United States Patent [19]

Labbe

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[54] **CIGARETTE MAKING MACHINES**

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[73] Assignee: **Molins Limited,** London, England

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[30] **Foreign Application Priority Data**

Oct. 20, 1970 Great Britain 49843/70

[52] **U.S. Cl.** ..... **131/66,** 131/84 B, 131/84 C

[51] **Int. Cl.** **A24c 05/18**

[58] **Field of Search** ..... 131/84 R, 84 B, 84 C, 110, 131/21 D, 66

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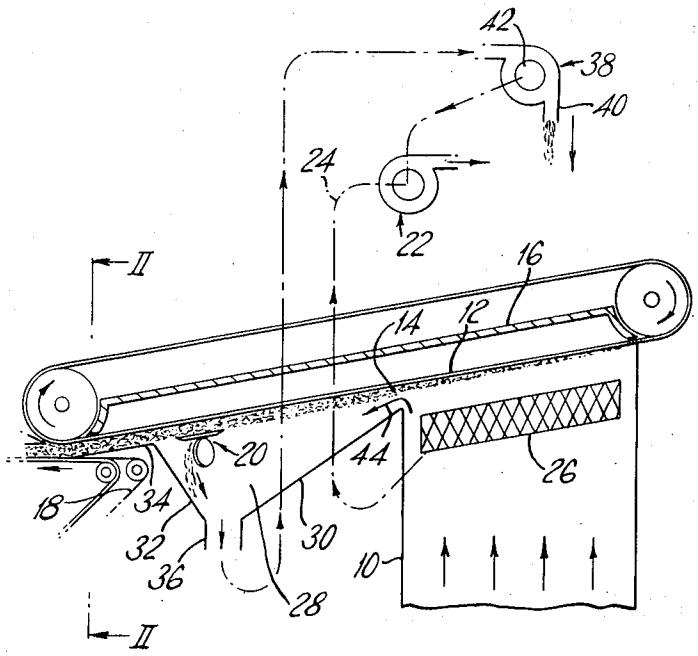
Primary Examiner—Joseph S. Reich

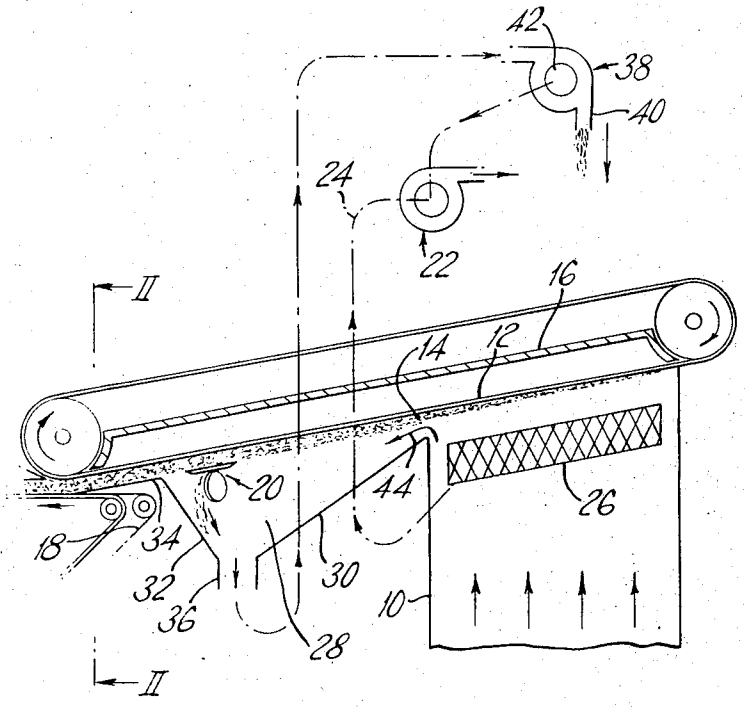
Attorney, Agent, or Firm—Craig & Antonelli

[57] **ABSTRACT**

A cigarette making machine with a suction conveyor includes a cover which extends along the conveyor to define a cover space along and adjacent to the outer surface of the filler stream, and includes openings, such as ports or slots, for permitting air to flow under the influence of the suction through the cover space to entrain particles of tobacco which become separated from the filler stream.

13 Claims, 12 Drawing Figures




42
38
40
24
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II
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44
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II

FIG. 1.

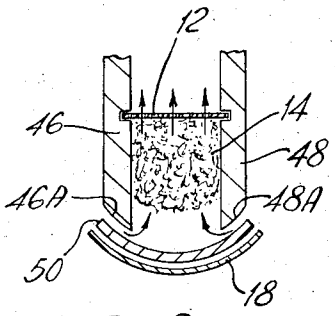

12
46
14
48
46A
48A
50
18

FIG. 2.

