March 1, 1955 D. W. MOLINS ET AL 2,703,089

METHOD OF AND APPARATUS FOR MAKING MOUTHPIECE CIGARETTES

Filed May 22, 1950 2 Sheets-Sheet 1

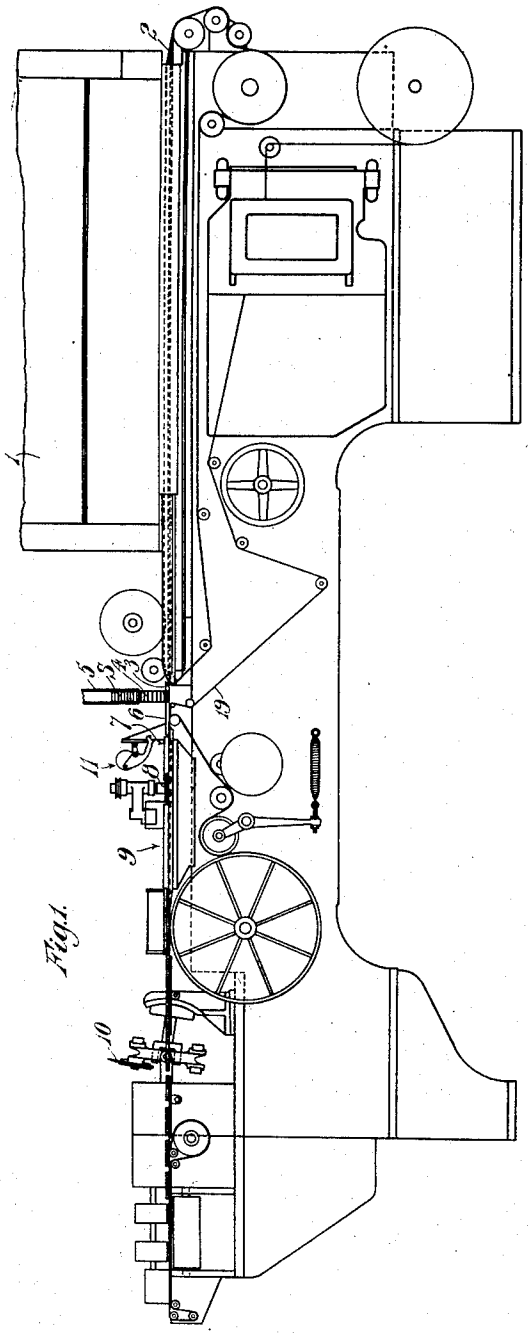


Fig. 1.

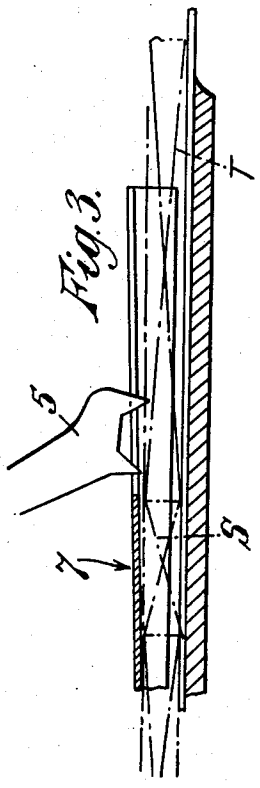


Fig. 3.

