Sept. 26, 1961 B. SCHUBERT 3,001,528

DEVICE FOR ROLLING A CONNECTOR SHEET AROUND THE BUTTING POINTS OF CIGARETTES AND FILTERS

Filed May 23, 1958 2 Sheets-Sheet 1

Fig. 1

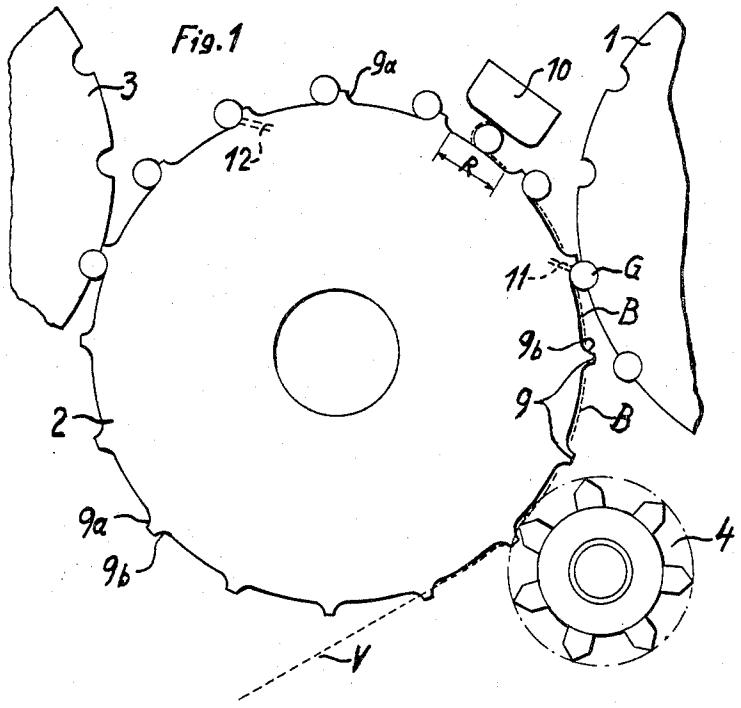
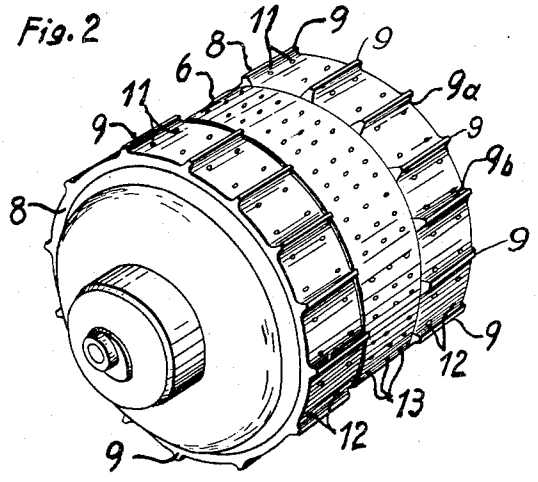


Fig. 2



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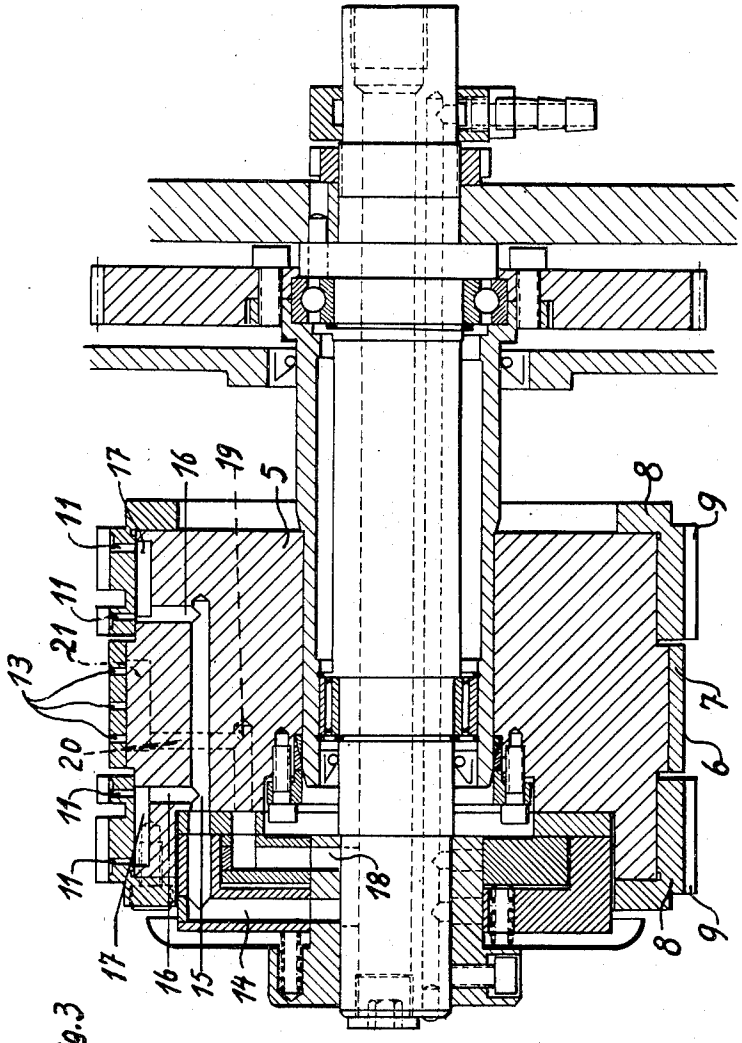