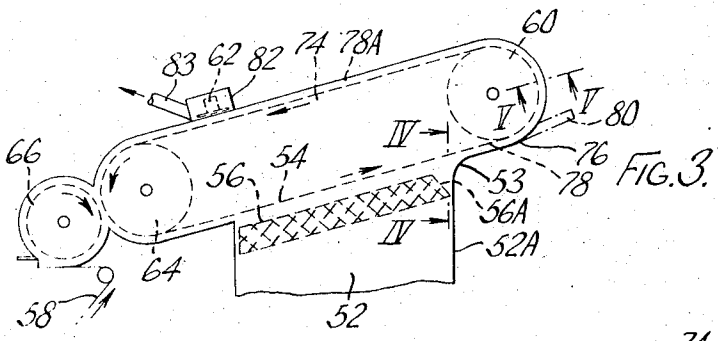


FIG. 3.

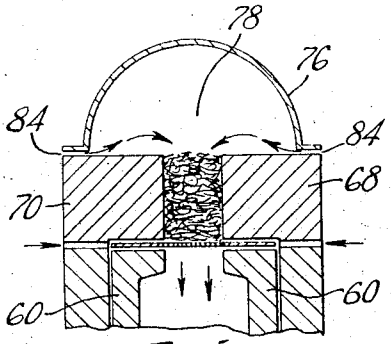


FIG. 5.

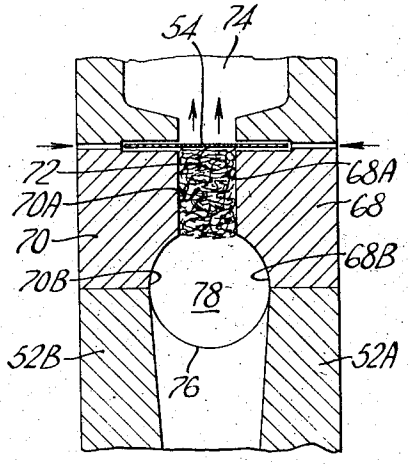


FIG. 4.

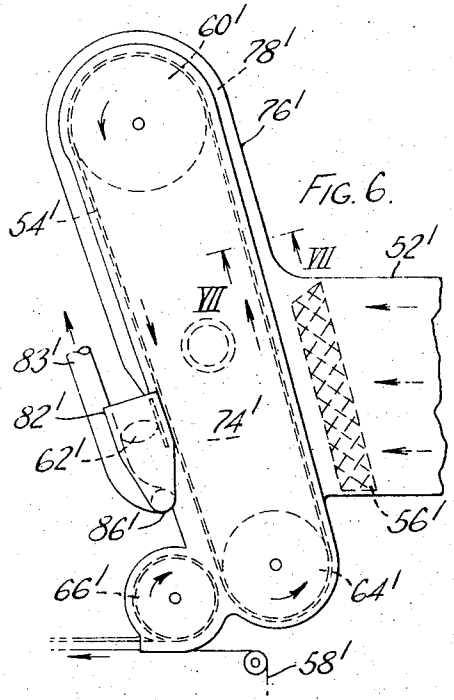


FIG. 6.

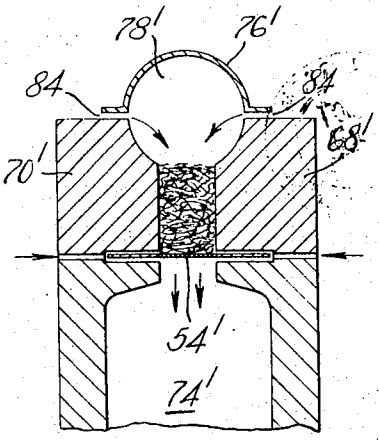
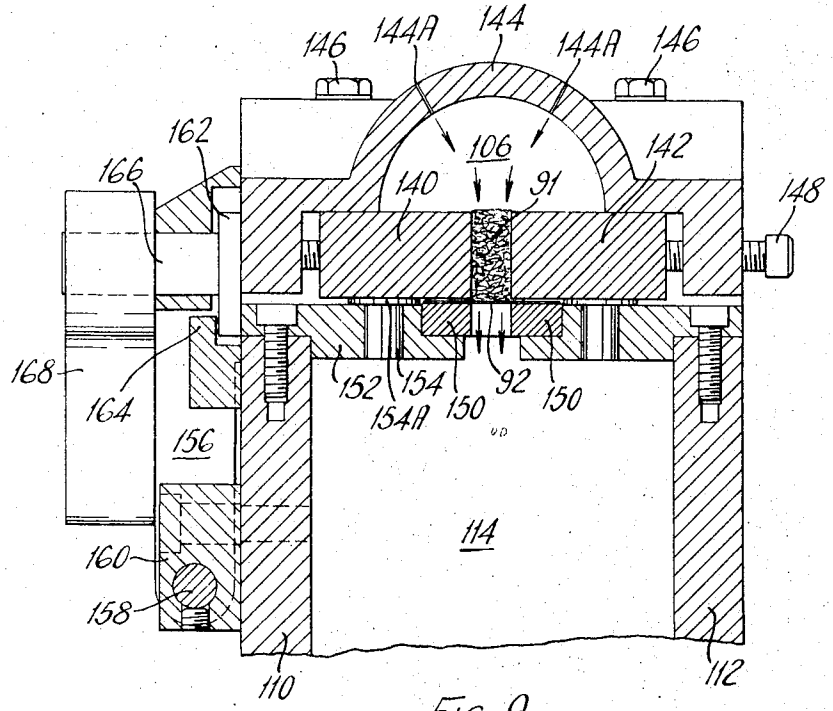


FIG. 7.