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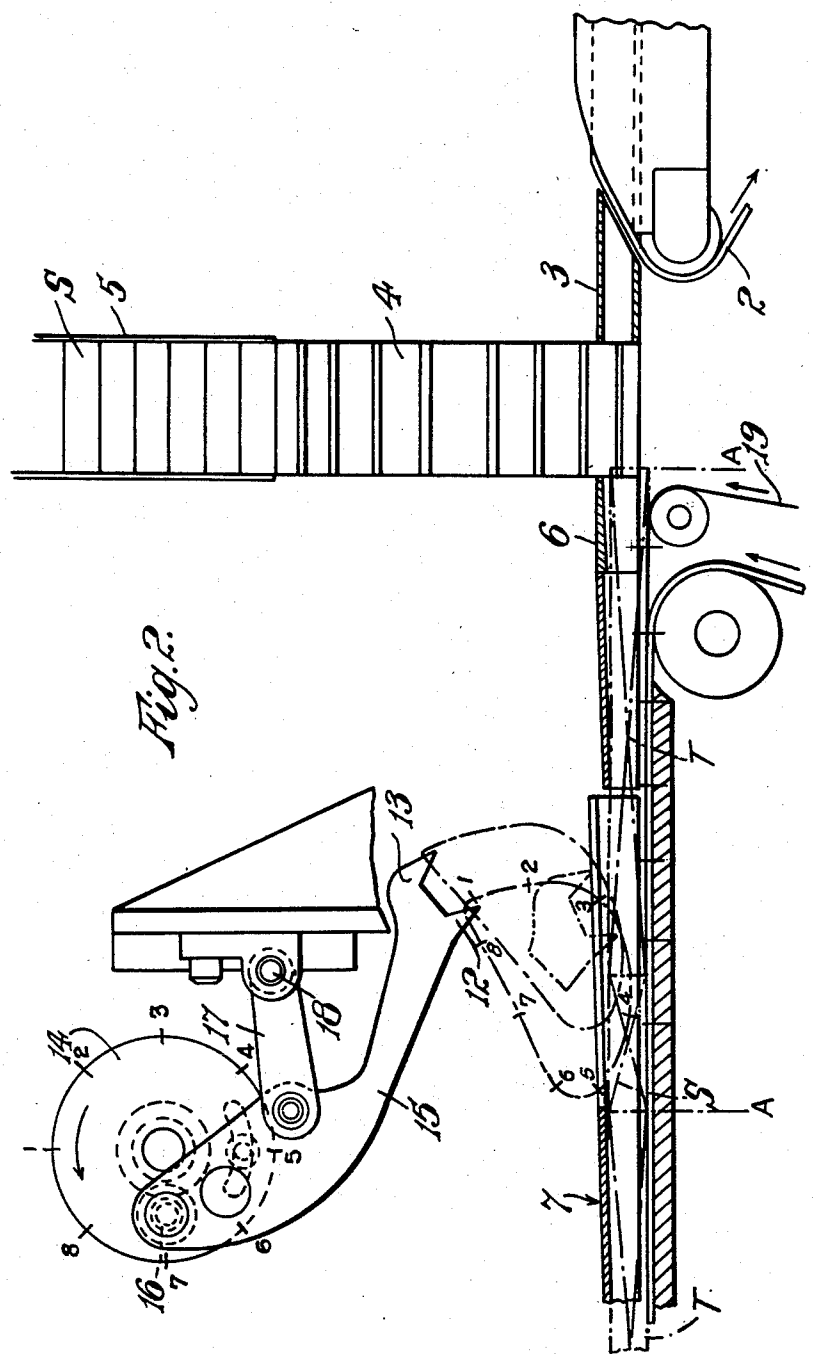


Fig. 2.

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METHOD OF AND APPARATUS FOR MAKING MOUTHPIECE CIGARETTES

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Claims priority, application Great Britain June 2, 1949

6 Claims. (Cl. 131—61)

This invention concerns improvements in or relating to a method and apparatus for making mouthpiece cigarettes.

Such cigarettes may be made in two ways, one in which lengths of wrapped cigarette rod section are united to mouthpiece portions and another method in which unwrapped tobacco is fed at intervals with mouthpiece portions interrupting the continuity of a stream of such unwrapped tobacco so as to form a continuous composite filler which is enclosed in an endless wrapper to form a continuous composite rod, which is then separated at suitable intervals to produce mouthpiece cigarettes.

The present invention is concerned with making cigarettes of the latter type, namely the type which is made by enclosing unwrapped tobacco together with mouthpiece portions in an endless wrapper. Such cigarettes will for convenience be referred to herein as "cigarettes of the type described" and mouthpiece portions will be referred to as "stubs."

