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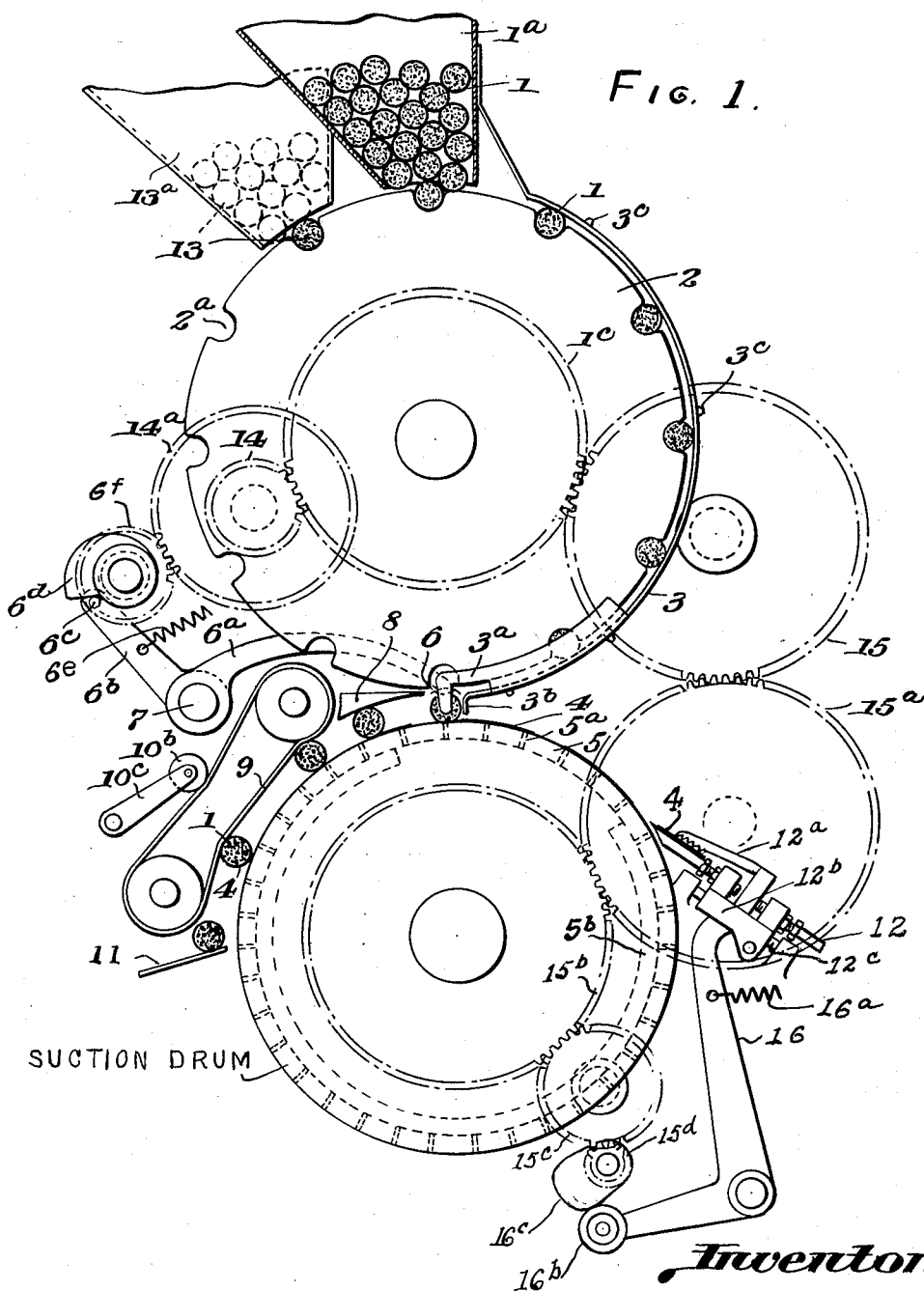
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MANUFACTURE OF CIGARETTES

