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CIGARETTE MAKING MACHINE

Filed May 22, 1934

2 Sheets-Sheet 1

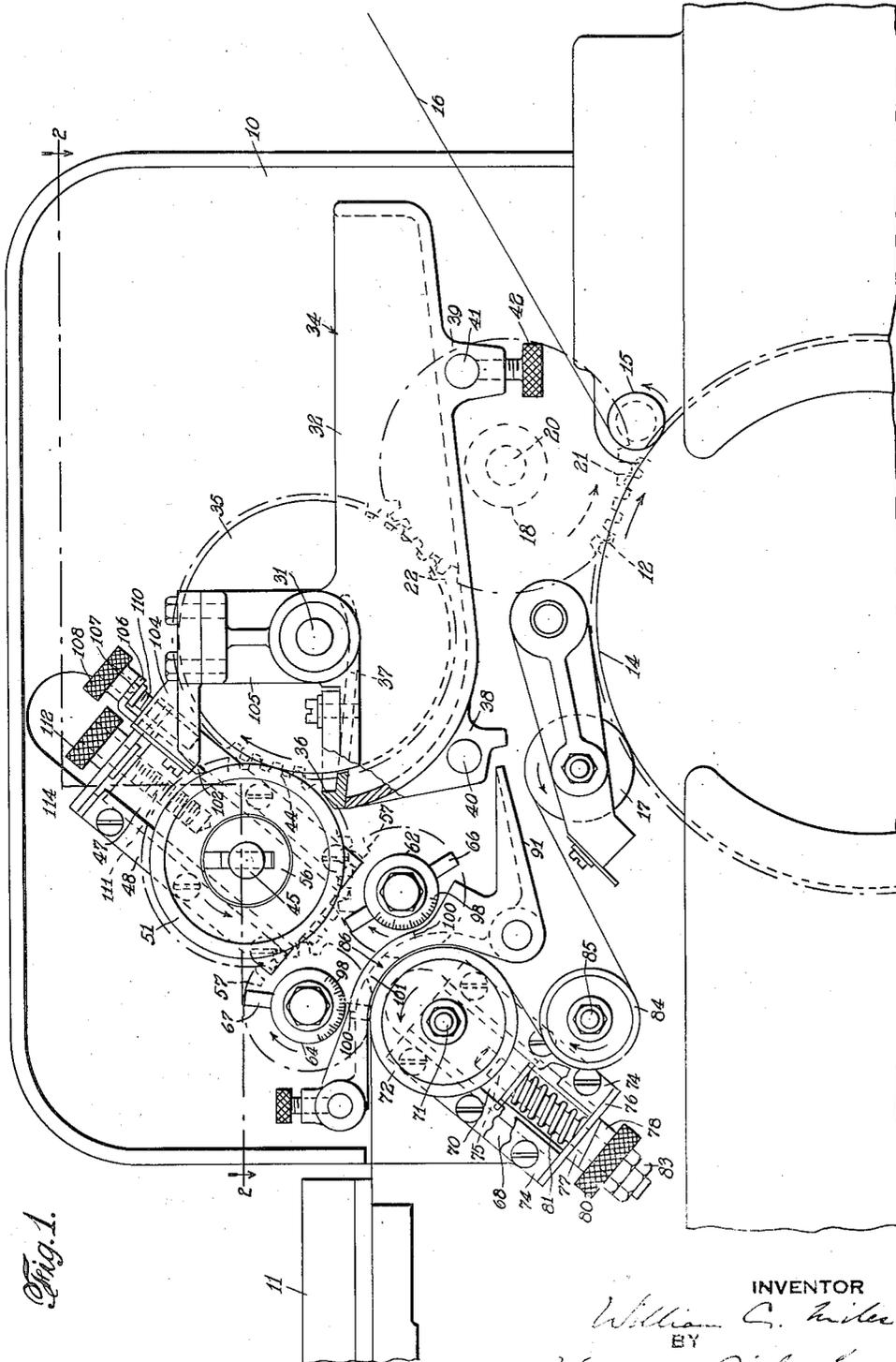


Fig. 1.

