Oct. 23, 1934. R. J. A. CHANDLER 1,977,985

PASTING MECHANISM FOR CIGARETTE MAKING MACHINES

Filed June 27, 1933 3 Sheets-Sheet 1

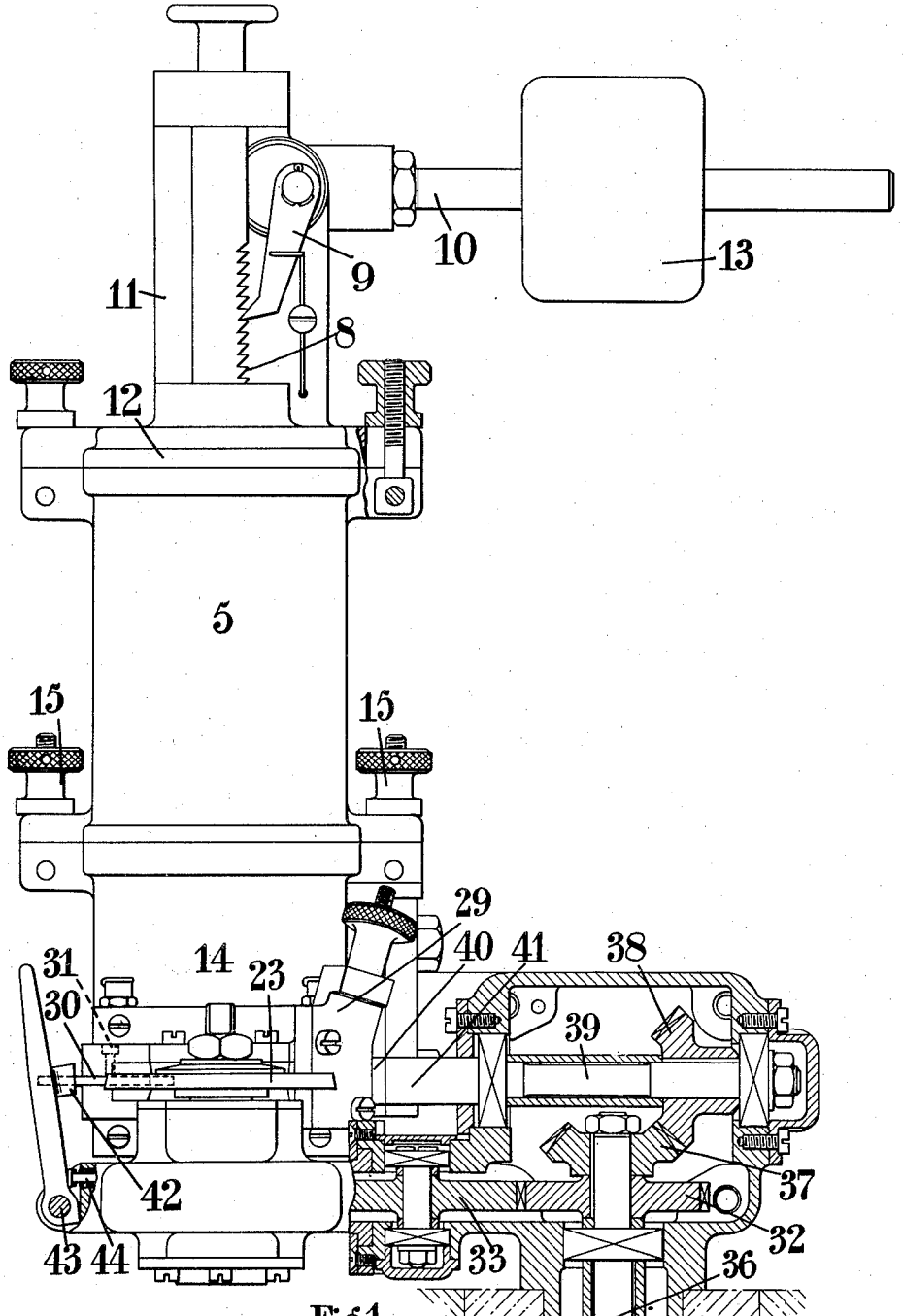


Fig.1.

