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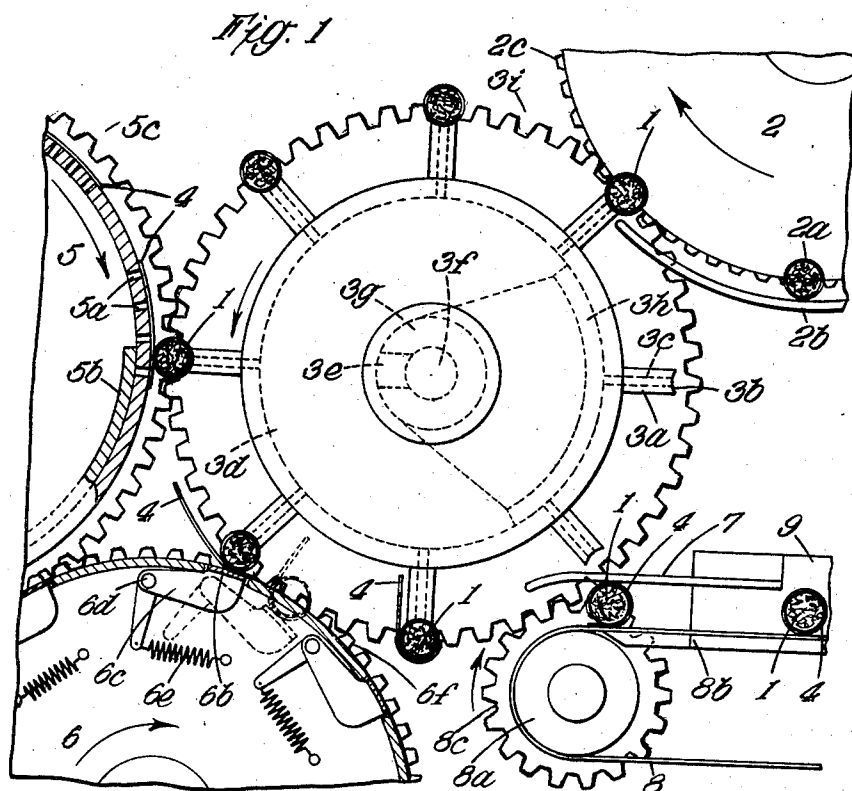
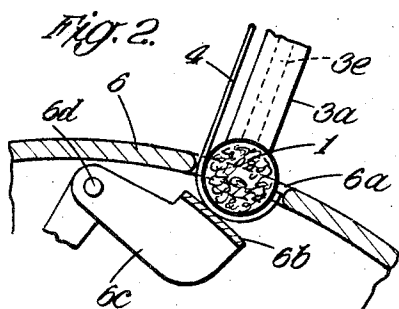
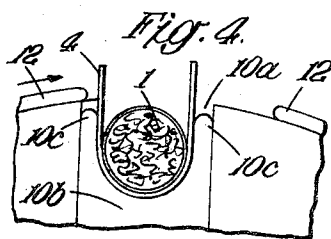
W. F. M. EDWARDS

