Feb. 28, 1939. F. DI IANNI 2,148,685

NONFOULING LAP FORMER FOR CIGARETTE MACHINES

Filed Feb. 8, 1935

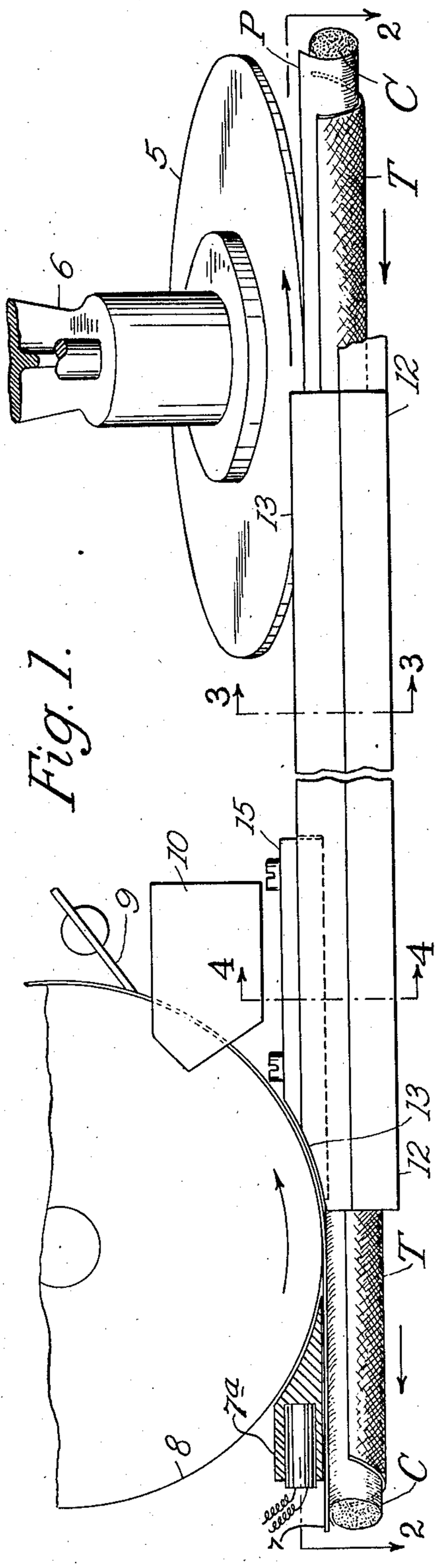

Fig. 1.

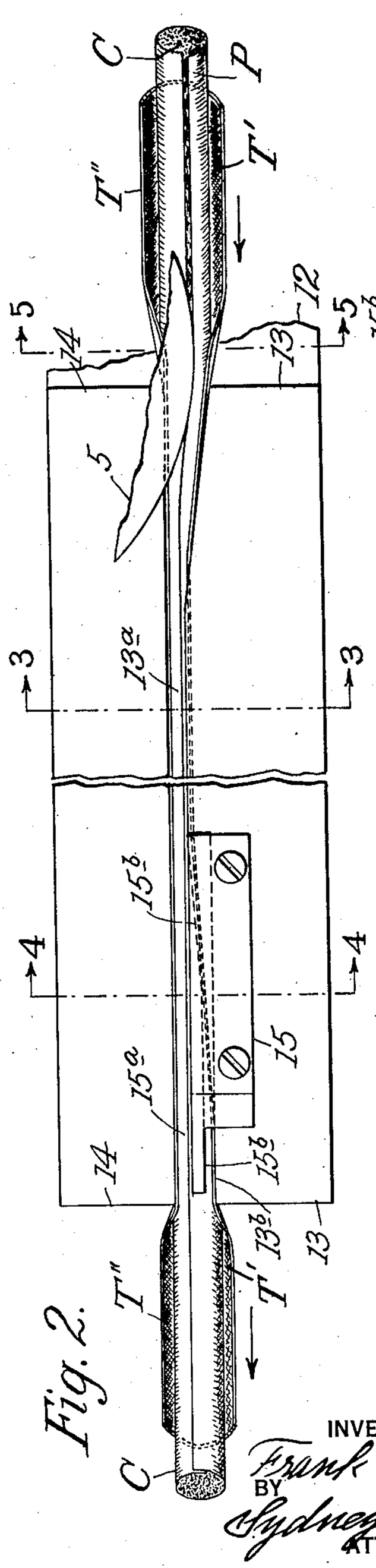

Fig. 2.

