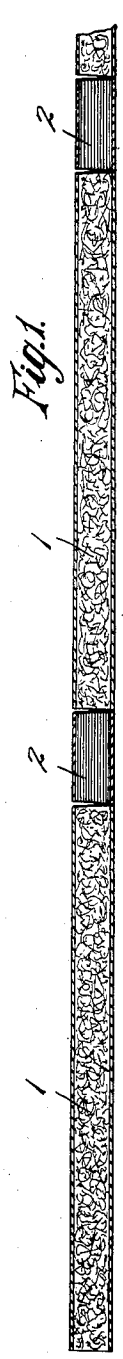
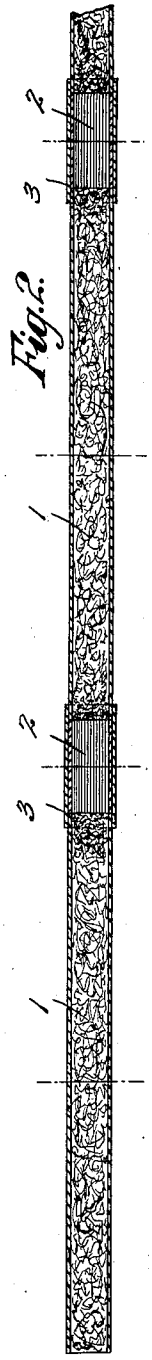
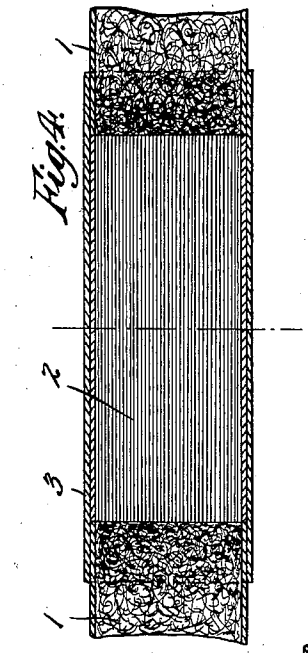
March 28, 1939. W. E. MOLINS 2,152,416

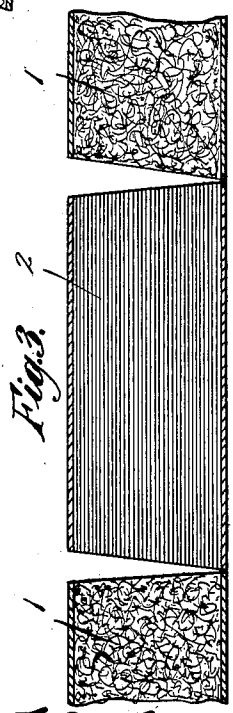
MANUFACTURE OF CIGARETTES

Filed Dec. 5, 1935 2 Sheets-Sheet 1









W. E. Molins, Deceased,
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March 28, 1939. W. E. MOLINS 2,152,416

MANUFACTURE OF CIGARETTES

Filed Dec. 5, 1935 2 Sheets-Sheet 2

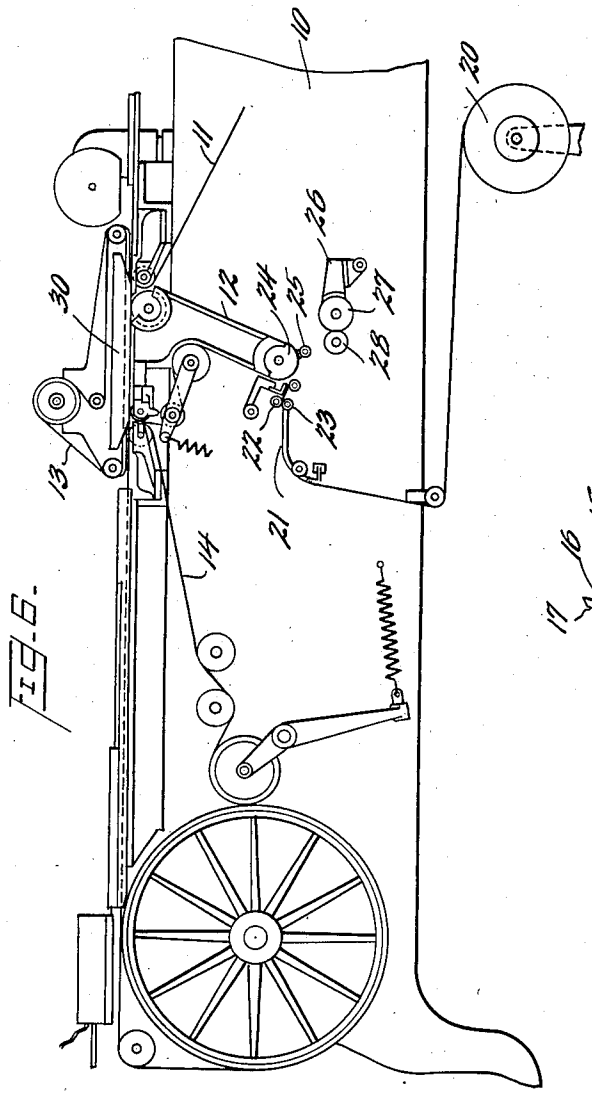

Fig. 6.