Filed Feb. 13, 1936

2 Sheets-Sheet 1



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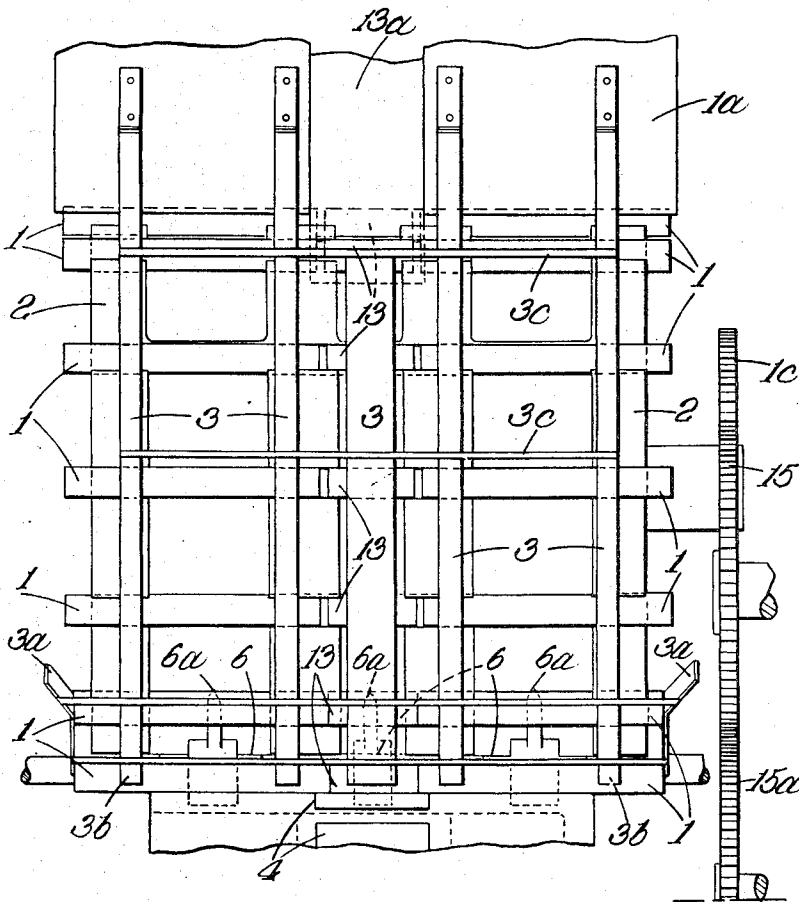
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FIG. 2.



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UNITED STATES PATENT OFFICE

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MANUFACTURE OF CIGARETTES

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don, England, a British company

Application February 13, 1936, Serial No. 63,803
In Great Britain February 19, 1935

9 Claims. (Cl. 131—94)

This invention relates to the manufacture of cigarettes having filter tips or other stub portions at the mouthpiece end, and is particularly concerned with an improved method and apparatus for the manufacture of such cigarettes by uniting cigarettes or lengths of cigarette rod and filter tips or mouthpiece portions by means of bands of paper, cork or the like previously provided with an adhesive surface.

10 The present invention comprises a method of manufacturing filter tip or like composite cigarettes by uniting cigarettes or lengths of cigarette rod and filter tips or mouthpiece portions by means of bands of paper, cork or the like, wherein the lengths to be united are assembled in alignment and uniting bands attached thereto or brought into contact therewith are wrapped around the assemblage by rolling the latter between relatively movable surfaces whereby the wrapping operation is effected or completed during lateral movement of the assemblage. Preferably the rolling of the assemblage is effected between parallel surfaces which are spaced apart at a distance very slightly less than the diameter of the cigarettes so that while the cigarettes and filter tips or stub portions are frictionally engaged between the surfaces to ensure effective rolling, substantially no compression is exerted on the cigarettes. Single cigarettes and filter tips or stub portions may be so united, but conveniently cigarettes in pairs are united to double length filter tips or stub portions interposed between them, the product being subsequently bisected. Alternatively, double lengths of cigarette rod may be united to pairs of single filter tips or stub in which case the double length of cigarette rod is subsequently bisected. Furthermore, if desired, any suitable number of lengths may be assembled and united together by the application of a corresponding number of uniting bands, the product being subsequently bisected.

Advantageously the uniting bands are attached to the assembled lengths before the rolling operation commences. The attachment of the uniting bands may be effected before the assembled lengths are positioned for the rolling operation and in such a case the attachment may be effected by applying assembled and aligned lengths to be united on to the uniting bands while positioned on an endless belt by which the assemblages are moved axially into position for the rolling operation. The seam of the uniting band may be held for a suitable period

of time after the rolling operation to ensure proper adhesion.

The filter tips or stub portions may be of any desired kind. For instance, they may consist of material such as crepe paper with or without filtering or absorbent material associated therewith and formed in any suitable manner. Alternatively, the stub portions may consist of tobacco of a different character to that of which the cigarettes proper are formed. The filter tips or stub portions are previously enclosed in paper tubes or wrappers whereby the cylindrical formation is retained while they are fed between the rolling surfaces for the application of the uniting bands.

