

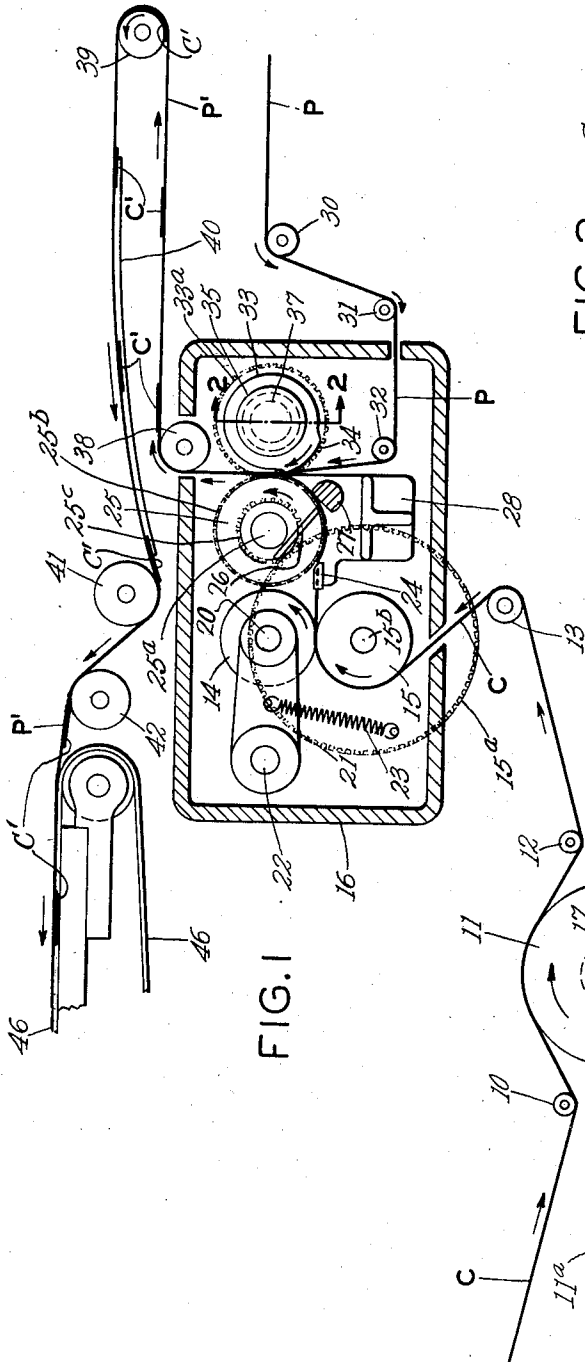
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CIGARETTE TIPPING

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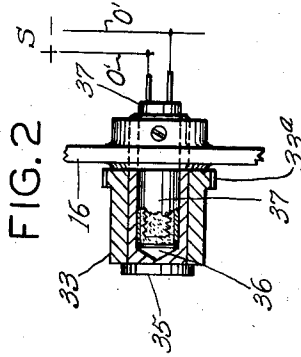


FIG. 2

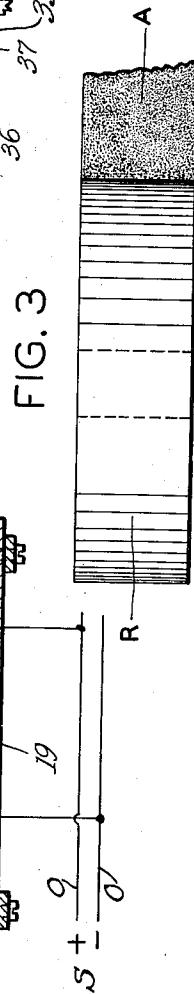


FIG. 3

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CIGARETTE TIPPING

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Application April 6, 1937, Serial No. 135,305

1 Claim. (Cl. 154—36)

This invention relates to cigarette manufacture and more particularly to improvements in a method of and a machine for producing cigarettes with cork, gold, ivory or other kinds of tips, and has special reference to the continuous rod production of cigarettes.

Heretofore in the manufacture of tipped cigarettes, it has been customary to apply adhesive either to the material to be cut into tip lengths or to cut the tip lengths to a size adapted to tip two cigarettes, coat one face with adhesive, and then apply them to the web, or to apply the adhesive to the cigarette web at the proper points depending on the lengths of the cigarettes to be formed, and then attach the cut tip lengths thereto.

In each of these mentioned practices it has been necessary for the adhesive to dry after the tips have been applied to the web. When cork tip material is applied according to the above noted method, there is usually a great possibility of the cork of this material curling because it is fabricated by adhesively securing a very thin layer of cork to a backing sheet. The cork expands when coated with ordinary adhesive, then dries unevenly with respect to its backing sheet and tends to curl. Also, since the cigarette web is moving at a high rate of speed, the now commonly used casein and paste adhesives do not have time to dry completely before the tipped cigarette web is fed into the machine and associated with the tobacco to form the cigarette rod. From this it can be seen that there is always the danger of adhesive exuding from under the tips on the web, which will build up in the machine, and from time to time cause stoppage for cleaning. So also, when the adhesive has a short length of time to dry, as is usually the case, there is an ever present possibility that the tips on the web will be displaced from their proper position and get askew during the feeding of the tipped web into the machine. It has also been found that in some instances when the paste holding the tips on the cigarette web is not dry that corners of the tips on the embryo cigarettes are bent back by the folding mechanism and the cigarettes thus formed are unsalable.