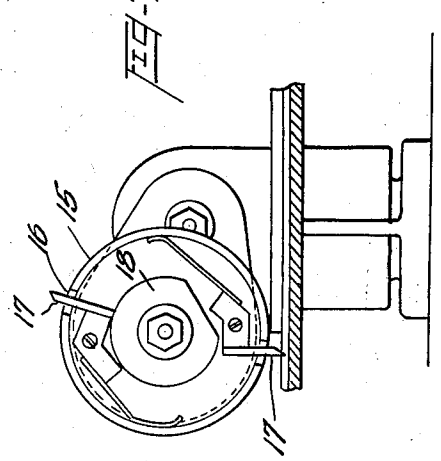

Fig. 7.

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UNITED STATES PATENT OFFICE

2,152,416

MANUFACTURE OF CIGARETTES

Walter Everett Molins, deceased, late of Deptford, London, England, by Harold Bernardo Molins, Deptford, London, England, and Moses Hyman Isaacs, London, England, executors, assignors to Molins Machine Company, Limited, Deptford, London, England

Application December 5, 1935, Serial No. 53,104
In Great Britain December 20, 1934

8 Claims. (Cl. 131—52)

This invention is for improvements in or relating to the manufacture of cigarettes of the type in which a stub portion and a cigarette portion are secured together and abut endwise. Such cigarettes will be referred to in the appended claims as "mouthpiece cigarettes".

The term "stub" shall include mouthpieces in the form of tubes of paper or other material which may be empty, or filled entirely or partly with filtering or flavouring material or tobacco. It will be appreciated that where the tubes are not filled they should have sufficient rigidity to enable them to remain open when the cigarettes are being smoked.

The term "stub" shall also be deemed to include a composite mouthpiece constituted in part by a length of wrapped cigarette rod, and in part by a length of filter or flavouring material wrapped in a tubular wrapper or by a tubular piece which is either hollow or partly filled with filter or flavouring material. The term "stub" shall also be deemed to include a mouthpiece comprising a length of tobacco filler in a wrapper, which tobacco is of a different kind of tobacco from that forming the main body of the cigarette.

According to the present invention there is provided a method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, the effective aggregate length of the stub portions and cigarette portions being greater than the required length of the finished product, pressing the cigarettes and stub portions together in a lengthwise direction to reduce their effective overall length to the desired length, and securing the cigarette and stub portions together by wrapping material.

According to another form of the invention there is provided a method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, the effective aggregate length of the stub portions and cigarette portions being greater than the required length of the finished product, pressing the cigarette and stub portions together in a lengthwise direction to reduce their effective overall length to the desired length, and securing the cigarette and stub portions together by wrapping material while the cigarette and stub portions are moving lengthwise.

According to a further form of the invention there is provided a method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, said cigarette portions having a length which is greater than the length required in the finished product, pressing the cigarette and stub portions together in a lengthwise direction to reduce their overall length to the desired length, and securing the cigarette and stub portions together by wrapping material.

According to a further form of the invention there is provided a method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, said cigarette portions having a length which is greater than the length required in the finished product, moving the cigarette and stub portions lengthwise, and pressing them together in a lengthwise direction to reduce their overall length to the desired length, and securing the cigarette and stub portions together by wrapping material while the cigarette and stub portions are moving lengthwise.

The invention will now be more particularly described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows in section double length cigarette portions and double length stub portions aligned and before endwise pressure has been exerted on the cigarette and stub portions.

Figure 2 shows in section the parts in their relative positions after endwise pressure has been exerted, and after wrapping material has been applied to secure the parts together.

Figure 3 is an enlarged view showing a part of Figure 1.

Figure 4 is an enlarged view showing a part of Figure 2.

Figure 5 is a section of a completed cigarette.

Figure 6 is an elevation of a machine for manufacturing cigarettes according to the method of the present invention; and

Figure 7 is an elevation of a device for applying axial pressure to the cigarette and stub portions in accordance with the method of the present invention.

Like references refer to like parts throughout the specification and drawings.

