Dec. 13, 1932. R. W. VOIGT 1,890,707

MEANS FOR ARRANGING OVAL CIGARETTES

Filed Feb. 20, 1929 2 Sheets-Sheet 1

Fig. 1

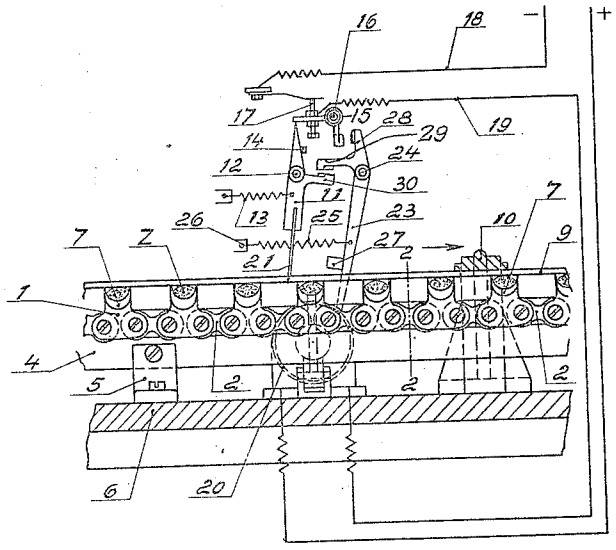


Fig. 1a

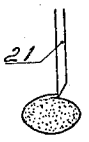


Fig. 2

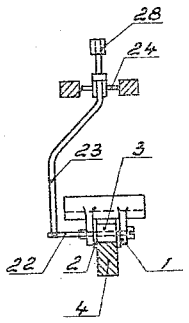
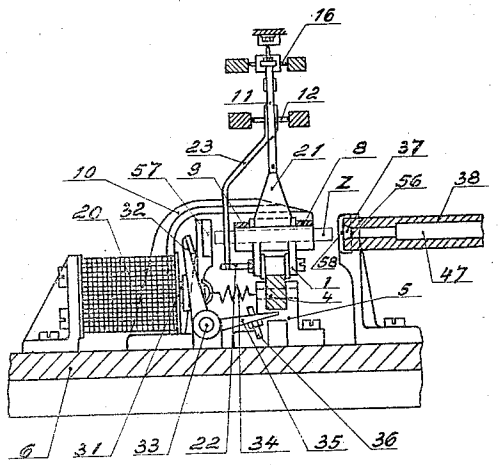


Fig. 3



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MEANS FOR ARRANGING OVAL CIGARETTES

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Fig. 4

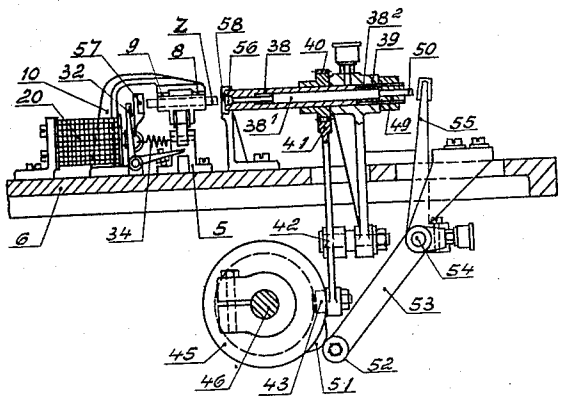
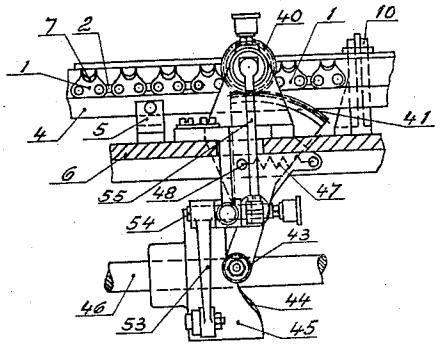


Fig. 5



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UNITED STATES PATENT OFFICE

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MEANS FOR ARRANGING OVAL CIGARETTES

Application filed February 20, 1929, Serial No. 341,387, and in Germany February 25, 1928.

This invention relates to a means for arranging oval cigarettes.

The cigarettes delivered from cigarette machines as is well-known already bear imprints. In the delivery of the cigarettes coming from the machine, means have been provided for insuring that the cigarettes lie with their imprints similarly disposed. In general, however, cigarettes are arranged in inclined piles before they are packed. In the cigarette boxes the imprints of at least the upper layer of cigarettes should be visible i. e. disposed in the same direction. If the cigarettes are packeted mechanically then they must be arranged mechanically to obtain the desired appearance of the imprints in the packet. For this purpose it has already been proposed to mechanically arrange the cigarettes provided with imprints, by leading said cigarettes past a source of light which illuminates that part of the cigarette at which the imprint is to be found and the light reflected is directed to a highly heat- or light-sensitive medium which in consequence of the action of the reflected light produces or allows the passage of an electric current only of sufficient strength to excite a relay to close a second circuit which controls mechanical means for rotating the cigarettes about their longitudinal axes when the reflected light is not weakened by the imprint. Thus a heating or lighting effect is the basis of this method.