2,189,886

CIGARETTE

Filed Feb. 1, 1937

3 Sheets-Sheet 1



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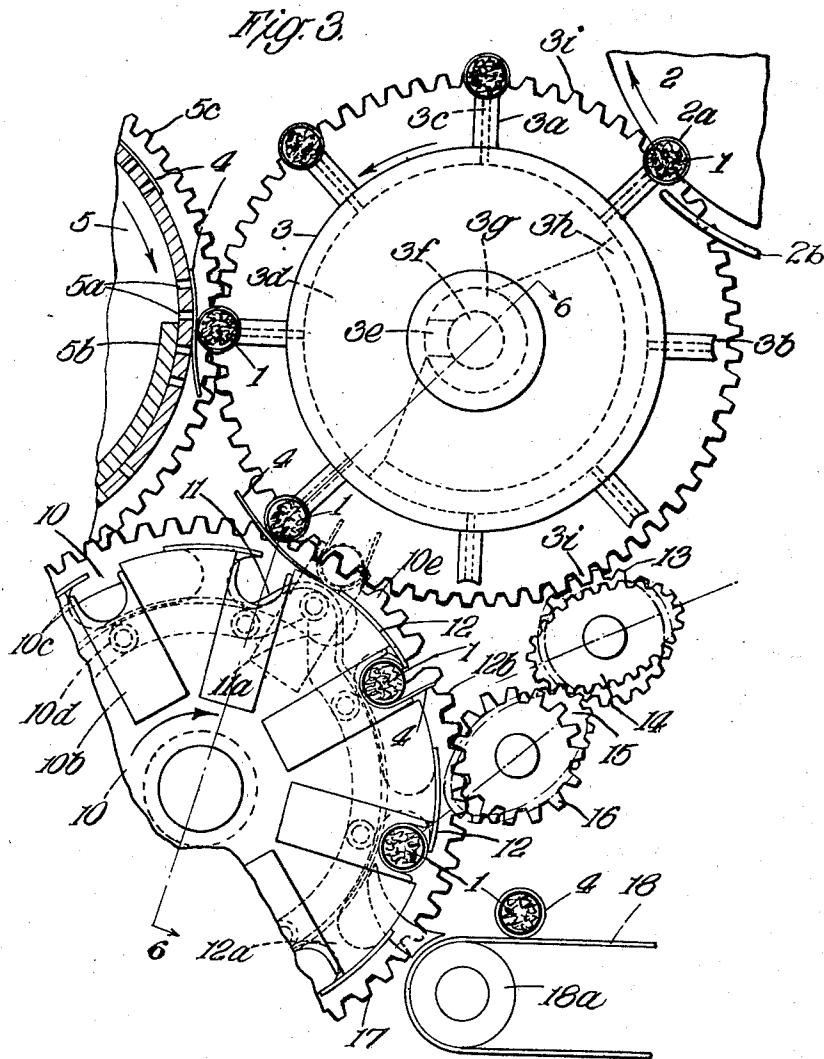
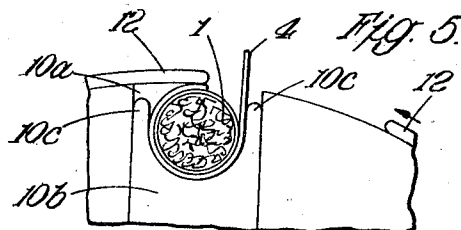
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3 Sheets-Sheet 2



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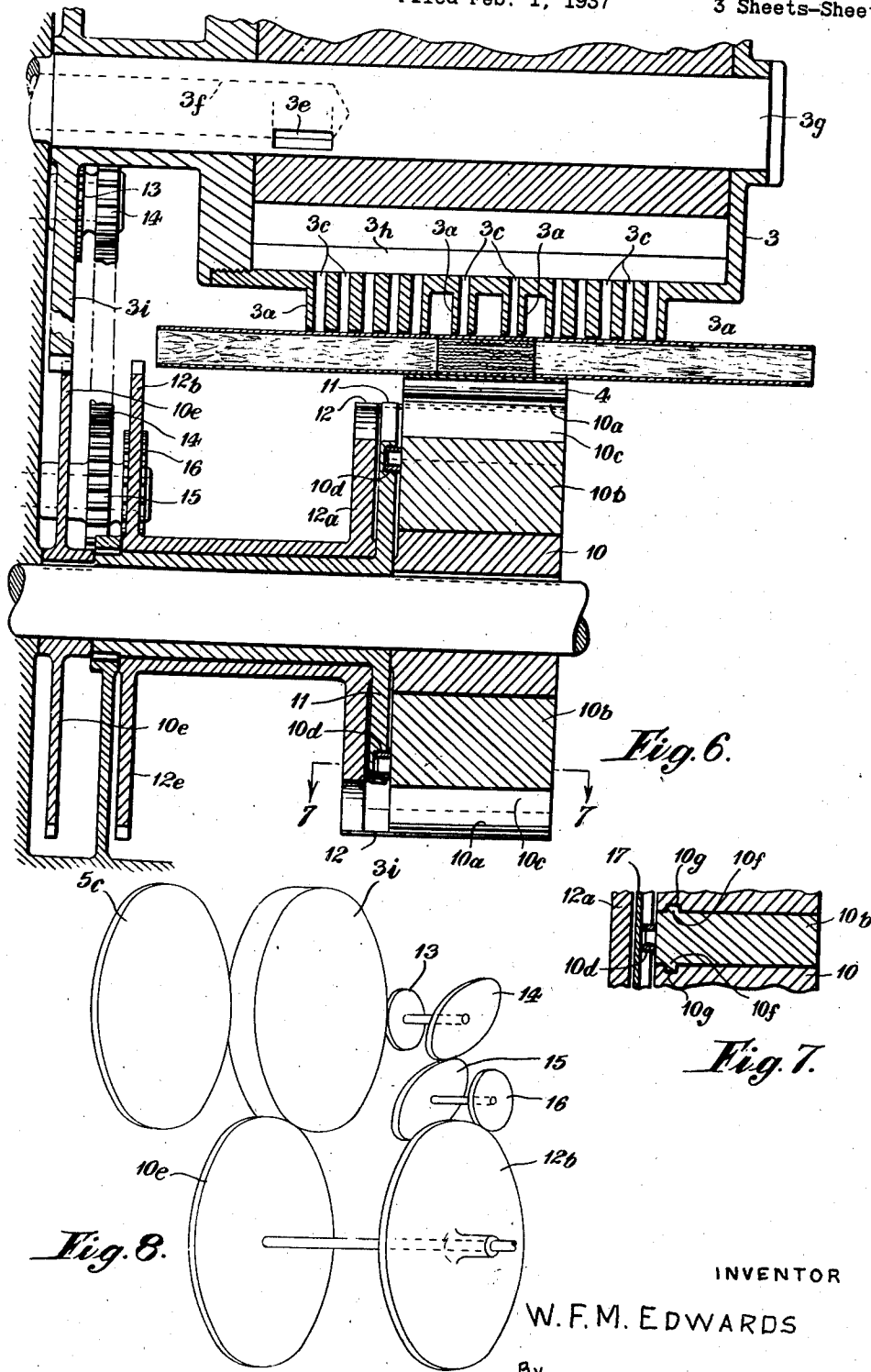