One difficulty in manufacturing cigarettes of the type described lies in obtaining a cigarette with a good joint between the tobacco section of the cigarette and the stub, while at the same time ensuring a consistent filling for the tobacco section itself. Another difficulty is in ensuring that the stubs in the composite filler rod are in the correct longitudinal position so as to ensure that the stubs in the finished cigarettes are all of a reasonably consistent length, since in normal practice, the composite filler rod has stubs and tobacco sections of double length, and the composite rod is cut through the middle of each stub and through the middle of each tobacco section.

In one way of manufacturing mouthpiece cigarettes of the type described, a tobacco filler is fed endwise to mechanism which operates at intervals to cut off the leading portion of the filler, the portion so cut off being then fed forwardly. Stubs are placed between successive cut lengths of filler and a composite cigarette rod is formed. The cutting operation may involve a temporary hold-up of the uncut filler, whose leading end may therefore become somewhat compressed endwise due to the pressure of the oncoming filler. Consequently when the next portion is cut off, the separated length of tobacco so produced may be more compressed and compact at its leading end than elsewhere.

According to the present invention there is provided a method of manufacturing mouthpiece cigarettes of the type described comprising forming a continuous composite filler by feeding lengths of unwrapped tobacco and stubs endwise in desired sequence and positively engaging and accelerating tobacco in the leading end part of a length of tobacco so fed.

Further according to the present invention, there is provided a method of manufacturing mouthpiece cigarettes of the type described, in which lengths of unwrapped tobacco are separated at intervals from an endwise moving tobacco filler, comprising the step of positively engaging and accelerating the leading end part of a length of tobacco so as to tend to draw out lengthwise tobacco in the said length.

Further according to the present invention there is provided in apparatus for manufacturing mouthpiece cigarettes of the type described, means to feed lengths of tobacco and stubs lengthwise in desired sequence so as to form a continuous composite filler, and means moving faster than the leading end part of each length of tobacco so fed to engage and accelerate such end part.

Further according to the present invention there is provided apparatus for manufacturing mouthpiece cigarettes of the type described, having means to form a continuous composite filler and means to enclose the said composite filler in an endless wrapper to form a composite rod, said apparatus comprising means to feed stubs and unwrapped tobacco endwise so as to build up on the end of the composite filler, and means to engage the leading end of a length of tobacco to cause it to be drawn out.

The said means to engage the tobacco may comprise a pair of fingers arranged one behind the other to move into and out of a path of stubs and lengths of tobacco to engage and disengage respectively the leading end part of each length of tobacco. The said fingers are so arranged and timed to operate that the leading finger is behind but in close proximity to the leading end of each length of tobacco when engaging the tobacco.

Further according to the present invention, there is provided a method of manufacturing mouthpiece cigarettes of the type described, in which lengths of unwrapped tobacco are separated at intervals from an endwise moving tobacco filler by a separating or trimming operation which causes the leading end of the oncoming filler to be temporarily arrested and thereby compressed or compacted endwise, comprising the steps of positively engaging and accelerating the leading end of each separated length so as to tend to draw out the compressed tobacco in said leading end.

Apparatus for manufacturing mouthpiece cigarettes of the type described, in accordance with the present invention, will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is a front elevation of a cigarette making machine embodying devices for making mouthpiece cigarettes of the type described.

Figure 2 is an enlarged view of part of Figure 1.

Figure 3 shows a fragment of Figure 2 with the parts in a different position.