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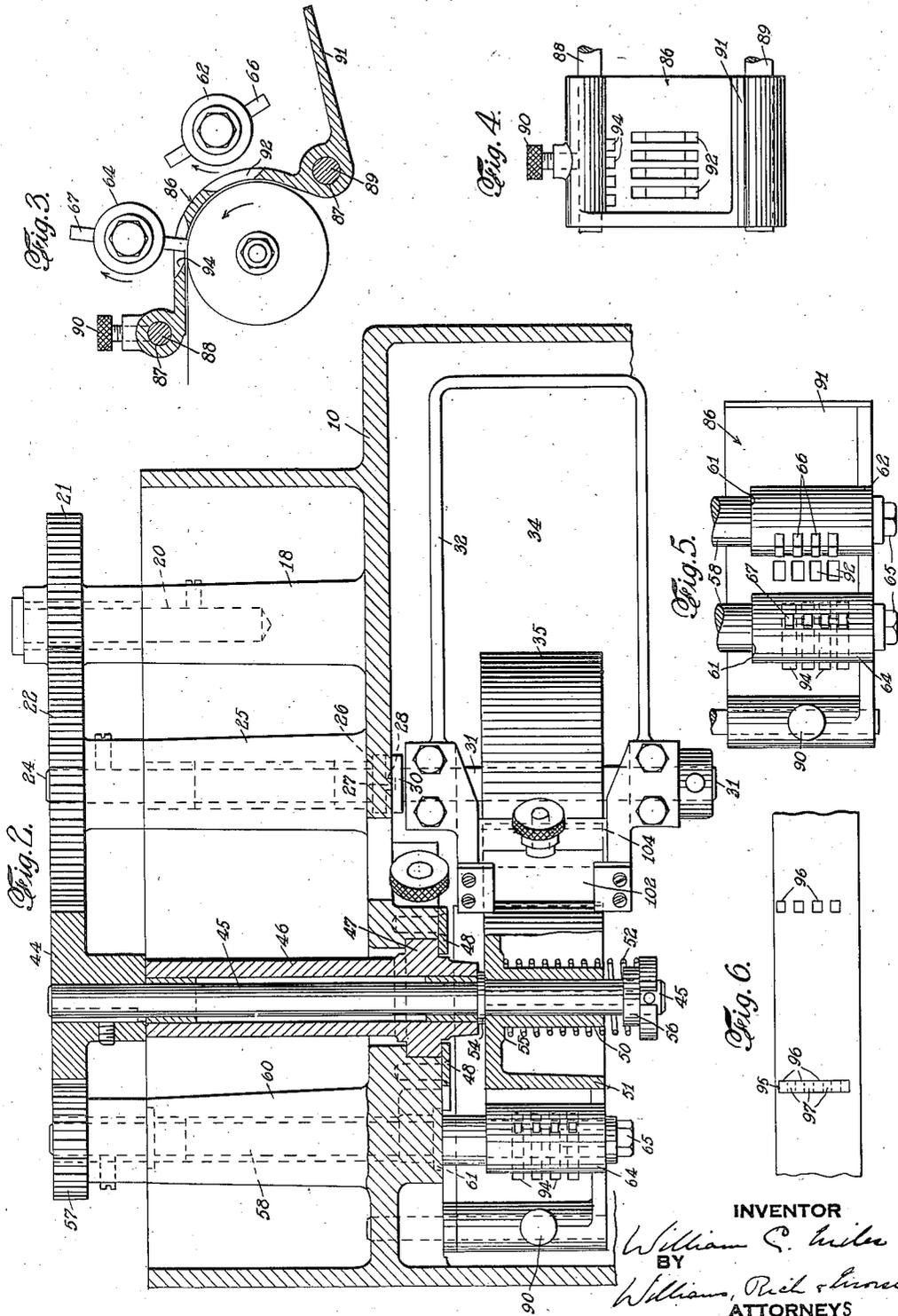
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CIGARETTE MAKING MACHINE