Robert J. A. Chandler,
by Sydney J. Prescott,
Attorney

Oct. 23, 1934. R. J. A. CHANDLER 1,977,985

PASTING MECHANISM FOR CIGARETTE MAKING MACHINES

Filed June 27, 1933 3 Sheets-Sheet 2

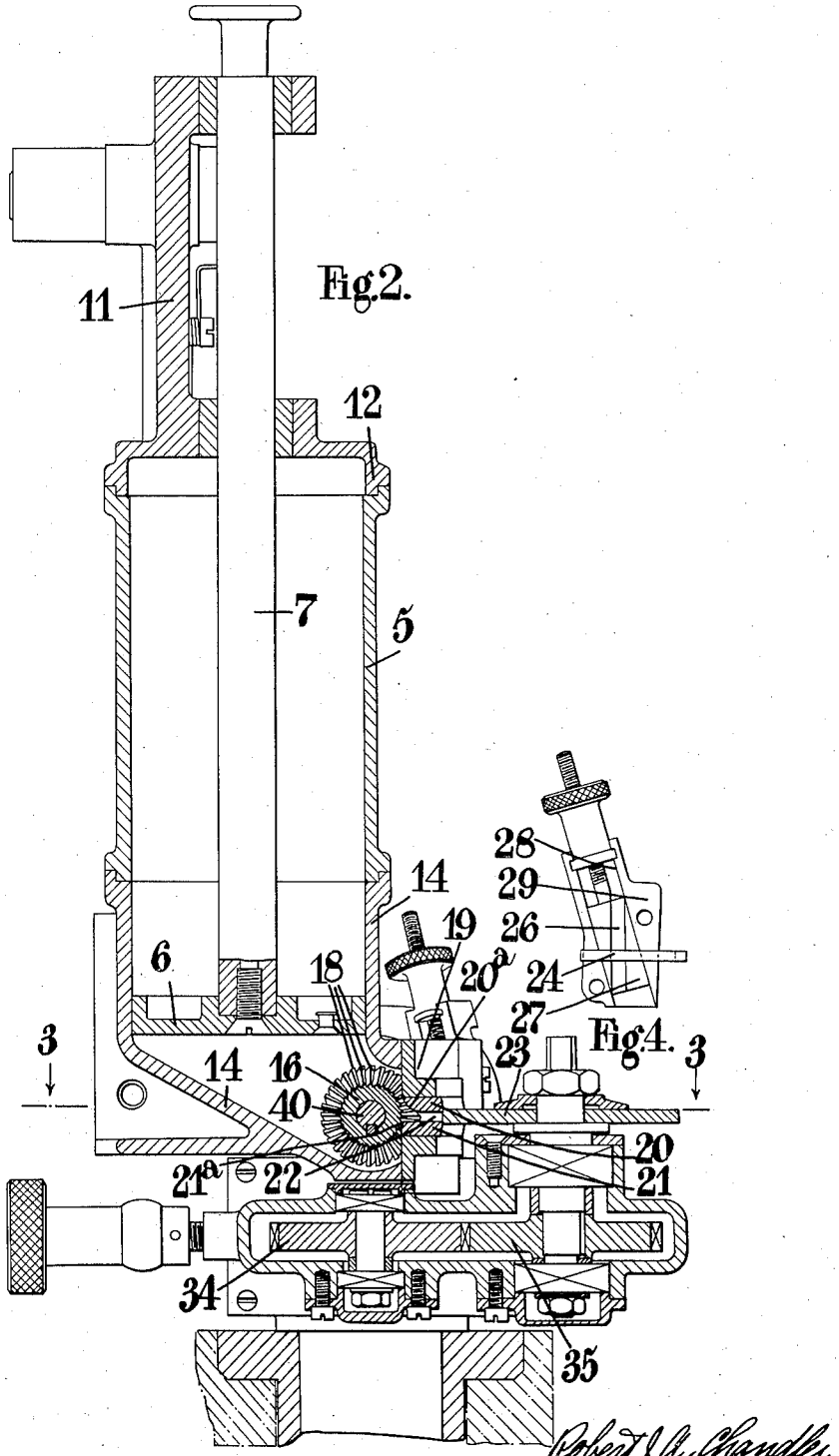


Fig.2.