146
144A
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144A
146
162
106
142
166
140
91
148
168
164
152
154
154A
150
92
150
156
114
160
158
110
112

FIG. 9.

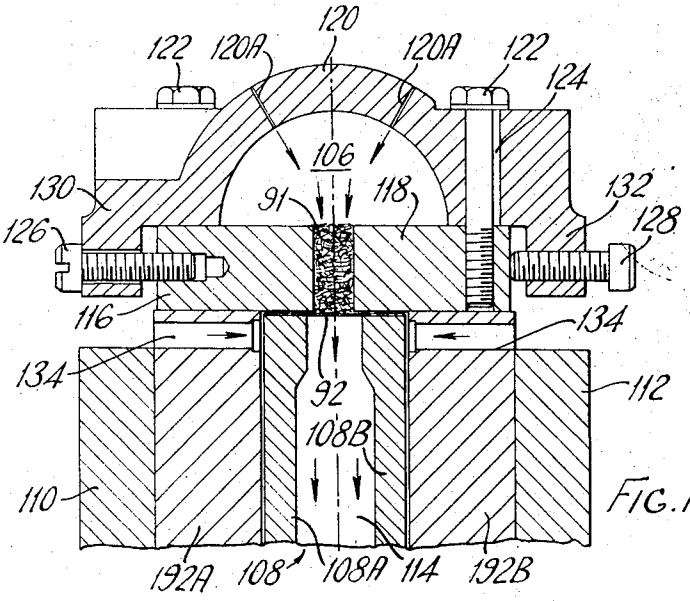
120
122
120A
120A
122
124
106
130
91
118
132
126
128
116
134
134
92
112
108B
110
192A
108
108A
114
192B

FIG. 10.

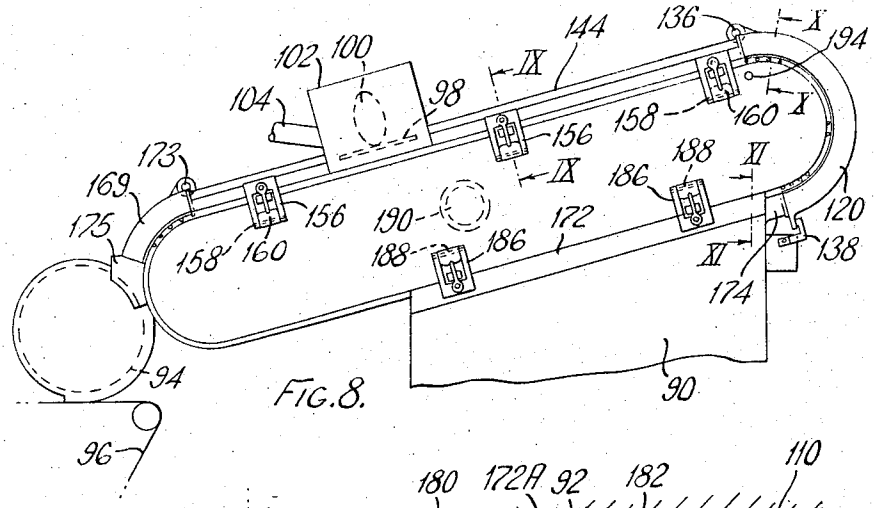

FIG. 8.

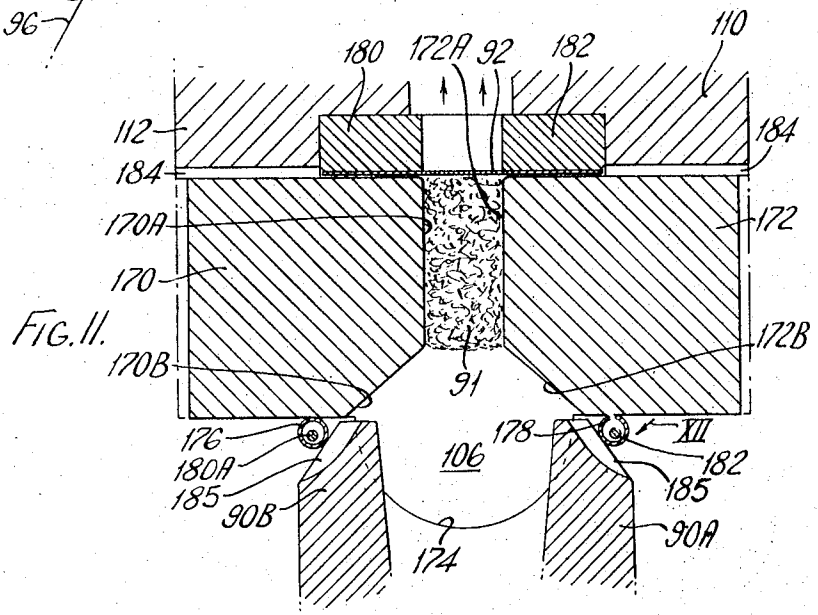

FIG. 11.

