A. L. EWERS.
SEAM SEALING DEVICE FOR CIGARETTE MACHINES.
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fig. 1

fig. 2

fig. 3

fig. 4

fig. 5

INVENTOR.

ALEXANDER L. EWERS

WITNESSES:

J. M. STRICKER

H. MILLINGWORTH

BY

Meyer, Buckman \\
ATTORNEYS.

THE NOBIS PETERS CO., PHOTO-LITHO., WASHINGTON, D.C.
SEAM-SEALING DEVICE FOR CIGARETTE-MACHINES.

UNITED STATES PATENT OFFICE.

ALEXANDER L. EWERS, OF DURVID, VIRGINIA, ASSIGNOR TO UNITED CIGARETTE MACHINE CO. LTD., OF LONDON, ENGLAND, A CORPORATION OF GREAT BRITAIN AND IRELAND.

1,130,720.


To all whom it may concern:

Be it known that I, ALEXANDER LEE EWERS, a citizen of the United States, residing at Durvid, in the county of Campbell and State of Virginia, have invented new and useful Improvements in Seam-Sealing Devices for Cigarette-Machines, of which the following is a specification.

This invention relates to cigarette making machines of the continuous rod type and particularly to the means for laying and drying the pasted seam of the folded wrapper as it travels with great speed from the wrapper folding devices to the rod cutting mechanism. In machines of this type, particularly those machines that run at high speed and machines that form cigarettes with a narrow lap, the cigarettes are liable to be delivered with moist, and wrinkled or puckered seams due to expansion of the paper wrapper by the water in the paste. The wrinkled or puckered seam detracts from the appearance of the finished cigarette while cigarettes ejected with undried seams, especially when the lap is narrow, tend to open up under the expansion of the filler and spoil the product.

To overcome the faults above recited, various means for ironing and drying the seam immediately the wrapper is folded have been devised, in most of which heat generated by gas or electricity, has been employed to raise the temperature of a portion of the channel through which the cigarette rod passes. In the present invention, all such means for generating heat have been abandoned and in place thereof a friction device has been adapted to increase the temperature of a part adjacent the cigarette rod and by conduction through said part, transmit the generated heat to the cigarette seam, drying and ironing said seam as the cigarette rod moves rapidly past the heated part and in contact therewith. Briefly stated the invention comprises in the embodiment shown, a hollow drum resting against the channel through which the cigarette rod passes, and particularly against that side in contact with the seam. This side may be a block or piece interposed between the drum and the cigarette rod, or the drum itself may form the side of the channel as preferred. In the axis of the drum is a rotating shaft carrying a number of friction blocks that bear against the inner surface of the drum as they revolve and generate heat that is transmitted by conduction through the wall of the drum to the channel and thence to the seam of the cigarette rod. The shaft is driven by gearing receiving motion from the cigarette machinery, and the drum is mounted in such a way that it can be readily raised from the channel and held therefrom whenever desired.

In order that the invention may be clear to those skilled in the art, the accompanying drawings show what is considered the preferred embodiment of the invention, and as there shown Figure 1 is a side elevation of the friction device applied to a cigarette channel a portion being broken away. Fig. 2 is a vertical cross sectional view of the same on the line 2—2. Fig. 3 is an enlarged detail view in section of a portion of the friction device and the cigarette channel. Fig. 4 is an enlarged view similar to the lower portion of Fig. 2, of a modified form of the invention. Fig. 5 is a cross sectional view on the line 5—5 Fig. 4.

In the drawings, 10 indicates a portion of the cigarette rod channel, here shown as comprising a lower plate 11 and an upper plate 12 in contact therewith through which plates is made a longitudinal opening for the passage of the cigarette rod. The channel 10 here shown is merely illustrative and may be substituted by any other type of channel.

Resting upon the channel 10 is a hollow drum 13 having an open end tightly covered by a cap 14, which in the drawings is shown as screwed on a reduced and externally threaded portion of the drum. Extending through the drum 13 and in the axis thereof is a shaft 15 mounted in bearings 16, 17 on the drum 13 and cap 14, respectively, and which may contain stuffing boxes or other means to prevent the escape of fluid through the bearings. On one end of the shaft 15 is fastened a gear wheel 18. Within the shaft the shaft has fixed thereon a hub 19 extending from head to head of the drum, and from which hub project a number of longitudinal ribs or lugs 20. One side 21 of each of said ribs is made tangential to a circle concentric to the axis of the shaft, and to each of said sides 21 is secured a resilient arm 22, here shown as a spring plate of sheet...
metal. Each arm 22 has fastened on its outer end a friction block 23, as long as the drum 13 between the heads and bearing against the inner surface of the drum.

A short distance from the drum 13 is a bearing bracket 24 bolted or otherwise secured to a portion 25 of the cigarette machine frame that supports a shaft 26 on which is a gear wheel 27 in engagement with the gear wheel 18. An arm 28 is mounted at one end to swing on said shaft 26, its other end being forked and connected to the bearings 16, 17 on the drum 13 and carries said drum. Pivoted on the bracket 24 is a lever 29 having a notch 30 in one side and a handle 31 on its free end. A pin 32 projects from the side of the arm 28 and when the drum is lifted, said pin is caught in the notch 30 of the lever and the drum sustained above the channel 10. A spring 33 holds the lever 29 against the pin when the latter is disengaged from the notch and draws the notch into engagement with said pin when the drum is raised. The drum is about three fourths filled with oil which becomes heated and being a relatively large body, retains its heat for quite a while. By this means a constant even temperature is maintained in the heater while the cigarette machine is running and cools but slowly during a temporary stoppage.