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Self Extinguishing Cigarette Corporation, New
York, N. Y., a corporation of New York

Application May 22, 1934, Serial No. 726,885

10 Claims. (Cl. 131—39)

This invention relates generally to cigarette-making machines, and has particular reference to machines for use in the manufacture of cigarettes of the self-extinguishing type, wherein the wrapper, according to the invention to which the patent application of Maurice X. C. Weinberger, Serial No. 664,888, filed April 7th, 1933, is directed, is provided immediately prior to the tobacco-filling and cigarette-rolling operation with a transverse film-like coating of suitable agglutinant, to which certain particles of the tobacco adhere during the filling operation so as to provide in the finished cigarette an annular, combustion-retarding band of tobacco particles, in union with the inner face of the cigarette wrapper intermediate the ends thereof.

Important objects of the present invention are to provide a machine, for use in making cigarettes of the above general character, which is simple in construction, efficient in use, and which is so constructed that possible damage to either the machine in its entirety or any part or parts thereof is positively averted should the traveling web-like wrapper paper break under operating conditions.

Other objects and advantages of the invention will become apparent from the following description, taken in connection with the accompanying drawings, in which—

Fig. 1 is a fragmental view in elevation of a cigarette machine embodying the invention; Fig. 2 is a sectional view taken on line 2—2 of Fig. 1; Fig. 3 is a detailed view, partly in section and partly in elevation, showing a pair of pick-up rollers in association with a contact roller which is partially encircled by a slotted shield or guard plate; Fig. 4 is a view in elevation of the guard plate as seen from the right in Fig. 3; Fig. 5 is a plan view of that part of the machine appearing in Fig. 3, and Fig. 6 is a fragmental face view of a section of web-like wrapper paper and illustrating more or less diagrammatically the manner in which the pick-up rollers jointly act on the wrapper paper to produce at definite intervals a transverse film-like coating of agglutinant.

Inasmuch as the present machine is adapted for use in connection with standard types of cigarette-making machines, wherein the tobacco filler is fed from a hopper on to a traveling web-like wrapper paper, which is thereafter folded around the filler and then sealed at its meeting margins, it is deemed unnecessary for a complete understanding of the present invention, to refer to any details of such standard machine other than the machine frame 10, tobacco hopper 11, main drive

gear 12, printing drum 14, idler roller 15 over which the web-like wrapper paper 16 passes onto the printing drum from a suitable source, not shown, and idler roller 17 about which passes the web-like wrapper paper as it leaves the printing drum.

Carried by the machine frame 10 is an outwardly extending bearing boss 18, by which is supported a stub shaft 20, on which is journaled an intermediate gear 21, meshing with the driving gear 12 and with a driven gear 22, the latter of which is secured to a horizontally disposed shaft 24, supported by and journaled in a bearing boss 25 which is similar to the boss 18 and is also carried by the frame 10. The shaft 24 is provided at its forward end with a driving head 26, carrying a rib 27 which is accommodated by a rib-receiving groove 28, formed in the driven head 29 of a feed roller shaft 31.

The feed roller shaft 31 is journaled at opposite ends in the side walls 32 of a reservoir 34, adapted for the reception of a quantity of suitable agglutinant, hereinafter more particularly mentioned, the shaft 31 being provided with a feed roller 35, a substantial peripheral portion of which is adapted to contact at all times with the contents of the reservoir. In order to limit to a reasonable thickness the film of agglutinant carried from the reservoir 34 on the peripheral surface of the feed roller 35, there is provided at the exit throat of the reservoir a transverse scraper 36. This scraper is secured to the side walls 32 of the reservoir and is so supported that its scraping edge, which extends throughout the width of the feed roller, is spaced a slight distance from the peripheral surface of that roller. In order that the end faces of the feed roller 35 may be kept substantially free of agglutinant above the level of the contents of the reservoir, there is provided a pair of scrapers 37, which are secured to opposite ends of the scraper 36 and extend rearwardly and downwardly therefrom as shown in Fig. 1.