Fig. 6.

Fig. 7.

Fig. 8.

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2,189,886

CIGARETTE

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17 Claims. (Cl. 131—94)

(Granted under the provisions of sec. 14, act of
March 2, 1927; 357 O. G. 5)

This invention relates to the manufacture of filter tip or like composite cigarettes by uniting cigarettes or lengths of cigarette rod and filter tips or mouthpiece portions by means of uniting bands of cork or the like.

The present invention has for its object to provide improvements in the production of filter tip cigarettes whereby the application of the uniting bands to and around the assembled lengths to be united may be effected with certainty and precision so as to ensure constant and efficient operation under ordinary working conditions and at the same time to secure a product which is consistently satisfactory.

More specifically the present invention has for its main object to effect a preliminary wrapping of the uniting band around part of the circumference of the assemblage without rotation or axial movement of the same.

A further object is to effect the wrapping of the uniting bands around the assemblages partially or wholly while the assemblages are being carried laterally without rotation.

A further object is to provide apparatus for carrying out the method herein described.

The invention is hereinafter described by way of example with reference to the accompanying diagrammatic drawings, in which—

Figure 1 is a part sectional side elevation illustrating one embodiment according to the invention;

Figure 2 is a detail view drawn to an enlarged scale showing the manner in which the initial wrapping operation is effected in the apparatus shown in Figure 1;

Figure 3 is a view similar to Figure 1 illustrating a modification;

Figures 4 and 5 are detail views on an enlarged scale illustrating the manner in which the wrapping is completed.

Figure 6 is a developed section on the line 6—6 in Figure 3;

Figure 7 is a section of a detail on the line 7—7 in Figure 6; and

Figure 8 is a perspective diagram showing the wheels of the arrangement in Figure 3.

In carrying the invention into effect according to one embodiment and with reference to Figures 1 and 2 of the accompanying diagrammatic drawings, the assemblages 1, the component parts of which are to be united and which generally consist of two cigarettes or lengths of cigarette rod and an interposed double length filter tip or mouthpiece portion, are delivered from hopper or other means (not shown) into

grooves 2a in a drum 2 in which grooves 2a the assemblages are retained by fixed guides 2b. From the drum 2 each assemblage is transferred in turn by the provision of a rotary carrier 3 in the form of a suction drum having arms 3a with concave extremities 3b and suction holes 3c, the latter communicating with a suction chamber 3d which in turn communicates through a hole 3e with a bore 3f in the spindle 3g connected to a suitable source of suction. Each arm 3a is in four parts, the two outer parts engaging the two cigarettes and the two inner parts engaging the double filter tip, the spacing of the four parts providing circumferentially extending slots in which the guides 2b and a suitably slotted part of the member 7 to be hereinafter referred to may extend. The suction to the arms 3a is cut off by a fixed member 3h during the part of the travel from the release point to the point of pick up from the drum 2.

