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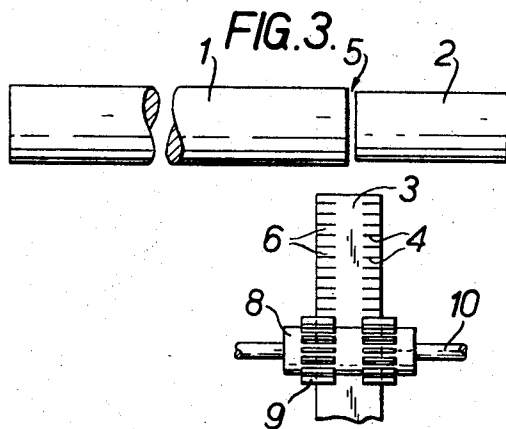
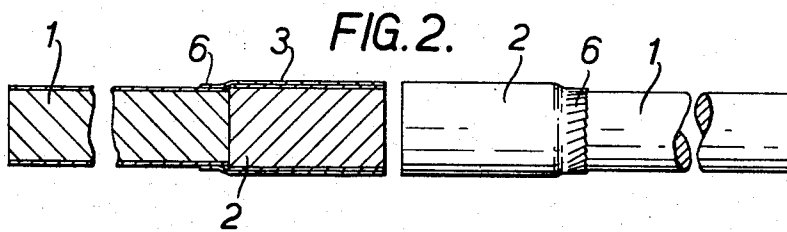
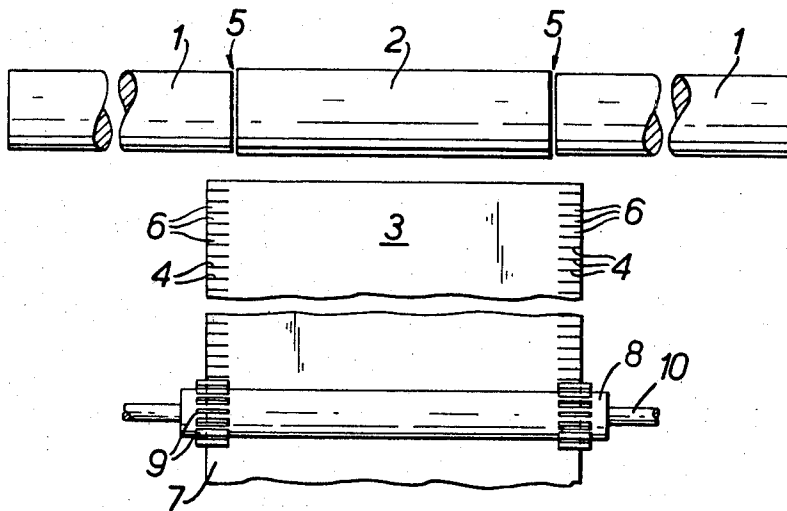
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MANUFACTURE OF MOUTHPIECE CIGARETTES

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FIG. 1.



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MANUFACTURE OF MOUTHPIECE CIGARETTES
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 5 Claims. (Cl. 131—94)

ABSTRACT OF THE DISCLOSURE

A method and machine for producing mouthpiece cigarettes, in which a uniting band is rolled around a mouthpiece and a cigarette length abutted and axially aligned therewith, provides for slitting at least one edge portion of the band prior to rolling so that said edge portion leaves a succession of tongues. During rolling said tongues may adjust their positions so as to provide an improved seal between the mouthpiece and the cigarette length.

This invention relates to mouthpiece cigarettes and the manufacture thereof. The expression "mouthpiece cigarette" is used in the sense common in the art, i.e. to denote a cigarette in which the major part of its length, termed a cigarette length, is composed of tobacco enclosed in a paper tube but the remaining minor part of its length, constituting an end portion of the cigarette, comprises a mouthpiece consisting of a cylindrical plug of other material (usually filter material), usually also wrapped in paper.

Probably the most common method of manufacture of such mouthpiece cigarettes is to make the cigarette length on a conventional cigarette-making machine and the mouthpieces on a separate machine, each cigarette length then being brought into axial abutment with a mouthpiece and secured thereto by wrapping a uniting band round abutting end portions of the mouthpiece and cigarette length. While this method is eminently satisfactory in many respects, it is found that quite small differences in diameter between the cigarette length and mouthpiece are liable to affect the joint therebetween with the disadvantage that, when the cigarette is smoked, air may be drawn in through the joint with consequent dilution of the smoke reaching the smoker.

It is an object of the present invention to provide an improved method of manufacture of mouthpiece cigarettes, producing an improved cigarette structure, such that the above noted disadvantage may be reduced.

