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PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventor: JOHN ARTHUR STERICKER

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COMPLETE SPECIFICATION

Improvements relating to Tipped Cigarettes

We, GALLAHER LIMITED, a British Company, of Granite House, 97—101 Cannon Street, London, E.C.4, 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:—

In the normal kind of filter tipped cigarettes the cylindrical filter plug is joined abutting the end of the tobacco rod, consisting of a tube of cigarette paper filled with tobacco, by means of a sleeve of simulated cork or other material which is wrapped around and stuck to both the filter plug and the end of the tobacco rod. Mechanically the weakest point in the joint between the filter plug and the tobacco rod is in the anchorage or lap joint between the simulated cork sleeve and the end of the tubular cigarette paper containing the tobacco rod. This lap joint is weak not only because the overlap is made as small as possible, usually about 3 mm., in order not to exaggerate the length of the filter plug unduly but also because the end of the tobacco rod is not very rigid and does not provide a firm support when the sleeve is wrapped around and stuck to the plug and rod. It is not entirely practical to pack extra tobacco in the tobacco rod to form a denser end because this wastes valuable tobacco within the overlapping end of the simulated cork sleeve, a part of the cigarette which is not smoked.

In accordance with the present invention the cigarette paper containing the tobacco rod of a filter tipped cigarette of the kind described is reinforced internally at the end of the rod at which the filter plug is fitted by a reinforcing ring.

The reinforcing ring is preferably a tubular collar of a tissue web of vinyl paper or other suitable sheet material which is stuck to the inner surface of the cigarette paper at the end of the tobacco rod. The provision of the reinforcing ring stiffens the end of the tobacco rod when the simulated cork sleeve is consequently wrapped around and stuck to the filter plug

and tobacco rod so that an inherently much stronger anchorage is formed between the sleeve and the rod. This increase in bond strength can, if desired, be used to reduce the length of the overlap between the sleeve and the rod to as little as 2 mm. or even less so that the cigarette can be smoked down closer to the filter tip. An unexpected advantage is that, when the cigarette has been smoked down to the filter tip, the exposed end of the reinforcing ring appears to curl inwards and hold the unsmoked but still burning remains of the tobacco to the filter plug and prevents it falling off which has been a frequent objection to conventional filter tip cigarettes.

The axial length of the reinforcing ring along the tobacco rod is preferably slightly greater, by up to 1 mm. or more than the axial extent of the overlap between the simulated cork sleeve and the tobacco rod.

The reinforcing ring can be applied to the inner surface of the cigarette paper containing the tobacco rod during the normal course of cigarette production. Thus a reinforcing ring of double unit length may be stuck to the inner surface of a continuous web of cigarette paper at centres equal to two unit tobacco rod lengths. This may be done at a station immediately following or preceding the printer. The paper may be dabbed with adhesive, at the appropriate centres, and rectangles of reinforcing sheet material applied to the dabs of adhesive by a suction drum. The longitudinal edges of the web are then continuously stuck together in conventional fashion with the web rolled around a plug of tobacco to form a continuous tobacco rod which is then cut transversely both centrally through the double reinforcing rings and midway between the double reinforcing rings to form unit tobacco rod lengths. Filter plugs are secured abutting the reinforced ends of the tobacco rods by means of sleeves which are wrapped around and stuck to both the filter plugs and the reinforced ends of the tobacco rods.

Each reinforcing ring preferably does not

[Price 4s. 6d.]



extend completely around the circumference within the cigarette paper to avoid an unsightly double overlap.

5 The invention also includes a machine for continuously making filter tip cigarettes in accordance with this novel method, the machine including means for passing the continuous web of cigarette paper, before it is formed into
10 a continuous tobacco rod, through a web reinforcing station which includes means for applying a dab of adhesive to the web at appropriate centres and means including a suction drum for applying rectangles of reinforcing sheet metal to the dabs of adhesive.