For the purpose of facilitating the removal of the reservoir 34 and its associated feed roller 35 as a unit, the bottom of the reservoir is provided with depending apertured lugs 38 and 39, adapted for the reception of a pair of horizontally disposed supporting rods 40 and 41 which are secured to and project outwardly from the machine frame 10, the lug 39 being provided with a thumb screw 42 which is adapted to be run down into engagement with the supporting rod 41 and thereby effectively hold the reservoir against displacement under operating conditions.

It will be understood, because of the connection afforded between the shafts 24 and 31 and hereinbefore described as including driving and driven heads 26 and 30 respectively, that the reservoir 5 34 and its associated feed roller 35 may be readily removed from or placed in its operative position without disturbing the shaft 24 by which the feed roller 35 is rotated.

Meshing with the gear 22, is a similar gear 44, 10 which is secured to a shaft 45, journalled in a bearing sleeve 46, carried by an adjustable bearing block 47 which is movably held on the machine frame 10 by a pair of gibs 48. Splined to the outer end of the shaft 45, is the hub portion 15 50 of a transfer roller 51, which is held by a compression spring 52 in engagement with a shoulder 54, provided on the shaft 45 adjacent the adjustable bearing block 47, the spring being confined intermediate the end wall 55 of the transfer roller and a readily removable spring-retaining head 56 carried by the outer end of the shaft 45. From the foregoing, it will be understood that, when occasion requires, the transfer roller 51 may be quickly removed from the shaft 25 45 without disturbing that shaft in any particular.

Meshing with the gear 44, are a pair of similar gears 57, secured to a pair of shafts 58, journalled in bearing bosses 60, which are carried by the machine frame 10 and are similar to the bearing bosses 18 and 25 hereinbefore described. These shafts 58 are provided at their outer ends with shoulders 61 and are adapted to receive a pair of pick-up rollers 62 and 64, which are removably held on their respective shafts and in driving engagement with the shoulders 61 by lag screws 65, provided, respectively, with a pair of longitudinal rows of dauber lugs 66 and 67. The dauber lugs 66 are equi-distantly spaced from each other longitudinally of the axis of the pick-up roller 62, and the dauber lugs 67 are similarly spaced. It is to be noted that the lugs 66 are staggered with respect to the lugs 67, as when the pick-up rollers are secured in operative position on the shafts 58 as shown in Fig. 5, and that the lugs 66 are each of a width equal to the space afforded between the lugs 67 and that the lugs 67 are each of a width equal to the space afforded between the lugs 66.

Disposed intermediate a pair of guides 68, carried by the machine frame 10, is a slidable bearing block 70, provided at its upper end with an outwardly extending stub shaft 71, on which is journalled a rubber faced contact roller 72, the bearing block being retained intermediate the guides 68 for sliding adjustment by a pair of gibs 74. Secured to the bearing block 70, is a guide rod 75 which projects through an abutment plate 76 secured to the guides 68, the abutment plate being provided with a fixed cam 77 through which the outer end of the guide rod 75 projects. Mounted on an unthreaded portion of the guide rod 75, is a rotatable cam 78 carrying a thumb wheel 80. Disposed intermediate the bearing block 70 and the abutment plate 76, is a compression spring 81, which serves to maintain the contact roller 72 in a definite position of adjustment as determined by a nut 82 carried by the lower end of the guide rod 75, which nut may be held in any desired position of adjustment by a lock nut 83, also carried by the guide rod 75. From the foregoing, it will be understood that although the contact roller 72 is held in a definite position of adjustment by the spring 81 under operating conditions, the roller may be quickly

moved downwardly out of that position when desired, as for example when threading the web-like wrapper paper 16 over the contact roller 72, which serves, during the operation of the machine, as a rotatable paper support, onto which the paper is guided by a roller 84, journalled on a stub shaft 85 carried by the frame member 10.

