Sept. 5, 1944. J. W. WARREN 2,357,785

CIGARETTE ROD FORMER

Filed July 12, 1941

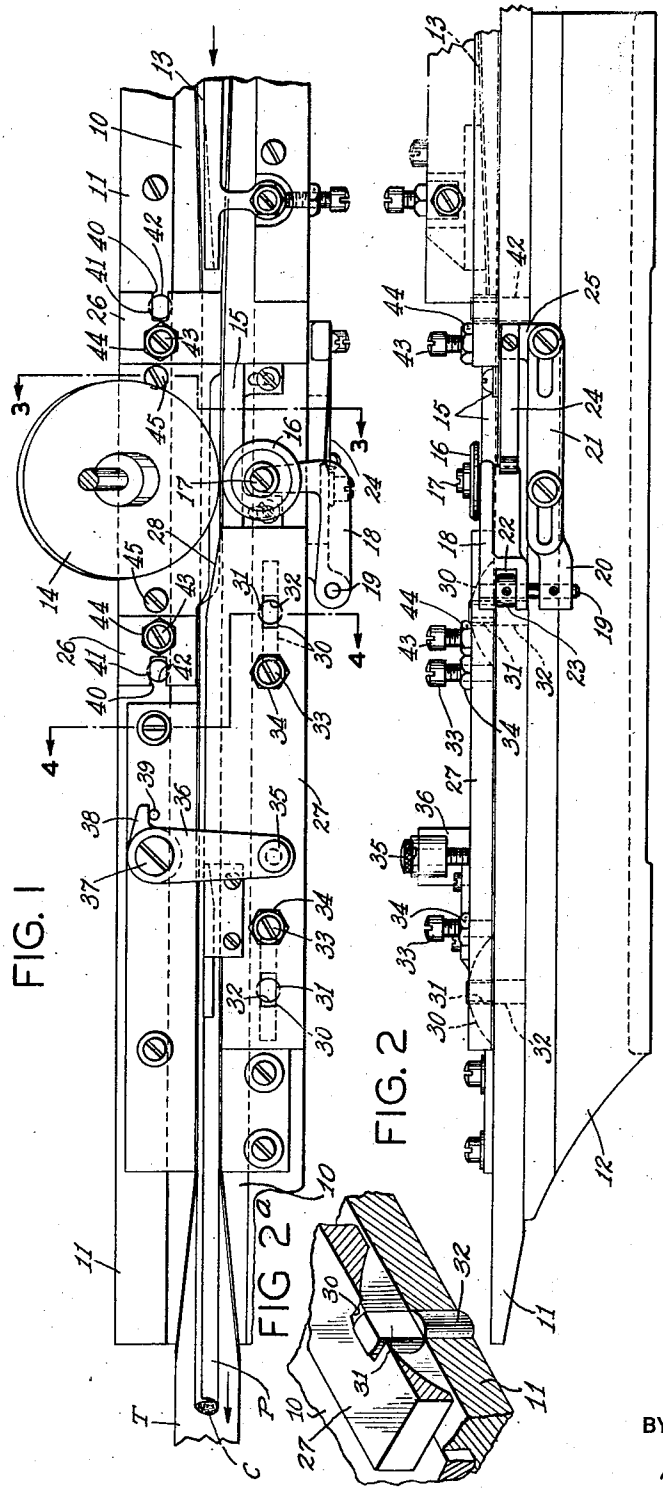


FIG. 1

FIG. 2

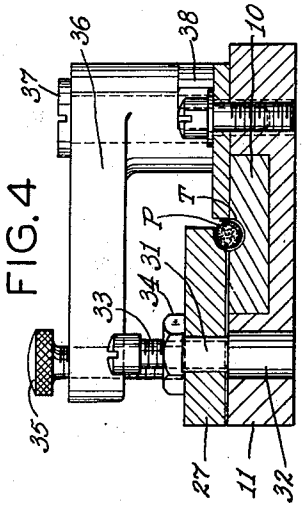


FIG. 4

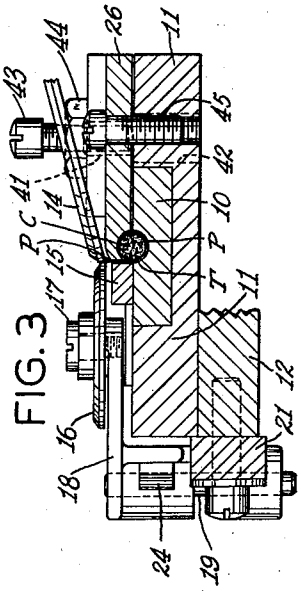


FIG. 3

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Patented Sept. 5, 1944 2,357,785

UNITED STATES PATENT OFFICE

2,357,785

CIGARETTE ROD FORMER

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Application July 12, 1941, Serial No. 402,153

12 Claims. (Cl. 131—67)

This invention relates to a continuous rod cigarette machine and more particularly to improvements in a mounting for the pasting section block and the folder or ironer blocks of the cigarette rod forming and finishing mechanism.

Heretofore, the folder ironing section block has been positioned by shims or strips of paper and then clamped; that is, paper strips have been used to obtain the proper spacing to secure the desired diameter of the cigarette rod which must be exceedingly accurate. Instead of using shims or strips of paper, four screws located approximately in each corner of the block have also been used to obtain the proper tilt and spacing for the pasting section or folded ironing section blocks.

With this four-corner screw type of adjustment, it has been found quite difficult to properly balance the block because if one screw were improperly set, it would cause the block to wobble in a manner somewhat similar to a chair which teeters because of the shortness of one leg. Moreover, since blocks have to be positioned and placed with great precision, it is not uncommon for an operator to sometimes work a half hour or more attempting to position these blocks. This special accuracy is required because if the pasting section and ironing block are not properly adjusted with respect to the rod forming tongue and with respect to one another, wrinkles or creases will be formed in the completed cigarette rod.

Therefore, every time the rod forming tongue is raised or lowered to form a cigarette of different diameter, to make a tighter or looser rod, to allow for an increase or decrease in the speed of the cigarette machine, or for any other reason it is adjusted, it is usually necessary to make a similar adjustment in the adjacent pasting section block and also in the ironing block. Moreover, whenever a defective rod is being formed, these various blocks have to be adjusted to rectify the cause of the defect in the rod. It is also necessary to remove the ironing block of some cigarette machines several times a day in order to remove paste which has accumulated on the under side thereof.

