



PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Manufacture of Laminated Cigarette Filter Tip

We, OLIN MATHIESON CHEMICAL CORPORATION, a corporation organized and existing under the laws of the State of Virginia, United States of America, of 460, Park Avenue, New York 22, New York, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to composite or laminated cigarette filter tips.

It has been proposed to produce a rod for recessed filter tips, i.e. tips in which the filtering material is contained in the axially inner portion thereof and the axially outer portion is a tube, by employing a wrapper or stiff paper or cardboard, spacing filter plugs at intervals longitudinally of the paper or cardboard and then rolling the assembly into a tube. In such construction the paper or cardboard must be stiff enough to resist excessive deformation during the smoking of the cigarette. Paper of the required stiffness is difficult to handle in machines in which it must be formed into a tube and then assembled as part of a cigarette.

It has been found that a much more satisfactory practice is to provide a hollow tube to form the alternate section of the filter tip, or the recessed end, and to align these tube sections alternately with filter tip sections to form filter rods which may eventually be cut to filter tip or double filter tip length. The tube has substantially the same outer diameter as the filter sections and may be a paper tube or cylinder which possesses sufficient strength to withstand handling by the smoker, and permit it to be cut in the various types of machines and equipment employed in the manufacture of cigarettes. Thus, many materials other than paper might be used. A heavy cellulose base material in the form of a wound tube, such as the conventional sipping straw, has been found to be highly satisfactory.

Cellulose acetate tubing or polyethylene

[Price 3s. 6d.]

tubing formed by conventional extrusion methods may be used. A metal that is light and which is soft enough to be cut at high speed on a cigarette-making machine may be employed. Thus, a metal foil, such as aluminium foil, may be wrapped of several layers thickness to form a suitable tube section. The foil may be sprayed with a suitable bonding agent as it is wrapped. Metals, other than aluminium, might be used, and the tube might be formed in other ways, as by extrusion, by coiling, or by forming a tube with a crimped seam.

The accompanying drawings illustrate the invention in filter rod form and as a filter tip forming a part of a cigarette. In this showing:

Fig. 1 is a sectional view of a filter rod, formed of a plurality of filter sections;

Fig. 2 is an enlarged view of the outer end of a filter tip, parts being shown in section; and

Fig. 3 is a sectional view illustrating the assembly of a double filter tip with two cigarettes.

Referring to Fig. 1, a filter rod may consist of seven alternating filter sections, with inner filter tip sections 1 at each end and tubing 2 which forms the mouth-piece of the filter between each pair of inner filter tip sections. The tubing 2 has an outside diameter substantially equal to the diameter of the filtering sections. The filtering sections 1 may be formed of any bulked smoke-filtering material, such as the cellulose acetate filament type, crumpled paper, cotton wadding, crinkled paper, combinations of crinkled paper with carded web material, and other similar materials and arrangements designed to and capable of removing some of the objectionable constituents produced in the smoke caused by the burning of tobacco. Such smoke-filtering material will be referred to as of the kind described. The particular material used and the form of the inner filtering section otherwise forms no part of the present invention.

The rod shown in Fig. 1 is formed by arranging alternate sections 1 and 2 in a carrier or other support by any suitable means and then wrapping the sections in a paper wrapper 3 (see Fig. 2). Any suitable method and apparatus may be employed in the formation of the filter rods. Formation of filter rods of seven sections, as illustrated in Fig. 1, is purely arbitrary but is employed herein for the purpose of illustration because it is employed in the industry at the present time. Following the present practice, a half filter section is removed from each end by cutting the rod at lines 4 and the trimmed ends may be re-used in the manufacture of the additional filter sections 1, depending upon the characteristics of the material being used. The rod is then cut on the lines 5 to produce three rods each of two filter tips with inner filter tip sections 1 on the outer ends of each rod, and a double outer filter tip section 2 between them. These double filter tips are fed to a conventional cigarette-making machine and assembled between two tobacco sections 6 as illustrated in Fig. 3. The assembly is wrapped in cigarette paper 7 on the machine and then severed at line 8 in the middle of the double outer filter tip section 2 to form two filter tip cigarettes. As shown, each cigarette has a filter tip section 1 adjacent the tobacco 6 and an outer open tubing section 2 forming a mouthpiece or recessed filter tip.