According to the present invention, tips are applied to a continuously moving cigarette web in a manner which overcomes any and all of the above and other disadvantages commonly experienced in cigarette tipping. The tipping material is coated with a thermoplastic adhesive maintained in a fluid state by heating so that it can be applied as a thin coating to one surface of a

web of tipping material, or with an adhesive of a thermoplastic nature which is fluid at the time it is coated on the tip material web but which becomes non-tacky very quickly after its application to the material so that when tips are affixed to the web by heat sealing a complete joiner is effected almost immediately and the operation of the cigarette machine at all times at highest efficiency is assured.

One type of thermoplastic adhesive found to be satisfactory for the purpose of this invention consists of a mixture of carnauba wax and dammar gum, although any other suitable thermoplastic adhesives may be used. Experimentation has shown that a mixture of about 65% carnauba wax and 35% dammar gum, having a melting point of approximately 180° F. gives excellent results. The proportions of course may be varied.

These adhesives which are kept in a molten condition for application to the tipping material web are found to have a cementing strength far beyond that of the pastes and glues now employed for this purpose; they are not soluble in water, and therefore there is little danger of tips affixed to the cigarette paper web by this type of material loosening if subjected to moisture.

It is also apparent that adhesives consisting of solutions of thermoplastic materials in solvents may also be used in carrying out this novel method. These adhesives may be of the type comprising gums and/or resins in pyroxylin. In use this type of adhesive is applied to the surface of the tipping material in a well known manner and the volatile solvents evaporate leaving a flexible coating of thermoplastic adhesive thereon.

It is desirable, however, that the adhesive used be substantially odorless, and colorless and transparent. It is also advisable that an adhesive having a higher melting point be used in climates where the temperature is apt to be relatively high, and especially where the tipping material is coated prior to use, and shipped in rolls to the place where it is to be used, in order to prevent sticking and tearing of the tip material webs as they are fed into the cigarette machines.

The tip material can either be coated in advance of its use in cigarette machines in which case rolls of cork or other well known tipping substances are unwound, coated with the adhesives, rewound and stored for shipment and for future use, or the tip material can be fed directly into the machine after coating. In either case lengths, usually of a size requisite for two cig-

arettes, are cut from the coated tip web, fed into juxtaposition with the traveling cigarette web, and a heat sealing member presses the two together and thereby energizes the adhesive to a tacky state so that the tip length and moving web are effectively joined together.

Among the many advantages accruing from this invention are: a reduction in the mechanism of the present tipping mechanism by about fifty percent since it eliminates the adhesive applying mechanism devices for registering the coated cigarette paper web with cut lengths and synchronizing means therefor. Also as the adhesive hardens almost instantly, there can be no deposit or transfer of adhesive or gum to the tip length, cutting knife, folding device, sealer or any other part of the machine. Furthermore, since the tip lengths are affixed substantially immediately, the speed of the tipper is limited only by the velocity of the cigarette forming mechanism itself. Also, since the adhesive is placed over the entire surface of the back of the tipping material, there will be no difficulty in sealing right out to the edge of the paper, and since the adhesive at the time tip lengths are applied to the cigarette web contains no water or other solvent, there will be no curling of the cork or other tip material on the cigarette paper web. The method is adaptable to the application of any type of tip material, since the adhesives are exceedingly strong and will hold either cork, gold, ivory or straw and it will be impossible for tips of these materials to spring or peel off the paper by reason of their stiffness.

It is therefore an object of this invention to provide a novel method of attaching tipping material to cigarette paper webs.

It is an added object to provide a novel method of tipping traveling webs of cigarette paper by applying the tip lengths thereto by heat and pressure.

The method also consists in the application of a substantially colorless, odorless and tasteless thermoplastic adhesive to a continuous web of cigarette tipping material, cutting lengths therefrom and applying the lengths to a traveling web of cigarette paper.

The method also consists in applying tipping material to a web of cigarette paper by energizing a waterproof adhesive which is applied to tip lengths and is substantially instantaneously hardening so that tips are more rapidly applied, more firmly anchored to the web and will not be affected by moisture.

The invention also contemplates the provision of mechanism for activating a thermoplastic and waterproof adhesive coating on a supply of tipping material, applying the tips cut from said supply and so treated to a traveling cigarette paper web as said adhesive is energized.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described, and then specifically set forth in the claim hereunto appended.