When one of these blocks is removed, it is sometimes the practice to replace it with a substitute block so as to avoid shutting down the machine, and it would then be necessary to add to or remove the strips of paper before mentioned so as to properly align the tongue, pasting section block and ironer block with one another to avoid the formation of wrinkles and creases in the completed cigarette rod. When such a substitute pasting section block or ironing block is placed upon the machine, it will frequently require a half hour or more of an operator's time to make the aforementioned adjustments.

With the present invention, all of the adjustments mentioned may be made within a very short time, usually less than ten minutes, and the number of improperly finished cigarettes is materially decreased. Although applicant has referred to the pasting section blocks and ironing section blocks of a cigarette machine, he wishes it to be understood that these section blocks may sometimes be combined into one and that the adjustments disclosed in this application may be utilized whether one or a plurality of rod finishing section blocks are used.

It is therefore an object of this invention to provide an improved mount for the pasting section blocks and folder ironing section blocks which will allow these blocks to be easily and quickly adjusted to form a cigarette rod of the proper size without any wrinkles or creases.

Another object is to provide an improved mounting for the pasting section blocks and folder ironing section blocks which will require only one adjustment, after which the blocks can be removed and replaced upon the cigarette machine without additional adjustments each time such replacements are made.

Another object is to provide a device which will produce a cigarette of uniform size and which will be free from wrinkles, with a minimum amount of adjustment.

A further object is to provide an improved and simplified mounting for the pasting, ironing and finishing blocks of a continuous rod cigarette machine.

Another object is to provide a mount for the finishing section of a cigarette machine which will lend itself to adjustment when the machine is running.

