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SEAM SEALER FOR CIGARETTE MACHINES

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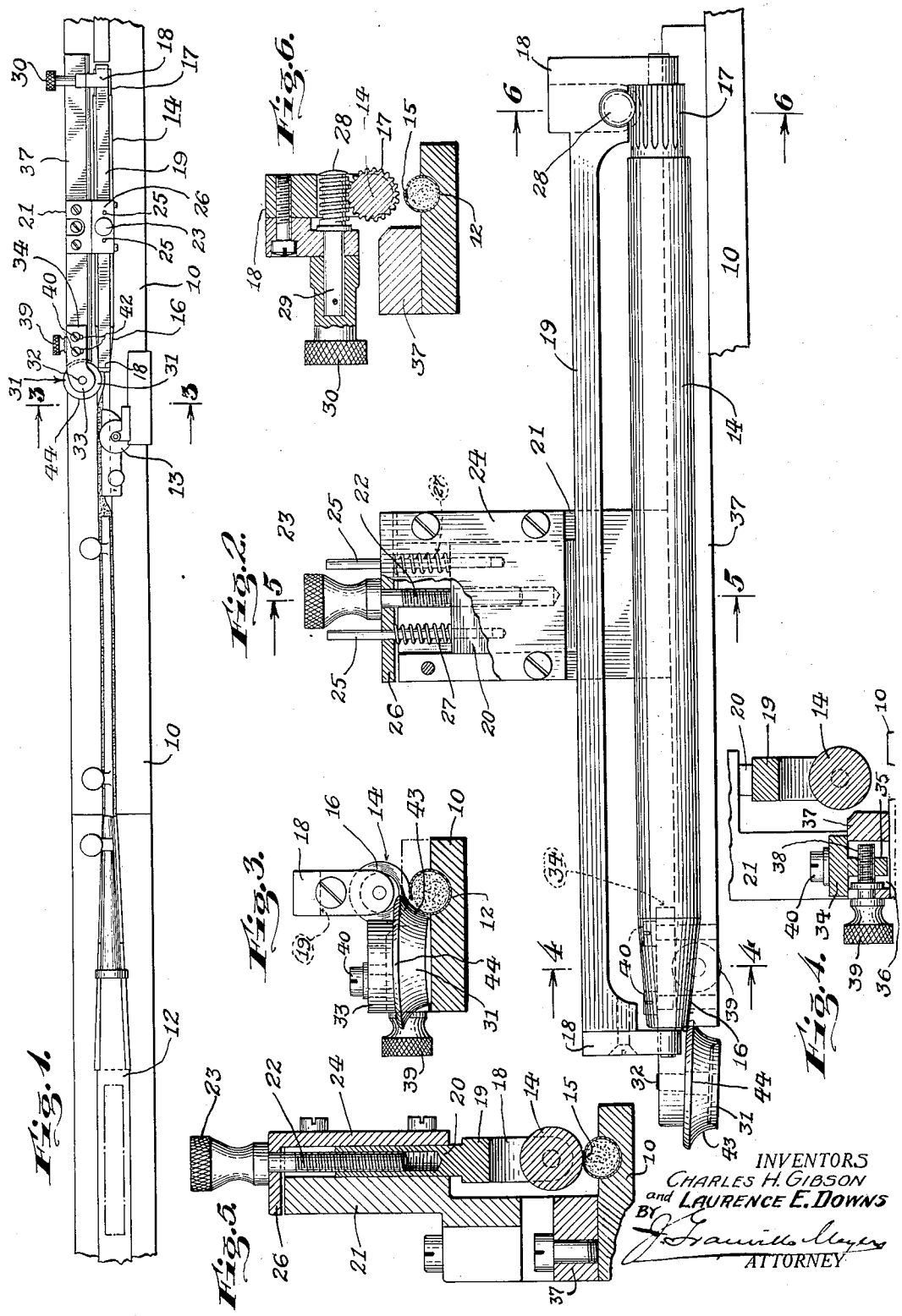


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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SEAM SEALER FOR CIGARETTE MACHINES

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The present invention relates to a seam sealer for continuous rod cigarette machines of the type wherein the tobacco filler is enclosed within a paper wrapper, the edges of which are overlapped and sealed to form a pasted seam.

