Nov. 12, 1940. G. DAVIDSON 2,221,443

MOUTHPIECE CIGARETTE MANUFACTURE

Filed April 28, 1936

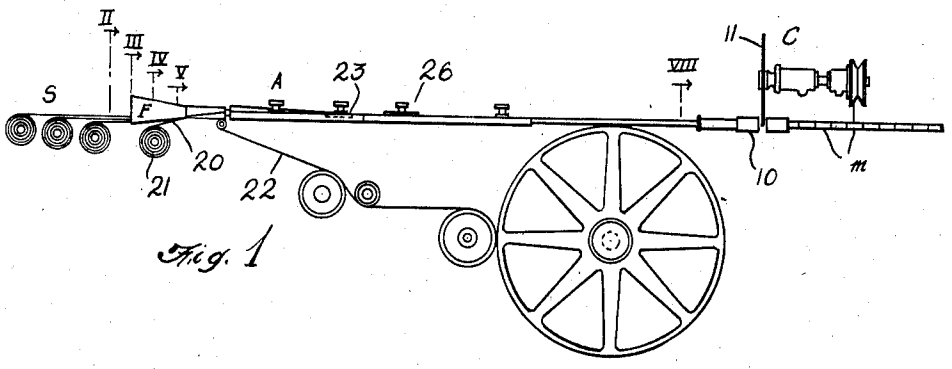


Fig. 1

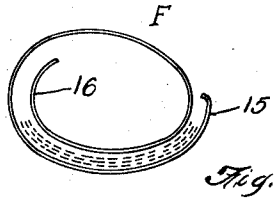


Fig. 3

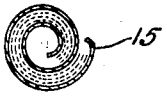


Fig. 4



Fig. 5

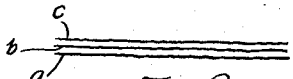


Fig. 2

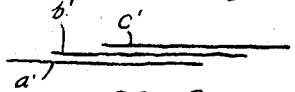


Fig. 6

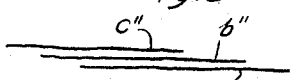


Fig. 7

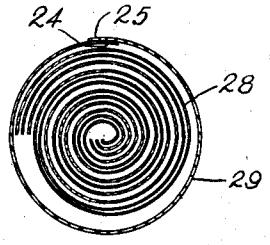


Fig. 8

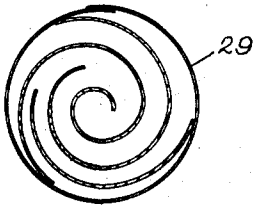


Fig. 9

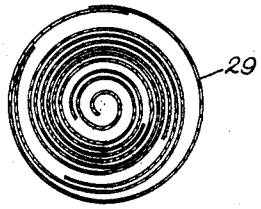


Fig. 10

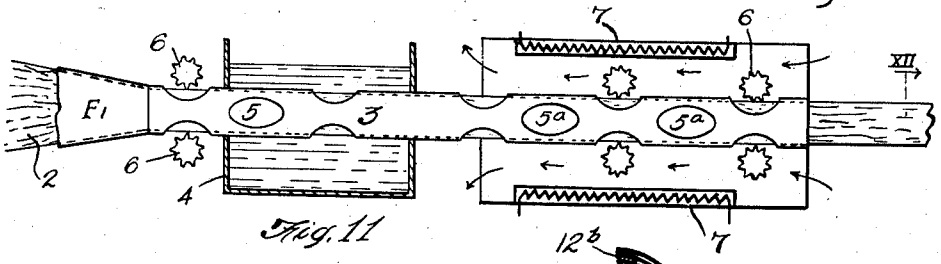


Fig. 11



Fig. 12

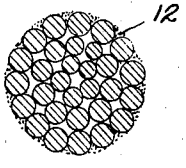


Fig. 14

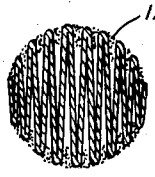


Fig. 15

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MOUTHPIECE CIGARETTE MANUFACTURE

Glenn Davidson, Aurora, Ill.