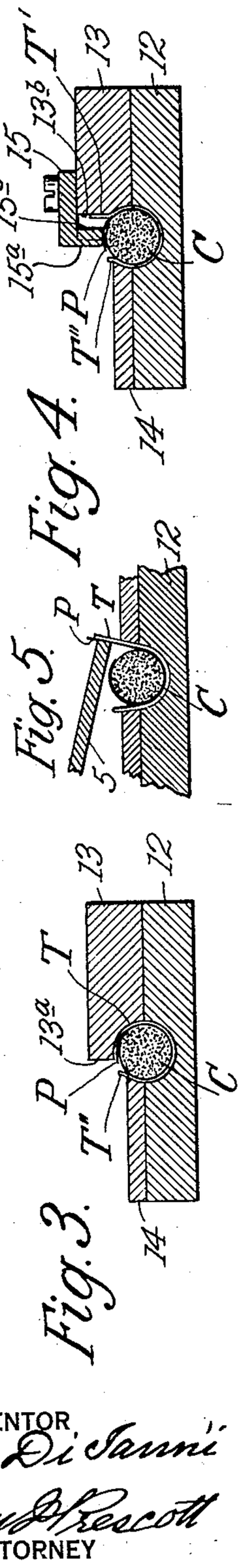

Fig. 4.

Fig. 5.

Fig. 3.

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Patented Feb. 28, 1939 2,148,685

UNITED STATES PATENT OFFICE

2,148,685

NONFOULING LAP FORMER FOR CIGARETTE MACHINES

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Application February 8, 1935, Serial No. 5,652

17 Claims. (Cl. 131—43)

This invention relates to improvements in the lap formers of rod-forming tubes used in continuous-rod cigarette machines to lap the freshly pasted margin of the wrapper web emerging from the rod paster, down upon the cigarette rod and hold it in overlapped position on the other margin of the wrapper web while the cigarette rod is carried by an endless rod-forming tape to the rod sealer by which the seam is pressed and dried to form the finished cigarette rod.

The main object of the present invention is to prevent fouling of the lap former by the surplus paste which is squeezed out of the seam and would otherwise collect on the lap-closing block, thereby obviating stoppage of the machine for cleaning of the block and thus increasing the production of the machine. A further object is to so construct the lap former that the margins of the endless rod-forming tape, which are held down upon the cigarette rod during its passage through the lap former, may spread apart relatively before entering the sealer, so as to clear the hot sealing surface of the latter and avoid damaging the tape.

The first object may be achieved by making the lap former in two parts, a lap-closing block and a plate secured to the channeled bottom block of the rod-forming tube, with a gap between them, this gap extending circumferentially from a short distance above the cigarette rod seam to a short distance below the same, so that the surplus paste remains on the cigarette rod and is subsequently removed by the action of the sealer. If the latter is of the self-cleaning endless band type, such as disclosed in the patent to R. E. Rundell, No. 1,907,587, granted May 9, 1933, or in the co-pending application of E. D. Smith, S. N. 727,003, filed May 22, 1934, issuing into Patent 1,992,723, the surplus paste is wiped from the cigarette rod by the endless band and continuously removed from the latter during the operation of the machine, thus eliminating the stoppages heretofore necessary for cleaning the block.

To achieve the second object a notch is formed in the tip of the lap-closing block alongside of the open gap, but extending only a portion of its length back from the sealer end, to permit one margin of the rod-forming tape to spread away from the heated sealer. The remaining portion of the tip at the other end of the gap is tapered toward the receiving end of the rod-forming tube so as to catch the incoming margin of the rod-forming tape and guide it underneath said tip.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawing which forms a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a front elevation of a rod-forming tube equipped with the improved lap former;

Fig. 2 is a top view of the same, on line 2—2 of Fig. 1;

Fig. 3 is a cross-section on lines 3—3 of Figs. 1 and 2;

Fig. 4 is a cross-section on lines 4—4 of Figs. 1 and 2; and

Fig. 5 is a cross-section on line 5—5 of Fig. 2.