In accordance with the present invention the electric current is utilized to set in operation mechanical means for rotating the cigarettes about their longitudinal axes but the contact for opening or closing the electric circuit is effected purely mechanically, the cigarette moving past a feeler which is so adjusted that it is moved by the cigarette seam. This movement is utilized to interrupt or close the electric circuit and thereby activate mechanical means which engage and turn the cigarettes. The new method is intended principally for the dressing of oval cigarettes where the seam, which is located diametrically opposite the imprint, can only take one of two positions, the cigarette lying either in its proper position with the seam on the supported side of the cigarette or with the seam on the upper side.

The cigarettes are disposed and held preferably on a feed band or the like at regular distances apart with their longitudinal axes parallel and fed past a feeler lever, the free end of which engages with the passing cigarette and is moved by the transversely extending cigarette seam i. e. is swung around.

The invention is illustrated in the accompanying drawings which show a suitable arrangement for dressing oval cigarettes in accordance with the invention, Fig. 1 being a side elevation, Fig. 1*a* a detail showing how the feeler is engaged by the cigarette seam, Fig. 2 a vertical section on the line 2—2 of Fig. 1, Fig. 3 an end view partly in vertical cross section and Fig. 4 being an end view partly in vertical section with the parts in a different position, the driving means for the turning device not being shown. Fig. 5 is a side elevation seen from the opposite side from Fig. 1.

Referring to the drawings, there is provided a feed chain in the form of an endless band the chain links 1 of which are connected with one another by intermediate links 2 each of which carries two rollers 3 of which one is adjacent the one chain link and the other the neighbouring chain link. The chain with these rollers 3 runs over the guide rail 4 which is carried by brackets 5 on the base plate 6. The chain links 1 terminate on their upper sides in channels 7 which are made of oval cross section to receive each cigarette. In order that the cigarettes Z will be held in the channels 7 there is provided over the chain links 1 a covering rail consisting of two bars 8 and 9 extending parallel to one another adjacent the ends of the channels as shown in Figs. 3 and 4. The cigarettes themselves ex-

tend beyond the ends of the channels at both sides. The covering strips 8 and 9 are held by brackets 10 which are mounted on the base plate 6 as shown in Figs. 3 and 4. Over the chain track is pivotally mounted on the pivots 12 a feeler lever 11. This feeler lever formed as a double armed lever is pulled by a spring 13 continuously against a projection 14. The upper end of the lever bears beneath a contact member formed as a bell crank lever 15 which is rotatable about the pivot 16 and carries the contact screw 17. In the position shown in Fig. 1 this contact screw closes a circuit by connecting the conductors 18 and 19 with one another which circuit includes a source of power not shown and electro-magnets 20, the function of which is hereinafter explained.

The feeler lever 11 terminates at its lower end in a blade-like feeler arm 21 which is so positioned that its lower horizontal edge comes in contact with the cigarette fed beneath this edge and resting in the channels 7 and held there by the covering strips 8 and 9. If the cigarettes are disposed so that the imprint is uppermost then they pass under the feeler arm without acting thereon. If the feeler arm with its lower edge comes in contact with a cigarette seam it strikes against the seam (see the enlarged detail Fig. 1*a*). As the cigarette is held and moved forwards by the chain in the direction of the arrow shown in Fig. 1 the edge of the seam moves the feeler arm and consequently the feeler lever so that the latter is swung about its pivot 12. The upper end of the feeler lever moves out of engagement with the bell crank lever 15. This latter lever falls due to gravity (assisted if desired by a spring) with its arm carrying the contact screw 17. Thus the circuit containing the conductors 18, 19 is interrupted and the electromagnet de-energized, the object of which is hereinafter explained.