Application April 28, 1936, Serial No. 76,816

11 Claims. (Cl. 93—1)

This invention relates to mouthpiece cigarettes or cigarettes having a plug or insert of cellulosic material or paper; and it is among the objects of the invention to provide a construction facilitating rapid manufacture in a convenient manner. Other objects and advantages will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is a side elevational view illustrative of the invention; Fig. 2 is an enlarged section taken on a plane substantially indicated by line II, Fig. 1; Figs. 3, 4 and 5 are sections similarly, taken respectively on planes substantially indicated by lines III, IV, and V, Fig. 1; Figs. 6 and 7 are sectional views corresponding to Fig. 2, showing modified arrangements of material; Fig. 8 is an enlarged section taken on a plane substantially indicated by line VIII, Fig. 1; Figs. 9 and 10 are corresponding views showing the same stage with the feed material employed as in Figs. 6 and 7 respectively; Fig. 11 is a fragmentary side elevation like Fig. 1, enlarged and partly in section, showing one detail of securing the material into a rod; Fig. 12 is an enlarged sectional view taken on a plane substantially indicated by line XII, Fig. 11; and Figs. 13 and 14 are similar views with different feeds respectively.

In general, there is shown a supply of cellulosic material, brought into suitable rod form in a forming zone, and then forwarded through a zone in which adhesive is applied to hold the rod form against disorganization, and, after sufficient drying, the continuous rod is passed through a cutting zone where it is cut up into the mouthpiece inserts or plugs.

The cellulosic material feed, whose detail may be as described more particularly hereinafter, is supplied in convenient continuous form **2**, Fig. 11, into the shaping funnel former F_1, being there drawn together or formed into a continuous rod which provides air-draft channels or passageways through its body and permits suitable functioning in draft conditions in the finished cigarette in which it is incorporated. The rod thus proceeding from the former is subjected to a superficial or surface application of adhesive, as for instance by being passed axially through a tubular guide **3** which has an adhesive reservoir **4** in relation, openings **5** in the tubular guide allowing access of the adhesive to the surface of the cellulosic rod sufficiently to superficially anchor the same, without impregnating to substantially any depth, this being readily controlled by the consistency and properties of the adhesive. The rod is forwarded by suitable propelling means, for instance feed-wheels **6**, and emerges from the adhesive-applicating zone to a drying or setting zone, the openings **5***a* in the guide permitting access of air or heat to the extent desired. By providing heaters **7**, such as electric heaters, and directing air countercurrently to the movement of the rod, particularly effective setting may be had. The rod leaving the guide is in condition to feed through the cutting guide **10**, Fig. 1, and be severed by the cutter **11** suitably driven in relation with the feed end, and be severed into the mouthpiece plugs *m*, the cutter being for instance of the character familiar in cigarette machines. With the feed stock as a plurality of cord-like strands as in Fig. 14, the rod eventuates with the superficial binding adhesive **12** forming an anchor means exteriorly, and without appreciable penetration. Similarly, where the feed stock is fed into the former in chordal folds as in Fig. 13, again the adhesive **12***a* provides an external anchorage against losing its form, and without penetration or interference with the longitudinal draft passages. In similar manner also where the material is laid in spiral form as in Fig. 12, the adhesive binder **12***b* is effectively at the periphery, holding the rod-form against loosening, and yet without penetration into the draft-passages. The spiral lay is facilitated by a forming cone having its entry-end as shown more in detail in Fig. 3, and having its sheet metal wall **15** shaped with an inner spiraling turn **16**, whereby the cellulosic material is compelled to follow the channel which converges more closely as in Fig. 4, and then in Fig. 5, to the desired rod form. With the cellulosic feed stock in three superposed webs or strips for instance as in Fig. 2, the webs *a*, *b*, *c*, being fed with their edges in alignment, the spiral takes the form as shown in Fig. 12, that is, the free or exposed edges of all layers are even. By feeding the sheet stock in lapping relation, as illustrated in *a'*, *b'*, *c'*, Fig. 6, and *a''*, *b''*, *c''*, Fig. 7, the free or exposed edges instead of being aligned altogether as in Fig. 12, are correspondingly spaced about the periphery of the rod. With a construction formed as described, and having