Disposed intermediate the pair of pick-up rollers 62—64 and the contact roller 72, is a shield or guard plate 86. This guard plate is curved on an arc struck from the center of rotation of the contact roller 72 and is spaced a slight distance from that roller throughout a relatively large extent of its arcuate surface, the space thus afforded being adapted to permit unobstructed passage of the web-like paper 16 between the contact roller and its associated guard 86. In order that the guard 86 may be removably supported with relation to the machine frame 10, it is provided with a pair of openings 87 adapted to slidably receive a pair of supporting rods 88 and 89, which are secured to the machine frame and project horizontally therefrom. The guard 86 may be locked in its operative position by a thumb screw 90 which is carried thereby and is adapted to be run down into engagement with the guide rod 88. The lower end of the guard 86 is formed with a rearwardly extending apron 91, which terminates above the idler roller 17, the apron being provided as a protective measure against the remote possibility of the paper 16 piling up in the vicinity of the rollers 17 and 35, upon breaking, and finding its way into the immediate vicinity of the pick-up rollers 62 and 64. In order to accommodate the dauber lugs 66 and 67 as the pick-up rollers 62 and 64 are rotated, the guard plate 86 is provided with two sets of slots 92 and 94, the slots being of equal width and of course slightly greater than the width of the dauber lugs which they are adapted to accommodate.

It will, of course, be understood that the pick-up rollers 62 and 64 operate in synchronism, and that they are so positioned on the shafts 58 that the points at which one group of dauber lugs 67 engage the paper 16 on the contact roller 72 are in direct transverse alignment with the points at which the corresponding group of dauber lugs 66 previously engage the paper on the contact roller. It will be apparent, therefore, that if the dauber lugs 66 and 67 are supplied at their outer ends with an agglutinant and are operated in synchronism, they will jointly act on the wrapper paper to produce at definite intervals a transverse film-like coating 95, which as shown in Fig. 6, is made up of transversely registering film-like spots 96 and 97 of agglutinant applied to the paper by one or the other groups of dauber lugs 66 of the pick-up roller 62 and the corresponding group of dauber lugs 67 of the pick-up roller 64.

In order to facilitate proper positioning of the pick-up rollers 62 and 64 on the shafts 58, the outer ends of the rollers are provided with correspondingly spaced scale graduations 98, in a proper relation to which fixed index marks 100 may be provided on some suitable part of the machine such, for example, as the upwardly extending marginal flange 101 of the guard plate 86. The graduations 98 in association with the fixed index marks 100 may be found especially useful when it is desired, after a given run of the machine, to advance or retard the position of the transverse film-like coating 95 with respect to the cutting off point at which the cigarette rod is successively severed pursuant to the tobacco-filling and wrapper-rolling and sealing opera-

tions as carried out with standard types of cigarette-making machines. In making such adjustments it is merely necessary to properly position one of the pick-up rollers, note the index reading, and thereafter correspondingly set the other pick-up roller. It will be also understood that the same principle of adjustment of the pick-up rollers holds true when it is desired to change the position of the transverse film-like coating 95 with relation to the position occupied by any printed matter that may be impressed on the paper 16 by the printing drum 14, hereinbefore referred to as a conventional unit of a standard type of cigarette-making machine in association with which the present invention is illustrated.

Although the scraper 38, as previously stated, is employed to control the thickness of the agglutinant on the feed roller 35, it is deemed expedient to provide, in association with the transfer roller 51, a scraper 102, by which the thickness of the film as received on that roller from the feed roller may be controlled to a nicety in order to insure the application of a proper quantity of agglutinant to the dauber lugs 66 and 67 each time they move into engagement with the periphery of the transfer roller and thereby insure delivery to the paper 16 of a proper quantity of agglutinant entering into the formation of the transverse coatings 95.