Fig.4.

Robert J. A. Chandler
by Sydney J. Rescott.
Attorney

Oct. 23, 1934. R. J. A. CHANDLER 1,977,985

PASTING MECHANISM FOR CIGARETTE MAKING MACHINES

Filed June 27, 1933 3 Sheets-Sheet 3

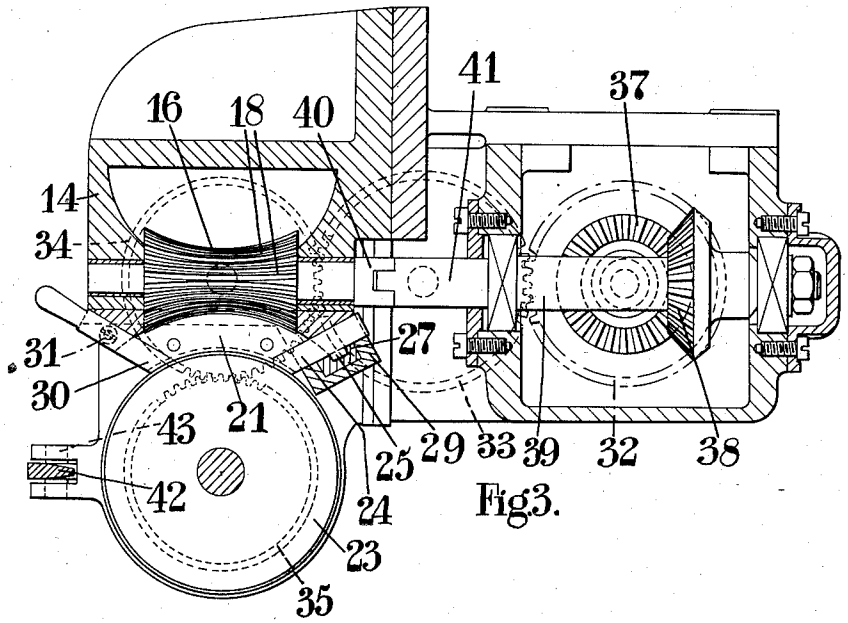


Fig3.

Robert J. A. Chandler
by Sydney S. Rescott
Attorney

Patented Oct. 23, 1934 1,977,985

UNITED STATES PATENT OFFICE

1,977,985

PASTING MECHANISM FOR CIGARETTE-MAKING MACHINES

Robert John Alexander Chandler, London, England, assignor to American Machine & Foundry Company, New York, N. Y., a corporation of New Jersey

Application June 27, 1933, Serial No. 677,790
In Great Britain July 6, 1932

21 Claims. (Cl. 131—43)

This invention relates to mechanism for applying paste to the cigarette wrapper strip of a cigarette-making machine and particularly to mechanism adapted for use with paste of the kind known as "hard" or "solid".

According to the invention, paste maintained under pressure in a receptacle is subjected to the milling action of a rotating member having teeth which are adapted to force the paste by the aid of centrifugal action through a nozzle from which it is deposited on the periphery of the usual pasting disc.

The rotating member, hereinafter referred to as the paste feeding drum, is preferably cylindroidal in form, the outline of its surface being concave to correspond with the periphery of the circular pasting disc, and is provided with teeth running longitudinally of the cylindroidal surface. The nozzle aperture is of the form of a slot extending over substantially the whole length of the toothed surface of the feeding drum and the inlet to the nozzle is formed to receive the paste carried round by the teeth of the feeding drum. The outlet of the nozzle is shaped to fit the periphery of the pasting disc which is mounted on a vertical axis according to the usual practice.

An adjustable blade is incorporated with the nozzle for controlling the amount of paste to be delivered by the pasting disc to the cigarette paper. A scraper may also be arranged at the opposite end of the nozzle for removing dried paste from the periphery of the disc.

In the accompanying drawings:—

Figure 1 is a view partly in section of a pasting apparatus according to the invention.

Figure 2 is a sectional view through the paste receptacle and nozzle.

