This invention relates to machines for applying a strip of paste to a moving sheet or web, and more particularly to apparatus for applying paste to paper in a cigarette making machine. It is well known, that cigarettes are made by continuously feeding the paper from a roll at a predetermined speed, feeding the proper quantity of tobacco to the paper to produce cigarettes of a given weight, and then completing the manufacture of the cigarettes in a continuous rod. A suitable cutter severs cigarettes of the proper length from this rod.

Various improvements in cigarette making machines have resulted in increased speed of production and the apparatus heretofore used for supplying paste have proved inadequate in high speed machines. In the present invention I provide a paste which is capable of operating at high speed without the attendant disadvantages of the pastes heretofore used.

The device consists of a paste pot arranged on and communicating with a housing in which a revolving feed screw is mounted. At its forward end, the feed screw is provided with a radial port communicating with a central port or passage. The opposite end of this port communicates with an axial passage. A nozzle is mounted on the end of the feed screw androtates therewith. The nozzle is provided with an axial passage communicating with the axial passage in the feed screw.

The invention also comprises means for eliminating air bubbles from the paste as the paste is delivered to the feed screw. If air bubbles are present in paste delivered to the nozzle, the portion of the paste passing the nozzle at the time the air bubble is released, receives no paste and as a result the cigarette is not properly sealed. Removal of the air bubbles, together with the other structural features of the invention, results in a continuous feed of paste to the edge of the cigarette paper.

In the accompanying drawings I have shown one embodiment of the invention. In this showing,

Fig. 1 is a plan view of the paste pot mounted on the bed of a cigarette machine;

Fig. 2 is a vertical, sectional view on the irregular line 2-2 showing the support for the paste pot;

Fig. 3 is a central, longitudinal, vertical, sectional view on line 3-3 of Fig. 1;

Fig. 4 is a detailed, horizontal, sectional view on line 4-4 of Fig. 3; and

Fig. 5 is a detailed, vertical, sectional view on line 5-5 of Fig. 4.

Referring to the drawings, the reference numeral 1 designates the body of the feeder and it is provided with a central bore 2. The bushing 3 is mounted in the central bore. The feed screw 4 is mounted in the bushing and throughout the greater portion of the length of the bushing, forms a comparatively tight fit therewith. The feed screw is provided with threads 5 extending substantially throughout the length of the bushing, the thread being deeper at the rear end and tapering toward the front or outlet end.

In a specific embodiment of the invention, the threads are \( \frac{1}{4} \) deep at the outlet end and taper one-half degree toward the opposite end. At each end of the bushing, the feed screw is reduced in diameter, as indicated at 6, and passes through a closure 7 which prevents leakage of paste between the bushing and the feed screw at the opposite ends. The feed screw is adapted to rotate and is mounted in suitable ball bearings 8. A housing 9 surrounds the ball bearings and the closure at the rear end of the feed screw and a similar housing 10 is arranged at the front end.

The top of the casting or body is provided with a circular flange 11 to which a paste pot 12 may be secured in any suitable manner as by mating threads 13. The paste pot is provided with a cover 14. The bottom of the paste pot is provided with an opening 15 and bushing 3 is provided with an aligned opening 16 whereby the paste is delivered to the feed screw adjacent the rear end. Adjacent the forward end of the feed screw I provide a circular groove 17 and this groove communicates with a radial port 18.

The radial port extends to the center and communicates with an axial bore 19. A nozzle 20 is mounted in the bore 19 and is provided with a communicating bore 21. The nozzle may be held in the end of the bore 19 in any suitable manner as by adjusting nut 22.

The rear end of the feed screw is provided with a bevel gear 23 and is covered by a guard cover 24 secured to housing 9.

When the paste pot is in operative position, gear 23 meshes with a pinion 25. This pinion is mounted on a shaft 26 which passes through the bed 27 of the cigarette making machine. The lower end of shaft 26 carries a gear 28 which is driven from one of the moving shafts (not shown) of the cigarette making machine. A flanged sleeve 29 extends through the bed of the machine and forms a bearing housing for the shaft 26. Bearings 30 are arranged within this sleeve. The flange 31 is secured to the bed of the cigarette machine by bolts or studs 32.
guard 33 for bevel gear 25 is secured to the flange. As shown (see Fig. 3) the guard extends substantially half way round the top of the gear and cooperates with the cover 24 to form a complete housing when the parts are in the operative position shown in Fig. 3 of the drawings.