Fig. 3

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DEVICE FOR ROLLING A CONNECTOR SHEET AROUND THE BUTTING POINTS OF CIGARETTES AND FILTERS

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3 Claims. (Cl. 131—94)

The present invention relates to a device for attaching connector sheets around the butting ends of aligned rod-like articles or of such articles and rod-like attachments, and more particularly for producing filter mouthpiece cigarettes, cigarillos or the like by the assembly in axial alignment of a cigarette or two cigarettes or the like and a filter mouthpiece and by wrapping with a rolling action an adhesive connector sheet around the filter mouthpiece and around the adjacent end or ends of the cigarette or cigarettes.

In producing filter mouthpiece cigarettes it is known to roll a connector sheet in the manner of a sleeve around a mouthpiece of twice the final length and around the ends of cigarettes pressing against both ends of the mouthpiece. If the two groups united in this way are severed in the centre of the mouthpiece two filter mouthpiece cigarettes are obtained.

This rolling-on of the connector sheets around the groups offers the advantage in relation to other methods for producing filter cigarettes, that attachment of the connector sheet to the cigarettes is obtained reliably and satisfactorily at all points without air pockets being formed.

In order to execute such a rolling operation devices are known in which the groups are deposited on one end of a connector sheet which is supplied by a movable carrier and is guided together with the connector sheet over a stationary counter surface. The connector sheet is then wound or rolled upon the group by rolling against the counter surface. Such devices have the property that the groups are guided only by two smooth surfaces and therefore there is no reliable positive and uniform guidance means to retain precise spacing of the groups. Exact maintenance of the spacing or pitch is however highly desirable in order that the filter cigarettes can be fed forward after rolling at a definite uniform pitch or spacing.

It is also known to limit the rolling movement of the groups by stops which extend over the whole width of one of the grooved drums feeding the groups. As a result of these stops the connector sheets cannot be rolled down completely as they must press against the stops. The advantage of rolling the connector sheets around the groups such as has been referred to above is no longer present with this construction for precisely at the critical points at the beginning and at the end of the rolling of the connector sheet around the groups, these parts are not rolled but merely pressed down. For this reason such stops do not prevent the formation of air pockets particularly adjacent the overlap points of the connector sheet, which air pockets become objectionably noticeable when smoking the cigarettes.

The invention has for its object to provide a method of producing filter mouthpiece cigarettes or the like by means of connector sheets and with a satisfactory rolling operation with positive guiding of the groups and maintaining of their spacing or pitch and employs a device in which the groups are deposited on connector sheets located on a rotating drum or other conveyor and are then

moved past a counter surface and wherein stops or like projections form limiting elements on some part of the periphery of the drum or other conveyor or for limiting the rolling movement of the groups whereas the other part of the drum is of smooth form.

The limiting elements serving for maintaining the pitch are thus omitted over those parts of the drum which receive the connector sheets and the spacing between the limiting elements is such that the rolling path between them corresponds at least to the length of the connector sheets.

The limiting elements are conveniently formed as fins which embody a profile corresponding to the circumference of the cigarette in the region of their surface parts which engage the cigarettes. Adjacent these fins or webs obliquely disposed suction ducts may be provided directed approximately to the centre point of the cigarettes which retain the cigarettes in either end position.