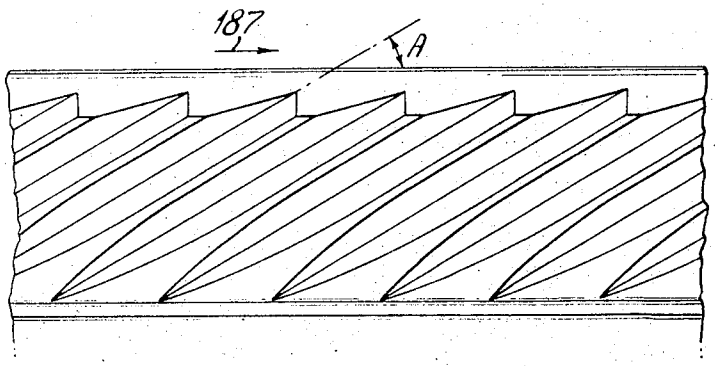

FIG. 12.

CIGARETTE MAKING MACHINES

This invention is concerned especially with machines for making cigarettes and similar articles by showering tobacco through a channel towards an air-pervious band on one face of which the tobacco forms a cigarette filler stream which is held against the band by the action of suction in a suction chamber on the other side of the band. An example of such a machine is described in U.S. Pat. No. 3,030,965.

In this specification the term "cigarette" will be used with the intention that it should be regarded as including other similar articles for smoking. The term "tobacco" will be used with the intention that it should be regarded as including any material or mixture of materials which may be used to form the filler of a cigarette or other similar article for smoking.

A machine according to one aspect of the present invention includes a port in a wall of the channel, near the band, through which air is drawn by a supercharger fan to increase the air velocity through the channel and towards the band. This supercharger fan is also connected to a suction space adjacent to the outer surface of the fully formed tobacco stream (i.e., downstream of the channel) to maintain a suction pressure in the space substantially the same as or greater than the suction pressure in the channel at the end adjacent to the band.

The use of a supercharger fan is shown in itself from U.S. Pat. No. 3,019,793. However, with reference to FIG. 2 of that patent, it will be seen that the space to the left of the end wall **15** of the channel **12** is at atmospheric pressure; a flap seal **64** prevents the flow of air from the atmosphere into the channel, i.e. in the direction opposite to the direction in which the tobacco stream is conveyed by the band **20.** In accordance with the present invention, the space to the left of the end wall **15** and adjacent to the fully formed tobacco stream is substantially enclosed and is maintained at a suction pressure which is preferably at least as great as the suction pressure in the top left-hand corner of the channel **12,** so that there is no need for a seal such as the seal **64.**

In a preferred machine according to this invention there is a trimmer, for example like the trimmer **60** shown in U.S. Pat. No. 3,019,793, which removes part of the tobacco stream and is also enclosed in the suction space. The discard tobacco removed by the trimmer is carried away pneumatically in a duct through which air is drawn by the supercharger fan.

According to another aspect of this invention, a cigarette making machine includes a conveyor which carries a cigarette filler stream by means of suction towards a rod-forming device by which the filler stream is enclosed in a wrapper to form a continuous cigarette rod, characterised in that the machine includes a cover which extends along the conveyor to define a cover space along and adjacent to the outer surface of the filler stream, and includes means for permitting or producing an air flow through the cover space in which particles of tobacco which become separated from the filler stream are entrained.

Examples of machines according to this invention are shown in the accompanying drawings. In these drawings:

FIG. 1 is a diagrammatic longitudinal sectional view of the filler stream forming part of the machine;

FIG. 2 is an enlarged section through the tobacco stream, taken on the line II—II in FIG. 1;

FIG. 3 is a diagrammatic view similar to FIG. 1 of another machine;

FIG. 4 is a section on the line IV—IV in FIG. 3;

FIG. 5 is a section on the line V—V in FIG. 3;

FIG. 6 is a view similar to FIG. 3, but showing a different machine;

FIG.7 is a section on the line VII—VII in FIG. 6;

FIG. 8 is a view bascially similar to that shown in FIG. 3, of another machine with additional details;

FIG. 9 is an enlarged section on the line IX—IX in FIG. 8;

FIG. 10 is an enlarged section on the line X—X in FIG. 8;

FIG. 11 is a still further enlarged section on the line XI—XI in FIG. 8; and

FIG. 12 is an enlarged fragmentary plan view in the direction of the arrow XII in FIG. 11.

The machine shown in FIG. 1 includes a vertical channel **10** up which tobacco particles are carried by air towards a porous band **12** against which the tobacco particles form a cigarette filler stream **14.** Suction in a suction box **16** above the band holds this fillter stream against the bottom surface of the band so that the stream is carried by the band towards a rod-forming section of the machine by which the stream is enclosed in a continuous paper web **18.** Before it reaches the rod-forming section, part of the stream is removed by a trimmer **20.**

The air flow up the channel **10** is produced mainly by a supercharger fan **22** of which the inlet is connected by a line **24** to a louvred port **26** in one side wall of the channel **10,** as described in U.S. Pat. No. 3,019,793.