Each assemblage 1 is in turn brought into contact with a previously pasted uniting band 4 of cork or the like carried on a suction drum 5 having suction holes 5a and a suction cut-off member 5b. As shown, the assemblage contacts with the band 4 at a position towards its leading end and the assemblage with the band 4 applied thereto is carried around on the arm 3a into engagement with the drum 6. The drum 6 is formed with transversely extending slots 6a (Figure 2) in which resiliently mounted members 6b normally are disposed so as to lie more or less flush with the periphery of the drum. As shown, the members 6b may be carried on arms 6c pivoted at 6d and influenced by light tension springs 6e. In the projecting movement of the assemblage towards the drum 6, the leading part of the band 4 is engaged by the respective member 6b and thereby partly wrapped around the assemblage. As the assemblage approaches the position shown in dotted lines in Figure 1 it is pressed into the slot 6a in the drum 6 against the resilient member 6b and, as shown more especially in Figure 2, the band 4 is thereby wrapped around approximately half the circumference of the assemblage. The resilient members 6b also have the function of ensuring ejection of the assemblage from the slot 6a so that the assemblage will be retained on the suction arm 3a and carried thereby around to the discharge point at which the assemblage is engaged between the slotted member 7 and a belt 8. The member 7 is arranged to strip the assemblage from the suction arm 3a at or about the moment that the suction is cut off. The belt 8 passes over a roller 8a and 55

a table 8b and the assemblage is rolled between the belt 8 and the member 7 so as to complete the wrapping of the uniting band 4 around the assemblage in a manner known per se, the belt 8 also serving as a conveying belt by which the product may be fed to a receiving tray 9 or to a bisecting cutter in the usual manner.

The whole of the apparatus shown in Figure 1 may move continuously. The drum 2 and the carrier 3 may be geared together by gear wheels 2c, 3i. The carrier 3 may be geared to the drum 5 by the gears 3i, 5c and the drum 6 to the carrier 3 by the gears 3i, 6f. The roller 8a may be driven by the gears 3i, 8c.

As viewed in Fig. 1, the gear wheel 5c is disposed slightly behind the gear wheel 6f so as not to foul the latter, and it will be understood that the teeth of the gear wheel 3i are made wide enough to mesh with both the wheels 5c and 6f; a similar arrangement is hereinafter described with reference to Figs. 3 to 8 and is most clearly seen in Fig. 8.

In a modification, as illustrated in Figures 3 to 8, the assemblages 1 are transferred from the drum 2 by means of radial arms 3a on a suction carrier 3 as before described, but in this embodiment each assemblage contacts with the uniting band at a substantially middle position, as shown in Figure 3. The assemblage with the uniting band 4 attached is carried around in relation to a drum 10 having radially projectible members 10b disposed in slots 10a and having U-shaped outer ends forming spaced members 10c. Tongues 10f formed in the members 10b, as shown in Figure 7, engage in grooves 10g formed in the walls of the slots 10a; so that the members 10b are constrained to remain square with respect to the axis of the drum 10. The members 10b are fitted with rollers 10d engaging in a cam groove in a fixed cam disc 11, the cam groove being profiled at 11a so that at this position each member 10b is projected radially, as shown in dotted lines, so that the members 10c act to wrap the band 4 around substantially half the circumference of the assemblage. At this point the suction to the arm 3a is cut off by the member 3h and on withdrawal of the member 10b the assemblage is carried thereby into the slot 10a in the drum 10. The projecting parts of the uniting band 4 are wrapped around the assemblage, while the same is being carried laterally by the drum 10, by the action of sleeve segments 12 carried by an end plate 12a which, while driven in the same direction as the drum 10, has a differential movement with respect thereto so that during accelerated movement of the plate 12a one segment 12, as shown in Figure 4, moves forward to wrap over one of the projecting parts of the uniting band 4 and then, on deceleration of the plate 12a in relation to the drum 10, the adjacent segment 12 moving backwards in relation to the drum 10, wraps the remaining part of the uniting band 4. In the position shown in Figure 3, the sleeve segments 12 are decelerating in relation to the drum 10, the arrangement being such that while the member 10b is projected from the slot 10a the segments 12 are clear of said slot. The completed assemblage may be stripped from the respective member 10b by means of fixed arms 17 and may be delivered on to a conveying belt 18 passing over a roller 18a. The carrier 3 and the drums 2 and 5 may be geared together by the means shown diagrammatically in Fig. 8. The drum 10 may be geared to the carrier 3 by means of the

gears 3i, 10e. The plate 12a may be mounted on a sleeve fitted with a separate gear wheel 12b which is driven with a differential motion in relation to the gear 10e, for instance by a gear train embodying a gear 13 meshing with the gear 3i, elliptical or other varying ratio gears 14, 15 and a gear 16 meshing with the gear 12b.