In addition to stiff paper, many other materials may be employed in the manufacture of the outer section of the filter tip. Any material having sufficient stiffness to resist extensive deformation during smoking of the cigarette and capable of being cut by the cutting apparatus used on high speed cigarette-making machines may be employed. Cigarettes having recessed filter tips in accordance with the disclosed of this application have been prepared using a tube of cardboard. Any of a number of plastic materials capable of being extruded in tubular form, such as cellulose acetate or polyethylene may be used. The tube may also be formed of a metal that is not too hard to be cut by the cutters of cigarette-making machines. Thus, a metal foil, such as aluminium, may be formed into a tube of several layers by winding it on a mandrel or other form, until the desired thickness is obtained. The metal may be extruded in tube form, or wound from strip, or formed into a tube with a crimped seam.

A preferred method of forming the alternate sections 2 of the filter tip is to use heavy cellulose base material and in the form of helically wound tubing, such as is used in the manufacture of sipping straws. The tubing is cut to form the double sections 2 shown in the drawings and then assembled with the sections 1 as heretofore described.

In Fig. 2 there is illustrated the outer end of a filter tip showing the tube 9 which may be made of any of the materials and by any of the methods heretofore described and assembled in the wrapper 3 with the sections 1 to form the filter rod shown in Fig. 1. The thickness of the tube 9 is exaggerated for the purpose of illustration.

Attention is directed to our Patent No. 781,654.

WHAT WE CLAIM IS:—

1. A laminated cigarette filter tip adapted to be enclosed within the normal wrapper of a cigarette comprising a filtering section made of smoke-filtering material of the kind described, a separate hollow tube section which is entirely open at both ends and arranged in end to end relation to said filtering section, and being in direct contact therewith, said hollow tube section having substantially the same outer diameter as that of the filtering section, and an outer wrapping entirely surrounding said filtering section and said tube section.

2. A filter tip in accordance with claim 1 in which the tube section is formed of a cellulose base material having sufficient stiffness to resist deformation during smoking of a cigarette.

3. A filter tip in accordance with claim 1 in which the tube section is formed of a relatively soft metal.

4. A filter tip in accordance with claim 1 in which the tube section is formed of polyethylene.

5. A filter tip in accordance with claim 1 in which the tube section is formed of cellulose acetate.

6. A recessed cigarette filter tip adapted to be enclosed within the normal wrapper of a cigarette, comprising an inner filter section made of smoke-filtering material of the kind described, a separate outer section in end to end relation with said filter section and being in direct contact therewith, said outer section comprising a hollow cylindrical tube formed of a material having sufficient stiffness to resist extensive deformation in the smoking of a cigarette, said hollow cylindrical tube being entirely open at both ends and having substantially the same outer diameter as that of the filter section, and an outer wrapping entirely surrounding said sections.

7. A filter rod comprising alternate filter sections of smoke-filtering material of the kind described and separate hollow tube sections which are entirely open at both ends, the tube sections being arranged in end to end direct contact with the filter sections and having substantially the same outer diameter as the filter sections and the filter and tube sections being joined together by an outer wrapper.

8. A filter rod as claimed in claim 7,



disclosure

The rod shown in Fig. 1 is formed by arranging alternate sections 1 and 2 in a carrier or other support by any suitable means and then wrapping the sections in a paper wrapper 3 (see Fig. 2). Any suitable method and apparatus may be employed in the formation of the filter rods. Formation of filter rods of seven sections, as illustrated in Fig. 1, is purely arbitrary but is employed herein for the purpose of illustration because it is employed in the industry at the present time. Following the present practice, a half filter section is removed from each end by cutting the rod at lines 4 and the trimmed ends may be re-used in the manufacture of the additional filter sections 1, depending upon the characteristics of the material being used. The rod is then cut on the lines 5 to produce three rods each of two filter tips with inner filter tip sections 1 on the outer ends of each rod, and a double outer filter tip section 2 between them. These double filter tips are fed to a conventional cigarette-making machine and assembled between two tobacco sections 6 as illustrated in Fig. 3. The assembly is wrapped in cigarette paper 7 on the machine and then severed at line 8 in the middle of the double outer filter tip section 2 to form two filter tip cigarettes. As shown, each cigarette has a filter tip section 1 adjacent the tobacco 6 and an outer open tubing section 2 forming a mouthpiece or recessed filter tip.