15 One example of the production of cigarettes in accordance with the invention is illustrated in the accompanying drawings in which:—

Figure 1 is a central longitudinal section through a finished cigarette;

20 Figure 2 is a diagrammatic front elevation of printing and web reinforcing stations of a machine for use in making the cigarette;

Figure 3 is a central longitudinal section through a continuous intermittently reinforced tobacco rod; and,

25 Figures 4 and 5 are similar sections showing the fitting of the filter plugs to the individual tobacco rods.

30 As shown in Figure 1 the cigarette consists of a tobacco rod formed by a tube 6 of cigarette paper filled with shredded tobacco 7. A cylindrical filter plug 8 having an external diameter the same as that of the tobacco rod abuts one end of the tobacco rod and is secured in
35 position by means of a simulated cork sleeve 9 which is wrapped around the plug 8 overlapping the tobacco rod and is stuck to both the plug and rod. The end of the tobacco rod adjacent to the plug 8 is reinforced by means of
40 an internal collar 10 of vinyl paper or other material which is stuck to the inner surface of the cigarette paper 6.

45 The axial extent of the reinforcing ring 10 is 4 mm. and the axial extent of the overlap of the sleeve 9 over the tobacco rod is $1\frac{1}{2}$ mm. This overlap is substantially half the conventional overlap which is necessary with previous cigarettes not having the reinforcing collar 10.

50 Figure 2 illustrates how the reinforcing collars 10 are applied to the cigarette paper 6. A continuous web 6¹ of cigarette paper is fed from a reel 11 around rollers 12 and 13, around a drag roller 14 and through a printing
55 station where an inked dye 15 prints the web at intervals against a back-up roller 16. From the printing station the web passes around another roller 17, around a drag roller 18, a tension roller 19 to a further back-up roller 20. The roller 20 supports the web while it is
60 dabbled with adhesive at two unit tobacco rod length centres by a gum dye 21 which is supplied with gum from a gum bath 22 by means of transfer rollers 23.

65 At the same time a continuous web of rein-

forcing vinyl paper or other material 24 passes from a reel 25 around feed rollers 26 to a suction drum 27 which co-operates with a knife drum 28. The suction drum 27 has a
70 perforated periphery and a vacuum is supplied to the inside of the drum so that the reinforcing paper is held against the periphery of the drum. The feed rollers 26 let the web 24 off at a speed such that the knives of the drum
75 cut from the free end of the web rectangles 10¹ of material equivalent to two of the reinforcing collars end to end. These rectangles 10¹ are held on the periphery of the drum 27 and are carried round into engagement with the gummed inner surface of the web 6¹. The
80 feed of the webs 6¹ and 24 is synchronised so that the rectangles 10¹ are placed exactly on the dabs of adhesive on the web 6¹ and stick to the web.

85 The web 6¹ with the rectangles 10¹ then passes round a further drag roller 29 and rollers 30 and 31 to a further station 32 where shredded tobacco is laid evenly on the web 6¹ and the longitudinal edges of the web 6¹
90 are rolled upwards and stuck together to form a continuous tube of tobacco rod as shown in Figure 3.

95 The advancing continuous tobacco rod is cut transversely at positions shown diagrammatically by the chain dotted lines 33 in Figure 3, that is midway through the double tubular reinforcing collars which have been formed by rolling the rectangles 10¹ within the web 6¹. The individual double tobacco rod lengths reinforced at each end are then accelerated
100 ahead of the rest of the continuous rod so that, as shown diagrammatically in Figure 4, filter plugs 8¹, of double unit length can be fitted in the gap between a pair of adjacent reinforced ends of the double tobacco rods. After
105 bringing the reinforced ends into abutment with the plugs 8¹, simulated cork sleeves 9¹ of double length are then wrapped around the filter plugs 8¹ overlapping the reinforced ends of the double tobacco rods so that the severed
110 double tobacco rod lengths are reconnected again. Transverse cuts at positions corresponding to that indicated by the chain dotted line 34 in Figure 5 are then made to divide the product into double cigarettes integrally
115 joined at their untipped ends and cuts are then made at positions similar to that indicated by the chain dotted lines 35 in Figure 3 to sever the double cigarettes into individual cigarettes which are collected and stacked.
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WHAT WE CLAIM IS:—

1. A filter tipped cigarette of the kind described in which the cigarette paper containing the tobacco rod is reinforced internally at the end of the rod at which the filter plug is fitted
125 by a reinforcing ring.