According to one feature of the invention, therefore, a method is provided for manufacturing mouthpiece cigarettes comprising making cigarette lengths, making mouthpieces, bringing each cigarette length into axial abutment with a mouthpiece and rolling said cigarette length and mouthpiece with a uniting band to produce a joint therebetween, including prior to said rolling the step of slitting at least one edge portion of said uniting band at spaced positions so that said edge portion becomes a succession of tongues projecting from the remainder of said band.

It is of course common practice to employ a uniting band of cork (now commonly synthetic cork) which encloses the whole mouthpiece and to assemble two cigarettes at a time, i.e. by applying a double-width uniting band around a double-length mouthpiece lying between two cigarette lengths and subsequently cutting at the centre of the said double-length mouthpiece—and in applying the invention to this procedure we slit two opposed edge portions of the uniting band. In the method of assembly termed "ring tipping," which involves the use of a uniting band of minimum width, i.e. not enclosing the whole

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mouthpiece but only overlapping the mouthpiece and the cigarette length to the extent necessary for a sufficiently strong joint, we prefer to slit two opposed edge portions of the band.

5 When a band slit as defined above is rolled about a cigarette length and mouthpiece, if the mouthpiece, say, is of slightly larger diameter than the cigarette length then the band will lie comfortably where it overlaps the mouth-
 10 piece but where it overlaps the cigarette length it will not be supported and the tongues formed between the slits on the edge portion overlapping the cigarette length will be deflected inwardly to meet the cigarette length and also will drag, i.e. each tongue will move so as to open the slit ahead of it and close the slit behind it, considered in
 15 relation to the direction of the rolling. In the result, the slitted edge portion accommodates itself to the smaller diameter of the cigarette length, and in the finished cigarette the tongues will overlap one another slightly at their free ends; it will be appreciated that there will be materially
 20 less air leakage at the joint than with an unslitted band.

Where the mouthpiece and cigarette length are of unequal diameter it is most commonly found that the mouth-
 25 piece is the larger and therefore it is frequently satisfactory for the slits to be made only in the edge portion which is to engage the cigarette length. If however with any particular cigarette-making machinery there is a substan-
 30 tial change of encountering mouthpieces of smaller diameter than the cigarette lengths to which they are to be attached, it is preferred to use ring tipping and slit the uniting bands on two opposed edges.

According to a further feature of the invention, there is provided a mouthpiece cigarette comprising a cigarette
 35 length, a mouthpiece, and a uniting band formed into a cylindrical wrapper enclosing at least part of the length of both said cigarette length and said mouthpiece so as to
 40 hold said cigarette length and said mouthpiece abutted in substantially axial alignment, in which said wrapper has at least one edge portion provided with a plurality of slits permitting said one edge portion to assume a frusto-
 45 conical form.

The invention yet again is applicable to machines for assembling mouthpiece cigarettes comprising means for
 50 feeding at least one cigarette length into abutting and substantially axially aligned relationship with a mouth-
 55 piece and means for rolling a uniting band therearound, including means for slitting at least one edge portion of said band at spaced positions prior to said rolling so that
 60 said edge portion becomes a succession of tongues projecting from the remainder of said band.

In order that the invention may be well understood, a preferred embodiment thereof will now be described with
 65 reference to the accompanying drawings, in which:

FIGURE 1 shows, somewhat diagrammatically, mouth-
 70 piece cigarette components just prior to assembly.

FIGURE 2 shows a pair of finished cigarettes, one being
 75 drawn in section; and

FIGURE 3 is a view corresponding to FIGURE 1 but
 80 illustrating ring tipping.

First considering FIGURE 1, the components there
 85 shown comprise two cigarette lengths 1, a double-length filter plug 2, and a uniting band 3. The cigarette lengths 1 are axially aligned with the plug 2 and the band 3 is being fed at right-angles to the plug 2 and towards the latter. The cigarette lengths 1, when in the positions shown, are still moving towards the plug 2 and will continue until they abut against said plug 2, i.e. until the gaps
 90 5 between the cigarette lengths and the plug have been closed.

The band 3 is employed to unite the cigarette lengths 1 and the plug 2 in known manner, by rolling the cigarette
 95 lengths and plug after the band 3 has been brought into engagement with them, until the band 3 forms a cylin-

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dricial sleeve enclosing the plug and overlapping the adjacent ends of the cigarette lengths; the face of the band 3 which is brought into engagement with the cigarette lengths and the filter plug is of course provided with a coating of adhesive before the rolling occurs. After rolling, a transverse cut is made through the centre of the plug 2 to yield a pair of finished cigarettes (FIGURE 2).

