ensure that in such an event the compression wheel is prevented from engaging the curled over edge and thus destroying the band. As, however, the edges of the band have to be guided into the spaces formed by the band supporting member and the side guides, it will be seen that it is easily possible for a bulky piece of tobacco, particularly a piece of stem, to get jammed between a side guide and the band. This might injure or wear the band and it will very likely project into the filler and hold up the movement of the latter since at this position the grip on the filler by the band is quite light seeing that the filler has not yet been subjected to compression.

In order to obtain good results, the size of the spaces (formed by the first said member and said side guides) through which the sides of the band pass during flattening out, is important, because if the gap is too large, a piece of stem or the like might get jammed as described above and also the compression on the tobacco will be released and the filler rendered uneven, and if too narrow the band will not pass through properly and undue wear and tear occurs.

According to the present invention there is provided rod forming mechanism as specified, wherein the dimensions of the spaces formed by

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the band supporting member or members and the side guides are controlled by arranging the said member or members, or a part thereof, or the side guides, to be adjustably mounted, whereby the spaces can be accurately set for a particular set of circumstances. The band supporting member may comprise separate pieces which are inset in the side walls of the band supporting member, said pieces being adjustable lengthwise of the band supporting member to enable the dimensions of the spaces between the said pieces and the adjacent edges of the side guides to be regulated.

Rod forming mechanism made in accordance with the present invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is a side elevation of part of the rod forming mechanism of a continuous rod cigarette making machine showing one form of the invention.

Figure 2 is a plan of Figure 1, certain parts being omitted.

Figure 3 is a section of Figure 1 on the line 3—3.

Figure 4 shows a detail of the side guide on the right-hand side in Figure 3.

Figure 5 shows a detail of the adjustable piece which is fitted to the band supporting member on the left-hand side in Figure 3.

Figure 6 is an end elevation of Figure 5.

Figure 7 is a longitudinal sectional view taken along the center line of Figure 2.

Figures 8, 9, 10, and 11 are sections on the lines 8—8, 9—9, 10—10, and 11—11 respectively of Figure 1.

Figure 12 is a section on the line 3—3, Figure 1, similar to the section shown in Figure 3, but showing only the lower part of said figure and on a larger scale.

Figures 13, 14 and 15 are sections on the lines 13—13, 14—14 and 15—15 respectively of Figure 1.

Figure 16 is a section on the line 16—16, Figure 1, but as viewed in the opposite direction from the other sections.

Figure 17 is a section on the line 16—16, Figure 1, which is the same section line as that for Figure 16 but viewed in the opposite direction.

Figures 18 and 19 are sections on the lines 18—18 and 19—19 respectively of Figure 1.

In all the Figures 10 to 15, the compression wheel has been omitted for clearness. Like reference numerals refer to like parts throughout the several figures of the drawings.

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Referring to the drawings, the rod forming apparatus about to be described is apparatus for forming a filler rod of tobacco on a continuous rod cigarette making machine and comprises a trough 1 along which an endless band 2 travels, the band being bent to substantially U shape in the trough, and the sides of the band being held upwardly by the side walls 3, Figure 3, of the trough; the band supporting members in which trough 1 is formed are indicated at 17. At the left-hand end of the trough, as viewed in Figure 1, the band is allowed to flatten out so that it can pass over a roller 4 and the tobacco at this point is delivered over a bridge 5 on to a paper web 6 travelling over a small roller 6' and onto another endless band 7. At the position marked 8, Figure 1, where the band commences to flatten out, a compression roller 9 (having a periphery concave in cross-section in a plane including the axis of the roller), is provided to press the tobacco stream and form it into a filler rod of desired shape. In order to guide the tobacco and keep it in proper formation under the compression wheel, side guides 10 are provided at each side of the wheel and in the closest possible proximity thereto. A side guide is shown in detail at Figure 4. The guides 10 are fixed to supporting members 30 mounted on the member 17. The guides extend downwardly to the band and are arranged in close proximity to the band at the point 8 where the sides of the band begin to flatten out. The side guides therefore virtually form a continuation of the sides of the endless band in the trough. In order to ensure that the gaps 15 (best seen in Figure 14) between the side walls of the trough and the side guides, at the place where the band first passes behind said guides, are of the correct size, the sides of the trough are cut away at 16 and provided with adjustable inset pieces 11 on the inside of the trough walls, see Figures 13, 14, and 15. One of these adjustable pieces is shown in detail at Figures 5 and 6. These adjustable pieces are bolted to the side walls of the trough through a plurality of slotted connections indicated at 12, Figure 1. Thus these adjustable pieces can be accurately adjusted for each particular case so that the gap between a piece 11 and the adjacent edge of a side guide 10 may be made as narrow as possible and by this means the band can be properly scraped by the side guides so as to prevent tobacco from passing between the guides and the band (which would tend to upset the formation of the filler rod) and at the same time the pressure between the side guides and the band can be controlled so as to prevent undue wear on the band itself. Thus the parts are adjusted to get the best possible control over the tobacco consistent with reasonable service from a band. The arrangement may be followed by reference to Figure 2 where it will be seen that the band 2 runs between guides 13, which engage the band edges and control the band while it runs along the supporting member which embodies the trough 1, the trough at this point being in the form of a concave groove which gradually narrows as the band approaches the com-

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pression wheel. A plate 14 covers the guides and band for part of the way, and immediately to the left of this plate the band is engaged by the opposed faces of the adjustable pieces 11 and it is then of substantially U-form in cross-section. The tobacco after passing the compression roller 9 may be fed under a controlling member (not shown) which, together with the side guides 10, can provide a confining passage in which the speed of the tobacco is reduced, such as in the construction described in United States Letters Patent No. 2,149,924.

It will be seen that instead of providing the adjustable pieces 11 they could be permanently fixed to the band supporting member 17 or the latter could be made with integral parts similar in shape to the said pieces. In either case the side guides 10 may be made adjustable to secure the purpose in view.

As may be seen from Figures 1 and 13, a slot 31 is formed in the part 17 located at the point where the band 2 passes beyond the end of the guide 11. The slot enables the machine operator to observe the band at this critical point.

What I claim as my invention and desire to secure by Letters Patent is:

Rod forming mechanism comprising a rod forming channel including a fixed band-supporting member and an endless travelling band so supported thereby as to cause said band to assume the desired cross-sectional shape at different positions along the channel, a rotatable compression wheel cooperating with said channel to compress the tobacco filler as it passes along the channel, side guides to shield the sides of the band from the action of the compression wheel, insets constituting parts of the walls of the band-supporting member, said insets being spaced from said guides, said insets and guides having confronting edges defining passages between the insets and guides, which passages extend outwardly of the channel, said passages being traversed by the sides of the band, and means adjustably supporting said insets for displacement with respect to said guides, whereby the dimensions of the spaces between said insets and the adjacent edges of the side guides where the band first passes behind the side guides, can be regulated.

FÉLIX FRÉDÉRIC RUAU.

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