To the left of the channel **10,** and adjacent to the tobacco stream **14,** there is a suction space **28** defined partly by bottom wall sections **30, 32** and **34.** Air is drawn continuously from the space **28** through a pipe **36** by the action of the supercharger fan **22,** as noted below. In the preferred arrangement shown, the air flowing through the pipe **36** also carries away the discard tobacco thrown down by the trimmer **20.** Accordingly the pipe **36** leads in fact to a cyclone **38** which has a tangential outlet **40** through which the discard tobacco is discharged, and an axial air outlet **42** which is connected to the inlet of the fan **22.** The outlet **40** has an air seal, for example formed by a paddle wheel.

Air can flow into the suction space **28** from the atmosphere through vents (not shown) which are such that the suction pressure in the space **28** is slightly greater than the suction pressure in the top end of the channel **10.** Accordingly there is a slight air flow from the channel **10** to the space **28,** as shown by the arrow **44.** The vents into the space **28** may for example be holes or slots. For example, there may be holes at intervals along the wall section **34** and in the side walls in the region of the bottom wall section **30.** In addition, or as an alternative, there may be slots in both of the side walls defining the space **28,** extending all the way along the space (and possibly as far as the left-hand end of the wall section **34**), just below the bottom surface of the tobacco stream.

FIG. 2 shows the arrangement at a point just before the tobacco stream is transferred to the paper web **18.** Rails **46** and **48,** which form extensions of the side walls enclosing the suction space **28,** have inclined bottom edges **46A** and **48A.** Air flows inwards through slots

below these edges, as shown by the arrows, the slots being defined by the edges **46A** and **48A** and by a paper shield **50** which extends above the paper **18** until the point where the suction above the band **12** is released so as to deposit the tobacco stream **14** on the paper. The slots below the edges **46A** and **48A** may, for example, be of approximately **1** mm. width.

The side walls defining the suction space **28** may include air inlet slots forming extensions of the slots below the edges **46A** and **48A** of the rails, as shown in FIG. **2.**

As an example, the suction pressure in the suction box **16** above the band **12** may be 500 mm. of water gauge. This suction in the region above the channel **10** produces an upward air flow through the channel, but this upward air flow may be increased by between 40 and 150 percent by means of the supercharger fan. The supercharger fan may for example be designed to produce a large air flow at a low pressure head. For example, the suction pressure at the inlet of the supercharger fan may be approximately 75 mm. of water gauge. The suction pressure inside the channel **10** at its upper end, may be approximately 63 mm., and the suction pressure in the space **28** may be about 63 mm. or slightly higher.

The discard tobacco discharged from the cyclone **38** may be returned to the main body of tobacco, for example in the hopper of the machine, upstream of the point at which the tobacco is projected into the channel **10.**

The machine shown in FIG. **3** is similar to that shown in FIG. **1** in that tobacco is showered upwards by means of air through a shower channel **52** to build up a cigarette filler stream on a pervious band **54,** most of the air being drawn through the channel **52** by means of a supercharger fan (not shown) connected to a louvre port **56** in one wall of the channel. However, the band carries the filler stream initially away from the continuous wrapper web **58,** round a pulley **60,** past a trimmer **62** and then partly round a pulley **64** to a point at which a transfer wheel **66** receives the filler stream and carries it by means of suction on to the web **58.** The general arrangement is in accordance with an invention described in U.S. Pat. No. 3,750,678.

As shown in FIG. **4,** the channel **52** is formed mainly by front and back walls **52A** and **52B.** Adjacent to the band **54** there are front and back rails **68** and **70** which have inner walls **68A** and **70A** defining a narrow trough of uniform width and depth, and recessed parts **68B** and **70B** which form a deepening extension to the trough, but with an increasing width. The tobacco showered through the channel **52** builds up to form a cigarette filler stream **72** which is held on the band **54** by suction (for example **500** mm. water gauge) applied through the band from a suction chamber **74.**

During use of the amount of tobacco showered through the channel **52** is normally such as to just fill the narrow trough formed between the walls **68A** and **70A** of the rails, as shown in FIG. **4.** Any momentary excess in the tobacco delivery rate results in a filler stream which projects significantly out of the narrow trough. Immediately downstream of the channel **52** (in relation to movement of the band) there is a cover **76** which defines with the recessed parts **68B** and **70B** of the rails a cover space **78** through which air is drawn from the channel **52** as a result of the suction pressure in the cover space (for example about 70 to 75 mm. water gauge) being greater than the suction pressure in the channel in the region of the band (for example about 60 to 65 mm. water gauge). The cover space **78** is of a relatively small cross-section until the band reaches the pulley **60,** so as to produce a relatively fast air stream, for example about 9 to 9.5 metres/sec. In the region of the pulley **60** and further downstream the cover **76** has the shape shown in FIG. **5.** Furthermore, as shown in FIG. **5,** extensions of the rails **68** and **70** in the region of the pulley **60** and further on have crossectional shapes which no longer include the recessed parts **68B** and **70B** shown in FIG. **4.**

In order to increase the flow of air into the cover space from the channel **52,** the flow of air into the louvre port **56** near the downstream end wall **52A** of the channel **52** is reduced as a result of the louvre port terminating along an oblique boundary **56A,** so that more of the air flowing up the channel near the end wall **52A** passes the louvre port and reaches the upper end of the channel, thus tending to continue into the cover space; this effect is promoted by the fact that the entry to the cover space is formed by a curved corner **53.**

Centrifugal force helps to ensure that any excess tobacco carried forward through the cover space **78** by the air moving into the cover space remains separate from the main body of the filler stream carried by the band. When this excess tobacco reaches the top run **78A** of the cover space, it may settle back on the main body of the filler stream. Alternatively, the air flow may be fast enough to carry some or all of the tobacco all the way to a box **82** containing the trimmer **62,** so that the excess tobacco can be carried away, for example by means of suction through a discard pipe **83,** together with the discard tobacco removed by the trimmer.