Modern continuous rod cigarette machines run at great speed, some producing as many as 1200 cigarettes per minute, and since a given length of the rod is in the forming and sealing channel for an infinitesimal space of time, the paste employed to unite the overlapping edges of the wrapper paper does not always have time to set and seal the seam before the rod emerges from the channel. It has been the practice therefore to employ a separate seam sealer to engage and press upon the pasted seam of the cigarette rod immediately it emerges from the forming channel and before it reaches the "cut off" mechanism.

Many different types of seam sealers have been proposed and some have been used commercially, but all are objectionable because of the fact that the quick drying paste employed to form the seam of the cigarette rod soon accumulates and hardens upon the otherwise smooth pressing face of the sealer, producing a roughened surface, and unless this accumulation is cleaned off promptly, it will tear the delicate paper wrapper, or so interfere with the intended operation of the sealer that the seam will open up quite frequently during a day's run, with the result that the output of the cigarette machine is greatly diminished and considerable waste is produced.

Some of the known seam sealers are so mounted relative to the traveling cigarette rod that they may be moved out of engagement with the rod and the pressing face exposed for the purpose of removing the accumulated paste. With these types it is usually necessary to stop the machine while the sealer is being cleaned and this reduces the output of the machine. If the machine is not stopped during the cleaning operation, the seam of the cigarette rod is likely to open up because it will not have been properly pressed and sealed by the absent sealer and this results in much waste in addition to reducing the output of the machine.

Others have proposed a sealer consisting of a rapidly rotating cylinder or roller with means for heating the same and also means for rotating it at high speed during the seam-sealing operation, but these have not proved to be successful for various reasons, among which may be mentioned the fact that the paste rapidly accumulates on the surface of the roller and it must be frequently lifted from the rod and the fouled surface cleaned, thus reducing the output of the machine as with the other known types of sealers.

A prime object of the present invention is to provide a seam sealer having a continuous pressing face of appreciable length so positioned and adjustably mounted relative to the seam of the travelling cigarette-rod that a portion of the circumference thereof will be in constant stationary contact with a substantial length of the seam of the cigarette rod, leaving other portions exposed to be cleaned of paste accumulations and wherein a freshly cleaned portion may be brought into seam-engaging position without lifting or removing the sealer from the seam or stopping the operation of the machine.

A further object of the invention resides in associating with the seam sealer a means, such as a rotatable wheel or disk constructed and arranged to engage and fold or turn the previously pasted edge of the traveling cigarette wrapper over the tobacco filler to form the pasted seam or lap, said means being adjustably mounted to form laps or seams of different widths, it being understood in the art that some manufacturers prefer cigarettes having relatively narrow laps, while others prefer wider laps.

With these and other more or less important objects in view, as will hereinafter appear, the seam sealer of the present invention comprises an adjustably rotatable cylindrical member having a relatively long and smooth annular pressing surface any portion of which is adapted to make direct pressure contact with the seam of a traveling cigarette-rod as it is formed, means for rotatably mounting said member above and lengthwise of the path of travel of the cigarette-rod, and manually-operable means for rotatably adjusting said cylindrical member to selectively bring different portions of its annular surface into pressing contact with the seam of the moving cigarette rod, while exposing other portions of said annual surface to be cleaned, and means for holding the cylindrical member against rotation when in its adjusted position, and during the seam-sealing operations.

The invention further comprises a horizontally rotatable disk or roller, mounted upon a vertical axis and preferably having a concave periphery to conform to the cross-sectional shape of the cigarette-rod, said disk or roller having an upstanding peripheral flange positioned to engage and turn an edge of the travelling cigarette paper over the continuous filler to form the lap or seam of the wrapper, said disk or roller being laterally

adjustable relative to the path of travel of the cigarette-rod to vary the width of the lap.

In order to enable others skilled in the art to understand, make and use the invention, we will now proceed to describe the same in detail, reference being had for this purpose to the accompanying drawing, wherein,—

Fig. 1 is a plan view of the rod-forming mechanism of a continuous rod cigarette machine, showing our improved seam-sealer in the position it assumes on such a machine.