Figures 3 is a sectional plan view on the line 3—3 of Figure 2, and

Figure 4 is a detail of an adjustment device in connection with the nozzle.

In carrying the invention into effect according to one convenient mode the paste receptacle 5 comprises a cylindrical portion provided with a piston 6 through which pressure may be applied to the paste by suitable means. According to a convenient form a rod 7 attached to the piston is provided with ratchet teeth 8 which are engaged by a pawl 9 mounted on an arm 10 pivoted to the frame 11 supported upon the closing cap 12 of the receptacle. The arm 10 carries an adjustable weight 13 by means of which the desired pressure is applied to the rod through the pawl, the arm and its weight being raised by hand when required as the arm sinks.

The lower portion 14 of the paste receptacle may be readily separable from the cylindrical portion by means of pivotal fastenings 15 and is shaped to receive the horizontal paste feeding drum 16 which is mounted to one side thereof. The drum is of cylindroidal form having a surface which is concave in section and of a curvature corresponding to the periphery of the pasting disc. The concave or active surface of the drum 16 is provided with teeth 18 which are somewhat similar in form to the teeth of a milling cutter having approximately radial leading faces (see Figure 2). Mounted on one side of the receptacle is a closure member or plate 19 which supports a nozzle member level with the horizontal axis of the drum 16. The nozzle member is formed by a pair of spaced plates 20, 21 defining an aperture or passageway 22, the outer or discharge end of which engages with the usual horizontal pasting disc 23 while its inner end is shaped to conform to the concave surface of the paste feeding drum 16. The inner edges of the nozzle forming plates 20, 21 are preferably arranged so that one of them (e. g. the upper) is spaced further from the correspondingly curved surface of the drum than the other (e. g. the lower), the effect being to cause the paste to be forced (or pumped) into the nozzle aperture 22 by the pressure exerted by the faces of the teeth 18 as they pass from the upper to the lower edge of the nozzle.

It will be noted that the lower plate 21 has an abrupt edge 21*a* located close to the surface of the drum while the upper plate 20 is provided with a curved surface 20*a* which is spaced from the drum whereby the forcing action of the teeth on the drum is obtained.

It will be understood that the arrangement of the upper and lower inlet edges of the plates forming the nozzle may be reversed, if desired, and the feeding drum rotated in the opposite sense.

The nozzle aperture or slot 22 embraces a portion of the periphery of the rotating pasting disc 23 and means are provided for regulating the quantity of paste supplied to the disc. This may be done by making a portion of the nozzle adjustable at the end at which the paste leaves (on the disc), such adjustable portion forming the end wall of the nozzle and comprising a plate 24 movable between the nozzle plates 20, 21 and in a slot formed in the closure member 19 whereby the plate 24 may be moved towards or away from the peripheral surface of the pasting disc. The adjustment of the plate 24 may be effected by

screw-actuated cam means. Thus the plate may be provided with a tooth 25 engaging in a slot 26 in an adjustable block 27 located in a guiding groove 28 in a cap-piece 29. In this way the thickness of the film of paste taken up by the pasting disc may be regulated as desired while the machine is running.

The opposite end wall of the nozzle may be formed as a separate removable plate 30 which closes the rear end of the nozzle and also acts as a scraper for removing dried paste from the edge of the disc before it passes into receiving relation with the nozzle. The plate 30 is located in a groove formed in the closure member 19 and is held in set position by the screw 31. A scraper 42 is pivotally mounted on the gear casing at 43 whereby it may be moved in engagement with the pasting disc (see Figure 1), spring means 44 being provided for holding it normally away from the disc.

The pasting disc 23 and paste feeding drum 16 are driven through gearing or other convenient means at suitable speeds depending on the conditions under which the device is required to operate. For example, the pasting disc may be driven through gears 32, 33, 34, 35 from the spindle 36 which latter is provided with a bevel gear 37 meshing with a bevel 38 on the spindle 39 coupled to the drum spindle 40 by a clutch 41. It will be understood that the teeth of the rotatable feeding drum act to mill the paste which is thereby softened and given a consistency suitable for the purpose in view, and the paste is then forced or pumped into the nozzle by the pressure of the tooth faces.