The scraper 102 above mentioned is slidably supported on a bridge-like member 104, connected at its opposite ends to the upper ends of a pair of standards 105, carried by the side walls 32 of the reservoir 34; and is provided at its upper end with a yoke, the arms 106 of which are disposed within a groove 107, provided in a thumb nut 108, carried by a screw-threaded trunnion 109 secured to the bridge-like member 104. From the foregoing, it will be appreciated that by rotating the thumb nut 108, in one direction or the other, the cutting edge of the scraper 102 may be positioned to a nicety with reference to the peripheral surface of the transfer roller 51, with the result that thickness of the film of agglutinant thereon may be accurately controlled, such excess material as is prevented from passing the scraper 102 and as may accumulate in the vicinity of the point of contact of the feed roller 35 with the transfer roller being returned to the reservoir on the surface of the feed-roller, as will be readily understood when it is taken into account that the feed roller rotates in a clockwise direction as viewed in Fig. 1.

In order that the transfer roller 51 may be accurately adjusted to obtain a proper position of it with relation to the dauber lugs 66 and 67, the adjustable bearing block 47, by which the transfer roller shaft 45 is supported, is connected to an adjusting screw 111, to the upper end of which is connected a thumb wheel 112, the hub portion of which is rotatably connected to a bridge member 114 secured to the upper ends of the gibs 48, by which the bearing block 47 is movably held on the machine frame 10. From the foregoing, it will be appreciated that by rotating the thumb wheel 112, in one direction or the other, the transfer roller 51 may be accurately adjusted with relation to the dauber lugs 66 and 67, it being understood in this connection that the extent of movement required under any circumstances is exceedingly small and because of that fact the gears 44 and 57 may be properly designed to permit the maximum adjustment required without affecting their accuracy of mesh or efficiency in operation.

Assuming that the machine is conditioned for

use as shown in the drawings, its operation is as follows: As the wrapper paper 16 passes from the printing drum 14 over the idler roller 17, guide roller 85, contact roller 72 and thence along its path of travel beneath the tobacco hopper 11 of the standard cigarette-making machine, agglutinant is delivered from the feed roller 35 to the transfer roller 51, from which quantities are picked up by the dauber lugs 66 and 67 of the pick-up rollers 62 and 64. From the dauber lugs 66 agglutinant is transferred to the paper as the lugs enter and pass through the slots 92 in the guard plate 88, thus delivering agglutinant to the paper in the form of film-like spots 96. At the instant these film-like spots 96 arrive at the slots 94, the dauber lugs 67 corresponding thereto enter the slots 94 and deliver agglutinant to the paper in the form of film-like spots 97, transversely registering with the spots 96, the spots 96 and 97 collectively forming the transverse film-like coating 95 extending from one marginal area of the paper to the other marginal area thereof as shown in Fig. 6. The transverse film-like coatings 95 of agglutinant, with which the wrapper paper 16 is thus provided, are carried on the tobacco-receiving face of the wrapper paper, with the result, that, as the tobacco-filling operation is carried out beneath the hopper 11, certain particles of tobacco will adhere to the coatings so as to provide an annular, combustion-retarding band of tobacco particles, in union with the inner face of the wrapper of each cigarette severed, according to the well-known practice, from the rod-like cigarette structure as it emerges from the discharge end, not shown, of the machine. It will be understood that the successive transverse film-like coatings 95 are spaced from each other along the length of the paper 16 a distance equal to the overall length of the individual cigarettes, which are severed, by the cut-off mechanism not shown, from the rod-like cigarette structure at definite intervals and at definite distances from each annular, combustion-retarding band produced according to the present invention.