2. A cigarette according to claim 1, in which the reinforcing ring is a tubular collar of sheet material which is stuck to the inner surface

continuous



extend completely around the circumference within the cigarette paper to avoid an unsightly double overlap.

The invention also includes a machine for continuously making filter tip cigarettes in accordance with this novel method, the machine including means for passing the continuous web of cigarette paper, before it is formed into a continuous tobacco rod, through a web reinforcing station which includes means for applying a dab of adhesive to the web at appropriate centres and means including a suction drum for applying rectangles of reinforcing sheet metal to the dabs of adhesive.

One example of the production of cigarettes in accordance with the invention is illustrated in the accompanying drawings in which:—

Figure 1 is a central longitudinal section through a finished cigarette;

Figure 2 is a diagrammatic front elevation of printing and web reinforcing stations of a machine for use in making the cigarette;

Figure 3 is a central longitudinal section through a continuous intermittently reinforced tobacco rod; and,

Figures 4 and 5 are similar sections showing the fitting of the filter plugs to the individual tobacco rods.

As shown in Figure 1 the cigarette consists of a tobacco rod formed by a tube 6 of cigarette paper filled with shredded tobacco 7. A cylindrical filter plug 8 having an external diameter the same as that of the tobacco rod abuts one end of the tobacco rod and is secured in position by means of a simulated cork sleeve 9 which is wrapped around the plug 8 overlapping the tobacco rod and is stuck to both the plug and rod. The end of the tobacco rod adjacent to the plug 8 is reinforced by means of an internal collar 10 of vinyl paper or other material which is stuck to the inner surface of the cigarette paper 6.

The axial extent of the reinforcing ring 10 is 4 mm. and the axial extent of the overlap of the sleeve 9 over the tobacco rod is $1\frac{1}{2}$ mm. This overlap is substantially half the conventional overlap which is necessary with previous cigarettes not having the reinforcing collar 10.

Figure 2 illustrates how the reinforcing collars 10 are applied to the cigarette paper 6. A continuous web 6¹ of cigarette paper is fed from a reel 11 around rollers 12 and 13, around a drag roller 14 and through a printing station where an inked dye 15 prints the web at intervals against a back-up roller 16. From the printing station the web passes around another roller 17, around a drag roller 18, a tension roller 19 to a further back-up roller 20. The roller 20 supports the web while it is dabbed with adhesive at two unit tobacco rod length centres by a gum dye 21 which is supplied with gum from a gum bath 22 by means of transfer rollers 23.

At the same time a continuous web of rein-

forcing vinyl paper or other material 24 passes from a reel 25 around feed rollers 26 to a suction drum 27 which co-operates with a knife drum 28. The suction drum 27 has a perforated periphery and a vacuum is supplied to the inside of the drum so that the reinforcing paper is held against the periphery of the drum. The feed rollers 26 let the web 24 off at a speed such that the knives of the drum 28 cut from the free end of the web rectangles 10¹ of material equivalent to two of the reinforcing collars end to end. These rectangles 10¹ are held on the periphery of the drum 27 and are carried round into engagement with the gummed inner surface of the web 6¹. The feed of the webs 6¹ and 24 is synchronised so that the rectangles 10¹ are placed exactly on the dabs of adhesive on the web 6¹ and stick to the web.