In carrying the invention into effect there is provided a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, a longitudinally channeled bottom block adapted to support the tape in its channel, a lap former secured to the bottom block and hollowed longitudinally to provide, together with the channel, a bore in which the pasted margin is lapped on the other margin to form a seam, the lap former being provided with an open gap along the seam, whereby the paste squeezed from the seam cannot foul the lap former. In the best constructions contemplated there is provided a traveling heated sealer band arranged to engage the seam as the cigarette rod is forwarded from between the bottom block and lap former on the rod-forming tape, and a scraper engaging said band, whereby the surplus paste is continuously removed from the cigarette rod. Furthermore, the lap former, in the best constructions, includes a lap-closing block secured to the bottom block at one side of the channel and provided with a tip overhanging and terminating on the exterior of the pasted margin of the wrapper, and a plate extending along the other side of the channel and of such height that there is an open gap between it and the tip of the lap-closing block along the seam, the lap-closing block having its tip cut away near its far end to permit the adjacent margin of the rod-forming tape to spread out of the path of the sealer band, and provided with an angle-iron extending into the notch thus formed to bear against the seam.

These various means and parts may be widely varied in construction within the scope of the claims for the particular device selected to illus-

trate the invention is but one of many possible concrete embodiments of the same. The invention, therefore, is not to be restricted to the specific construction shown and described.

Referring to Fig. 1, the paster wheel 5, which forms a part of the paster of the continuous-rod cigarette machine, turns in the bracket 6 and applies paste to the interior upstanding margin of the wrapper web P of the cigarette rod C. The paster may be of any well known construction operating to deliver paste or casein to the periphery of the paster wheel; and the sealer may be of the self-cleaning type, such as shown in the Rundell or Smith patents cited above, or of the manually cleaned type disclosed in the patent to C. H. Gibson et al., Number 1,945,433, granted January 30, 1934. In the present embodiment the sealer illustrated is of the endless band type shown in the patent to E. D. Smith identified above, in which the lower run of the endless band 7 is heated by the electrical heater unit 7*a* and driven by the wheel 8, engages and dries the seam of the cigarette rod C and picks up the surplus paste from the rod. The paste collecting on the belt 7 is then removed by a scraper 9 and drops into a waste pot 10.

The cigarette rod C is carried from the paster wheel or disc 5 to the sealer band 7 by a continuously moving endless rod-forming tape T which is supported in a longitudinal channel of semi-circular cross-section provided in the bottom block 12 of the rod-forming tube. Upon the block 12 is mounted the lap former which, together with the block 12, constitutes the rod-forming tube and folds the pasted margin of the wrapper web P upon the rod, thus closing the seam.

The improved lap former, Figs. 1 to 4, consists of a lap-closing block 13 mounted at one side of the channel in the block 12 and overhanging the cigarette rod, and of a plate 14 mounted on the other side, the block 13 and plate 14 being hollowed out longitudinally to form with the channel in the bottom block 12 a bore in which the pasted margin of the wrapper web is lapped on the other margin to form a seam. The amount of circumferential overhang of block 13 and the height of plate 14 are so chosen that an open gap is provided between them along the overlapping edge of the seam. As shown in Fig. 3, the overlapping edge of the seam projects a short distance beyond the tip 13*a* of block 13 and terminates some distance away from the edge T'' of tape T projecting above plate 14. Therefore, the surplus paste squeezed from the seam can not come into contact with either part of the lap former or with the edge T'' of tape T, but is carried away on the cigarette rod from which it is removed by the sealer as described.

To prevent the edge T' of the tape T from being damaged by contact with the sealer band 7, a second axial gap, extending for an appreciable distance at the sealer end of the lap former, is produced by cutting away a portion of the tip 13*a* of block 13; and an angle-iron 15, Fig. 4, is attached to the remaining portion 13*b* in such a manner that the vertical leg of the same, at its outer edge 15*a*, forms the continuation of the tip edge 13*a* of the block but leaves a space between its inner edge 15*b* and the recessed edge 13*b* of the clock and bears against the seam. The forward end of angle piece 15 is concaved to fit the curvature of the portion of the sealer band 7 trained over wheel 8, and the inner edge 15*b* of its downwardly projecting leg is tapered towards the rear, so as to provide a suitable space for spreading of tape margin T'. The edge T'' of tape T projects above the plate 14 into the main gap of the lap former.