Should the wrapper paper 16 accidentally or otherwise break, as often happens at a point somewhere along its line of travel beneath the hopper 11 and in front of the usual paper tensioning or translating means employed in standard types of cigarette-making machines, the free end of the paper beyond the contact roller 72 is relieved of tension. Under such conditions, the adhesion afforded between the paper and the outer ends of the dauber lugs would be sufficient, due to the presence of agglutinant on such lugs, to cause them to pick up the paper and wind it about one or the other of the pick-up rollers with detrimental results; but the possibility of such fouling is eliminated by the presence of the guard plate 88, which serves as a stripper for the paper, with the result that it is peeled, so to speak, from the ends of the dauber lugs as effectively as though it were intact and properly tensioned along its line of travel beyond the contact roller 72. So effectively does the guard plate 88 perform its function, upon the occurrence of a break in the paper, that the freely rotating contact roller 72, serves, in the majority of instances, to move the paper on past itself at a sufficient rate of speed to compensate for the supply delivered from the printing drum 14 to a point beyond the idler roller 17, thus eliminating, to a large extent, the necessity for the apron 91 which, as heretofore explained, is provided in association with the guard plate 88 as a precautionary measure.

Although only one form of the invention is herein shown and described, it will be understood that various changes may be made without departing from the spirit of the invention or the scope of the following claims.

What is claimed is:

1. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, and means for transferring agglutinant from the reservoir and for applying a portion of it to said wrapper in the form of film-like spots spaced from each other transversely of the wrapper and for applying another portion of it to the wrapper in the form of film-like spots spaced from each other transversely of the wrapper and in such alignment with the first-mentioned spots as to jointly form therewith a film-like coating extending transversely of the wrapper.

2. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, and means for transferring agglutinant from the reservoir and for applying portions of it to said wrapper at intervals along the length of the wrapper in the form of groups of film-like spots spaced from each other transversely of the wrapper and for applying other portions of it to the wrapper in the form of groups of film-like spots spaced from each other transversely of the wrapper and respectively in such alignment with the first-mentioned spots as to jointly form therewith film-like coatings extending transversely of the wrapper and separated from each other along the length thereof.

3. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, a pair of pick-up rollers respectively equipped with a group of dauber lugs spaced from each other longitudinally of the rollers and adapted to receive agglutinant from said reservoir, the dauber lugs of one roller being staggered with relation to the dauber lugs of the other roller, and means for rotating said pick-up rollers in synchronism and in such timed relation to the moving web-like wrapper that said dauber lugs engage the wrapper at points aligned transversely of the wrapper and apply thereto film-like spots of agglutinant jointly forming a film-like coating extending transversely of the wrapper.

4. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, a pair of pick-up rollers respectively equipped with a group of dauber lugs spaced from each other longitudinally of the rollers and adapted to receive agglutinant from said

reservoir, the dauber lugs of one roller being staggered with relation to the dauber lugs of the other roller, and means for rotating said pick-up rollers in synchronism and in such timed relation to the moving web-like wrapper that said groups of dauber lugs engage the wrapper at substantially the same intervals along the length thereof and there apply to the wrapper transversely aligned film-like spots of agglutinant jointly forming at each of such intervals a film-like coating transversely of the wrapper.

5. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, movable supporting means for said wrapper, a pair of pick-up rollers respectively equipped with a group of dauber lugs spaced from each other longitudinally thereof and adapted to receive agglutinant from said reservoir, the dauber lugs of one roller being staggered with relation to the dauber lugs of the other roller, means for rotating said pick-up rollers in synchronism and in such timed relation to the moving web-like wrapper that said dauber lugs engage the wrapper at points aligned transversely of the wrapper and apply thereto film-like spots of agglutinant jointly forming a film-like coating extending transversely of the wrapper, and a guard disposed intermediate said wrapper-supporting means and said pick-up rollers, said guard having slots therein accommodating the passage of said dauber lugs into and out of engagement with said wrapper.

6. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, movable supporting means for said wrapper, a pair of pick-up rollers respectively equipped with a group of dauber lugs spaced from each other longitudinally thereof and adapted to receive agglutinant from said reservoir, the dauber lugs of one roller being staggered with relation to the dauber lugs of the other roller, means for rotating said pick-up rollers in synchronism and in such timed relation to the moving web-like wrapper that said groups of dauber lugs engage the wrapper at substantially the same intervals along the length thereof and there apply to the wrapper transversely aligned film-like spots of agglutinant jointly forming at each of such intervals a film-like coating transversely of the wrapper, and a guard disposed intermediate said wrapper-supporting means and said pick-up rollers, said guard having slots therein accommodating the passage of said dauber lugs into and out of engagement with said wrapper.

7. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, a pair of pick-up rollers respectively equipped with a group of dauber lugs spaced from each other longitudinally thereof

and adapted to receive agglutinant from said reservoir, the dauber lugs of one roller being aligned with the spaces afforded between the dauber lugs of the other roller and the dauber lugs of said other roller being aligned with the spaces afforded between the dauber lugs of said one roller, and means for rotating said pick-up rollers in synchronism and in such timed relation to the moving web-like wrapper that the dauber lugs of the respective rollers engage the wrapper at points in alignment transversely of the wrapper and apply thereto film-like spots of agglutinant jointly forming a film-like coating extending transversely of the wrapper.

8. In a cigarette-making machine of the type wherein a tobacco-filling operation is carried out with respect to a moving web-like wrapper to be folded around the filler and sealed at its meeting margins, a device for treating the wrapper prior to the tobacco-filling operation and comprising a reservoir adapted for the reception of a quantity of agglutinant, rotatable supporting means for said wrapper, a pair of pick-up rollers respectively equipped with a group of dauber lugs spaced from each other longitudinally thereof and adapted to receive agglutinant from said reservoir, the dauber lugs of one roller being aligned with the spaces afforded between the dauber lugs of the other roller and the dauber lugs of said other roller being aligned with the spaces afforded between the dauber lugs of said one roller, means for rotating said pick-up rollers in synchronism and in such timed relation to the moving web-like wrapper that the dauber lugs of the respective rollers engage the wrapper at points in alignment transversely of the wrapper and apply thereto film-like spots of agglutinant jointly forming a film-like coating extending transversely of the wrapper, and a guard disposed intermediate said wrapper supporting means and said pick-up rollers and having groups of slots therein, the slots of one group being alternately dis-

posed with relation to the slots of the other group and adapted to accommodate passage of the dauber lugs of one roller into and out of engagement with said wrapper and the slots of the other group being alternately disposed with relation to the slots of said one group and adapted to accommodate the passage of the dauber lugs of the other pick-up roller into and out of engagement with said wrapper.

9. The method of applying agglutinant to a moving web-like wrapper in conditioning that wrapper for use in a cigarette-making machine of the type wherein such wrapper is folded around a tobacco filler and sealed at its meeting margins, comprising applying an agglutinant to the moving wrapper in the form of film-like spots spaced from each other transversely of the wrapper and thereafter applying agglutinant to the moving wrapper in the form of film-like spots spaced from each other transversely of the wrapper and in such alignment with the first-mentioned spots as to jointly form therewith a film-like coating extending transversely of the wrapper.

10. The method of applying agglutinant to a moving web-like wrapper in conditioning that wrapper for use in a cigarette-making machine of the type wherein such wrapper is folded around a tobacco filler and sealed at its meeting margins, comprising applying an agglutinant to the moving wrapper at intervals along the length of the wrapper in the form of groups of film-like spots spaced from each other transversely of the wrapper, and following each such application of agglutinant by a second application of agglutinant in the form of film-like spots spaced from each other transversely of the wrapper and in such alignment with the spots of the respective groups as to jointly form therewith film-like coatings extending transversely of the wrapper and separated from each other along the length thereof.

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