A further object is to provide a mount for the ironing and pasting blocks of a cigarette machine which will not be affected by machining tolerances and which may be removed and replaced without requiring adjustments to be made each time such block is removed or replaced.

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

In the accompanying drawing, which forms a part of this specification, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawing, in which:

Fig. 1 is a plan view of the improved manner of securing the paster and lap folder or ironer sections of the rod former;

Fig. 2 is a side view of the same;

Fig. 2a is an enlarged perspective view of a detail of the invention;

Fig. 3 is a cross section on the line 3—3 of Fig. 1; and

Fig. 4 is a cross section on line 4—4 of Fig. 1.

Referring to the drawing, in the operation of a cigarette machine, the paper wrapper web P, on which the tobacco is showered or otherwise deposited, is advanced by a continuously moving endless rod forming tape T which is supported in a longitudinal channel of semi-circular or oval cross section provided in the folder bottom insert 10 which is secured in the bottom block 11 carried by a bracket 12 of the cigarette making machine. The tape advances the paper P and the tobacco under a tongue 13 which compacts the tobacco in the usual manner; said tongue and its mounting may be of the same construction as disclosed in the patent issued March 25, 1941, to E. D. Smith, No. 2,235,853.

Beyond the tongue, a rotating paste applying wheel 14 which forms a part of the paster of the continuous rod cigarette machine applies paste to the interior upstanding margin of the paper wrapper web P, Fig. 3, 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, such as that shown in the patent issued September 22, 1931, to Bronander, No. 1,824,392.

The upstanding portion of the paper web P, Fig. 3, is supported by a guide plate 15, adjustably fastened to block 11, and by a roller 16 adjacent the paste wheel 14 which serves to smooth any lumps or heavy portions of paste applied to the paper web. Roller 16 turns freely on a stud 17 carried by an arm 18 which is pivotally mounted on a stud 19 extending from a lug 20 integral with a bracket 21 adjustably attached to member 12. Arm 18 is forked at 22 so as to straddle a collar 23 which locates the arm pivotally on stud 19. The bracket 21 is slotted to permit lateral adjustment of roller 16 with the paste applying wheel 14, said roller being yieldably held against the passing paper web by a flat spring 24 which engages the web of arm 18, said spring being carried by a lug 25 of bracket 21.

Upon the block 11 is mounted a tongue 13, a pasting section block 26, and a folder ironing or lap folder section block 27 constituting the rod forming tube and folding the pasted margin of the wrapper web P upon the rod, thus closing the seam. The pasting section block 26 overhangs the cigarette rod and is hollowed out longitudinally to form with the channel in insert 10, Fig. 3, a bore in which the wrapper web P begins to form a tube. As the upstanding pasted portion of the web P continues to advance, it encounters the inclined portion 28 of the lap folder section block or folder ironing section block 27 which gradually folds the pasted margin until it is lapped on the other margin to form a seam. The ironing section block 27 overhangs the cigarette rod and is also hollowed out longitudinally so as to engage and partially set the pasted seam before it approaches a sealer (not shown), thus finishing the cigarette rod. This sealer (not shown) may be of the endless band self cleaning type, such as shown in the patent issued February 26, 1935, to E. D. Smith, No. 1,992,723. Such an endless band type of sealer has its lower run heated by an electric heater unit and is driven by suitable means, said sealer engaging and drying the seam of the cigarette rod C and picking up the surplus paste from the rod.

The lap folder section 27 in the present case has a novel mounting whereby it can be readily adjusted to secure the desired position for forming a cigarette rod of the correct size without any creases or defects therein. Heretofore, the lap folder ironing block was positioned by shims or strips of paper and then clamped in place. Every time the lap folder ironing block is removed, which frequently occurs several times a day in some machines to remove accumulations of paste, another lap folder ironing block can be substituted in order to allow the cigarette machine to continue operating with a maximum of efficiency.

Each time a lap folder and ironing section of the old type was removed, the substitute section or block would have to be properly shimmed all over again because the shims used for one section would not be appropriate for another section. This is due to the fact that no two blocks are made exactly alike and because fine adjustments have to be made at this part of the machine to form a cigarette of correct size without any creases or wrinkles in the rod.