adhesive applied to its external surface, anchoring the components against displacement, no further wrapper is necessary in many cases. In fact, a cut plug so formed having the dried adhesive on the exterior offers novel advantages in properties and ability to assemble in novel ways. In cases where a further external wrapper is desired however, this may be applied by the same machine as shown in Fig. 1, by supplying a wrapper web 20 from a roll 21, such that it is drawn along under the formed rod by the belt 22 and into the auxiliary former where a small adhesive applicator 23, as known in cigarette machines, applies sufficient adhesive to the edge of the wrapper just before the outer edge 25 (Fig. 8) is laid in place, further smoothing down being accomplished by elements generally indicated at 26, Fig. 1, so that the finished rod has the body 28 of the spiral-laid layers, and the outer wrapper 29 as seen in Fig. 8. If the feed layers are supplied to the former F in the step-wise position as shown in Figs. 6 and 7, the products correspondingly are as shown in Figs. 9 and 10 respectively.

Whether the cellulosic material be of crinkled or creped paper or other pulped stock or cotton and in sheet or plural cord form, the character of the draft passages can be controlled accurately and provide a draft-resistance when ultimately in use substantially equal to that of a corresponding portion of replaced tobacco. Such a cigarette is, in action, undistinguishable from the old all-tobacco cigarettes while having all the advantages of the insert construction.

This application is a continuation in part, and with respect to common subject-matter, of application Ser. No. 645,548, filed December 3, 1932, which was a continuation in part, and with respect to common subject-matter, of its co-pending application Ser. No. 595,509, filed February 27, 1932, that being a continuation in part, and with respect to common subject-matter, of application Ser. No. 427,511, filed February 11, 1930.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A method of manufacturing cigarette mouthpieces, which comprises forming layers of sheet cellulose, then spiralling such layers into a continuous rod, and then adhering the closing edge of the sheet material, and severing into uniform pieces.

2. A method of manufacturing cigarette mouthpieces, which comprises forming layers of sheet cellulose, then spiralling such layers of web-like sheet cellulose into a continuous rod, and then adhering the exposed edges of the sheet cellulose, and severing into uniform pieces.

3. A method of manufacturing cigarette mouthpieces, which comprises forming layers of web-like sheet cellulose with their edges stepwise, then spiralling such layers into a continuous rod and then adhering the closing edges thereof.

4. A method of manufacturing cigarette mouthpieces, which comprises forming layers of sheet cellulose, then spiralling such web-like sheet cellulose into a continuous rod, applying a covering envelope, and severing into uniform pieces.

5. A cigarette mouthpiece apparatus comprising a former for shaping cellulosic stock into a continuous rod of uniform cross section, means for applying adhesive to the exterior of such rod, means for setting the adhesive, and a cutter for cutting the rod into uniform lengths.

6. A cigarette mouthpiece apparatus comprising a former for shaping cellulosic stock into a continuous rod, means for supplying a plurality of layers of stock into such former, means for feeding a continuous wrapper to the rod after it comes from the former, means for closing the wrapper, and a cutter for severing the rod into sections.

7. A method of manufacturing cigarette mouthpieces which comprises combining cellulosic stock into a continuous rod with spaces between portions of said cellulosic stock at the center of said rod and also at the periphery of said rod, then applying adhesive along the outer surface of said rod whereby such peripheral spaces are filled with adhesive and severing into uniform pieces.

8. A method of manufacturing cigarette mouthpieces which comprises combining cellulosic stock into a rod of circular cross section with a multiplicity of spaces around the periphery of said rod, then applying adhesive along the outer surface of said rod whereby such peripheral spaces are filled with adhesive and severing into uniform pieces.

9. A cigarette mouthpiece apparatus comprising a former for shaping cellulosic stock into a continuous rod with spaces between portions of said cellulosic stock at the center of said rod and also at the periphery of said rod and means for filling such peripheral spaces with adhesive.

10. A cigarette mouthpiece apparatus comprising a former for shaping cellulosic stock into a continuous rod with spaces between portions of said cellulosic stock at the center of said rod and also at the periphery of said rod, said former having a wall inturned as a spiral and convergently directed, said apparatus including means for feeding superposed layers of said stock to said former.

11. A cigarette mouthpiece apparatus comprising a former for shaping cellulosic stock into a continuous rod with spaces between portions of said cellulosic stock at the center of said rod and also at the periphery of said rod, said former having a wall inturned as a spiral and convergently directed, and means for joining such peripheral spaced portions with adhesive, said apparatus including means for feeding superposed layers of said stock to said former.

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