Suction ducts are also provided for retaining the connector sheets in the parts of the drum receiving such sheets. The suction in the region of the connector sheets is controlled during the rolling operation in such manner that the connector sheet is held under tension while rolling over the surface of the drum.

The advantage of the invention consists in the fact that the conveyor, e.g. the drum on which the assembled groups of articles are rolled can be used simultaneously as a cutting drum without it being necessary to provide movable cutter supports such as are required in a number of devices of this kind.

Therefore according to one feature of the invention the part of the drum periphery not provided with limiting elements, i.e. in the region supporting the connector sheets, is used as the cutting support and it consists for this reason of a hard metal ring or is provided at least in the region of the cutting point with counter cutter elements of hard metal. The cutting point is provided at the line adjoining the end of the rolling movement on the periphery of the drum. The incoming connector sheet is arranged to slip on the drum in known manner to an extent such that on completion of the slip and at the commencement of the following cut the forward edge of the connector sheet lies at the beginning of the rolling movement. Separate control devices are provided for the suction for retaining the cigarettes and the suction for retaining the connector sheets.

One constructional example of the invention is shown diagrammatically on the accompanying drawing wherein:

FIG. 1 is an elevation of part of a filter cigarette machine with the connector drum.

FIG. 2 is a general perspective view of the connector drum and

FIG. 3 shows the connector drum in section.

The assembled group G consisting of two cigarettes and an interposed filter positioned on the assembling drum 1 is delivered in known manner to connector sheets B on a conveyor means shown in the drawings as an assembly or connector drum 2. During the travel on the connector drum 2 the group is wrapped by means of the connector sheets B and then delivered to the following groove drum 3 on which the group is severed to form two filter cigarettes. The connector drum 2 is also formed at the same time as a cutter drum and serves for severing the connector sheets B by means of a cutter drum 4, the incoming strip V of connector sheet material slipping on the drum 4 to give the required spacing.

The connector drum 2 consists of a drum body 5 (FIG. 3) of which the smooth peripheral surface 6 arranged only in the region receiving the connector

sheets B, serves as a cutter support. In order to obtain an outer surface portion which is not liable to wear a hard metal ring 7 is shrunk into position to form the outer surface. On both sides of this hard metal ring 7 the drum body is recessed to form smaller diameter portions. In this region two flanged rings 8 are fitted, the oil surfaces of which are provided with fins 9. The surfaces 9*a* and 9*b* of the fins are of a shape which corresponds to the peripheral parts of the cigarettes and the distance R (see FIG. 1) representing the length of the rolling movement is preferably not less than and is approximately equal to the length of the connector sheet B. A stationary rolling surface 10 is provided coaxially to the periphery of the connector drum 2 as a counter surface for effecting the rolling operation.

The spacing of the rolling surface 10 from the surface 6 of the conector drum 2 is adjustable in order to allow for adjustment of the effective rolling pressure and adjustment according to the size of the cigarette.

Suction ducts 11 and 12 are provided in the region of the surfaces 9*a* and 9*b* which retain the cigarettes in the two end positions. These ducts are arranged obliquely as shown in FIG. 1 and are directed approximately to the mid-point of the group. Also suction ducts 13 are provided for retaining the connector sheet during cutting and rolling, these ducts being arranged in the region of the support surface for the connector sheets. In the embodiment shown it is not necessary to provide special counter cutter surfaces since the whole jacket 6 consists of hard metal. The suction for the ducts 11 and 12 is supplied through the suction chamber 14 and suction ducts 15, 16 and 17 and the suction for the ducts 13 through the suction chamber 18 and ducts 19, 20, 21. The chambers 14 and 18 are of arcuate form to apply suction over desired peripheral zones of the connector drum 2 in well known manner.

For rolling the connector sheet B about the butting points between filters and cigarettes strip material V is drawn in known manner from a reel not shown, gummed on the face opposite to the cutter drum 2, fed to the cutter drum 2 and retained thereon by suction. The cutters of the cutter drum 4 cut connector sheet pieces B from the strip V which are spaced from the leading end of the incoming strip. After cutting a connector sheet B lies between two fins 9 as shown in projection in FIG. 1.