With the present construction, the lap folder section block or folder ironing section block has elongated slots 30 formed in either end thereof which closely fit the flattened ends 31 of studs 32 set in the bottom block 11 and spaced therein to support and guide block 27. Folder ironing section block 27 is further provided with adjusting set screws 33 at the forward and rear ends and aligned with slots 30 whereby it can be positioned to obtain the desired cross section of the cigarette rod. Once the position of the lap folder section 27 has been set by the adjusting set screws 33, the lock nuts 34 thereon can be tightened so that the section can be removed for cleaning without worrying about the setting when it is replaced. The studs 32 provide means for locating the section 27 and limit the extent to which the folder ironing section block can tilt on the set screws 33 under the downward pressure of the eccentrically positioned clamp screw 35.

The clamp screw 35 is tightened to engage with the lap folder ironing section 27 at a portion to one side of an imaginary center line passing through the set screws 33. In the present showing, the clamp screw 35 is illustrated as engaging what may be referred to as the "outside" portion of the block 27. By engaging the folder ironing section 27 to one side of the set screws 33, the ironer is tilted slightly so that the diagonally opposite sides of the slots 30 engage with the studs 32 and is at the same time pressed down upon the bottom block 11 by the clamp screw 35. In this manner the ironing block 27 is held immovably in position and there is no opportunity for the block to wobble. It will therefore be seen that once the ironing block 27 has been adjustably placed in position by means of the set screws 33 and lock nuts 34, the ironing block 27 can be removed and replaced without any further adjustments because the tilt of the block 27 will always be in the same direction since the point at which the clamp screw 35 engages the block 27 is fixed in location. The eccentric mounting of clamp screw 35 with respect to set screw 33 enables an operator to obtain the exact positioning of block 27 which it had before he removed this block for purposes of cleaning. It will therefore be understood that applicant's invention consists in positioning a pasting or folding block over a cigarette rod by means of studs, adjusting the distance said block descends over a cigarette rod by means of set screws which lie in the same plane as said studs, and then clamping said block in place by means of a clamp screw which acts on the block at one side of the plane in which said

studs and set screws lie to secure the block against any loose or rocking movement. It has been found that there is usually a certain amount of machining tolerance allowed between the slots **30** and the studs **32** to provide a sliding fit, and the eccentric mounting of clamp **35** takes this slight amount of play into consideration by clamping the diagonally opposite edges of the slots **30** on the studs **32** when the block **27** is tilted under the downward pressure of said clamp **35**.

Clamp screw **35** is carried by an arm **36** pivotally mounted on a stud **37** secured in bottom block **11**. The arm **36** is provided with a lug **38** adapted to engage a stop pin **39** so that the clamp screw is always swung or moved to exactly the same clamping position over the ironing block. When the folder ironing block **27** is to be removed, the clamp screw **35** is backed off and the arm **36** is swung away so that the section block **27** can be lifted off the studs **32** and removed from the machine. The paster section **26** is secured in a similar manner, said section having open end slots **40** which closely fit the flattened ends **41** of studs **42** set in the bottom block **11**, and is also equipped with adjusting set screws **43** at the forward and rear ends of the block **26** whereby said block can be positioned and adjusted to obtain the desired cross section of the cigarette rod by setting the space between the pasting section block **26** and the bottom block **11**. When the proper spacing has been obtained by means of the set screws **43**, the lock nuts **44** thereon can be tightened to permanently retain the adjustment so that the block **26** can be removed and replaced on the machine without requiring a new set of adjustments each time such removal takes place. The clamp screws **45** are eccentrically positioned with respect to an imaginary center line passing through the center of set screws **43** for a purpose similar to the eccentric mounting of clamp screw **35**. The clamp screws **45** pass through eccentrically placed holes formed in the pasting section block **26** and are screwed into threaded holes formed in the bottom block **11**. The block **26** when placed over the studs **42** will tilt slightly due to the machining tolerances allowed between the stud **42** and the slots **40** to obtain sliding fit under the downward pressure of eccentrically mounted clamp screws **45** so that the diagonally opposite edges of the slots **40** come into contact with the studs **42**, clamping the slots against the studs **42**. The set screws **43** and **45**, as shown, are clear of the paster wheel **14**, thereby allowing the section block **26** to be adjusted while the machine is running. The clamp screw **35**, by causing the slotted openings to clamp the studs, prevents the section block **26** from rocking when the machine is in operation. It is understood that substitute blocks may be provided with similar slots and set screws to take the place of the ironing and pasting sections shown when the latter are removed from the machine for any reason so that there will be only a minimum stoppage of the machine.

