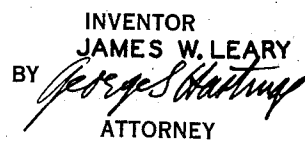


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2 Sheets-Sheet 1



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J. W. LEARY

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PASTER

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FIG. 3

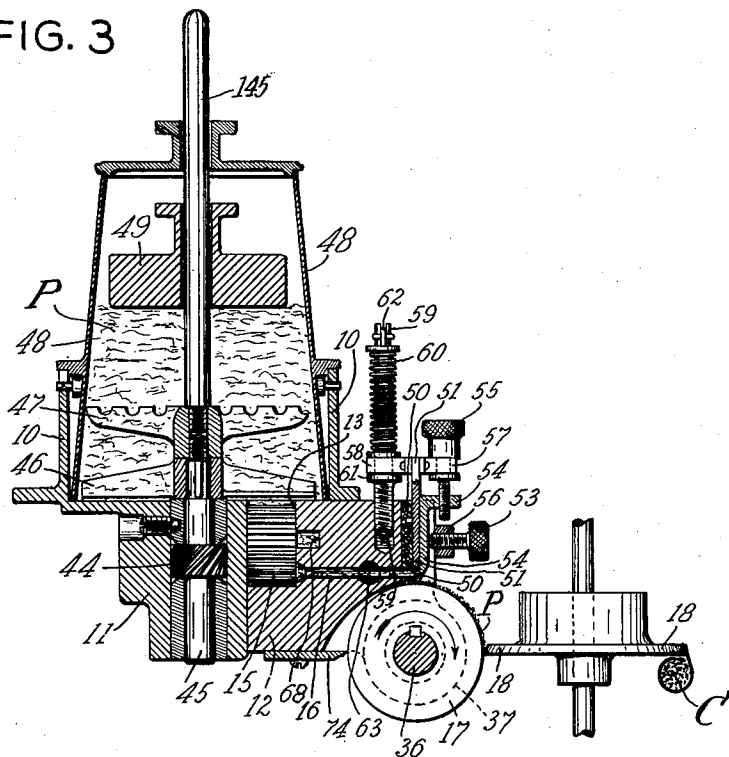
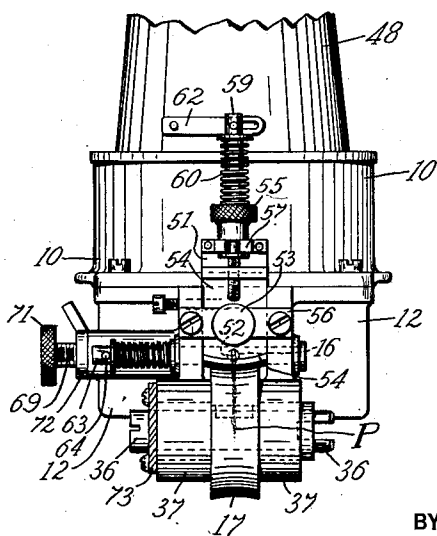


FIG. 4



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PASTER

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6 Claims. (Cl. 91—50)

This invention relates to a pasting device of the character utilized in such machines as rod-forming cigarette machines, and relates especially to a device for pasting the lengthwise marginal seam of a cigarette paper web, and more particularly to the type of cigarette machine paster employing a feed pump of the intermeshing gear type, as illustrated in Letters Patent to Bronander et al., No. 1,992,736, and in applicant's co-pending application, Serial No. 9,477, which has matured into Letters Patent No. 2,130,689, issued September 20, 1938.

An outstanding characteristic of the preferred type of cigarette machine paster disclosed in the last-named application is found in the combination with a paste reservoir of a delivery duct leading from the reservoir and having an extrusion orifice, mechanism coacting with said reservoir to force an oversupply of paste from the reservoir through said duct toward said orifice, devices providing a return conduit between said duct and the reservoir, at the pressure side of the orifice, and a relief valve controlling the return flow of any oversupply of paste through the return conduit to said reservoir whereby any excess of paste at the orifice will be relieved.

In my aforesaid application, substantial advantages over the prior art represented by a paste feed of the Bronander type having a plurality of sets of feeding gears were achieved by my provision for using a feed pump having a single set of gears, and by the provision for uniformity of feed by feeding an oversupply of paste through the delivery duct to the discharge orifice, returning any excess of paste to the reservoir through a by-pass as described by said Letters Patent, although the means employed to avoid the existence of voids in the paste supplied to the teeth was not altogether satisfactory.

An object of the invention is to provide means by which the paste extruded at the discharge orifice of the delivery duct will be fed more regularly and applied more efficiently to the marginal seam of the advancing web of cigarette paper than has been possible with a cigarette machine paster of conventional structure.

In carrying into effect this object, the invention provides an improved form of transfer means interposed between the discharge orifice of the delivery duct and the seam-pasting wheel; also an improved and readily attachable and detachable gate device for controlling the dimensions of the stream of paste to be supplied, including also means for effecting readily the adjustments required for regulating to a desired size the rib-

bon of paste which is extruded to a transfer wheel and thence to the pasting roll.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses.