In the operation of a cigarette machine equipped with the above described rod-forming tube, the wrapper web P on which the tobacco is showered, or otherwise deposited, is advanced in the channel of the bottom block 12 by the rod-forming tape under the tongue (not shown) which compacts the tobacco in the usual manner. Beyond the tongue, one margin of the wrapper web is drawn over the periphery of the paster wheel 5, and paste is thus applied to the interior of the wrapper web margin. As the rod-forming tape draws the pasted wrapper between the block 13 and plate 14 of the lap former the margins of the tape are thereby folded inwardly with the margins of the wrapper web to bring the pasted margin into lapped relation to the other margin of the wrapper web, the tape margin T' being caught by the tapered side of the tip 13*a* on block 13 and guided underneath said tip. The middle portion of the tip, along the open gap, holds the wrapper margin in lapped relation until the seam passes under the vertical leg of the angle-iron 15, whereupon the tape margin T' is free to spread away from the cigarette rod as its seam engages the heater sealer band, thus finishing the cigarette rod.

What is claimed is:

1. In a cigarette rod-forming tube, the combination with a longitudinally channeled bottom block adapted to support in its channel a traveling cigarette rod having the interior of one of its wrapper margins pasted, of a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam extending across the outer seam edge, whereby the paste squeezed from the seam cannot foul the lap former.

2. In a cigarette rod-forming tube, the combination with a longitudinally channeled bottom block adapted to support in its channel a traveling cigarette rod having the interior of one of its wrapper margins pasted, of a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam, whereby the paste squeezed from the seam cannot foul the lap former, said lap former including a lap-closing block secured to said bottom block at one side of said channel and provided with a tip overhanging and terminating on the exterior of the pasted margin of the wrapper within the edge of the same, and a plate extending along the other side of said groove and of such height that there is an open gap between it and the tip of the lap-closing block along the seam.

3. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which

the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam extending across the outer seam edge, whereby the paste squeezed from the seam cannot foul the lap former or tape.

4. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam, whereby the paste squeezed from the seam cannot foul the lap former or tape, said lap former including a lap-closing block secured to said bottom block at one side of said channel and provided with a tip overhanging and terminating on the exterior of the pasted margin of the wrapper within the edge of the same, and a plate extending along the other side of said groove of such height that there is an open gap between the margin of the tape adjacent it and the tip of the lap-closing block along the seam.

5. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam, whereby the paste squeezed from the seam cannot foul the lap former, said lap former including a lap-closing block secured to said bottom block at one side of said channel and provided with a tip overhanging and terminating on the exterior of the pasted margin of the wrapper, and a plate extending along the other side of said groove and of such height that there is an open gap between it and the tip of the lap-closing block along the seam, said lap-closing block having its tip cut away near its far end to permit the adjacent margin of the rod-forming tape to spread outwardly.

6. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam extending across the outer seam edge, whereby the paste squeezed from the seam cannot foul the lap former, and a self-cleaning sealer arranged to engage the seam as the cigarette rod is forwarded from between said bottom plate and lap former on said tape, whereby the surplus paste will be continuously removed from the cigarette rod.

7. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam extending across the outer seam edge, whereby the paste squeezed from the seam cannot foul the lap former, a traveling heated sealer band arranged to engage the seam as the cigarette rod is forwarded from between the bottom block and lap former on the rod-forming tape, and a scraper engaging said band, whereby the surplus paste is continuously removed from the cigarette rod.

8. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam, whereby the paste squeezed from the seam cannot foul the lap former, a traveling heated sealer band arranged to engage the seam as the cigarette rod is forwarded from between the bottom block and lap former on the rod-forming tape, and a scraper engaging said band, whereby the surplus paste is continuously removed from the cigarette rod, said lap former including a lap-closing block secured to said bottom block at one side of said channel and provided with a tip overhanging and terminating on the exterior of the pasted margin of the wrapper, and a plate extending along the other side of said channel and of such height that there is an open gap between it and the tip of the lap-closing block along the seam, said lap-closing block having its tip cut away near its far end to permit the adjacent margin of the tape to spread away from the sealer band and provided with a member extending into the notch thus formed and bearing against the seam.

9. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide, together with said channel, a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former being provided with an open gap along the seam extending across the outer seam edge, whereby the paste squeezed from the seam cannot foul the lap former, and a sealer arranged to engage the seam as the cigarette rod is forwarded from between said bottom block and lap former on said tape and remove surplus paste expressed from the seam.