In the case where a mouthpiece cigarette is to have the desired overall length of 70 m/m., the effective overall length of the stub portion and cigarette portion is originally arranged to be 71 m/m. before the stub portion and cigarette portion are pressed into endwise engagement. After the endwise pressure has been exerted, the desired effective overall length becomes 70 m/m. In the drawings, cigarette portions 1 and stub portions 2, each of which are of double the length required in the finished cigarette, are spaced in alignment. The cigarette portions are made on the well-known continuous rod type machines,

and it is sometimes found that the cigarette portions formed on such machines do not have end faces which are absolutely at right angles to the longitudinal axes of the cigarettes. The inclination of the end faces is, it will be understood, small, but it is frequently found that when the cigarette lengths are to be united with stub portions, the end portions do not abut perfectly over the whole of the abutting faces, but that there are minute gaps between some portions of the abutting faces. Although such cigarettes are satisfactory, the present invention provides a method by means of which the cigarettes are improved. The improvement is greater when cigarette lengths and tobacco stubs are being united than when cigarette lengths and stubs which are not formed wholly from tobacco are united.

It will be appreciated that the inclination of the end faces shown in Figure 1 and in the enlarged Figure 3, is exaggerated in order more clearly to show the effect which is obtained. If now sufficient endwise pressure is applied to the stub and cigarette portions to ensure that they are in proper contact with each other, the length of the finished mouthpiece cigarettes is less than the desired length. To give an example, according to this invention, the double length cigarettes are, when a 70 m/m. mouthpiece cigarette is required, made having a length of 120 m/m., and are united with double length stub portions whose length is 22 m/m. It will be seen therefore that the overall length of a double length cigarette portion and double length stub portion is 142 m/m., and when the cigarette portions and stub portions have been pressed together, their overall length is 140 m/m. When, therefore, the double length cigarette portion and the double length stub portion respectively is severed midway of its length, there is produced a mouthpiece cigarette whose overall length is 70 m/m.

As shown in the drawings, the stub portions and cigarette portions are united together by wrapping material **3**, which is composed of short lengths of material such for example as cork tip material. The wrapping material is applied to the stub and cigarette portions while the stub and cigarette portions are being moved lengthwise, and after the portions have been pressed together in a lengthwise direction so as to cause the end faces of the portions **1** and **2** closely to abut in the manner shown in Figures 2, 4 and 5.

The example just described is applicable when the cigarettes and/or the tobacco stubs are of a soft nature, but in cases where the cigarettes and/or the stubs are more hard, that is to say, less compressible in the direction of their longitudinal axis, it is not necessary to make the effective aggregate length so great. In this latter example the effective aggregate length before the cigarette and stub are pressed into endwise engagement may be 70.5 m/m.

When the stub is not composed wholly of tobacco, for example, when it is composed of layers of crepe paper having layers of cellulosic material disposed between the layers of crepe paper, it is found that an effective aggregate length of from 70.1 m/m. to 70.2 m/m. before the cigarette and stub are pressed into endwise engagement is usually sufficient. It is to be understood, however, that these dimensions may be smaller or greater according to the hard or soft nature respectively of the cigarettes being used.

It is found that by arranging the cigarette lengths and stub lengths, as set out above, it is possible to provide the necessary endwise pressure between the cigarettes and stub portions to ensure a good joint when the strip material is wrapped round the cigarettes.

Further, in the case where the stub portion and cigarette are moved axially while they are joined and secured together, it is possible to form a continuous composite rod in which the stub lengths and cigarette lengths abut closely without leaving gaps between the stubs and cigarettes.

A portion of a machine for manufacturing cigarettes in accordance with the method of the present invention is illustrated in Figures 6 and 7, such machine being more fully illustrated and described in applicant's British Patent No. 430,742. That portion of the machine illustrated in Figure 6 comprises generally a frame **10** on which are supported means for conveying and acting upon the cigarettes and stub portions as hereinafter described.

Cigarette and stub portions are delivered in alternating arrangement to a conveyor belt **11** by means not illustrated in the present application but which are fully described and illustrated in applicant's aforesaid British patent. The conveyor belt **11** serves to advance said cigarette and stub portions toward and onto a conveyor belt **12**, an upper conveyor belt **13** being adapted to cooperate with the belt **12** to grip and advance the cigarette and stub portions toward and onto the conveyor belt **14**. As the alternate cigarette and stub portions are advanced in the manner described, they are compressed axially, in accordance with the method of the present invention, by the mechanism illustrated in Figure 7. The latter comprises a rotating drum **15** having two apertures **16** in its cylindrical surface. Mounted on an annular flange in the drum **15** are two spring urged pivoted fingers **17**, which are arranged as cam followers to cooperate with a stationary cam **18**. The latter is so shaped that as the fingers **17** are moving along the conveyor belt **11**, that is, when they are in engagement with the cigarette or stub portions, the driving face of each finger **17** remains perpendicular so long as it is in engagement with a cigarette or stub portion. By reason of the positive driving action of the fingers **17** on the cigarette and stub portions, the latter are compressed axially in the manner described above, the rotation of the drum **15** being so timed with respect to the speed of movement of the cigarette and stub portions, and their lengths, as to produce the desired compressive effect.