In the first place it is to be noted that each chain link 1 carries a laterally projecting pin 22 which on the forward movement of the chain comes in contact with the free end of a rock lever 23 which is pivotally mounted on the pivot 24. The rock lever 23 is drawn against the stop 27 by a spring 25 which is secured to the frame 26. On contact with the pin 22 the lever 23 is caused to swing, the pin 22 moving past the correspondingly shaped lower end of the lever. The upper end of the lever has two projections respectively 28 and 29. These projections respectively come in contact with the contact member 15 or with a projection 30 on the feeler lever 11. The lever 23 rocks without effect when the parts 15 and 11 are in the position shown in Fig. 1. Here the lever projections 28 and 29 at their highest reach the stops of the contact member 15 or of the bracket 30. If however the feeler lever 11 is swung by a contact with a cigarette seam and the contact member 15 is depressed then the lever 23 makes a working stroke, first striking with its projection 28 against the end of contact member 15 and directing this again into the position shown in Fig. 1. At the same time the projection 29 strikes the projection 30 of the feeler lever so that the feeler lever assisted by the spring 13 is retracted into the initial position shown in Fig. 1.

Thus each time a cigarette passes with its imprint uppermost in its channel 7 beneath the feeler lever this lever remains in the position of rest and the controlling rock lever 23 makes an inoperative stroke. On the other hand when the feeler lever is swung by a cigarette seam said rock lever makes a working stroke which returns the feeler lever and the contact into the initial position so that this part is prepared for the passage of the next cigarettes.

The electro-magnet continuously under the action of the electric circuit attracts with its core 31 a rock lever 32 which is rotatable about the pivot 33. The rock lever is under the action of a spring 34 which tends to withdraw it from the core of the electro-magnet; it has also a projection 35 with an adjusting screw 36 so as to permit of regulation of the swinging movement of the lever.

The chain which is preferably intermittently moved is fed in such manner that each time the rock lever 32 stops the cigarette Z comes exactly opposite.

As shown in Fig. 1 the electromagnet with the rock lever 32 is located at the part of the guide rail 4 which is directly beneath the feeler lever 11. When the feeler lever is swung and consequently the circuit is interrupted the core 31 of the electromagnet releases the rock lever 32 which moves under the tension of its spring 34. The correspondingly formed end of the rock lever comes against the one end of the cigarette and moves the cigarette longitudinally. By such longitudinal movement the other end of the cigarette passes into the conically shaped mouth 37 of a rotatable member 38 formed as a tube. The tube is rotatably mounted in the bearings 39 (see Fig. 4). On the tube is mounted a pinion 40 which engages a toothed sector 41 which is rotatable about the pivot 42 and has an extension fitted with a roller 43. The roller 43 bears against a cam 44 on the cam disc 45 which is secured to the continuously rotating shaft 46. A spring 47 engages the toothed sector and is secured at its other end to the frame at 48 and tends to draw the roller 43 continuously against the cam 44. In consequence of this arrangement on each rotation of the shaft the toothed sector swings once and the rotatable member 38 is turned through 180°. Such movement takes place between two feeding movements of the chain which carries the cigarettes.

Each time that the feeler arm 21 is actuated a cigarette is rotated because the rock lever 32 has fed the cigarette into the mouth of the rotatable member 38 where it is held frictionally. Naturally, since roller 43 is kept in continuous engagement with cam 44 by means of spring 47, the pinion 40 is rotated 180° in opposite direction, returning to its original position, when the toothed sector 41 is returned to its original position.

In order to push back into the channels 7 the cigarettes which have been turned the following arrangement is provided. In the hollow rotatable member 38 is provided a pusher 38′ which is movable longitudinally and which by means of a spring 38^2 which bears against a collar 49 mounted threadedly or otherwise on the pusher tends to press the pusher towards the right in Fig. 4 so that the end 50 of the pusher projecting from the hollow rotatable member is held by the spring in the extreme right hand position. The cam disc 45 is, however, provided on its periphery with a cam 51. A rock lever 53, which is pivoted on the frame at 54, has its end fitted with a roller 52 which latter is adapted to bear against the periphery of said cam disk in the path of said cam 51. This lever is provided with an upwardly extending arm 55 the free end of which is located adjacent the end of the pusher 50. On each rotation of the shaft 46 the lever 53 and its arm 55 are rocked, the upper end of said arm striking against the end 50 of the pusher 38′ and pushing it longitudinally against the action of the spring 38^2 into the hollow rotatable member 38. The forward end 56 of the pusher entering the mouth of the rotating member abuts against a cigarette held therein and pushes such cigarette in its channel 7 back into its old position. Obviously the cam 51 is so arranged in relation to the cam disc 44 that the upwardly extending arm 55 of rock lever 53 acts on the pusher 38′ only when the rotatable member has extended its rotation through 180°.

It will be understood that the cigarettes carried by the chain and now arranged in relation to the imprints may be deposited in a suitable manner or delivered direct to the packeting machine.

The two guide members 57 and 58 which are carried by cheeks mounted on the frame plates extend on both sides of the chain and act as guides for the cigarette ends.