The feeding drum may, if desired, be made of cylindrical or other desired shape and it will also be understood that the invention may be applied to mechanism adapted for use with ordinary liquid or semi-liquid pastes.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. Means for applying paste to a running web, comprising a paste receptacle, means for maintaining the paste under pressure, a rotary toothed milling element, a nozzle through which the paste is forced by said toothed milling element, and a paste distributing device operative between the nozzle and the web and angularly disposed with respect to said element.

2. Means for applying paste to a running web comprising a paste receptacle, means for maintaining the paste under pressure, a rotary toothed milling element, a nozzle through which the paste is forced by said toothed milling element, and a pasting disc on the periphery of which the paste is deposited and angularly disposed with respect to said element.

3. Means for applying paste to a running web comprising in combination a paste receptacle, means for maintaining the paste in the receptacle under pressure, a nozzle, a rotary milling drum for forcing paste through said nozzle, and a paste distributing device between the nozzle and the web and angularly disposed with respect to said drum.

4. Means for applying paste to a running web comprising in combination a paste receptacle, means for maintaining the paste in the receptacle under pressure, a rotary toothed milling drum for operation on the paste in the receptacle, a nozzle having one edge of its inlet spaced farther from the drum surface than the other edge for causing the paste to be forced into said nozzle as the teeth of the drum pass across the inlet, and a pasting disc on the periphery of which the paste forced through the nozzle is deposited.

5. Means for applying paste to a running web, comprising in combination a paste receptacle, means for maintaining the paste under pressure in said receptacle, a nozzle forming a paste outlet from said receptacle, a pasting disc on the periphery of which the paste issuing from said nozzle is deposited, and means for forcing paste through said nozzle comprising a rotary milling element cylindroidal in form and being concave to correspond with the periphery of the said pasting disc.

6. Means for applying paste to a running web as claimed in claim 5, wherein the said rotary milling element is provided with teeth running longitudinally of the cylindroidal surface, said teeth having approximately radial leading faces.

7. Means for applying paste to a running web, comprising in combination a paste receptacle, means for maintaining paste under pressure in said receptacle, a rotary toothed milling drum within the receptacle, a pasting disc exteriorly of said receptacle and angularly disposed with respect to said drum, and a nozzle for delivering paste forced therethrough by said drum on to the periphery of the pasting disc comprising a slot extending substantially the whole length of the toothed surface of the milling drum and having its outlet curved to fit the periphery of the pasting disc.

8. Means for applying paste to a running web, comprising a paste receptacle, means for maintaining paste under pressure in the receptacle, a rotary toothed milling drum within the receptacle, a nozzle through which paste is forced by said drum and formed of a pair of spaced plates one of which is formed with an abrupt edge located in close proximity to the surface of the said drum and the other having a curved inner edge spaced from the surface of the drum, and a pasting disc on the periphery of which the paste forced through said nozzle is deposited.

9. Means for applying paste to a running web, comprising in combination a paste receptacle, means for maintaining the paste under pressure in the receptacle, a rotary toothed milling drum within the receptacle, a pair of spaced plates forming a nozzle through which paste is forced by said milling drum, a pasting disc on which the paste forced through said nozzle is deposited and angularly disposed with respect to said drum, and adjustable means at one end of the nozzle outlet to control the amount of paste delivered to said pasting disc.

10. Means for applying paste to a running web, as claimed in claim 9, wherein said adjustable means comprises a blade located between the nozzle plates and adjustable toward and from the pasting disc to vary the nozzle outlet.

11. Means for applying paste to a running web, comprising in combination a paste receptacle, means for maintaining paste under pressure in said receptacle, a pair of spaced plates forming a nozzle, means within the receptacle for forcing paste through said nozzle, a pasting disc for receiving on its periphery paste issuing from said nozzle, a blade located between the nozzle plates at one end of the nozzle outlet, and screw-operated cam means for adjusting said blade toward or from the pasting disc to vary the nozzle outlet.

12. Means for applying paste to a running web,

comprising in combination a paste receptacle, means for maintaining the paste in the receptacle under pressure, a nozzle having a slot forming an outlet from said receptacle, means within the receptacle for forcing paste through said nozzle slot, a pasting disc on the periphery of which paste forced through said nozzle is received, adjustable means at one end of the nozzle slot for controlling the amount of paste delivered to the pasting disc, and means at the other end of the nozzle slot to close such end and act as a surface for the pasting disc.