In addition to stiff paper, many other materials may be employed in the manufacture of the outer section of the filter tip. Any material having sufficient stiffness to resist extensive deformation during smoking of the cigarette and capable of being cut by the cutting apparatus used on high speed cigarette-making machines may be employed. Cigarettes having recessed filter tips in accordance with the disclosed of this application have been prepared using a tube of cardboard. Any of a number of plastic materials capable of being extruded in tubular form, such as cellulose acetate or polyethylene may be used. The tube may also be formed of a metal that is not too hard to be cut by the cutters of cigarette-making machines. Thus, a metal foil, such as aluminium, may be formed into a tube of several layers by winding it on a mandrel or other form, until the desired thickness is obtained. The metal may be extruded in tube form, or wound from strip, or formed into a tube with a crimped seam.

A preferred method of forming the alternate sections 2 of the filter tip is to use heavy cellulose base material and in the form of helically wound tubing, such as is used in the manufacture of sipping straws. The tubing is cut to form the double sections 2 shown in the drawings and then assembled with the sections 1 as heretofore described.

In Fig. 2 there is illustrated the outer end of a filter tip showing the tube 9 which may be made of any of the materials and by any of the methods heretofore described and assembled in the wrapper 3 with the sections 1 to form the filter rod shown in Fig. 1. The thickness of the tube 9 is exaggerated for the purpose of illustration.

Attention is directed to our Patent No. 781,654.

WHAT WE CLAIM IS:—

1. A laminated cigarette filter tip adapted to be enclosed within the normal wrapper of a cigarette comprising a filtering section made of smoke-filtering material of the kind described, a separate hollow tube section which is entirely open at both ends and arranged in end to end relation to said filtering section, and being in direct contact therewith, said hollow tube section having substantially the same outer diameter as that of the filtering section, and an outer wrapping entirely surrounding said filtering section and said tube section.

2. A filter tip in accordance with claim 1 in which the tube section is formed of a cellulose base material having sufficient stiffness to resist deformation during smoking of a cigarette.

3. A filter tip in accordance with claim 1 in which the tube section is formed of a relatively soft metal.

4. A filter tip in accordance with claim 1 in which the tube section is formed of polyethylene.

5. A filter tip in accordance with claim 1 in which the tube section is formed of cellulose acetate.

6. A recessed cigarette filter tip adapted to be enclosed within the normal wrapper of a cigarette, comprising an inner filter section made of smoke-filtering material of the kind described, a separate outer section in end to end relation with said filter section and being in direct contact therewith, said outer section comprising a hollow cylindrical tube formed of a material having sufficient stiffness to resist extensive deformation in the smoking of a cigarette, said hollow cylindrical tube being entirely open at both ends and having substantially the same outer diameter as that of the filter section, and an outer wrapping entirely surrounding said sections.

7. A filter rod comprising alternate filter sections of smoke-filtering material of the kind described and separate hollow tube sections which are entirely open at both ends, the tube sections being arranged in end to end direct contact with the filter sections and having substantially the same outer diameter as the filter sections and the filter and tube sections being joined together by an outer wrapper.

8. A filter rod as claimed in claim 7,



disclosure



in which the tube sections are made of stiff paper.

- 5 9. A filter rod as claimed in claim 7 or 8, in which the hollow tube section is of stiff helically wound material.

10 10. A filter rod as claimed in any of claims 7 to 9, in which the outermost sections are filter sections which are half the length of the intermediate sections.

11. A filter rod substantially as herein described with reference to Figs. 1 and 2

of the accompanying drawing.

12. A laminated cigarette filter tip, substantially as herein described with reference to Figs. 2 and 3 of the accompanying drawing. 15

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