United States Patent

Molins

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[54] APPARATUS FOR PRODUCING ROD-LIKE ARTICLES

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**.....**B65h 81/00**

[58] **Field of Search**.....156/180, 200, 296, 441, 203, 156/204, 450; 131/10, 226

[56] **References Cited**

UNITED STATES PATENTS

2,812,796	11/1957	MacHenry	156/180 X
3,120,690	2/1964	Stevens	156/441 X
3,173,188	3/1965	Wexler	156/200 X
3,232,805	2/1966	Touey et al.	156/180
3,320,110	5/1967	Gallagher	156/441 X
3,323,961	6/1967	Gallagher	156/180
3,516,885	6/1970	Sextone et al.	156/203

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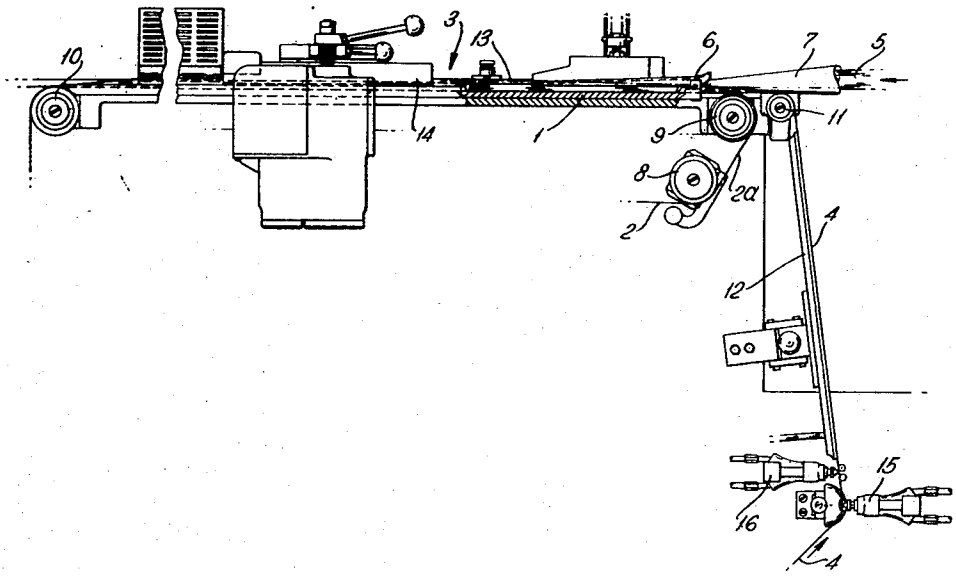
[57] **ABSTRACT**

In the production of a continuous wrapped rod, e.g. of filter material for subdivision into filter rods, the continuous wrapper web is provided along each of its marginal portions, but on opposite sides, with a line of heat-sensitive polyvinyl acetate which is dried before the marginal portions are foled on each other, and is then reactivated by heat.