13. Means for applying paste to a running web, comprising a paste receptacle, means for applying pressure to the paste in said receptacle, a rotary toothed milling element within said receptacle, a slotted nozzle through which paste is forced by said milling element, adjustable means for controlling the area of the nozzle outlet, and a paste distributing device operative between the nozzle outlet and the web.

14. Mechanism for applying paste to a wrapper strip of a cigarette making machine, comprising in combination a paste receptacle, means for maintaining paste in the reecptacle under pressure, a pasting disc located exteriorly of said receptacle, an outlet from the receptacle comprising a nozzle having its outer end curved to fit the periphery of said pasting disc, and a rotary toothed milling element of cylindroidal form and having a concave surface corresponding to the periphery of the pasting disc located within said receptacle for forcing paste through said nozzle on to the periphery of the pasting disc.

15. Mechanism of the class described, comprising in combination a paste receptacle, means for maintaining paste under pressure in the receptacle, a pair of spaced plates forming a nozzle outlet from said receptacle and having curved outer faces, two blades one located at each end of the nozzle outlet, means for adjusting the position of one of said blades to vary the area of the nozzle outlet, a pasting disc having a portion of its periphery fitting the curved faces of the nozzle plates, and means within the receptacle for forcing paste through said nozzle for deposit on the periphery of the pasting disc.

16. Mechanism of the class described comprising in combination a paste receptacle, means for maintaining paste in the receptacle under pressure, a nozzle outlet from said receptacle, adjustable means for varying the area of the nozzle outlet during operation, a toothed milling drum within said receptacle, a pasting disc having its periphery located adjacent the nozzle outlet, and means for rotating the milling drum and the pasting disc, to cause the drum to force paste through the nozzle on to the periphery of the rotating pasting disc.

17. Mechanism of the class described as claimed in claim 16 and having in combination scraper means movable into engagement with the pasting disc.

18. Mechanism for applying paste to a wrapper strip of a cigarette-making machine comprising in combination a paste receptacle, means for maintaining paste under pressure in the receptacle, a rotary toothed milling drum within the receptacle, a pair of spaced plates forming an outlet nozzle extending substantially the whole length of the surface of the said drum and through which paste is forced by said milling drum, one of said plates having an abrupt inlet edge located in close proximity to the surface of the drum and the other of said plates having a curved inlet edge spaced from the surface of the drum, adjustable means for regulating the quantity of paste forced through the said nozzle, and a pasting disc on the periphery of which paste forced through the nozzle is deposited.

19. Mechanism for applying paste to a wrapper strip of a cigarette-making machine comprising a paste receptacle, means for applying pressure to the paste in the receptacle, a slotted nozzle forming an outlet from the receptacle and having curved inner and outer faces, screw-operated cam means for varying the area of the nozzle outlet, a pasting disc the periphery of which fits the curved outer face of the nozzle, means for closing one end of the slot of the nozzle and acting as a scraper for the pasting disc, and a toothed milling drum having a surface curved corresponding to the curve of the inner face of the nozzle for forcing paste through the nozzle for deposit on the periphery of the pasting disc.

20. Mechanism for applying paste to a wrapper strip of a cigarette-making machine, comprising in combination, a paste receptacle, means for maintaining paste under pressure in said receptacle, a rotary toothed milling element having a concave surface, a nozzle through which paste is forced by said milling element and formed of a pair of plates having curved surfaces corresponding to the curved surface of the said milling element and located different distances therefrom, and a horizontally arranged pasting disc on the periphery of which the paste forced through the nozzle is deposited.

21. Means for applying paste to a running web, comprising a paste receptacle, means for maintaining the paste under pressure, a rotary toothed milling element, a nozzle through which the paste is forced by said toothed milling element, and a paste distributing device between the nozzle and the web, said nozzle having an elongated inlet, and said milling element rotating on an axis parallel to said inlet.

ROBERT JOHN ALEXANDER CHANDLER.