In the accompanying drawings, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings, in which:

Fig. 1 is a view in plan of a cigarette machine paster in the construction of which the present invention has been embodied;

Fig. 2 is a fragmentary detail view in vertical section taken upon the line 2—2 of Fig. 1, on a larger scale;

Fig. 3 is a fragmentary detail view in vertical section, with parts shown in elevation, taken upon the line 3—3 of Fig. 1; and

Fig. 4 is a view in end elevation of the parts shown in Fig. 3, looking from right to left on Fig. 1.

In the now-preferred embodiment of the invention selected for illustration and description, the part designated by the reference character 10 is a paste receptacle formed at its lower portion with a lug 11 upon which is mounted a housing 12 provided with a chamber 13 in communication with an opening in the bottom of the receptacle 10 (Fig. 3).

Within the chamber 13 is disposed a pump constituted by intermeshing gears 14 and 15, the upper portions of which rotate divergently when the pump is in use, and the teeth of this pair of gears scoop the paste in predetermined amounts from the paste lying in the V-shaped space between the upper portions of the gears.

At their under portions, the paste carried around and down by the gear teeth is delivered under pressure through a delivery duct 16 and through a discharge orifice 52 to a transfer wheel 17 by which the paste stream so constituted is transferred to a rotating paste wheel 18 by which it is applied to the appropriate lengthwise seam margin 8 of the cigarette paper web C.

To actuate the pump-gear-couple, a horizontal drive shaft 20 is provided, supported by the lug 11 and coupled to another horizontal shaft 21 mounted in bearings of a gear housing 22 (Fig. 1) the shaft 21 driving the gear couple 14—15 and being driven in turn by a gear 23 meshing with a gear 24 mounted on a shaft 25 also supported by bearings of housing 22.

The hub 26 of gear 24 contains a standard friction clutch (not shown) which can be con-

trolled in the conventional manner by turning a hand knob 27 mounted on the shaft 25. This arrangement is provided to permit the paste to be fed by means of a hand wheel 28 before starting the machine, thus preventing the waste of cigarette paper, the hand wheel being mounted on the shaft 21. The shaft 25 also carries a spiral gear 29 meshing with a spiral gear 30 which is mounted on a vertical shaft 31 coupled with the main drive shaft of the cigarette machine (not shown).

Upon a vertical shaft 31 supported by bearings of a bracket 32 mounted on the housing 22, is fastened a bevel gear 33 meshing with a bevel gear 34 mounted on a horizontal shaft 35 which is coupled with a shaft 36 carrying a known form of transfer wheel 17. Shaft 36 is supported in bearing lugs 37 of housing 12. Bracket 32 is equipped with an arm 38 holding a vertical stud 39 to which is adjustably clamped a forked bracket 40 supporting the rotating paste wheel 18. From supporting bracket 32 extends a lug 41 supporting an adjustable stop screw 42 contacting the paste wheel-supporting bracket 40. On the gear driving shaft 20 is also mounted a spiral gear 43 (Fig. 1) meshing with a spiral gear 44 attached to a vertical shaft 45 supported by bearings on lug 11 (Fig. 3). The upper portion of the shaft 45 extends into the paste receptacle 10 and carries a propeller 46 and an agitator 47.

While the propeller 46 assures the constant supply of paste to the pump gears 14 and 15, the agitator 47 serves concurrently the purpose of continuously stirring the column of paste P in the receptacle 10. As illustrated in Fig. 3, the receptacle 10 can be equipped with an extension 48 which can easily be attached thereto in case a heavier paste, such as starch, etc., is to be used. Under such conditions, it is desirable to provide a weight 49, resting upon said paste. Preferably this weight is of annular form, as illustrated, and mounted to slide upon a post 145 carried with, and rotated by, the hub of agitator 47 and the propeller 46.

The duct 16 communicates by means of a hole in a leather washer 50 (Fig. 3), with a paste guide plate 51 provided with a vertical slot 52 (Fig. 4) which matches with said hole in the leather washer 50. Against the paste guide plate 51, by means of a thumb screw 53, is clamped a paste control plate 54 which is vertically adjustable by means of a thumb screw 55. By raising or lowering said control plate, the amount of paste delivered to the transfer wheel 17 can be controlled to any desirable degree. A thumb screw 53 is held by means of a bar 56 attached to lugs 37 of housing 12, and the thumb screw 55 engages with an open slot of a flange 57 mounted on the upper portion of the paste guide plate 51. To the upper portion of the latter is fastened another flange 58 which with its open slot engages with a vertical stud 59 held by the housing 12. Flange 58, and therewith paste guide plate 51, are held yieldingly in place by means of a spring 60 pressing flange 58 against a collar 61 (Fig. 3) of stud 59. By lifting a lock bar 62 slidably pinned to the upper portion of the stud 59, the spring pressure upon flange 58 can be quickly released, and the leather washer 50, paste guide plate 51 and paste control plate 54 can be removed easily for cleaning purposes, etc.