Fig. 2 is a front elevation partly in section of the sealer.

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1 and looking in the direction of the arrows.

Fig. 4 is a transverse section on the line 4—4 of Fig. 2.

Fig. 5 is a vertical transverse section taken on the line 5—5 of Fig. 2; and

Fig. 6 is a vertical transverse section taken on the line 6—6 of Fig. 2.

The reference numeral 10, Fig. 1, indicates the usual metal channel forming the base of the cigarette-rod-forming tube and thru which the usual endless fabric tape (not shown) travels, and which supports and carries the cigarette wrapper paper 12 and the tobacco thru the forming tube to shape and form the cigarette rod. The reference character 13 indicates the usual paste-applying disk for applying paste to the upstanding edge of the cigarette wrapper paper as the partially formed cigarette rod emerges from the forming channel. All of the foregoing elements are well known and are embodied in one form or another in all continuous rod-cigarette machines in use at the present time.

Our improved seam sealer, as shown in Fig. 1, is mounted intermediate the outlet end of the forming channel and the rod-cut-off mechanism (not shown), and consists of a relatively long cylindrical member 14 such as a cylindrical rod, preferably of metal, which is arranged directly above and lengthwise of the path of travel of the cigarette rod, so as to have a portion of its cylindrical surface make yielding pressure contact with the overlapping edges of the wrapper or seam of the cigarette rod, as more clearly shown at 15 in Fig. 5. I prefer to make one end of the cylindrical member 14 of tapered or conical form, as shown at 16, Fig. 2, for a purpose presently to be described, and the said cylindrical pressing member is also formed at one end,—preferably that end opposite the conical end, with gear teeth 17 for a purpose presently to be described.

The cylindrical presser member or sealer is journaled at its opposite ends in brackets 18, depending from the ends of a longitudinally-extending carrier bar 19 having an integral upstanding block 20, mounted for yielding movement in a grooved way formed in an upstanding stationary bracket 21, the base of which is supported upon and attached by screws to the base 10 of the forming channel,—all as more clearly shown in Fig. 5. The upstanding block 20 is provided in its top wall with a vertically-extending threaded bore into which a screw 22 is threaded, said screw having a thumb-head 23 at its upper end by which it may be turned in either direction to raise and lower and thus vary the pressure of the cylindrical seam sealer 14 upon the seam of the cigarette rod. The upper end of the screw 22 passes freely thru an opening formed on the flange 26 of a plate 24 attached to the front face of the upstanding bracket 21 and overlying the guide channel in which the block 20 moves. The said block 20 is further provided with upstanding pins 25 mounted to move freely through openings formed in the rearwardly-extending flange 26 of the cover-plate 21, and a coiled spring 27 is mounted upon each of the pins 25, the opposite ends of the springs bearing respectively upon the upper face of the block 20 and the under face of the flange 26 of the cover-plate 24, the arrangement being such that the springs normally press upon the upper face of the block 20, and through it urge the seam-sealing bar 14 into yielding contact with the seam of the travelling cigarette-rod, all as shown in Fig. 2.

In order to hold a given portion of the cylindrical surface of the sealing rod 14 into contact with the seam of the cigarette-rod, and to provide for rotatably adjusting the same to bring a fresh or clean portion of its surface into sealing position, while at the same time permitting the previously-used portion which may have been fouled by the accumulation of paste, to be cleaned, and without removing the sealer out of contact with the cigarette-rod, we employ a worm 28 (see Fig. 6), the thread of which is in mesh with the teeth of the gear 17, said worm being mounted upon a shaft 29 journaled in an end of one of the brackets 18, said worm-shaft having a knurled head 30 by means of which it may be turned at the will of the operator to adjustably rotate the cylindrical sealing rod 14 for the purpose stated. With the construction described it will be seen that the seam-sealing rod 14 is normally held against rotation by the worm gearing, but may be rotated by said gearing to bring a fresh and clean sealing surface of the rod in position relative to the seam whenever a previously employed surface portion has become fouled with paste. This fouling occurs more quickly because the sealing-rod becomes heated by the frictional contact therewith of the rapidly travelling cigarette-rod, thus causing the accumulated paste which exudes from the seam of wrapper paper to become hard or caked in uneven lumps which tear the frail wrapper paper and otherwise interfere with the normally-intended function of the sealer. With our improved construction, wherein portions of the cylindrical surface of the sealer-rod 14 are at all times exposed, while another portion is in sealing contact with the seam of the cigarette-rod, it will be understood that a fouled portion of the surface may be cleaned without moving the sealer out of contact with the seam, so that the cigarette machine may be operated continuously while the sealer is being cleaned, and there will be no interruption in the operation of the sealer during the time when it is being rotatably adjusted by the worm gearing to bring a fresh and clean surface into contact with the seam of the cigarette-rod, while positioning the fouled surface to be cleaned.