As shown in Figs. 1 and 2, the base 1 of the machine is provided with an arm 34 terminating in a sleeve 35. This sleeve is received on a post 36, the post being mounted on a plate 37 which is received in a recess in the bed 27 of the cigarette making machine. The plate 37 and post 36 are retained in position by bolts or studs 38. Suitable means are provided for adjusting the paste pot vertically to bring the nozzle 20 into proper position to apply the paste to the cigarette paper. One such means illustrated consists of an adjustable sleeve 39 arranged over the post and receiving the sleeve 35. As shown, the sleeve 39 is provided with a flange 40 at the bottom and is further provided with a threaded opening 41 in the top. The post is in turn provided with a threaded bore 42 in alignment with the threaded opening 41. These openings are provided with threads of different pitch and a differential screw 43 passes through the opening 41 in the sleeve and is received in the bore 42. It will be apparent that when the screw 43 is turned, the difference in the pitch of the threads on the two portions thereof will cause the sleeve 39, and therefore the paste pot, to be raised or lowered, without the need to move the bed in dotted lines, thus permitting vertical adjustment of the nozzle.

Sleeve 35 is split as shown at 44 in Fig. 1 of the drawings. A clamping screw 45 is passed through aligned openings in the two ears 46, one of which is threaded to receive the screw 45, and the clamping screw is provided with an operating handle 47. By turning the handle 47 to release the clamping screw, the paste pot may be swung away from the path of the cigarette rod as indicated in dotted lines in Fig. 1 of the drawings. This permits easier access to the paste pot for any repairs or adjustments. When the paste pot is swung into its operative position, the cover 24 cooperates with guard 33 to cover the pinion 25.

As stated, throughout most of the length of the bushing 3 and the feed screw 4, the feed screw forms a comparatively close fit in the bushing. As a result, the paste in the threads 5 is milled as it passes along the feed screw and is thus delivered to the bore 19 of an even consistency. In alignment with the openings 15 and 16 in the bottom of the paste pot and the bushing, the bore of the bushing is eccentric, as indicated at 48 in Fig. 5 of the drawings. As shown, the wall of the bushing at this portion tapers in thickness from the opening 16 to the bottom as indicated at 49. This provides a passage or chamber 59 surrounding the feed screw which is wider at the top and tapers to the depth of the thread 3 at the bottom. In actual use of the paster I have found that this eliminates the possibility of the paste getting into the paste pot due to slight agitation caused by feed of the paste from the bottom of the paste pot.

I claim:

1. A paster for cigarette making machines comprising a body having a cylindrical bore, a bushing mounted in the bore, a threaded feed screw mounted in the bushing, the feed screw being snugly received within the bushing throughout most of its length, the bushing being provided with an eccentric portion adjacent its rear end and a chamber surrounding the feed screw tapering in width, the chamber being of greatest width at its top and being open at the top to receive paste, the feed screw being provided with a radial port adjacent its forward end and an axial bore communicating with the radial port, a nozzle mounted in the bore and rotatable with the feed screw, and means for rotating the feed screw and the nozzle to deposit paste on the paper passing the end of the nozzle.

2. A paster for cigarette making machines comprising a body having a bore, the bore being cylindrical throughout most of its length and being provided with an eccentric portion adjacent its rear end, a threaded feed screw mounted in the bore, the feed screw being snugly received throughout the cylindrical portion of the bore, the eccentric portion of the bore forming a chamber surrounding the feed screw tapering in width, the chamber being of greatest width at its top and being open at the top to receive paste, the feed screw being provided with a radial port adjacent its forward end and an axial bore communicating with the radial port, a nozzle mounted in the bore and rotatable with the feed screw, and means for rotating the feed screw and the nozzle.

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