The volume of paste passing through channel 16 can also be controlled readily by means of a valve staff 63 supported in housing 12 and operated by means of a handle 64 mounted on the extending portion of said valve staff. The high

speed of the pump gears 14 and 15 creates a high pressure in the duct 16 and thereby forces the paste against a spring-mounted plunger 65, which is pushed back by said pressure and allows the paste to enter by-pass channels 66 and 67 in housing 12 (Fig. 2). By-pass channel 67 is connected to a refill chamber 68 facing the teeth of pump gear 14. The excess paste, which is forced through the pump gears and not allowed to be carried away by the transfer wheel, due to the action of the gate 54, is forced back under pressure against the spring plunger 65 through by-pass 67—68 and is forced into the empty teeth of pump gears 14 and 15. The result is that a solid and even paste stream is delivered to the paper lap of the cigarette rod at all times, avoiding an insufficient paste supply, which heretofore was a common ailment of high speed cigarette machines. Of course, when no pressure is created in channel 16, the plunger 65 remains in its seat in by-pass channel 66 and allows no paste to pass through the latter.

Plunger 65 is slidably supported by a threaded bushing 69 supported by housing 12. Said plunger is also provided with a tension spring 70 (Fig. 2) the tension of which is adjustable readily by means of turning the hand knob 71 attached to bushing 69. A lock flange 72 holds the latter in the desired position. To one of the lugs 37 is also adjustably attached a scraper plate 73 contacting the rotating paste wheel 18 and scraping any remaining paste off the latter (Fig. 1). To the bottom portion of the housing 12 is also fastened a scraper plate 74 contacting the transfer wheel 17. Said plate serves the purpose of scraping any remaining paste of the transfer wheel 17 before a new paste stream is delivered upon the same. In order to assure proper and quick aligning of the driving and pasting mechanism, lug 11 is equipped with a guide shaft 75 entering a hub 76 of housing 22 (Fig. 1).

It will be noted that the transfer wheel 17 is not in contact with any mass of paste, and that the strip of paste extruded from the orifice 52 is substantially narrower than the width of the transfer wheel, so that there is no deposit of paste on the transfer wheel except where the strip of desired width is fed to the wheel.

It is further to be noted that the paste delivered by the gear pump, from the supply in the reservoir to the orifice 52, is several times in excess of that required for delivery to form the strip on the transfer wheel. This not only insures the supply of a strip having uniform characteristics for pasting purposes, but also insures an effective return supply to aid in avoiding voids in the gear pump, as already described.

The invention above described may be embodied in various modified forms of construction within the scope of the claims, for the particular physical embodiment selected to illustrate the invention, is but one of many possible concrete embodiments of the same. The invention is not, therefore, to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a paster for a cigarette machine and the like, the combination with a paste reservoir, a housing, and a delivery duct having a discharge orifice, of means for supplying paste from said reservoir in a stream through said duct to said orifice, a transfer wheel disposed to receive a strip of paste from said stream, a slide valve member having a gateway slot to delimit the maximum cross-sectional area of said stream, restricting it

to strip size, a sliding gate member to control the extent to which said slot is opened, and means to support said slide valve and sliding gate members upon said housing.

2. In a paster for a cigarette machine and the like, the combination with a paste reservoir, a housing, and a delivery duct having an orifice, of means for supplying paste from said reservoir in a stream through said duct to said orifice, a transfer wheel disposed to receive a strip of paste from said stream, a slide valve member having a gateway slot to delimit the maximum cross-sectional area of said stream, reducing it to strip size, a sliding gate member to regulate the opening of said slot, and a mounting supported by said housing and on which said members are carried, constituting with said members a unitary structure separable as such from said housing.

3. A paster device having the features claimed in claim 2, in which provision is made of a post provided with means by which it may be secured in adjusted position upon said housing, a cross-head having rotatable connections with said post, permitting axial movement of the post relatively to the cross-head, said cross-head and post constituting said means to support said slide valve and sliding gate members upon said housing.

4. A paster of the class described, having the features claimed in claim 2, in which said mount-

ing is provided with a cross-head fitted with means to adjust said gate member relatively to said slide-valve member, and said housing is provided with a bracket and binding screw to hold said mounting in readily attachable and detachable relation with said housing.

5. A paster of the class described, having the features claimed in claim 2, in which said mounting is provided with a cross-head fitted with means to adjust said gate member relatively to said slide-valve member, and said housing is provided with a bracket and binding screw to hold said mounting in readily attachable and detachable relation with said housing, said slide valve having a sealing means provided with an orifice adapted to pass paste from the discharge orifice of said delivery duct to said gateway slot.

6. A paster of the class described, having the features claimed in claim 2, in which provision is made of a post adapted to be supported by threaded engagement with a part carried by said housing, a cross-head transfixed vertically by said post, and adapted to be moved vertically by rotation of the post to adjust said slide-valve, a spring coiled around said post and arranged to bias said cross-head downwardly, and a trip lever at the upper end of said post, said trip lever being movable at will to tension and to relax said spring.

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