Wrapping of the tip material about the cigarette and stub portions, in accordance with the present method, is accomplished by means of the mechanism illustrated in Figure 6. The wrapping or tipping material is fed from a supply spool **20** over a stationary plate **21** and between driving rollers **22** and **23**. Strips or tips **3** (Figures 2 and 4) are severed from the continuous length of wrapping material by an oscillating knife, which need not be described in detail, such severed lengths of material being moved to a perforated roller **24** about which the conveyor belt **12** travels. Gum or other adhesive is applied to the severed tip material by a roller **25** of any convenient design from a gum pot **26** through rollers **27** and **28**.

The conveyor belt **12** is perforated or porous and the tips or short lengths of wrapping material are held on to the conveyor belt by suction, from the time they reach the roller **24** until they reach a point about half way along the shield

30. Suction is applied in the manner described in the aforementioned British patent. The tips are released from the conveyor belt 12 at the aforesaid point about half way along the shield 30 at which time they are in proper relation to the cigarettes and stubs, which have also been axially compressed in the manner described above, and have been gripped between the conveyor belts 12 and 13. The tips, together with the cigarette and stub portions, all in proper relationship, are then transferred to the conveyor belt 14, above which is provided folding mechanism for wrapping the tip material about the cigarette and stub portions, in a conventional manner.

By virtue of the above described mechanism it will be obvious that the cigarettes and stubs are maintained under the required axial pressure during the entire time that the tipping material is being supplied thereto and wrapped and sealed thereabout.

What is claimed is:

1. A method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, the effective aggregate length of the stub portions and cigarette portions being greater than the required length of the finished product, pressing the cigarette and stub portions together in a lengthwise direction so as to reduce their effective overall length to the desired length, and securing the cigarette and stub portions together by wrapping material.

2. A method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, said cigarette portions having a length which is greater than the length required in the finished product, moving the cigarette and stub portions lengthwise, and pressing them together in a lengthwise direction so as to reduce their overall length to the desired length, and securing the cigarette and stub portions together by wrapping material while the cigarette and stub portions are moving lengthwise.

3. A method of manufacturing mouthpiece cigarettes by aligning double length stub portions and double length cigarette portions, said cigarette portions having a length which is greater than twice the length required for the finished product, pressing the cigarette and stub portions together in a lengthwise direction so as to reduce their overall length to the desired length, securing the cigarette and stub portions together by wrapping material, and severing the stub portions and cigarette portions substantially midway of their length.

4. A method of manufacturing mouthpiece cigarettes by aligning double length stub portions and double length cigarette portions, said cigarette portions having a length which is greater than twice the length required in the finished product, moving the cigarette portions and stub portions in a lengthwise direction, and pressing the cigarette and stub portions together in a lengthwise direction so as to reduce their length to the desired length, securing the cigarette and stub portions together by wrapping material while said portions are moving lengthwise, and severing the cigarette portions and stub portions substantially midway of their length.

5. A method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, said cigarette portions having a length which is greater than the length required in the finished product, pressing the cigarette and stub portions together in a lengthwise direction so as to reduce their overall length to the desired length, and securing the cigarette and stub portions together by severed lengths of wrapping material.

6. A method of manufacturing mouthpiece cigarettes by aligning double length stub portions and double length cigarette portions, said cigarette portions having a length which is greater than twice the length required for the finished product, pressing the cigarette and stub portions together in a lengthwise direction so as to reduce their effective overall length to the desired length, securing the cigarette and stub portions together by severed lengths of wrapping material, and severing the stub portions and cigarette portions substantially midway of their length.

7. A method of manufacturing mouthpiece cigarettes by aligning stub portions and cigarette portions, said cigarette portions having a length which is greater than the length required in the finished product, moving the cigarette and stub portions lengthwise, and pressing them together in a lengthwise direction so as to reduce their overall length to the desired length, and securing the cigarette and stub portions together by severed lengths of wrapping material while the cigarette and stub portions are moving lengthwise.

8. A method of manufacturing mouthpiece cigarettes by aligning double length stub portions and double length cigarette portions, said cigarette portions having a length which is greater than twice the length required in the finished product, moving the cigarette portions and stub portions in a lengthwise direction, and pressing the cigarette and stub portions together in a lengthwise direction so as to reduce their length to the desired length, securing the cigarette and stub portions together by severed lengths of wrapping material while said portions are moving lengthwise, and severing the cigarette portions and stub portions substantially midway of their length.

HAROLD BERNARDO MOLINS.
MOSES HYMAN ISAACS.
Executors of the Estate of Walter E. Molins, Deceased.