We prefer to bevel, taper or form one end of the sealing cylinder 14 in the shape of a cone in order that its inclined wall will assist in gradually folding or turning the upstanding pasted edge of the travelling cigarette wrapper paper down upon the unpasted edge during the formation of the pasted seam and to obviate the presence of an obstruction at the point where the turned edge of the wrapper paper comes into contact with the active presser-face of the sealer.

In order to initially turn or fold the upstanding pasted edge of the wrapper paper down upon the previously turned unpasted edge and to vary

at will the width of the lap of the seam, we provide a wrapper-turning disk 31, journaled for rotation in a slightly-inclined plane about a substantially vertical axis, said axis including a journal-pin 32, the free end of which is mounted in a bracket 33 outstanding from a laterally adjustable block 34 having a depending web 35, mounted for back and forth movement in a slot or way 36 formed in the base 37 of the bracket 21. The depending web 35 is provided with a transversely-arranged threaded opening into which is tapped a screw 38 having a knurled thumb-head 39, at its end, so that by turning the head in one direction or the other, the periphery of the disk or wheel 31 may be adjusted toward and from the path of movement of the partially formed cigarette-rod and against the upstanding edge of the wrapper paper. After it has been adjusted the block 34 with its disk 31, are securely fixed by means of set screws 40, of which there are two, as more clearly shown in Fig. 1, said set screws passing thru slots 42 in the block 34, and entering threaded openings in the base 37.

As more clearly shown in Figs. 2 and 3, the periphery of the paper turning disk 31 is outwardly curved or arched as at 43, to provide an outstanding annular flange 44, the arched periphery of the disk substantially conforming to the cross-sectional shape of the cigarette-rod and the peripheral flange 44 is so positioned as to engage the upstanding pasted edge of the paper wrapper and turn it over toward the folded but unpasted wrapper edge whereby the conical edge 16 of the presser member will engage the said turned-over edge and gradually guide it into contact with the folded edge to form the pasted wrapper seam. Because of the fact that the disk or wheel 31, with its flange 44, is adjustable toward and from the path of movement of the cigarette-rod and its seam, it is obvious that seams with laps of different widths may be provided.

While we have shown and described the wrapper folding disk in association with our improved sealer, and prefer to use the same in connection therewith, we wish it understood that we may employ our sealer without the said wrapper folding disk, as where it is applied to cigarette machines wherein the cigarette-rod emerges from the forming-channel with the overlapping edges of the wrapper paper already pasted. When so employed our improved sealer serves to add the additional pressure required to firmly set and seal the seam.

Nor do we wish to be understood as limiting ourselves to the worm gear construction shown and described for rotating the seam-sealing rod and for holding it against rotation during normal operation of the sealer, as obviously other approved means may be employed for accomplishing the results stated and without departing from the spirit of the invention.

What we claim as new herein and desire to secure by Letters Patent is:—

1. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth annular surface, adapted to be positioned above and parallel with the path of travel of a cigarette-rod, and manually-operable means for adjustably rotating said member to bring selected portions of its annular surface into pressing contact with the seam of a travelling cigarette-rod, leaving other portions exposed for cleaning.

2. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth annular surface, adapted to be positioned above and parallel with the path of travel of a cigarette-rod, manually-operable means for adjustably rotating said member to bring a selected portion of its annular surface into pressing contact with the seam of a travelling cigarette-rod leaving other portions exposed for cleaning, and means for holding the cylindrical member in its different adjusted positions.

3. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth annular surface, adapted to be positioned above and parallel with the path of travel of a cigarette-rod, and manually-operable means for rotating said member to bring selected portions of its annular surface into contact with the seam of a travelling cigarette-rod and to expose other portions for cleaning, said means including mechanism for holding the cylindrical member against rotation except upon the operation of said rotating means.

4. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth annular surface, adapted to be positioned above and parallel with the path of travel of a cigarette-rod, manually-operable means for adjustably rotating said member to bring different portions of its annular surface into pressing contact with the seam of a travelling cigarette-rod and to expose other portions for cleaning, and means for yieldably mounting said cylindrical member.

5. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth annular surface, adapted to be positioned above and parallel with the path of travel of a cigarette-rod, manually-operable means for rotatably adjusting said member to bring different portions of its annular surface into contact with the seam of a travelling cigarette-rod and to expose other portions for cleaning, and means for vertically adjusting said cylindrical member toward and from a travelling cigarette-rod.

6. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth annular surface, adapted to be positioned above and parallel with the path of travel of a cigarette-rod, and manually-operable means for rotatably adjusting said member to bring different selected portions of its annular surface into contact with the seam of a travelling cigarette-rod and to expose other portions for cleaning, said cylindrical member having a conical end.

7. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth peripheral surface, a bracket in which the opposite ends of the cylinder are journaled, and manually-operable worm gearing for rotating the cylindrical member at will and for temporarily holding the same against rotation except upon operation of the worm gearing.

8. A seam sealer for continuous rod-cigarette machines, comprising a cylindrical member having a relatively long and smooth peripheral surface, one end of said member being conical, a mounting in which the ends of the cylindrical member are journaled, manually-operable means for rotating said member to successively bring different portions of its cylindrical surface into

operating position and other portions thereof exposed for cleaning, and means for holding the cylindrical member against rotation.

9. A seam sealer for continuous rod cigarette machines, comprising a rotatable member having a continuous relatively long and smooth cylindrical surface all portions of which may make direct contact with the seam of a cigarette-rod as it is formed and advanced through the machine, means for rotatably mounting said member above and lengthwise of the path of movement of the cigarette-rod, and manually-operable means for rotatably adjusting the member to selectively bring different portions of its cylindrical surface into contact with a moving cigarette-rod, while permitting other portions thereof to be cleaned, said means including mechanism for holding the member against rotation when in its adjusted position.

10. A seam sealer for continuous rod cigarette machines, comprising a cylindrical member having a relatively long and smooth periphery and a conical end, means for supporting and holding the cylinder against rotation and lengthwise the path of movement of a cigarette rod as it is formed, and manually-operable means for axially adjusting the cylinder for the purposes stated.

11. A seam sealer of the class described, comprising a cylindrical member having a conical end, and a paper turning disk associated with said conical end.

12. A seam sealer of the class described, comprising a cylindrical member having a conical end, and a paper turning disk associated with said member and having a portion of its periphery overlapping said conical end of the cylinder member.

13. A seam sealer of the class described, comprising a cylindrical member having a conical end and a paper turning disk provided with a peripheral flange associated with the conical end of the cylindrical member.

14. A seam sealer of the class described, comprising an adjustably rotatable cylindrical member and a paper turning disk mounted for rotation on an axis different from the axis of rotation of the cylindrical member and positioned at one end of said member.

15. A seam sealer of the class described, comprising a rotatably adjustable cylindrical member, a paper turning disk having its periphery arranged adjacent one end of the cylindrical member, and means for adjusting the position of the disk relatively to the said member.

16. A seam sealer of the class described, comprising a rotatably adjustable cylindrical member, a paper turning disk mounted for rotation in a substantially horizontal plane at one end of said member, and means for adjusting the position of the disk in a direction at right angles to the length of the cylindical member.

17. A seam sealer of the class described, comprising a rotatably adjustable cylindrical member, and a paper turning disk having an arched periphery mounted for rotation in a substantially horizontal plane at one end of said cylindrical member.

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