The web 6¹ with the rectangles 10¹ then passes round a further drag roller 29 and rollers 30 and 31 to a further station 32 where shredded tobacco is laid evenly on the web 6¹ and the longitudinal edges of the web 6¹ are rolled upwards and stuck together to form a continuous tube of tobacco rod as shown in Figure 3.

The advancing continuous tobacco rod is cut transversely at positions shown diagrammatically by the chain dotted lines 33 in Figure 3, that is midway through the double tubular reinforcing collars which have been formed by rolling the rectangles 10¹ within the web 6¹. The individual double tobacco rod lengths reinforced at each end are then accelerated ahead of the rest of the continuous rod so that, as shown diagrammatically in Figure 4, filter plugs 8¹, of double unit length can be fitted in the gap between a pair of adjacent reinforced ends of the double tobacco rods. After bringing the reinforced ends into abutment with the plugs 8¹, simulated cork sleeves 9¹ of double length are then wrapped around the filter plugs 8¹ overlapping the reinforced ends of the double tobacco rods so that the severed double tobacco rod lengths are reconnected again. Transverse cuts at positions corresponding to that indicated by the chain dotted line 34 in Figure 5 are then made to divide the product into double cigarettes integrally joined at their untipped ends and cuts are then made at positions similar to that indicated by the chain dotted lines 35 in Figure 3 to sever the double cigarettes into individual cigarettes which are collected and stacked.

WHAT WE CLAIM IS:—

1. A filter tipped cigarette of the kind described in which the cigarette paper containing the tobacco rod is reinforced internally at the end of the rod at which the filter plug is fitted by a reinforcing ring.

2. A cigarette according to claim 1, in which the reinforcing ring is a tubular collar of sheet material which is stuck to the inner surface

continuous

cigarette

- of the cigarette paper at the end of the tobacco rod.
3. A cigarette according to claim 2, in which the axial length of the reinforcing ring along the tobacco rod is greater than the axial extent of the overlap between the simulated cork sleeve and the tobacco rod.
4. A cigarette according to claim 1, substantially as described with reference to Figure 1 of the accompanying drawings.
5. A method of continuously making cigarettes according to any one of the preceding claims in which reinforcing rings of double unit length are stuck to the inner surface of a continuous web of cigarette paper at centres equal to two unit tobacco rod lengths, the longitudinal edges of the web are continuously stuck together with the web rolled around a plug of tobacco to form a continuous tobacco rod which is then cut transversely both centrally through the double reinforcing rings and midway between the double reinforcing rings to form unit tobacco rod lengths, filter plugs being secured abutting the reinforced ends of the tobacco rods by means of sleeves which are wrapped around and stuck to both the filter plugs and the reinforced ends of the tobacco rods.
6. A method according to claim 5, in which the continuous web of cigarette paper is dabbed with adhesive at the appropriate centres and rectangles of sheet material, forming the reinforcing rings of double unit length are applied to the dabs of adhesive by a suction drum.
7. A method according to claim 5 or claim 6, in which the reinforcing rings of double unit length are applied to the web of cigarette paper adjacent to a station at which the paper is printed.
8. A method according to claim 5, substantially as described with reference to the accompanying drawings.
9. A machine for continuously making filter tipped cigarettes by a method according to any one of claims 5 to 8, the machine including means for passing the continuous web of cigarette paper, before it is formed into a continuous tobacco rod, through a web reinforcing station which includes means for applying a dab of adhesive to the web at appropriate centres and means including a suction drum for applying rectangles of reinforcing sheet material to the dabs of adhesive.
10. A machine according to claim 9, in which the web reinforcing station is adjacent to a printing station for the web of cigarette paper.
11. A machine according to claim 9, substantially as described with reference to Figure 2 of the accompanying drawings.

For the Applicants:

GILL, JENNINGS & EVERY,
Chartered Patent Agents,
51/52 Chancery Lane,
London, W.C.2.