The device shown operates as follows: Between pairs of aligned cigarettes delivered from a cigarette magazine or directly from a cigarette rod machine there is inserted a filter plug of twice the final length in known manner. The group G so formed is assembled on the assembly drum 1 for example by means of guide blades and deposited on the end of the connector sheet B lying on the connector drum 2. The filter plug lying between the cigarettes retains its position on the one hand by adhesion to the gummed connector sheets and on the other hand by the pressure of the ends of the cigarettes. The group G lying in this form in engagement with the trailing surface 9*a* of the fin 9 is fed into the region of the counter rolling surface 10 during the further rotation of the connector drum 2. On contact therewith the group G is moved away from the surface 9*a* and the connector sheet B is wound around the group by the specific rotation thereof to the extent of rather more than one complete revolution, although more than one revolution can be provided for if desired. The length of the rolling path provided by the counter surface 10 corresponds precisely or at least with the length of the path R which the groups can execute between two fins. For this reason the group is brought into engagement with the leading surface 9*b* of the next following fin 9 after traversing the rolling point. At this point, i.e. against the surface 9*b* it is retained by the suction delivered through the suction duct 12 until delivery to the cutting drum 3. The holding of the groups against the surfaces 9*a* and 9*b* can also be effected by other suitable retaining means for example lateral stops (for 9*a*) or springs or guides arranged on the periphery of the connector drum (for 9*b*).

The mechanism shown on the drawings in diagrammatic form is completed by means well known in the art by any suitable means for rotating the drums 1, 2 and 3 and the cutter device 4 in synchronism and for feeding and gumming the strip V, but as these means will be evident to those skilled in the art it has not been thought to show them in further detail.

What I claim is:

1. A device for attaching connector sheets around the butting ends of aligned pairs of cigarettes and mouthpiece attachments interposed between said pairs, said connector sheets being wider than said attachments and of a sufficient length to completely enwrap the attachments and to unite them with the cigarettes on each side, a rotary conveyor drum having a smooth central portion to receive successive adhesive connector sheets, uniformly spaced projections on said conveyor drum on each side of said central portion, said conveyor drum receiving the cigarettes and attachments with the attachments and the end parts of the two cigarettes overlying the connector sheets and with the two cigarettes in engagement with the projections, a stationary counter surface adjacent the conveyor drum to cause the cigarettes and attachments to roll relatively to the conveyor drum and thereby to roll the connector sheets around the attachments to unite them with the cigarettes, the mutual spacing of said projections being such as to allow the cigarettes to roll to an extent which completely enwraps the connector around the butting ends, and feeder means adapted to feed aligned groups consisting of cigarettes with interposed mouthpieces against the trailing faces of the projections on the conveyor drum, the mouthpieces being held by endwise pressure thereon by the cigarettes and by the connector sheets previously placed on the central portion of the conveyor drum, each group being rolled by the counter surface until the cigarettes are engaged by the leading edges of the respective following projections, and the projections being provided with suction ports on each flank face to retain the groups in either terminal position, and means to remove the assembled aligned groups after being enwrapped by the connector sheets.

2. A device as claimed in claim 1 further comprising suction ducts in the central smooth peripheral portion of the conveyor drum, and separate suction control and feeder means for controlling the admission of suction to the ports in the projections and the ports in the smooth central portion of the conveyor drum.

3. A device for attaching connector sheets around the butting ends of aligned pairs of cigarettes and mouthpiece attachments interposed between said pairs, said connector sheets being wider than said attachments and of a sufficient length to completely enwrap the attachments and to unite them with the cigarettes on each side, a rotary conveyor drum having a smooth central portion to receive successive adhesive connector sheets, uniformly spaced and fixed axially extending projections on the circumference of said conveyor drum on each side of said smooth central portion of the same, said conveyor drum receiving the cigarettes and attachments with the attachments and the end parts of the two cigarettes overlying the connector sheets and with the two cigarettes in engagement with the trailing faces of the projections, a stationary counter surface adjacent the conveyor drum to cause the cigarettes and attachments to roll relatively to the conveyor drum and thereby to roll the connector sheets around the attachments to unite them with the cigarettes, the mutual spacing of said projections being such as to allow the cigarettes to roll to an extent which completely enwraps the connector sheet around the butting ends, feeder means adapted to feed aligned groups consisting of cigarettes with interposed mouthpieces

against the trailing faces of the projections on the conveyor drum, the mouthpieces being held by the connector sheets previously placed on the smooth central portion of the conveyor drum, each group being rolled by the counter surface until the cigarettes are engaged by the leading faces of the next following projections, said projections having cigarette holding means thereon for retaining the groups in engagement with said leading faces of the next following projections, and means to remove the assembled aligned groups from said conveyor drum after being enwrapped by the connector sheets.

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