1 Claim, 2 Drawing Figures



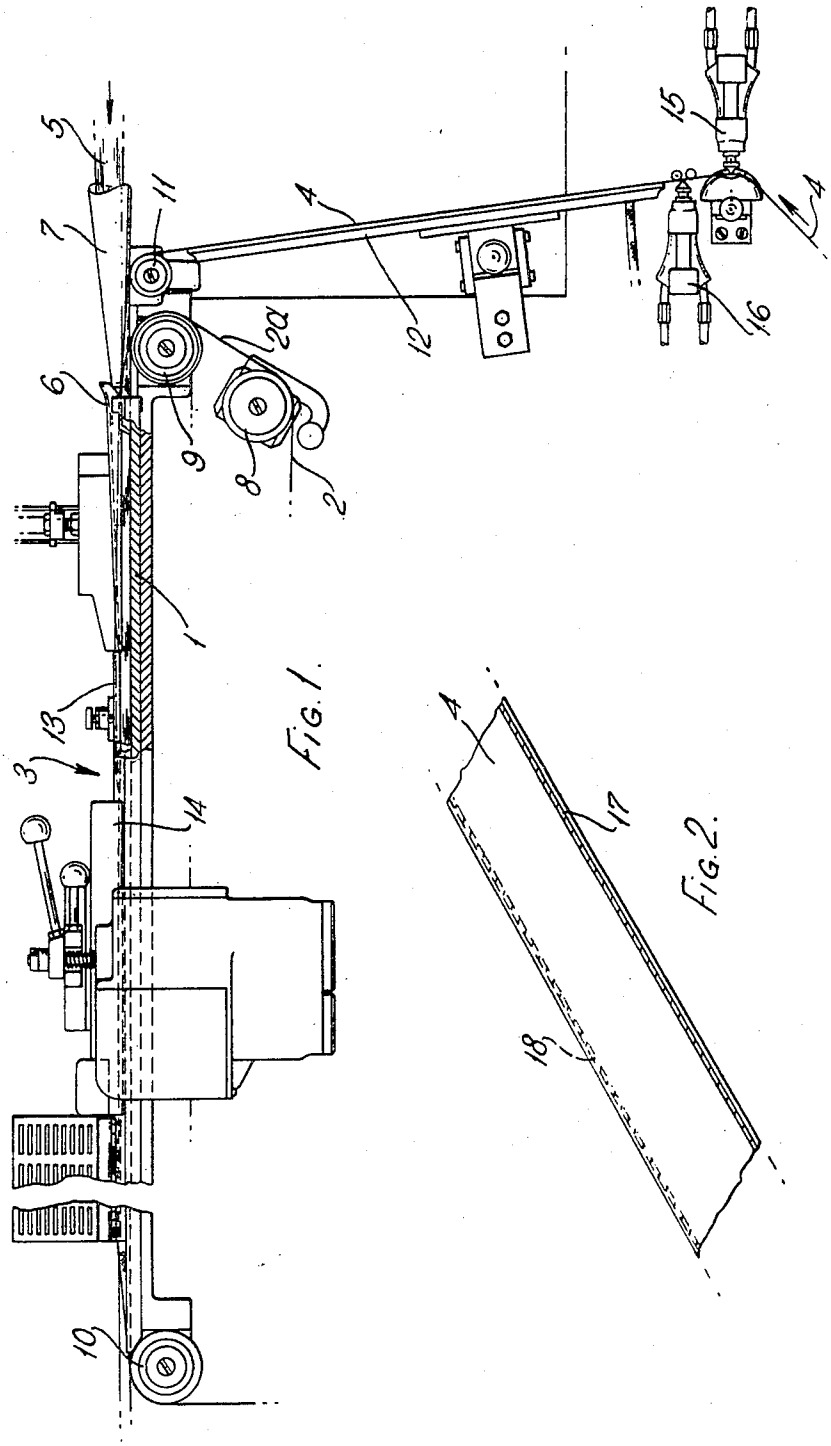


FIG. 1.

FIG. 2.

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APPARATUS FOR PRODUCING ROD-LIKE ARTICLES

The present invention relates to methods of and apparatus for producing rod-like articles, and more particularly to the production of a continuous wrapped rod to be subdivided into rod-like articles such as cigarettes or filter plugs.

In the production of a continuous cigarette or filter rod a wrapper web is fed onto a garniture bed and a filler, either tobacco or filter material, is deposited on the wrapper web, the two then passing into a folding arrangement which serves to fold the wrapper around the filler, one margin of the wrapper having had a line of glue deposited on it prior to entering the folding arrangement, so that when the two edges of the wrapper are folded one over the other they will adhere to each other to form the continuous rod. It is common to use an adhesive, such as polyvinyl acetate (p.v.a.) which is activated by heat, the p.v.a. being deposited in liquid form along one margin of the wrapper and a heater being incorporated in the folding arrangement to activate the heat-sensitive adhesive and thus bond the wrapper in the form of a tube around the filler. However, a difficulty can arise in that the liquid adhesive, which is applied before the wrapper web reaches the garniture bed, can become deposited on parts of the machine such as the folding arrangement, the garniture bed or an entry tongue is provided to compress the filler (e.g. tobacco or filtering material) on to the wrapper. Furthermore, in the case of some filter materials the water contained in certain liquid adhesives can have a deleterious effect on the filter material if it comes in contact with it.

The present invention is concerned with providing a method of and apparatus for forming a continuous cigarette or filter rod in which the above problems are overcome.

According to the present invention there is provided a method of producing a continuous rod such as a cigarette rod or a filter rod, in which a wrapper web is fed on to a garniture bed, a filler is deposited on the wrapper web and the two are passed into a folding arrangement, and wherein two lines of an adhesive capable of reactivation by heat are deposited one along each marginal portion of the wrapper web but at opposite faces thereof, the two lines of adhesive are dried before the two marginal portions of the wrapper are folded one on to the other, and the two lines are then reactivated by the application of heat to cause them to adhere to each other and thus to form a bonded seam along the wrapper.