According to the invention, moreover, apparatus for carrying out the method specified comprises means adapted to bring aligned lengths to be united and uniting bands previously provided with an adhesive surface into contact or engagement with one another, and means comprising relatively movable members between which the assemblage is rolled to effect or to complete the wrapping of the uniting band therearound. The apparatus may comprise a carrier such as a drum, on which the lengths to be united are assembled in alignment, rolling means such as a drum or endless band provided or associated with means for positioning the uniting bands thereon, means for effecting contact or engagement of each assemblage with the respective band so that the latter is attached to the assemblage, and a counter rolling member providing a surface arranged in relation to the rolling means in such manner that on movement of the latter the assemblage is rolled to effect or to complete the wrapping of the uniting band therearound. The counter rolling member may be stationary or, if desired, may be constituted by an endless band which is moved in relation to the drum or other rolling means.

Means may be provided for holding the seam of the uniting band for a period of time after the rolling is completed. Such means may comprise an endless band moved with and at the same speed as the rolling means and arranged to engage the assemblage at the termination of the rolling operation. The means for effecting contact or engagement of the assemblages and the uniting bands may comprise fingers or like members engaging the assembled lengths and operated so as to press the same into engagement with the uniting bands. Conveniently, the rolling means consists of a drum provided with suction ports whereby uniting bands fed on to the

periphery are positioned in relation to the lengths to be united.

In a modification means are provided for attaching the uniting bands to the assembled lengths before the latter are positioned for passage through the rolling means. In such an arrangement the assemblages with the uniting bands attached advantageously are fed axially into position for engagement with and feed between the co-operation surfaces of the rolling means. Conveniently, the assembled lengths are applied to the uniting bands while the latter are positioned on an endless belt by which the assemblages are fed axially to the rolling position. The apparatus preferably operates intermittently.

The invention is hereinafter described by way of example with reference to the accompanying drawings which illustrate one construction of apparatus adapted for carrying out the method according to the invention.

In the drawings:

Figure 1 is a diagrammatic end elevation partly in section of a machine embodying the present invention, and

Figure 2 is a front view of the machine of Figure 1.

In accordance with the present invention, cigarettes 1 are fed from duplicate hoppers 1a. The hoppers 1a are spaced apart and a hopper 13a is disposed between them and in a similar manner feeds double length wrapped filter tips 13 into the flutes 2a in the drum 2.

The cigarettes 1 and filter tips 13 received in the grooves 2a are retained therein by the guide strips 3 connected together by the cross-pieces 3c and, as shown in Fig. 2, are initially spaced apart. During the feed movement of the drum 2, the aligned cigarettes and filter tips are brought between the inclined side guiding pieces 3a whereby they are pressed towards one another and caused to abut before being transferred by the presser members 6 onto the suction drum 5. The drum 5 is driven from the drum 2 by means of the gears 1c, 15, 15a and 15b.

The arms 6a carrying the presser members 6 are operated by means of a cam 6d driven through the gears 1c, 14, 14a and 6f, the cam engaging a small roller 6c mounted on an arm 6b fixed on the spindle 7, the return movement of the arms being effected by the springs 6e.

The suction drum 5 is provided with suitably arranged suction ports 5a controlled by a suction cut-off 5b and opening at the periphery of the drum 5 so that the bands 4 of paper, cork or the like previously pasted or coated with adhesive and fed by suitable means, such as fingers 12a from a feed table 12, are positioned on the rolling drum 5 and held thereon by suction during at least a part of the rolling operation.

Pieces 4 of cork or the like are fed from table 12 by finger 12a mounted on a carriage 12b which, in turn, is slidably mounted on bars 12c. Carriage 12b is reciprocated on bars 12c by means of a bell-crank lever 16 urged to one extreme position by spring 16a and positively displaced to the other extreme position by means of cam 16c engaging cam roller 16b. Cam 16c is driven by pinion 15d which is connected through idler 15c with gear 15b of drum 5.

A stationary member 8 having a curved surface extending parallel with the periphery of the rolling drum 5 is arranged so that on rotation of the drum 5 the assemblage is rolled between the drum 5 and the stationary member

8 whereby the uniting band 4 is wrapped around the double filter tip or stub portion and the adjacent end portions of the aligned cigarettes, thus joining the same together. The member 8 is spaced from the drum 5 at such a distance that only slight pressure is applied upon the cigarettes. If desired, the member 8 may be resiliently mounted, in which case the rolling surface thereof may be flat and is not necessarily disposed parallel with the periphery of the drum 5. The member 8 may be constructed as a hot plate or heat may be otherwise applied in any suitable manner to facilitate setting of the adhesive used.