The operation of this heater is very efficient. The drum 13 rests on the channel 10 over the lap of the wrapper, the channel being made exceedingly thin at this point, see 34, Fig. 3. The shaft rotates rapidly when the cigarette making machine is in operation and the friction blocks 23 bearing against the inner surface of the drum 13, generate heat by their frictional contact that raises the temperature of the drum and the oil, the intensity of the heat depending on the speed of the shaft, the pressure of the blocks against the drum and the area of the surfaces in frictional engagement. The speed may be regulated by changing the proportion of the gear wheels 18, 27, the pressure by increasing or decreasing the tension of the spring arms, and the area of the contacting surfaces by enlarging or reducing the bearing surfaces of the friction blocks. By properly proportioning these several elements that affect the generation of heat, any temperature desired may be had and maintained during the operation of the cigarette machine. The drum 13 bearing on the channel 19, the heat of the drum is conducted to said channel and through the thin part 34 thereof to the lap of the cigarette rod, drying the paste and ironing out all wrinkles caused by pasting.

The upper plate 12 of the channel may be omitted beneath the heater and the latter substituted therefor as clearly shown in Figs. 5 and 6. As there represented, a groove 35 is made in the drum 13 to coact with the groove in the lower plate 11 of the channel and form the opening through which the cigarette rod passes.

In place of spring arms 22 to carry the friction blocks pivoted arms 29 may be substituted and held against the drum by springs 36 as in Fig. 4.

The drum 13 and its cap 14 are preferably made of different metals, the former of phosphor-bronze and the latter of steel. In this way the expansion and contraction of these parts, due to heating and cooling do not injuriously affect the threaded connection by which they are joined.

What I claim is:

1. In a cigarette making machine, the combination with a forming channel through which the cigarette rod passes, of a fixed metallic member arranged to bear upon the seam of the cigarette rod, and rapidly moving heat generating means contacting frictionally with said metallic member for heating the latter by friction and for transmitting such heat to the seam of the cigarette rod by conduction.

2. In a cigarette making machine, the combination with a wrapper folding channel having a relatively thin metal wall, of a heater for said wall comprising a stationary member in contact with the thin wall of the channel, and a rapidly moving heat generating member contacting with said stationary member for heating the latter by friction and transmitting such heat through the said thin wall by conduction.

3. In a cigarette making machine, the combination with a wrapper folding channel, of a heater for said channel, comprising a stationary hollow member in contact with the channel, and a movable member within and bearing against the hollow member.

4. In a cigarette making machine, the combination with a wrapper folding channel, of a heater for said channel, comprising a stationary hollow member in contact with said channel, and a revolvable member within said hollow member and in frictional contact with the inner surface thereof.

5. In a cigarette making machine, the combination with a wrapper folding channel, of a heater for said channel, comprising a stationary hollow member in contact with the channel, a revolvable member within said stationary member in frictional contact with the inner wall thereof, and a liquid also within said hollow member adapted to be heated by the friction between the said members and distribute the heat to contiguous parts.

6. In a cigarette making machine, the combination with a wrapper folding channel through which a cigarette rod passes, of a heater for said channel comprising a me-
tallic member adapted to be moved into and out of contact with the channel, of a rapidly revoluble heat generating member in frictional contact with said metallic member for heating the latter by friction and transmitting the heat to the channel and the cigarette rod by conduction.

7. In a cigarette making machine, the combination with a wrapper folding channel through which the cigarette rod passes, said channel having a thin wall at one side, a hollow member movable into and out of contact with the thin wall of said channel, and a revoluble heat generating member in frictional contact with the inner wall of the said hollow member for heating the latter and transmitting its heat by conduction through the said thin wall to the cigarette rod.

8. In a cigarette making machine, the combination with a wrapper folding channel, of a heater for said channel comprising a stationary hollow member in contact with said channel, a revoluble shaft extending through said member, and frictional blocks resiliently carried by said shaft in contact with the inner surface of the hollow member.

9. In a cigarette making machine, the combination with a wrapper folding channel, of a heater for said channel, comprising a hollow member movable into and out of contact with said channel, a revoluble shaft extending through said member, spring arms extending from said shaft, and a friction shoe carried by each of said spring arms bearing upon the inner surface of a stationary member.

10. In a cigarette making machine, the means for pressing and smoothing the pasted seam of a paper wrapped cigarette rod consisting of an apparatus for generating heat by friction and comprising a stationary metallic member bearing upon the cigarette rod, and a rapidly moving member in frictional contact with said stationary metallic member for heating the latter by

11. In a cigarette making machine, an apparatus for generating heat by friction comprising a hollow stationary member, and a revoluble member within the hollow member held frictionally against the inner surface of the same by resilient means.

12. In a cigarette making machine, an apparatus for generating heat by friction comprising a drum adapted to be moved into and out of contact with said machine, a shaft rotatable within said drum, a hub carried by said shaft, spring arms secured to said shaft, and a friction block carried by each spring arm and bearing resiliently against the inner surface of said drum.

13. In a cigarette making machine, the combination with a wrapper folding channel, of a heater therefor, comprising a stationary member mounted to swing into and out of contact with said channel, a revoluble member within said stationary member, and bearing frictionally against the inner surface thereof, and means for supporting said stationary member when raised out of contact with said folding channel.

14. In a cigarette making machine, the combination with a wrapper folding channel, of a heater therefor comprising a non-rotating drum, and a plurality of revoluble members within said drum in friction contact with its inner wall, a lever connected to said drum and arranged to swing the same into contact with said channel to heat the same by conduction, a conducting liquid within the drum, and a supporting means for holding said drum out of contact with said channel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALEXANDER L. EWERS.

Witnesses:
E. H. Bickerton,
J. Granville Meyers.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."