A further possibility is that the excess tobacco may fly off through a pipe **80** shown dotted in FIG. **3.**

The suction pressure in the cover space **78** may be determined partly by the suction pressure in the pipe **83** and partly by the suction applied through the band from the suction chamber **74.** Slots **84** between the cover **76** and the rails **68** and **70** at regular intervals are of dimensions such as to let in the necessary volume of air at various positions along the cover space.

FIG. **6** shows a machine which is generally similar to that shown in FIG. **3,** except that the channel **52** and the band assembly have been rotated through approximately 90° so that the band is in an upright position. The parts shown in FIG. **6** have the same reference numerals as equivalent parts in FIG. **3** but with the addition of a prime. A discard pipe **83'** is shown for removing the discard tobacco which is separted from the main body of the filler stream by the trimmer **62'.** The excess tobacco carried through the cover space **78'** by air is also removed through the pipe **83'.** For this purpose the discard tobacco removed by the trimmer falls into a trough **86'** formed at the bottom of the box **82'** housing the trimmer. At one end of the trough there is a venturi-shaped opening to atmosphere through which air enters as a high-speed jet to carry the discard tobacco and excess tobacco through the trough and straight into the pipe **83',** which at its inlet end forms an extension to the trough.

It should be noted that as the cover space **78'** extends downwards from the pulley **60'** to the box **82'** (and is even inclined so that the cover is slightly below the filler stream on the band) gravity does not tend to return the excess tobacco to the main body of the filler

stream on the band. However, if it is desired to return the excess tobacco to the main body of tobacco, this can be done by fitting the cover **76'** with an internal deflector or series of deflectors to deflect any tobacco moving in the cover space towards the main body of tobacco, so that the excess tobacco (or at least some of it) can again be held with the main body of the tobacco by suction applied through the band.

The cross-sectional shape of the cover **76'** in the region around the pulley **60'** and further on is the same as that shown at **78** in FIG. **5.** Thus, as the cross-sectional area of the cover space **78'** is larger in this region than it is immediately downstream of the shower channel, the air speed is reduced and may be equal to or less than the speed of the band which may, for example, move at about 280 metres per minute or at a somewhat higher speed.

The machine shown in FIG. **8** is basically similar to that shown in FIG. **3** in that it includes a channel through which tobacco is showered upwards by means of air produced partly by a supercharger fan connected to a louvre port (not shown) similar to the louvre port **56** in FIG. **3.** Thus a cigarette filler stream **91** (FIGS. **9–11**) is formed on a band **92** which moves around two pulleys (as in FIG. **3**) and delivers the cigarette filler stream to a suction transfer wheel **94** which in turn carries the filler stream on to a continuous wrapper web **96.** Before the filler stream reaches the wheel **94,** it is trimmed by a trimmer comprising cooperating discs **98** and a rotary brush **100** mounted in a housing **102.** A discard pipe **104** connected to a source of suction draws away the discard tobacco removed by the trimmer, together with any tobacco which becomes separated from the main body of the cigarette filler stream and is conveyed to the housing **102** through a cover space **106** in the manner described with reference to FIGS. **3** to **5.**

FIG. **10** corresponds generally to FIG. **5** and shows the band **92** passing around a pulley **108** which runs between fixed walls **110** and **112** of a suction chamber **114.** The pulley comprises spaced walls **108A** and **108B** so that suction from the suction chamber is applied through the band **92** to hold the filler stream **91** on the band in the region of the pulley.

The sides of the filler stream **91** in the region of the pulley are confined by rails **116** and **118** which are secured to a rigid cover section **120** by bolts **122** which are screwed into the rails and pass through slots **124** in the cover to enable the lateral positions of the rails to be adjusted; that is to say, to change the width of the filler stream. Lateral movement of the rails (once the bolts **122** have been loosened) is achieved by means of screws **126** and **128** which engage with side flanges **130** and **132** on the cover. Each rail has screws of the type **126** alternating at regular intervals with screws of the type **128.** Each screw **126** passes through a clearance hole in the corresponding flange **130** and is screwed into the corresponding rail **116,** so that tightening the screws **126** pulls the corresponding rail outwards; on the other hand, each screw **128** is screwed through the corresponding flange **132** and has its inner end abutting against the rail **118,** so that tightening of the screws **128** results in the corresponding rail **118** being pushed inwards. The bolts **122** are aligned with the screws **128.**

FIG. **10** further shows that the walls **110** and **112** of the suction chamber have, in the region of the pulley **108,** air inlet passages **134** through which air is drawn in by the suction in the suction chamber, so that cleaning air flows inwards along both the inner and outer faces of the edge portions of the band **92** to clear away any particles between the band and the pulley or rails.