It will be understood that in all cases single filter tips may be united to single cigarettes and that where a double filter tip is interposed between and united to a pair of cigarettes, the product has to be subsequently bisected. Furthermore, if desired, any suitable number of lengths may be united by the application of two or more uniting bands to produce a rod which is subsequently sub-divided.

Furthermore, the invention is applicable to the production of cigarettes containing tobacco of two different kinds, in which case the filter tip is constituted by a short length of cigarette rod the tobacco of which is different to the tobacco of the cigarette to be united thereto.

The term "slot" recited in the claims is intended to cover a slot, groove, channel or the like.

I claim:

1. Apparatus for the manufacture of filter tip or like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions by means of uniting bands, comprising a rotatable suction carrier having radial suction arms adapted to pick up and convey the assemblages to be united, means for bringing previously pasted uniting bands into contact with the assemblages, a rotary member having slots adapted to embrace the assemblage partially as it is conveyed by the said carrier and thereby to wrap the uniting band around part of the circumference of the assemblage, and means for subsequently completing the wrapping of the uniting band around the assemblage.
2. Apparatus as claimed in claim 1, wherein the said slots are formed in said rotary member so as to be radially movable with respect thereto, said apparatus also comprising a stationary cam for successively projecting said slotted parts to embrace the assemblages and on withdrawal to remove the assemblages from their carrier.
3. Apparatus as claimed in claim 1, wherein the means for the completion of the wrapping of the uniting band around the assemblage comprises sleeve segments carried by a member having a differential motion with respect to the said rotary member to lap first one projecting part of the uniting band and then the other.
4. A method for the manufacture of filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions with uniting bands, comprising assembling lengths of cigarette rod and mouthpiece portions in axial alignment, holding an aligned assemblage on one side thereof while leaving the major part of the circumference thereof accessible, pressing the opposite side of said assemblage into contact with a uniting band, further pressing the assemblage while so held and the band in contact therewith transversely of the axis of said assemblage into a slot to partially wrap the band around said assemblage, discontinuing the holding of the assemblage, and completely wrapping the band around the assemblage.
5. A method for the manufacture of filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions with uniting bands, comprising assembling lengths of

cigarette rod and mouthpiece portions in axial alignment, holding an aligned assemblage on one side thereof while leaving the major part of the circumference thereof accessible, conveying the assemblage to bring the opposite free side thereof into attaching contact with a uniting band, pressing the assemblage while so held and the band in contact therewith transversely of the axis of said assemblage into a slot to partially wrap the band around said assemblage, discontinuing the holding of the assemblage, and completely wrapping the band around the assemblage.

6. A method for the manufacture of filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions with uniting bands, comprising assembling lengths of cigarette rod and mouthpiece portions in axial alignment, holding an aligned assemblage on one side thereof while leaving the major part of the circumference thereof accessible, conveying the assemblage to bring the opposite free side thereof into attaching contact with a uniting band, further conveying the assemblage while so held with the attached uniting band to a wrapping zone, pressing the assemblage and the band in contact therewith transversely of the axis of said assemblage into a slot to partially wrap the band around said assemblage, discontinuing the holding of the assemblage, and completely wrapping the band around the assemblage.

7. A method for the manufacture of filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions with uniting bands, comprising assembling lengths of cigarette rod and mouthpiece portions in axial alignment, holding an aligned assemblage on one side thereof while leaving the major part of the circumference thereof accessible, pressing the opposite side of said assemblage into contact with a uniting band, further pressing the assemblage while so held and the band in contact therewith transversely of the axis of said assemblage into a slot to partially wrap the band around said assemblage, discontinuing the holding of the assemblage, and rolling the assemblage between relative moving surfaces to complete the wrapping of the band about the same.