The invention above described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many concrete embodiments of the same. The invention therefore is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a continuous rod cigarette machine, a mount for a device for forming and finishing cigarette seams comprising, a cigarette rod finishing block for finishing the seam of a cigarette rod traveling beneath said clock, said block having elongated slotted openings formed in either end of said block; a support; studs mounted in said support constructed and arranged to extend upward through said slotted openings; set screws threaded through said block and in line with said slots for fixing the distance said block slides down over each of said studs; and a clamp screw engaging said block to that side of a center line passing between said set screws which is opposite to the side under which the cigarette rod passes to cant said block against said studs and press said block downward toward said support.

2. In a continuous rod cigarette machine, a mount for a device for forming and finishing cigarette seams comprising, a cigarette folder ironing section block for finishing the seam of a cigarette rod traveling beneath said block, said block having elongated slotted openings formed in either end of said block; a support; studs mounted in said support constructed and arranged to extend upward through said slotted openings; set screws threaded through said block and in line with said slots for fixing the distance said block slides down over each of said studs; a clamp screw engaging said block to that side of a center line passing between said set screws which is opposite to the side under which the cigarette rod passes to cant said block against said studs and press said block downward upon said set screws; and an arm for mounting said clamp screw to move said clamp screw into and out of operating position to facilitate the removal of said ironing block.

3. In a continuous rod cigarette machine having a surface over which a cigarette rod travels and a cooperating section block to aid in the finishing of the rod traveling over said surface, a mount for said section block comprising, a base structure, studs fixedly mounted in said structure constructed and arranged to extend through slotted openings formed in each end of said block for positioning said block with respect to said cigarette rod, set screws mounted in said block for adjusting the amount of space between said block and said base structure, and a clamp screw for engaging said block at a portion to one side of an imaginary center line passing through the center of each of said set screws for pressing said plate toward said base structure.

4. In a continuous rod cigarette machine having a surface over which a cigarette rod travels and a cooperating lap folder section block to aid in the finishing of the rod traveling over said surface, a mount for said block comprising, a base structure, studs fixedly mounted in said structure constructed and arranged to extend through slotted openings formed in each end of said block for positioning said block with respect to said cigarette rod, set screws mounted in said block for adjusting the amount of space between said block and said base structure, a clamp screw for engaging said block at a portion to one side of an imaginary center line passing through said set screws for pressing said plate toward said base structure, and a mount for said clamp screw constructed and arranged to move said clamp screw into and out of operating position with respect to said block.

5. A mount for a pasting section block or for a folder ironing section block which cooperates with a base structure of a cigarette machine to perform a finishing operation upon a cigarette rod comprising, guide members mounted in and extending upwardly from said base structure, said block having openings constructed and arranged

to form a sliding fit with the guide members projecting upwardly from said base structure; adjusting members mounted in said block for adjusting the amount of space between said block and said base structure; and a clamp device for engaging said block at one side of said adjusting members to bias said block toward said base structure and give the block the same fixed amount of tilt each time said clamp is brought into engagement with said block.