The band 3 is, in pursuance of the invention, provided with slits 4 at right-angles to the length of the band in each of two opposed edge portions, namely the side edge portions of the band 3, considered in relation to its direction of feed, which become the end portions of the cylindrical sleeve which the band 3 becomes after rolling. The presence of slits 4 means that each of the said side edge portions of band 3 is divided into a succession of tongues 6 projecting from the unslitted central part of the band 3; during the rolling of the band around the cigarette lengths 1 and plug 2, the tongues will tend to drag or trail, and bend inwardly towards the cigarette lengths 1 if, as shown, the latter are at all smaller in diameter than the plug 2. Each tongue 6 will then partly overlap the tongue next behind it (considered in relation to the movement of the band). The result is, as shown in FIGURE 2, that the end portions of the cylindrical sleeve formed by the band 3 assume in part a frusto-conical form, so that the extreme end portions of tongues 6 may lie against and adhere to the cigarette lengths 1 in spite of the diameter of the latter being smaller than that of the plug 2. The band 3 thus makes an effective, substantially airtight joint with each cigarette length 1 as well as with the plug 2. The overlapping of tongues 6 serves to prevent, or reduce to negligible proportions, any air leak through slits 4.

The overlap of band 3 on each cigarette length 1 is usually of the order of 4 mm., and slits 4 may then conveniently be of 2 mm. length and placed at 2 mm. pitch. All these dimensions may however be varied to suit particular materials and manufacturing tolerances.

The slits 4 are conveniently formed in band 3 shortly before the latter meets the cigarette lengths and filter plug. As seen in FIGURE 1, the band is originally plain as indicated at 7 and is fed under a slitter roller 8 having knives 9 of suitable dimensions projecting radially from its surface so as to engage and slit the edge portions of the band as required. Roller 8 is carried on a shaft 10 which it will be understood that appropriate drive connections are provided so that the roller 8 rotates in properly timed relation to movement of the band 3, and a roller or other counter-surface for cooperation with the knives 9 provided below the band 3 and in register with roller 8.

Should the plug 2 be of smaller diameter than the cigarette lengths 1, it will be apparent that a method of assembly as described above will not give the desired results. If however it is possible for the cigarette lengths to be of larger diameter, ring tipping as illustrated in FIGURE 3 may be employed. In FIGURE 3, all the parts have the same references as before and will not therefore be again recited. The band 3, however, is a narrow band, of the minimum width needed to overlap both the cigarette length 1 and the filter plug 2. The plug 2 in this figure is shown as having a diameter smaller than that of the cigarette length 1, and when the band 3 is rolled onto the cigarette length and plug, the presence of slits 4 in the part of the band which engages the cigarette length does not affect the result, but the slits 4 in the opposite edge portion of band 3 i.e. the edge portion engaging the plug 2, permits this edge portion to assume a frusto-conical form and thus provide a good and substantially airtight

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joint. It will be appreciated that, by employing ring tipping, using a band 3 with slits in two opposed edge portions as shown, it is immaterial whether the plug or the cigarette length has the larger diameter.

A machine embodying the invention for assembling mouthpiece cigarettes may take a variety of known forms so far as it comprises means for feeding mouthpieces and cigarette lengths into abutted relationship with one another and rolling a uniting band therearound, but additionally must embody some means for slitting the band before such rolling. A simple and economical form of slitting means is provided by a slitter roller such as the roller 8 (FIGURES 1 and 3) with its knives 9, shaft 10, and a counter-surface such as a further roller (not shown).

Various changes or modifications may be made in details of the methods described without departure from the scope of the invention, the foregoing details being given by way of example only.

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

1. A method of manufacturing a mouthpiece cigarette comprising bringing a cigarette length into axial abutment with a mouthpiece to form an assembly and subsequently rolling the abutted cigarette length and mouthpiece with a uniting band to secure said assembly, said method including the step prior to said rolling of slitting at least one edge portion of said uniting band at spaced positions so that said edge portion becomes a succession of tongues projecting along the edge of said band, whereby said tongues contact said assembly upon said band being rolled thereabout.

2. A method as claimed in claim 1 in which slitting is applied to two opposed edge portions of a double-width uniting band, whereafter said band is applied around a double-length mouthpiece lying between two cigarette lengths and subsequently a cut is made through the centre of said mouthpiece to yield two mouthpiece cigarettes.

3. A method as claimed in claim 1 in which the uniting band is of the minimum width necessary for a sufficiently strong joint between the cigarette length and the mouthpiece and slitting is applied to two opposed edge portions of said band.

4. A machine for assembling mouthpiece cigarettes, comprising means for feeding at least one cigarette length into abutting and substantially axially aligned relationship with a mouthpiece to form an assembly and means for subsequently rolling a uniting band around the abutted cigarette length and mouthpiece, including means for slitting at least one edge portion of said band at spaced positions prior to said rolling so that said edge portion becomes a succession of tongues projecting along the edge of said band, whereby said tongues contact said assembly upon said band being rolled thereabout.

5. A machine as claimed in claim 4 in which the slitting means comprises a slitter roller having a plurality of knives projecting radially from its surface.

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