Referring to Figure 1, the machine shown is in general a continuous rod machine of the known kind, but provided with known devices for effecting division of the tobacco filler and insertion of the stubs. For an example of such machine, reference is made to the patent to Molins, 2,606,560, of August 12, 1952. Tobacco is showered from a hopper **1** on to an endless moving band **2** which conveys the tobacco endwise as a stream or filler. The filler is passed through a guide tube **3** and into and through a flute of an intermittently rotating fluted drum **4**. The drum may be supplied with stubs by any suitable known stub feed but for simplicity this is shown simply as a vertical chute **5** containing stubs S. The filler emerging from the flute of the drum thus ejects a stub from the flute, so that the stub and tobacco filler move end to end. The drum is then rotated a step and thereby cuts off the length of tobacco filler which has been fed through it. The section of filler remaining in the flute is carried sideways out of line with the rest of the filler by this rotation of the drum, which at the same time brings a further flute containing a further stub into line with the oncoming tobacco filler, which in turn pushes this further stub out of the flute.

As a length of tobacco forming the leading part of the tobacco filler passes through the drum flute it enters a further guide tube **6** which leads it on to a moving paper web **19** which moves at a slower speed than that of the conveyor **2** on which the filler is formed. Thus a continuous composite filler is formed on the paper web, consisting of alternate lengths of tobacco filler T and stubs S. The composite filler is carried endwise by the paper web beneath the usual tongue at **7** and through the usual gumming and folding devices **8** and **9** respectively, of a continuous rod cigarette-making machine and is thus formed into a continuous composite rod, which is divided into mouthpiece cigarettes by a cutter **10** which cuts the rod through the middle of each stub and tobacco length. Near the tongue is a device marked **11** which will now be described with reference to Figure 2.

It is found in practice that when cigarettes are made in the manner just described, and the filler portions

and stubs in the composite rod so formed are each cut midway along their lengths to produce individual mouthpiece cigarettes, there is a tendency for the portion which comprises the leading end of a length of tobacco in the rod to be heavier than the portion which comprises the rear end of such a length. It is thought that this may be due to the tobacco in the leading part of a length being more compressed, and thus denser, than the rearward part, for reasons such as those suggested at the beginning of the specification.

Referring now to Figure 2 a pair of fingers **12** and **13**, arranged one behind the other, are suitably mounted above the paper web **19** and arranged to move downwardly into the path of the tobacco and stubs and in the direction of their travel, followed by a return movement out of the said path. In one construction which is found to give good results, the fingers are spaced 16 mm. apart. The fingers are arranged to move in the desired path by any suitable and convenient mechanism such as that illustrated. This comprises a rotating disc **14** which turns at one revolution for each section of tobacco filler passing. An arm **15** is pivoted to the disc at **16** and its free end comprises the aforesaid fingers. A link **17** is pivoted to the arm and also to a fixed pivot **18** and thus the arm is constrained to move so that the fingers follow the paths shown by chain lines. Figure 3 shows the fingers emerging from the tobacco at the end of the movement.

The arm **15** is so timed in relation to the other parts of the apparatus, that the leading finger **12** enters the path of the tobacco a distance of about 5 mm. behind a stub, and thereafter moves faster than the paper web.

This is indicated in Figure 2, in which the circumference of the disc **14** is shown divided into eight equal parts, the dividing lines being numbered **1**, **2**, **3**, etc., and the distance A—A occupied by a tobacco portion T and a stub S is also divided into eight equal parts. Since the disc **14** turns through one revolution for each tobacco section passing, as stated above, it will be seen that the paper web **19** carrying the tobacco portions and stubs travels a distance such as A—A for each revolution of the disc **14**, and hence during one-eighth of a revolution of the disc **14**, the paper web travels a distance represented in Figure 2 as one of the eight equal parts into which the distance A—A is divided.

As stated above, the paths in which the fingers **12** and **13** move are shown in Figure 2 by chain lines. The chain line representing the path of finger **12** has been marked **1**, **2**, **3**, etc., representing the positions occupied by the finger for corresponding positions **1**, **2**, **3**, etc. of the disc **14**. It will be seen that the distance moved by the finger from point **3** to point **5** on the chain line (which distance includes the distance through which the finger travels while in the path of the tobacco and stubs), is considerably greater than the distance moved by the paper web, and the tobacco portions and stubs carried thereby, during the same time interval, namely, a distance equal to one-quarter of the distance A—A.