10. In a cigarette rod-forming tube, the combination with a longitudinally channeled bottom block adapted to support in its channel a traveling cigarette rod having the interior of one of its wrapper margins pasted, of a lap former secured to said block and hollowed longitudinally to provide together with said channel a bore in which the pasted margin is lapped on the other margin to form a seam, said lap former including a lap-closing block secured to said bottom block at one side of said channel and overhanging and terminating on the exterior of the pasted

margin of the wrapper short of the edge of the same to prevent fouling of the lap-closing block by the paste expressed from the seam.

11. In a cigarette rod-former, the combination with a rod-forming tube having a longitudinally channeled portion adapted to support in its channel a traveling cigarette rod with its paper wrapper partially folded and having the interior of one of its paper margins pasted, said tube having a lap forming portion arranged to fold the pasted margin of the cigarette paper on the other margin to form a seam, said tube being provided with an open gap along the seam and said forming portion terminating at the edge of said gap, short of the seam whereby the paste squeezed from the seam cannot foul the forming portion.

12. In a cigarette-rod former, the combination with a rod-forming tube having a longitudinally channeled portion adapted to support in its channel a traveling cigarette-rod with its paper wrapper partially folded and having the interior of one of its paper margins pasted, of a traveling rod forming tape arranged to forward the cigarette-rod through said tube, said tube having a lap forming portion arranged to fold the pasted margin of the cigarette paper on the other margin to form a seam, said tube being provided with an open gap along the seam and said lap forming portion terminating at the edge of said gap short of the seam.

13. A cigarette rod-forming tube having a bore adapted to permit the passage therethrough of a rod-forming tape carrying a cigarette rod having a partially folded wrapper, the interior of one of the wrapper margins being pasted, and also having a lap-forming portion arranged to fold the pasted margin of the wrapper on the other margin to form a seam, said tube being provided with an open gap along the seam and said lap-forming portion terminating short of the edge of the overlapping wrapper margin whereby the paste squeezed from the seam cannot foul the tube.

14. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having the interior of one of its wrapper margins pasted, of a longitudinally channeled bottom block adapted to support said tape in its channel, and a lap former secured to said bottom block and hollowed longitudinally to provide together with said channel a bore in which the pasted margin is lapped on the other margin to form a seam, and a traveling sealer arranged to engage the seam as the cigarette rod is forwarded on said tape from between said bottom block and lap former and remove surplus paste expressed from the seam, said lap former having a member engaging the exterior of the overlapping wrapper margin and terminating thereon short of the edge of the same to prevent fouling of said member by paste squeezed out of said seam.

15. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having adhesive on the interior of one of its wrapper margins, of a longitudinally channeled bottom block adapted to support said tape in its channel, a lap former secured to said bottom block and hollowed longitudinally to provide together with said channel a bore in which the pasted wrapper margin is lapped on the other margin of the wrapper to form a seam and the tape adjacent its longitudinal edges is pressed against the rod, said lap former including a lap-closing block secured to said bottom block and notched at one end to permit the underlying margin of the tape to spread away from the cigarette rod after the seam has been formed by said block, and a plate engaging the other margin of the tape along the length of said block to maintain said margin in a substantially vertical position.

16. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having adhesive on the interior of one of its wrapper margins, of a rod-forming tube adapted to inwardly fold the tape margins together and the wrapper margins to lap the adhesive-coated margin on the other wrapper margin, and form a seam, a heated sealer engaging the seam to finish the rod after it emerges from said tube, and a member arranged to engage only the outer wrapper margin within said tube after the formation of the seam and maintain the same in contact with the inner wrapper margin until that portion of the wrapper reaches said sealer, said member being provided with an open portion arranged to admit the tape margin overlying the outer wrapper margin and permit the said tape margin to spread itself out of the path of the sealer.

17. The combination with a traveling rod-forming tape adapted to forward a cigarette rod having adhesive on the interior of one of its wrapper margins, of a rod-forming tube adapted to inwardly fold the margins of the tape together with the margins of the wrapper, to lap the adhesive-coatd margin on the other wrapper margin and form a seam, a heated traveling self-cleaning sealer engaging the seam to finish the cigarette rod and remove surplus adhesive squeezed out of the seam, and a member arranged to engage only the outer wrapper margin within said tube after the formation of the seam and until the outer wrapper margin reaches said sealer, said member being provided with an open portion arranged to admit the tape margin overlying the outer wrapper margin and permit the said tape margin to spread itself out of the path of the sealer.

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