In order to hold the seam of the uniting band for a substantial period after the termination of the rolling operation, an endless belt 9 is carried around rollers 10, 10a disposed so that the united assemblage on passing out of engagement with the member 8 will engage the belt 9. The belt 9 is driven so as to move with and at the same speed as the periphery of the drum 5 and thus on engaging the belt 9 the assemblages will be carried round with the drum 5 and between the same and the belt 9 without rotation, a suitable tension being maintained on the belt 9, for instance by means of the roller 10b carried on the arm 10c and either gravity- or spring-influenced. The arrangement is such that when the assemblages pass into engagement with the belt 9 the seam of the uniting band is either in contact with the belt 9 or with the drum 5 and thus the seam will be held until the united assemblage is discharged on to the chute 11 or on to a suitable conveyor. The product, consisting of a pair of cigarettes united to an intermediate double length filter tip or stub portion is subsequently bisected by suitable means.

It will be understood that the invention is not limited to the particular embodiment hereinbefore described. For example, the cigarettes and filter tips or stub portions may be otherwise fed so as to be applied in alignment between the rolling surfaces. Furthermore, in place of a drum co-operating with a curved stationary member an endless band passing over a flat table may co-operate with a flat member which may be stationary or be constituted by an endless band moving relatively to the first-mentioned band.

What I claim is:

1. A method of manufacturing filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions by bands of material, comprising assembling the lengths to be united in alignment, bringing uniting bands into contact therewith, and wrapping said bands around the assemblages by rolling the latter between relatively movable surfaces and in rolling contact with each of said surfaces whereby the wrapping operation is effected during lateral movement of the assemblages.

2. Apparatus of the character described, comprising means for bringing aligned lengths to be united and uniting bands previously provided with an adhesive surface into contact with one another and means comprising relatively movable members between which and in rolling contact with each of which the assemblage is rolled to effect or to complete the wrapping of the uniting band therearound during lateral movement of the assemblage.

3. Apparatus of the character described, comprising a carrier on which lengths to be united are assembled in alignment, rolling means pro-

vided with means for positioning uniting bands thereon, means for effecting contact or engagement of each assemblage with the respective band so that the latter is attached to the assemblage, and a counter rolling member providing a surface arranged in relation to the rolling means in such manner that on movement of the latter the assemblage is rolled in rolling contact with the rolling means and with the counter rolling member to effect or to complete the wrapping of the uniting band therearound.

4. Apparatus according to claim 2, wherein the means for effecting contact of the assemblages and the uniting bands comprises fingers engaging the assembled lengths and operated so as to press the same into engagement with the uniting bands.

5. A method of manufacturing filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions by bands of material, comprising depositing lengths of cigarette rod and mouthpiece portions in an open groove provided on the surface of a moving member, axially pressing said lengths together, laterally removing said lengths, while in axial alignment and axially pressed together, from said groove, contacting said lengths while aligned and pressed together with an adhering uniting band, and wrapping said band about the so assembled lengths by rolling the assembled lengths between relatively movable surfaces and in rolling contact with each of said relatively movable surfaces.

6. A method of manufacturing filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions by bands of material, comprising aligning lengths of cigarette rod and mouthpiece portions, axially pressing said lengths together, laterally displacing said lengths, while so aligned and pressed together, into contact with an adhering uniting band, and rolling said assembled lengths and band between relatively moving surfaces and in rolling contact with each of said relatively movable surfaces to wrap the band around said assembled lengths.

7. A method of manufacturing filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions by bands of material, comprising aligning lengths of cigarette rod and mouthpiece portions, axially pressing said lengths together, applying adhering uniting band sheets to a moving surface, laterally displacing said lengths while so aligned and pressed together into contact with the band on said moving surface, and continuing to move the moving surface to bring said lengths into contact with a second surface to effect rolling of the lengths between and in rolling contact with each of said surfaces to wrap the band about the same.

8. A method of manufacturing filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions by bands of material, comprising depositing lengths of cigarette rod and mouthpiece portions in an open groove provided on the surface of a moving member, axially pressing said lengths together, applying adhering uniting band sheets to a moving surface, laterally displacing said lengths while so aligned and pressed together into contact with the band on said moving surface, and continuing to move the moving surface to bring said lengths into contact with a second surface to effect rolling of the lengths between and in rolling contact with each of said surfaces to wrap the band about the same.

9. An apparatus of the character described, comprising a carrier provided with an open groove, means for depositing a length of a cigarette rod and a length of a mouthpiece portion in said groove, means for pressing said lengths axially together, means for supporting a uniting wrapper band, means for laterally discharging said lengths while axially pressed together onto said band, and means comprising relatively movable members for rolling the lengths in rolling contact with each of said members to wrap the band about the same.

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