In the accompanying drawing which forms a part of this specification, and in which like characters of reference indicate the same or like parts:

Fig. 1 is a side view of a portion of a cigarette making machine, showing the tipping mechanism and the adhesive applying device;

Fig. 2 is a sectional detail view, taken on line 2-2 of Fig. 1, of the sealing roller; and

Fig. 3 is a view showing a roll of tipping mate-

rial having one face coated with a hardened thermoplastic adhesive.

Referring to the drawing, the tipping material C in the form of a continuous web is drawn from a supply reel, not shown, guided under a roller 10, over an adhesive applying wheel 11, then under a roller 12, around a roller 13 and between the feeding rollers 14 and 15 enclosed in a casing 16 fixed to the cigarette machine in a manner similar to that shown in copending application S. N. 98,280, filed August 28, 1936, by Charles Arelt, for Cigarette paper feed.

Roller 11 is mounted on shaft 17 and in revolving, picks up adhesive stored in the receptacle 18 and applies it to the tipping material C as it is fed across its moving surface. A suitable heater means, indicated at 19, is attached to the base of receptacle 18, being connected to the current source S by conductors 20, and provides means for melting and maintaining the adhesive at the desired temperature and in a fluid condition. A scraper 11a is provided to remove surplus adhesive from wheel 11 before it is applied to the tipping material. Rollers 10 and 12 are so positioned as to guide and maintain a pressure on the tipping material web when passing over wheel 11 and in this manner assure that a coating of adhesive will be properly applied to the continuous web C.

The feed roller 14, mounted on a stud 20, is carried by an arm 21 pivotally supported on stud 22 fixed to casing 16. A spring 23 connected at one end to the arm and at the other to the casing provides means for normally holding roller 14 in contact with the driven feed roller 15. The tipping material advanced by the feeding members, enters a guideway 24 formed in bracket 28 leading to a revolving drum 25 which mounts a knife 26 adapted to cut a length of tip from the continuous tipping web when it engages a ledger 27 adjustably mounted in bracket 28, as more fully shown and described in copending application S. N. 14,994, filed by James W. Leary, April 6, 1935.

The paper strip P is unwound from a supply reel by feed rollers similar to those disclosed in the above noted copending Arelt patent application. The paper P issuing from these feed rollers is then guided about rollers 30, 31 and 32 and upwardly between drum 25 and a coating heated tip length applying roller 33. Member 33 is provided with a raised portion 34 adapted to clamp the paper P and the advancing tip length against drum 25, included in an electrical circuit 0'0' with the current source S, which causes the coating on the tip length to be activated so that it adheres to the moving web lengthwise thereof, and, as is customary in present practice provides tips for two cigarettes. Succeeding lengths of tip material are similarly affixed along the web at spaced intervals corresponding to the length of two cigarettes. The heat sealing roller 33, Fig. 2, is mounted on a stud 35, fixed in a hub in casing 16, said stud being counterbored at 36 to receive a cartridge heating element 37, and is provided with a driving gear which may be either formed integral therewith, as shown in Fig. 2, or affixed thereto. A shaft 25a which carries rollers 25 is driven by conventional means from the cigarette machine (not shown), and is provided with gears 25b and 25c, the former meshing with gear 33a, and the latter meshing with a gear 15a fixed on the shaft 15b of lower feed roller 15.

The cigarette wrapping web P' thus prepared with the spaced tip pieces, which are substantially

instantly secured thereto by heat sealing, is then led around guide rollers 38 and 39, passed over a guide plate 40, forwarded between guide rollers 41 and 42 and thereby directed in completely finished condition to the continuously running folding tape 46 of the cigarette machine which is suitably driven from the main drive of said machine.

As hereinbefore described, and as shown in Fig. 3, the rolls of tipping material R may be prepared in advance by application of suitable thermoplastic adhesives A which are allowed to harden before rewinding. These rolls can then be shipped to any point for use with mechanism of the type as described above and tip lengths cut therefrom can be readily affixed to the cigarette paper webs.

The various means referred to may be varied in construction within the scope of the claim, for the particular device selected to illustrate the invention is but one of the many possible concrete embodiments of the same. The invention is not, therefore, to be restricted to the precise details of the structure shown and described.

What is claimed is:

In a continuous rod cigarette machine, a tipping mechanism comprising means for continuously feeding a continuous web of cigarette paper, means for continuously feeding a continuous web of tipping material, means for cutting tip length sections from said tipping material web while advancing the cut tip length sections to a heat sealing zone, said sections having a heat-responsive thermoplastic component, heat-sealing means acting to energize the adhesive on said sections, and means for feeding said heat-responsive tip sections into juxtaposition with said paper web while firmly held by said section feeding means, the latter including a pressing device constructed and arranged to engage said assembled web and sections, and to press said web and sections together to effect a substantially permanent joinder thereof, said means for feeding the paper web being coordinated with said section-applying mechanism to present the paper web for application of the tip sections thereto at suitable cigarette length intervals and to deliver the tipped web continuously.

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