There are holes or slots **120A** at intervals along the cover section **120** to let in the necessary volume of air at various positions along the cover space.

The semi-circular cover section **120** which extends round the pulley **108** is mounted at its upper end of a pivot **136,** so that the cover section **120** can be swung in a counterclockwise direction, as seen in FIG. **8,** about the pivot **136** to carry the rails away from the band. The purpose of this will be described further on. During normal use, the cover section **120** is secured in position by a releasable fastener **138.**

After passing round the pulley **108,** the filler stream **91** is confined between straight rails **140** and **142** which are carried by a straight cover section **144** which, like the cover section **120,** is of relatively thick crosssection so as to be rigid enough to carry the rails, and has air inlet holes or slots **144A.** The rails **140** and **142** are secured to the cover section **144** by means of bolts **146** in the manner described with reference to FIG. **10,** and there are again adjusting screws **148** for adjusting the width of the filler stream. Along the straight upper run of the band **92,** the edge portions of the band are each supported by low-friction inserts **150** mounted in an upper wall **152** of the suction chamber. Each rail is spaced from the wall **152** by the thin heads **154A** of studs **154** situated at regular intervals along the wall **152,** so that cleaning air can flow inwards between the rails and the wall **152** and above and below the band, for the purpose already mentioned.

The cover section **144** has connected to it a number of side members **156** which are pivoted by means of pins **158** to parts **160** secured to the wall **110** of the suction chamber. Thus the cover portion **144,** carrying with it the rails, can be swung about the axis of the pivots **160** in an anti-clockwise direction (FIG. **9**) to expose the band **92.** While the machine is running, the cover is locked in the position shown by eccentric discs **162** engaging behind fixed members **164.** Each eccentric disc **162** is carried eccentrically by a spindle **166** which can be rotated manually by means of a lever **168** to a position in which the disc **162** can disengage with the member **164** when the band is required to be exposed.

A further curved cover section **169** (FIG. **8**) carries rails extending from the downstream end of the rails **140, 142** to the point at which the filler stream is transferred to the wheel **94.** The cover section **169** can be swung in a clockwise direction (FIG. **8**) about a pivot **173** to allow access to the band. In the immediate vicinity of the transfer point there is a hinged door **175** which can be opened to allow ready access to the filler stream in the region of the transfer point.

Across the top of the channel **90** (along the bottom run of the band **92**) there are rails **170** and **172** (FIG. **11**). The inner surfaces of these rails include parallel parts **170A** and **172A** defining a narrow trough, and flat recessed parts **170B** and **172B** defining a progressively widening extension to the trough into which excess tobacco protrudes momentarily (or possibly continuously). For a short distance downstream of the channel **90,** (i.e., between the channel and the curved

cover section **120**) the cover space **106** is defined by the surfaces **170B** and **172B** of the rails and a cover section **174**; the inner surface of the cover section **174**, where it is furthest from the band, is at the same distance from the band **92** as the inner surface of the cover part **120** at the point where it is furthest from the band **92**.

The top of the channel **90** is formed by front and back walls **90A** and **90B** which at their upper extremities are slightly below the bottom surfaces of the rails **170** and **172**, thus defining a clearance to allow movement of the rails relative to the walls **90A** and **90B**. Light tubes **176** and **178** form seals between the walls and the rails, being held in position as a result of the suction pressure within the channel; rods or wires **180A** and **182** extend through the tubes and have their ends fixed so as to prevent the tubes from falling out of position when the machine is not running.

Towards the downstream ends of the walls **90A** and **90B** (for example along about the last 40 percent) there are grooves **185** which extend obliquely forwards in the direction of motion of the band **92**, the direction of movement of the band being shown by the arrow **187** in FIG. **12**. More specifically, the grooves are inclined to the band by the angle A which is equal to 30°. Thus, as a result of the suction pressure within the channel, air is drawn in from the atmosphere through the grooves **185**. This air flows partly along the surfaces **170B** and **172B** of the rails and assists the movement of the last part of the tobacco shower into the trough between the rails, while at the same time giving the air flow a forward component so as to increase the velocity of the air flowing into the cover space **106** from the channel.

As shown in FIG. **11**, the band **91** runs along low-friction inserts **180** and **182** set in the walls **110** and **112** of the suction chamber (here shown somewhat diagrammatically). Between the walls **110** and **112** and the rails there are slots **184** at regular intervals along both sides of the band to let in cleaning air, as described above.

The rails **170** and **172** are each carried by two parts **186** (see FIG. **8**) which are pivotally connected to parts **188** fixed to the side walls of the suction chamber; this enables each rail to be swung outwards to allow access to the band. Furthermore, each rail can be adjusted as to its lateral position so as to vary the width of the trough formed between the rails.