Further, according to the present invention there is provided a method wherein the adhesive is a heat sensitive polyvinyl acetate.

How the invention may be carried out will now be described, by way of example only, with reference to the accompanying drawings in which:

FIG. 1 is a side elevational view of a continuous rod making machine incorporating the invention; and

FIG. 2 is a fragmentary perspective view on an enlarged scale of a portion of the wrapper web shown in FIG. 1.

The filter rod making machine comprises essentially a garniture bed 1 over which a garniture tape 2 passes, a folding arrangement 3 being positioned above the garniture bed 1 to fold a wrapper web 4 around a filter material 5.

A tongue assembly, in this case comprising a single tongue 6 of inverted channel cross-section, is positioned upstream of the folding arrangement 3, and a frusto-conical convergent guide 7 is positioned upstream of the tongue 6 to condense the filter material, which in this case is in the form of a web.

The garniture tape 2 passes around rollers 8, 9 and 10, the roller 8 being mounted on a swinging arm so that the portion 2*a* of the garniture tape 2 can be moved a limited amount in a plane substantially normal to the plane of the drawing to centralize the garniture tape on the garniture bed 1.

The wrapper 4 passes around a roller 11 from a spool (not shown) via two adhesive-applying stations 15 and 16 by which two lines 17 and 18 of adhesive are applied along both margins of the wrapper, one on one face and the other on the other face of the wrapper (FIG. 2). The adhesive is heat-sensitive polyvinyl acetate (p.v.a.).

Downstream of the adhesive-applying stations 15 and 16 is a first heater 12 to dry the two lines of adhesive 17 and 18 before the wrapper reaches the guide 7 and tongue 6 so that the adhesive will not be deposited on the guide 7 or the tongue 6 or on the garniture bed 1.

The folding arrangement comprises a first folder 13 which folds over one edge of the wrapper 4 and downstream of the first folder 13 is a second folder 14 which folds down the other edge of the wrapper 4.

A second heater is incorporated in the second folder 14 to re-activate the adhesive carried by the two edges of the wrapper. In folding over the two edges of the wrapper the two lines 17 and 18 of adhesive are brought into contact with one another so that subsequent heating by the second heater will cause these two lines of adhesive to become tacky and to adhere to one another.

It has been found in practice that if a single line of adhesive is used it cannot be dried prior to its entry into the guide 7 and tongue 6, if an effective bond is subsequently to be obtained, with the result that the adhesive tends to get deposited on those parts of the machine mentioned earlier. Furthermore, when the adhesive reaches the second heater it has been found that where a relatively thick wrapper is employed it is difficult to heat the adhesive through the thickness of the wrapper to produce an effective bond. This latter difficulty can result in it being necessary to run the machine at a relatively low speed in order to give the second heater time to be effective on the adhesive; the time the adhesive is subjected to heat being of course inversely proportional to the speed of operation of the machine.

In contrast to this known method where an adhesive-to-wrapper bond is used, the use of the two lines of adhesive enables an adhesive-to-adhesive bond to be used. The latter type of bond is easier to effect and requires less heat in the case of p.v.a. to effect it. Consequently, it is possible in the latter case to dry the adhesive prior to its entry on to the garniture bed.

Although the invention has been described with reference to its application to a filter making machine, it could also be applied to a cigarette making machine and also to a machine for making composite filter rod such as the machine known as the Molins D.A.P.T.C. machine.

Although the invention has been described with reference to the use of p.v.a. as the adhesive, it could be equally applicable to other adhesives such as a hot melt adhesive, the essence of the invention being that an adhesive-to-adhesive bond is employed as against an adhesive-to-wrapper bond.

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

1. Apparatus for producing a continuous rod such as a cigarette rod or a filter rod, comprising a garniture through which a wrapper web carrying a filler is fed, and a folding arrangement for folding the wrapper about the filler, and further including an adhesive applicator means arranged to deposit on the wrapper web two lines of an adhesive which is capable of reactivation by heat, one line being deposited along each marginal portion of the wrapper web, but on opposite faces of the latter, a first heater for drying the two lines of adhesive, and a second heater situated downstream of the folding arrangement for reactivating the two lines of adhesive, whereby the two marginal portions of the wrapper are bonded one to another.

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