8. A method for the manufacture of filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions with uniting bands, comprising assembling lengths of cigarette rod and mouthpiece portions in axial alignment, holding an aligned assemblage on one side thereof while leaving the major part of the circumference thereof accessible, pressing the opposite side of said assemblage into contact with a uniting band, further pressing the assemblage while so held and the band in contact therewith transversely of the axis of said assemblage into a slot to partially wrap the band around said assemblage, discontinuing the holding of the assemblage, retaining said partially wrapped assemblage in said slot, and completing the wrapping of said assemblage.

9. A method for the manufacture of filter tip and like composite cigarettes by uniting lengths of cigarette rod and mouthpiece portions with uniting bands, comprising assembling lengths of cigarette rod and mouthpiece portions in axial alignment, holding an aligned assemblage on one side thereof while leaving the major part of the circumference thereof accessible, applying a uniting band to said assemblage on the opposite side, pressing the assemblage while so held and the band in contact therewith transversely of the

axis of said assemblage into a slot to partially wrap the band around said assemblage, discontinuing the holding of the assemblage, and completely wrapping the band around the assemblage.

10. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a conveyor, means on said conveyor for supporting assemblages of aligned lengths of cigarette rod and mouthpiece portions, a second conveyor having wrapping means thereon, means for driving said conveyors to press an assemblage, carried by the first conveyor, transversely of the axis of the assemblage into the wrapping means of the second conveyor to partially wrap a uniting band about said assemblage, and means for completing the wrapping of said band about said assemblage.

11. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a conveyor, suction actuated means on said conveyor for supporting an assemblage of aligned lengths of cigarette rod and mouthpiece portions and engaging one side of said assemblage, a second conveyor having wrapping means thereon, means for driving said conveyors to press an assemblage, carried by the first conveyor, transversely of the axis of the assemblage into the wrapping means of the second conveyor to partially wrap a uniting band about said assemblage, and means for completing the wrapping of said band about said assemblage.

12. An apparatus for the manufacture of filter tip of like composite cigarettes, comprising a conveyor, suction actuated means on said conveyor for supporting an assemblage of aligned lengths of cigarette rod and mouthpiece portions and engaging one side of said assemblage, means for applying a uniting band to the opposite side of said assemblage, means for pressing the uniting band partially about said assemblage, and means for stripping said partially wrapped assemblage from said supporting means and completing the wrapping of said band.

13. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a conveyor having suction means for supporting an assemblage of axially aligned lengths of cigarette rod and mouthpiece portions, means for applying bands to said assemblage, and means acting in a direction approximately at right angles to the axis of the supported assemblage and cooperating with said conveyor to press the uniting bands around part of the circumference thereof before said assemblage is released from the conveyor.

14. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a rotary conveyor, radial arms on said conveyor, means for applying suction to said arms to support assemblages of aligned lengths of cigarette rod and mouthpiece portions on the outer extremities of said arms, means for applying and partially wrapping a uniting band about said assemblages while rigidly supported on said arms, means for releasing partially wrapped assemblages from said arms, and means for completing the wrapping of the bands about said assemblages.

15. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a rotary conveyor, radial arms on said conveyor, means for applying suction to said arms to support assemblages of aligned lengths of cigarette rod and mouthpiece portions on the outer extremities of said arms, a drum having slots in

the periphery thereof, and means for rotating said drum and rotating conveyor to cause said supported assemblages on the convey to enter into the slots of said drum to partially wrap a uniting band interposed between an assemblage and said drum about said assemblage.

16. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a rotary conveyor, radial arms on said conveyor, means for applying suction to said arms to support assemblages of aligned lengths of cigarette rod and mouthpiece portions on the outer extremities of said arms, a drum, radially movable wrapping means carried by said drum, means for rotating said carrier and drum to bring the assemblages supported by said carrier into register with the wrapping means on said drum, and means for displacing said wrapping means when in register with an assemblage to wrap a uniting

band interposed between said wrapping means and assemblage partially about the latter.

17. An apparatus for the manufacture of filter tip or like composite cigarettes, comprising a conveyor having suction means for supporting an assemblage of axially aligned lengths of cigarette rod and mouthpiece portions, means for applying bands to said assemblage, means acting in a direction approximately at right angles to the axis of the supported assemblage and cooperating with said conveyor to press the uniting bands around part of the circumference thereof before said assemblage is released from the conveyor, and means for completing the wrapping of the uniting band around the assemblage comprising a fixed member and a moving member by which the assemblage is rolled along the fixed member.

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