Thus the leading end part of each length of tobacco is positively engaged and accelerated by the fingers, and it is thought that this has the effect of drawing out the tobacco lengthwise. Thus if the leading end part of the length of tobacco is more dense and more compressed than the remainder, due to the tobacco having been held up during cutting or for any reason, the action of the fingers in accelerating the leading end part may, it is thought, tend to make the tobacco in that part looser and less dense, and more uniform with the rest of the length of tobacco. The rest of the tobacco in each length (that is, the tobacco behind the positively engaged leading end) will, before reaching the narrow portion of the tongue **7**, have enough space and freedom of movement to enable inequalities in the tobacco to be reduced in the region of the second finger. In any case it is found in practice that by means of the invention it is possible to reduce the tendency mentioned above towards inequalities in the weights of cigarettes comprising different parts of the lengths of tobacco.

A further advantage is that the tobacco so accelerated tends to be brought into closer abutment with the immediately preceding stub, thus reducing the tendency for

gaps to be formed between stubs and tobacco portions in the finished mouthpiece cigarettes.

There is sometimes a tendency for the stubs to become mis-placed lengthwise on the conveyor and even if the stubs themselves are correctly placed, the leading end of the cut-off length of tobacco immediately following a stub may lag behind the stub and fail to close up completely against the rear end of the stub.

It will be seen that the drawing out of the leading end of a tobacco length and the consequent engagement of the stub preceding said length will tend to locate the stub in its proper position on the conveyor. Further the closer packing of tobacco against the stub so as to secure a good joint has the advantage that when a cigarette is smoked there is less tendency for the burning tobacco near the stub to fall out when the cigarette has been consumed.

What we claim as our invention and desire to secure by Letters Patent is:

1. In the manufacture of mouthpiece cigarettes, a method of forming a composite filler consisting of stubs and separate lengths of unwrapped tobacco arranged endwise in desired sequence, which method comprises forming a continuous rod of unwrapped tobacco and feeding it endwise, cutting said rod to form a gap therein, inserting a stub into said gap, positively engaging tobacco in only the region immediately following said gap, and accelerating tobacco so engaged so as to draw out such tobacco lengthwise.

2. In the manufacture of mouthpiece cigarettes, a method of forming a composite filler consisting of stubs and separate lengths of unwrapped tobacco arranged endwise in desired sequence, which method comprises elongating a length of tobacco by engaging it at its leading end only and accelerating tobacco so engaged so as to draw out such tobacco lengthwise.

3. In apparatus for manufacturing mouthpiece cigarettes, means to feed stubs and lengths of tobacco endwise in desired sequence to form a compositte filler, and means to engage tobacco at the region of the leading end only of each said length of tobacco, and mechanism for moving said last named means, while so engaging said tobacco, in the direction of feed and at a speed faster than the remainder of the composite filler.

4. In apparatus for manufacturing mouthpiece cigarettes, means to form a continuous tobacco rod, means to feed said rod endwise, a cutting device arranged to cut the said rod, means to form a gap in the said rod at the region where it is cut, means to insert a stub into said gap, means to engage tobacco in only the region immediately behind said gap, and mechanism for moving said last named means, while so engaging said tobacco, in the direction of feed of said rod and at a higher speed to accelerate tobacco so engaged so as to draw out such tobacco lengthwise.

5. Apparatus as claimed in claim 3, wherein the means to engage tobacco comprises a pair of fingers arranged one behind the other, and means to move said fingers into and out of the path of the composite filler to engage and disengage tobacco, and to move the said fingers forwardly, while engaging tobacco, faster than the remainder of the composite filler.

6. Apparatus as claimed in claim 4, wherein the means to engage tobacco comprises a pair of fingers arranged one behind the other, and means to move said fingers into and out of the path of tobacco to engage and disengage tobacco, the said fingers being arranged to move forwardly, while engaging tobacco, faster than tobacco not so engaged.

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