6. A mount for a section block which cooperates with a base structure of a cigarette machine to perform a finishing operation upon a cigarette rod comprising, guide members mounted in and extending upwardly from said base structure, said block having openings constructed and arranged to form a sliding fit with the guide members projecting upwardly from said base structure; adjusting members mounted in said block for adjusting the amount of space between said block and said base structure; a clamp device for engaging said block at one side of said adjusting members to bias said block toward said base structure and give the block the same fixed amount of tilt each time said clamp is brought into engagement with said block; and a movable mounting for said clamp device to permit said clamp to be brought into and out of engagement with said block to facilitate the removal and replacement of said block on said machine.

7. In a continuous rod cigarette machine having an endless tape and paper wrapper carried thereby, the combination with a section block arranged to engage and fold inwardly one of the edges of the cigarette paper of the cigarette rod and having slots extending therethrough, lugs connected to said cigarette machine and extending through said slots for aligning said block with respect to said cigarette rod, threaded clamp means passing through said block and threaded into said cigarette machine for applying downward pressure on said block, and set screws mounted in said block for adjusting the extent of movement downward on said cigarette rod of said block whereby said block may be removed upon complete separation of the threaded clamp means from the corresponding threaded portion of the cigarette machine.

8. In a continuous rod cigarette machine, a mount for a device for forming and finishing cigarette seams comprising, a cigarette rod finishing block for finishing the seams of a cigarette rod, a support for said block adjacent which travels said cigarette rod, guide members connected to said support for positioning said block, set screws mounted in said block constructed and arranged to operate against said support for spacing said block with respect to said support, and a clamp screw engaging said block at a portion out of line with said set screws for pressing said block and set screws toward said support.

9. In a continuous rod cigarette machine, a mount for a device for forming and finishing cigarette seams comprising, a cigarette rod finishing block for finishing the seam of a cigarette rod, said block having slotted openings formed in either end of said block, a support for said block adjacent which travels said cigarette rod, studs mounted in said support constructed and arranged to extend through and fit snugly in said slots, set screws threaded through said finishing block at either end and in line with said slots and studs for spacing said block with respect to said support, and a clamp screw constructed and arranged to engage said block to one side of an imaginary center line passing through the center of said set screws to cause said block to be canted slightly against said studs for pressing said block toward said support.

10. In a cigarette machine having a base structure over which travels a continuous cigarette rod and a section block cooperating with said base structure to perform a finishing operation upon the seam of the cigarette rod, a mount for said block comprising, adjusting members for regulating the amount of space between said block and said base structure; guide members for positioning said block with respect to said base structure and for limiting the degree to which said block may be transversely tilted upon said adjusting members; and a clamp for transversely tilting said block toward said base structure and for holding said block in a fixed position with respect to said base structure.

11. In a cigarette machine having a base structure provided with a longitudinal channel through which travels a continuous cigarette rod, said cigarette rod consisting of a tobacco filler rod and a paper web folded about the filler rod, the shape of said channel conforming to the bottom of the cigarette rod, and a folder ironing section block arranged to fold the outer longitudinal edge of the paper web upon the inner longitudinal edge of said paper web, a mount for said folder block comprising, adjusting members mounted in said block for regulating the amount of space between said block and said base structure; guide members for positioning said block with respect to said base structure constructed and arranged to allow a slight amount of tilting and to limit the degree to which said block may be tilted upon said adjusting members; and a clamp for biasing said block toward said base structure and for holding said block in a fixed tilted position with respect to said base structure.

12. In a continuous rod cigarette machine having a bottom block, an endless tape and a paper wrapper carried thereby, a folder ironing section block arranged to engage the overlap edge of the cigarette paper and fold it over the other longitudinal edge thereof and having a slotted opening, an adjustable mounting for said folder ironing section block comprising, a lug fixedly mounted on said bottom block and constructed and arranged to fit snugly in said slot; a movable clamp secured to said cigarette machine for pressing said folder ironing section block downward over said lug against said bottom block in lap folding position; set screws mounted in said folder ironing section block and projecting therethrough into engagement with said bottom block for limiting the downward movement of the folder ironing section block, said screws being adjustable to position said folder ironing section block for a predetermined cross-section of the cigarette rod whereby said last-named block may be removed upon unloosening and moving said clamp to permit removal of paste accumulations from the block, and then replaced in exactly the same position.

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