I claim:

1. Apparatus for arranging oval cigarettes with respect to their imprints comprising a feeler, means for feeding the cigarettes to be arranged past said feeler, said feeler engageable with the cigarette seams, means for controlling an electric circuit, said means controlled by said feeler, means for rotating the cigarettes about their longitudinal axes, means controlled by said electric circuit for bringing said cigarettes into engagement with said rotating means and means for moving said cigarettes out of engagement with said rotating means.

2. Apparatus for arranging oval cigarettes with respect to their imprints comprising a feeler, feeding means for feeding the cigarettes to be arranged past said feeler, said feeler engageable with the cigarette seams, means for controlling an electric circuit, said means controlled by said feeler, an electro-magnet included in the electric circuit, a lever adapted to be controlled thereby and serving to displace the cigarettes in the longitudinal direction, means to move said lever away from said electro-magnet, a rotatable member adapted to receive the displaced cigarettes and to rotate them about the longitudinal axis of the cigarette through 180° and a pusher adapted to return the cigarette thus rotated back to the feeding means.

3. In a device for uniformly arranging ovel cigarettes having seams with respect to the imprints on said cigarettes, means to so arrange said cigarettes and means adapted to be actuated by engagement with said seams to control said arranging means.

4. In a device for uniformly arranging oval cigarettes having seams with respect to the imprints on said cigarettes, means to so arrange said cigarettes, electrical means to control said arranging means and mechanical means adapted to be actuated by engagement with said seams to control said electrical means.

5. In a device for uniformly arranging oval cigarettes having seams with respect to the imprints on said cigarettes, means to arrange the disarranged cigarettes and means adapted to be actuated by engagement with the seams of said disarranged cigarettes to control said arranging means.

6. In a device for uniformly arranging oval cigarettes having seams with respect to the imprints on said cigarettes, means to rotate the disarranged cigarettes through 180° and means adapted to be actuated by engagement with the seams of said disarranged cigarettes to control said rotating means.

7. In a device for uniformly arranging oval cigarettes having seams with respect to the imprints on said cigarettes, means to rotate the disarranged cigarettes through 180° to arrange the same in conformity with the other cigarettes, electrical means to control said rotating means and means adapted to be actuated by engagement with the seams of said cigarettes to control said electrical means.

8. In a device for uniformly arranging oval cigarettes having seams, with respect to the imprints on said cigarettes, means to rotate disarranged cigarettes into conformity with the other cigarettes, means to bring said disarranged cigarettes into engagement with

said rotating means, means to engage the seams of said disarranged cigarettes to control said second named means and means for conveying said cigarettes past said seam engaging means.

9. In a device for uniformly arranging oval cigarettes having seams, with respect to the imprints on said cigarettes, means to rotate disarranged cigarettes into conformity with the other cigarettes, means to bring said disarranged cigarettes into engagement with said rotating means, electrical means to control said second named means, means to engage the seams of said disarranged cigarettes to control said electrical means and means for conveying said cigarettes past said seam engaging means.

10. In a device for uniformly arranging oval cigarettes having seams, with respect to the imprints on said cigarettes, means to rotate the disarranged cigarettes about their longitudinal axes into conformity with the other cigarettes, means to bring said disarranged cigarettes into engagement with said rotating means, electrical means to control said second named means, means to engage the seams of said disarranged cigarettes to control said electrical means and means for conveying said cigarettes past said seam engaging means.

11. In a device for uniformly arranging oval cigarettes having seams, with respect to the imprints on said cigarettes, means to rotate the disarranged cigarettes 180° about their longitudinal axes into conformity with the other cigarettes, means to bring said disarranged cigarettes into engagement with said rotating means, electrical means to control said second named means, means to engage the seams of said disarranged cigarettes to control said electrical means and means for conveying said cigarettes past said seam engaging means.

12. In a device for uniformly arranging oval cigarettes having seams, with respect to the imprints on said cigarettes, means to rotate the disarranged cigarettes about their longitudinal axes into conformity with the other cigarettes, means to displace said disarranged cigarettes longitudinally to bring them into engagement with said rotating means, electrical means to control said displacing means, means to engage the seams of said disarranged cigarettes to control said electrical means, means to return said longitudinally displaced cigarettes to original position and means for conveying said cigarettes past said seam engaging means.

13. In a device for uniformly arranging oval cigarettes having seams, with respect to the imprints on said cigarettes, means to rotate the disarranged cigarettes about their longitudinal axes into conformity with the other cigarettes, means to displace said disarranged cigarettes longitudinally to bring them into engagement with said rotating means, electrical means to control said displacing means, means to engage the seams of said disarranged cigarettes to control said electrical means, and means for feeding said cigarettes successively past said seam engaging means.

In testimony whereof I affix my signature.

ROBERT WILHELM VOIGT.