Suction is supplied to the suction chamber **114** through a pipe **190** (FIG. **8**), and the suction chamber is arranged by suitable means so that it can be made to slide in the direction of the axis of the pipe **190**, being carried by the pipe **190**. When the band **92** needs to be changed, the suction chamber, together with the rails and the various cover sections, is moved far enough along the axis of the pipe **190** to be clear of the trimmer discs **98**. Then the band is exposed by swinging the top rails to one side (as already described), swinging the cover sections **169** and **120** away from the band, and swinging the rails **170** and **172** respectively sideways. Other small parts can then be disconnected to completely expose the band, which can then be removed and replaced by a new band. After that the various parts are moved back into position, and the suction chamber is moved along the axis of the pipe, back to its operative position.

The following provision is made for tensioning the band **92**. The pulley **108** is mounted for rotation in a holder consisting of front and back walls **192A** and **192B** (FIG. **10**). This holder fits within the walls **110** and **112** of the suction chamber and is pivoted with respect to the suction chamber by a pivot pin **194** (FIG. **8**). Thus by means of a spring or other tensioning device, the pulley **108** can be swung in a counterclockwise direction about the pin **194** to tension the band.

I claim:

1. A cigarette making machine comprising an elongated air-pervious conveyor, a channel extending towards the conveyor for directing tobacco towards the conveyor to form a cigarette filler stream on the conveyor, and suction means substantially coextensive with the operative length of the conveyor for compressing the filler stream thereon and for drawing air through the channel and towards the conveyor, characterized in that the machine includes a cover which extends along the conveyor to define a cover space extending from the channel and along and adjacent to the surface of the filler stream opposite to the conveyor, which space is under suction as a result of the transmission of suction through the conveyor from the said suction means, and including means for producing an air flow from the channel and into and through the cover space, moving substantially parallel to and in the same direction as the conveyor, which air flow entrains any particles of tobacco which become separated from the filler stream.

2. A cigarette making machine according to claim **1**, including a trimmer for trimming away part of the filler stream, and in which the air flow through the cover space carries the separated particles of tobacco towards the trimmer, where the particles are removed together with discard tobacco trimmed off by the trimmer.

3. A cigarette making machine according to claim **2**, and including a discard pipe through which the separated particles of tobacco and the discard tobacco are discharged, means for connecting said discard pipe to a source of suction, the air flow through the cover space being at least partly the result of the suction applied through the discard pipe.

4. A cigarette making machine according to claim **1**, including rails extending along opposite sides of the conveyor and having mutually opposed parallel surfaces normal to the surface of the conveyor defining a relatively narrow trough deep enough to contain substantially all the tobacco which is normally directed onto the conveyor, the rails having also recessed parts forming in cross-section a wider extension to the trough to receive any momentary excess of tobacco, and at least part of any such excess being carried forward, at a speed greater than the conveyor, by the air flow in the cover space.

5. A cigarette making machine according to claim **4** including at least in the region of the downstream end of the channel where the last tobacco is directed on to the conveyor, means defining air inlets through which air streams enter with a component of motion in the direction of movement of the conveyor.

6. A cigarette making machine according to claim **5** in which the air inlet means are arranged to give the air streams a component of motion also towards the con-

veyor to assist the movement of tobacco into the trough.

7. A cigarette making machine according to claim **1,** in which the conveyor is an air-pervious band which carries the filler stream by means of suction round a pulley, said pulley including means for effecting communication between said suction means and the portion of the band passing round said pulley with the filler stream lying on the outer surface of the band as it passes round the pulley, any tobacco thrown off by centrifugal force in the region of the pulley being carried forward by the air flow in the cover space, which cover space extends round the pulley.

8. A cigarette making machine according to claim **1,** in which the cross-sectional area of the cover space along a section adjacent to the channel is smaller than the cross-sectional area of those sections thereof that are located downstream from said section adjacent to the channel.

9. A cigarette making machine according to claim **1** wherein said channel is defined by walls, means providing a port through one wall thereof, and suction means connected with the port means whereby at least a part of the air stream through the channel is produced thereby.

10. A cigarette making machine according to claim **9** in which the port means is elongated and has opposite ends the end of the port means adjacent to the cover space being shaped so as to promote the flow of air into the cover space.

11. A cigarette making machine according to claim **1,** in which the channel is inclined to the band in the sense such that the direction of movement of the air and tobacco through the channel has a component in the direction of movement of the band.

12. A cigarette making machine according to claim **1,** including a suction conveyor located at the discharge end of the band for receiving the filler stream thereon, means for feeding and conveying a continuous wrapper web adjacent the discharge end of the suction conveyor, said web being adapted to receive the filler stream from the suction conveyor, and means for wrapping the web around the filler stream to form a continuous cigarette rod, the suction conveyor serving also to seal the adjacent end of the cover space.

13. A cigarette making machine according to claim **1,** including means defining apertures for letting air into the cover space at various positions along the cover space.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,850,177 Dated November 26, 1974

Inventor(s) Francis A. M. Labbe

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Priority data incomplete. Should read:

--Oct. 20, 1970	Great Britain	49843/70
July 28, 1971	Great Britain	35513/71--

Signed and Sealed this

Tenth Day of August 1976

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks