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ROD IN CIGARETTE MACHINES
Filed Feb. 4, 1939

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2 Sheets-Sheet 1

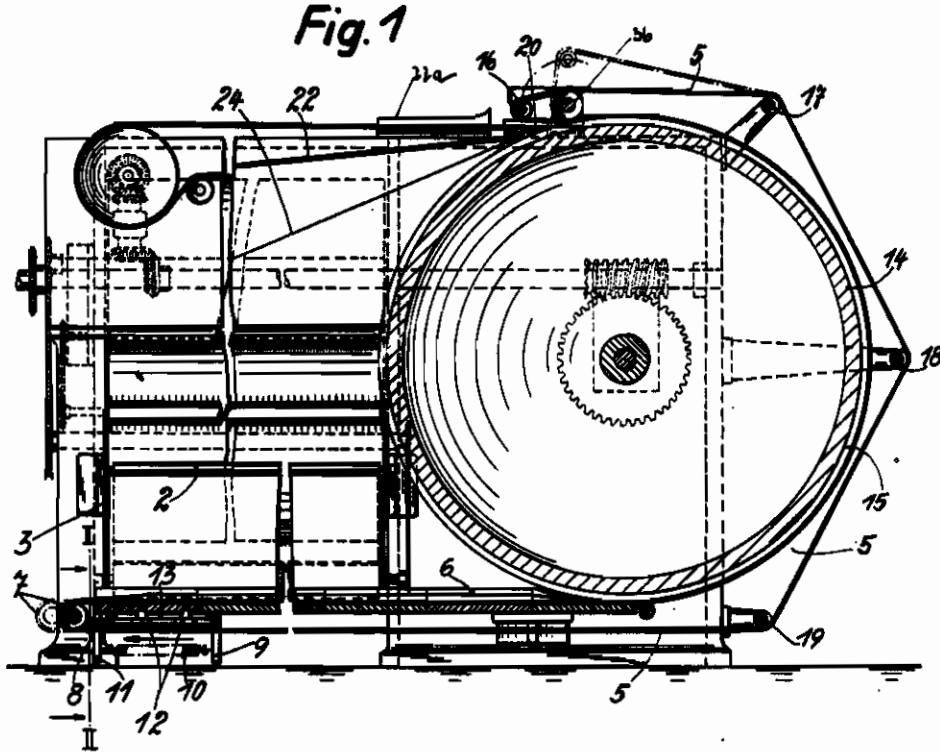
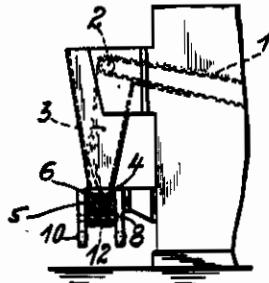


Fig. 2



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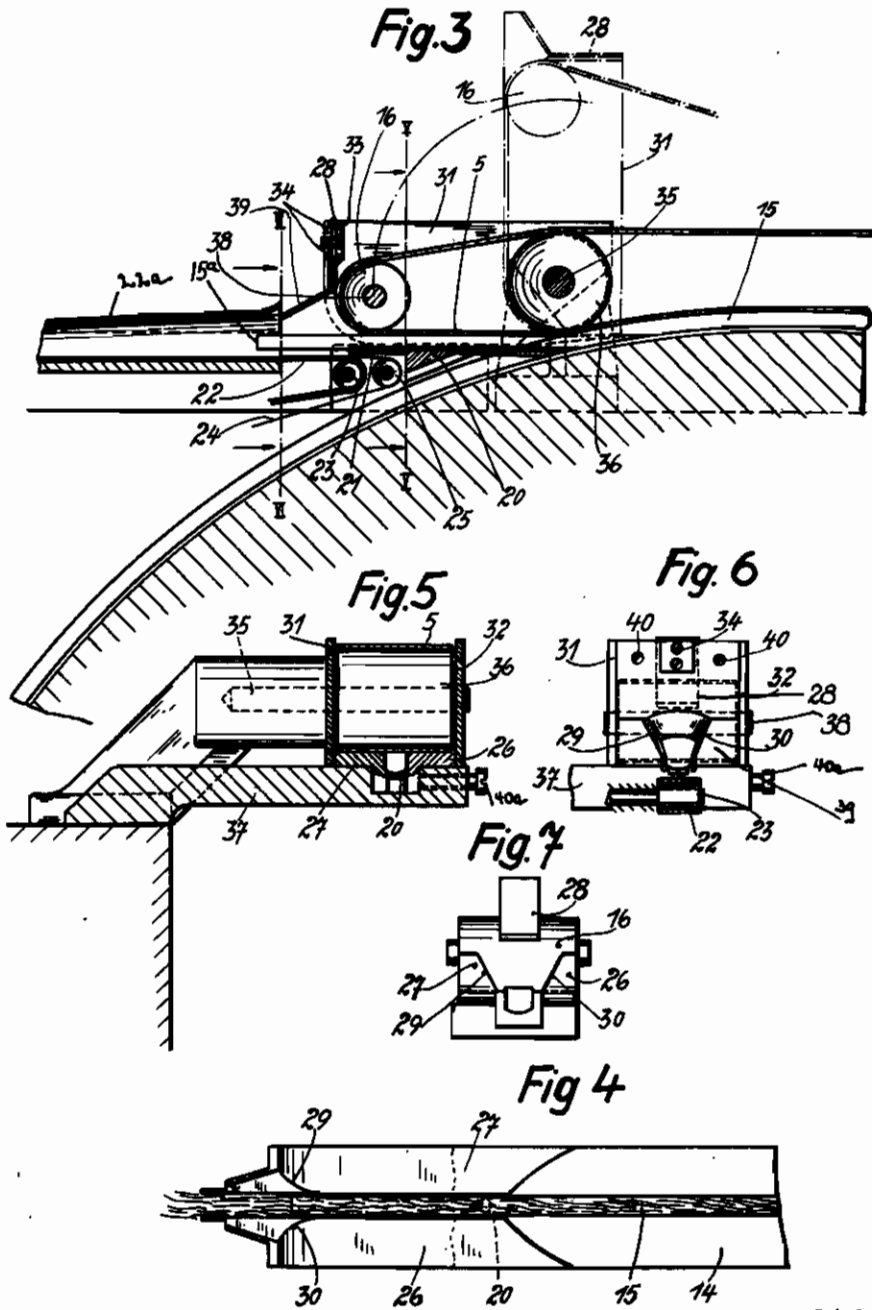
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ALIEN PROPERTY CUSTODIAN

DEVICE FOR THE FORMING OF A TOBACCO ROD IN CIGARETTE MACHINES

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Application filed February 4, 1939

The invention relates to a device for the forming of a tobacco rod for rod cigarette machines, in which the tobacco rod is formed in a groove provided in the periphery of a wheel rotating in a vertical plane over part of which a tobacco enclosing belt is placed.

The tobacco rod which is formed in the groove is conveyed by way of a bridge into the well-known shaper, in which it is provided with the tissue paper covering.

The transposition of the tobacco rod to the bridge has been accompanied with difficulties, and one of the objects of this invention is to provide means to overcome the same.

For this purpose, the invention consists of means cooperating with the tobacco rod as it leaves the groove of the wheel and enters upon the bridge, enabling the removal of the belt from the bridge, and its facile replacement over the bridge.

The invention has further for its object to separate from the belt as it passes over the bridge any adhering tobacco, and for this purpose the invention consists in means cooperating with the belt to separate adhering tobacco therefrom and discharge it to the bridge so as to enable it to form part of the tobacco rod as it is being enveloped by the paper.

The invention will be more fully described hereinafter, shown in the embodiments illustrated in the drawings, and will be finally pointed out in the claims.

In the accompanying drawings:

Figure 1 is a general side view, partially in vertical cross section, the drawing showing a broken off portion, as the structure of that part of the machine forms no part of the invention;

Figure 2 is a vertical cross section taken on line II—II of Figure 1, seen in the direction of the arrow applied to line II—II;

Figure 3 is an enlarged side view of the corresponding parts generally indicated in Figure 1, in respect to the movement of the end of the belt, bridge, and transposition of tobacco rod from the wheel to the bridge, and the supply thereto of the enveloping paper, together with the scraping device;

Figure 4 is a partial plan view of the tobacco rod as it leaves the groove of the wheel and of the bridge;

Figures 5 and 6 are vertical sections taken along the lines V—V and VI—VI of Figure 3, seen in the direction of the arrows applied to said lines; and

Figure 7 is a front view of the bridge, shown

in Figure 4, with the belt roller applied thereto.

Similar characters of reference indicate corresponding parts throughout the various views.

Referring to the drawings, and more particularly to Figure 1, the structure there shown is known, and will not be described in detail, except as such old parts are necessary to point out the improvement.

The cigarette or tobacco rod conveyor belt 22, paper 24 and former 22a act in the manner well known. The wheel 14 has a peripheral conduit 15 to form the rod by means of the belt 5, which extends over the wheel 14 about one half of its circumference. The return of the belt 5 is over pulley rollers 16, 17, 18 and 19, and then over a roller 7.

As known, the tobacco is fed by the apron 1, shown in Figure 2, which passes over the roller 2, and the tobacco drops into a vertical and conical channel 3. The tobacco discharges upon a U-shaped portion 4 of the belt 5, this form being given to the belt 5 by its passage through the channel, shaped support 6. The tobacco in this U-shaped form of the belt is conveyed to the wheel 14, where the tobacco enters the groove 15, and the belt flattens itself against the wheel 14.

The improvement consists in the device provided for moving the uppermost end of the belt where it is bent back upon itself over the roller 16, out of the path of the bridge 20, to enable access to be had thereto, and in the adjustment of the belt at its lowermost end where it also doubles upon itself when passing over the roller 7.

Referring to Figure 3, the tobacco rod formed in the groove 15 is removed therefrom by the guide plate 26 and 27 having a slot in which the bridge 20 is disposed. A plan view of this structure is shown in Figure 4. The rod of tobacco as it leaves the wheel 14 is maintained as a rod by the aid of the belt 5, as it is extended from right to left in Figure 3 beyond the wheel 14 so as to enable the rod to be enveloped by the paper 24, passing over the roller 25, and thrusts the rod and paper into the former 22a. The rod enveloped by the paper is conveyed by the belt 22 passing over the roller 23, to the knife (not shown).

This transposition of the rod to the former, as the rod emerges from the wheel, has given considerable trouble in the practical working of rod forming machines utilizing wheels and belts.

To enable ready access to be had to the bridge 20, the belt extension from the roller 36 to the roller 16 is made so as to be capable of being lifted and put out of the way. For this purpose, in the

embodiment shown, the shaft 35 of the roller, in addition to acting as a shaft for the roller, acts to pivotally support two parallel bars 31 and 32, which in turn support the ends of the shaft 38 of the roller 16. Transversely to the free ends of the bars 31 and 32, and forming a closed frame therein, is a scraper device 28, and a deflecting extension 39. When it is desired to examine the bridge 20, the frame formed of the bars 31 and 32 and cross bar 33, with deflector 39, is moved on the pivot shaft 35, and raised to the position shown in dotted lines in Figure 3. Thereby access is had to the tobacco rod 15a, while being enveloped by the paper 24, to the former 22a, to the bridge 20, and to the surfaces 26 and 27, and to the wheel 14 with its groove 15. By thus turning the roller 16 up and rearward, the belt 5 becomes slackened, and for the purpose of taking up this slack, the roller 7 is made movable, as seen in Figure 1. The shaft of this roller 7 is journaled in a movable support or slide 8. Upon this support 8 are fish plates 9, between which and the plates 11 springs 10 are arranged, which pull the plates 9 constantly in the direction of the arrow there shown, the plates 11 being firmly fixed in the groove plate 6, (Figure 2). The slide 8 is held and guided by two guide pins 12 having heads, which pins are attached to the floor of the plate 8, and which project into a set-off and correspondingly long slot 13 of the slide. The extreme left of the tension roller is indicated by broken lines. Thus, when the roller 16 is moved up and back, and provides a slack in the belt, this slack is taken up by the movement of the roller 7 from full line position to dotted line position in Figure 1; and when the roller 16 is moved from dotted line position, as shown in Figure 1, to full line position, the roller 7 takes the full line position. The belt portions which traverse the groove 6 and which contact with the wheel 14, remain unaffected, the other portions of the belt adjusting themselves over rollers 17, 18 and 19.

In continuation of the groove 15 there is formed, in the region of the bridge 20, a channel whose floor consists of the bridge 20 and which has the width of the groove, as is apparent from Figure 4. The bridge 20 has an extension 21.

The surfaces 26 and 27 have together a width equal to the width of the wheel 14, as seen in Figure 4, and at their rod discharge ends are inclined upwardly, to the position where an adjustable scraper 28 rests against the belt 5 passing over the roller 16. Thereby the inner edges of the channel walls 26 and 27 move apart, so that there results a widening to the lines 29 and 30, as seen in Figures 4 and 6. At the same time, the edges are rounded off in the region of these lines. If the edges of the walls 26 and 27 were to extend perpendicularly upward, as is indicated in Figure 7 by broken lines, then the particles of tobacco scraped off from the belt by the wide scraper would not be completely conducted to the exposed tobacco rod, and also a contact with the belt resting upon the reversal roller 16 would always occur at the same place, i. e., in two concentric circles, a circumstance which would immediately lead to the destruction of the belt. But if a gradual widening along the lines 29 and 30 takes place, then a contact of the channel edges with the belt 5 running on the roller 16 occurs at points which are continuously changing, a fact which contributes materially to the preservation of the belt. The scraper 28 is in this connection constructed as wide as the unfolding of the edges of the channel permits, and in

consequence thereof the scraper sweeps not only that portion of the belt which is situated in the region of the channel groove, which corresponds in its dimensions to the wheel 15, but also those portions of the belt which are situated to the sides thereof, so that any particles of tobacco which may possibly still adhere there are removed by the scraper.

The two side walls 31 and 32 have at their forward end a transverse strip 33, to which the scraper 28 is displaceably attached by means of screws 34, and to which the cap 39 is attached by means of screws 40. The bolt 35 is firmly supported in the machine frame. The side walls 31 and 32, which together with the transverse strip 33 form a swinging frame, have their lower ends resting on the machine frame 37 and thereby limit the swinging of the arm downward, (Figure 5). The arrangement is made in such a way that the center of the axis of rotation 38 of the reversal roller 16, when the latter occupies the operating position in accordance with Figure 3, is situated lower than the center of the bolt 35. By this toggle joint action, the roller 16 is normally held in down or operative position.

To the swinging frame there is expediently attached on the outside a handle, not illustrated in the drawing, which handle makes it possible to swing it upward against a stop, not shown, into the position indicated in Figures 1 and 3 in broken lines. The swinging frame is automatically held fast in the operating position by the tension of the belt, when the axis of roller 16 is below that of the roller 36.

It has been seen that the belt 5 has been drawn forward at the point of the removal of the tobacco rod, i. e., in the region of the upper vertex of the pulley, and provided with a guide roller, to such an extent that it overlaps the bridge 20 inserted between the pulley 15 and the shaper belt 22. In order thus to obtain a positive propulsion of the tobacco over the bridge 20 and to cover the bridge. At the point where the rod emerges from the groove 14 of the wheel 15, the belt 5 is conducted away from the bridge 20, this being a critical point which requires constant supervision and which must therefore above all things be readily accessible.

In this manner, by simple swinging of the end of the belt upward, one can expose the point of transfer of the rod, while at the swinging back the chosen mutual position of the swing axis to the center of the guide roller which has been swung into the operating position assures with certainty a correct and unshiftable position of the guide roller and therewith also of the belt to the bridge, because in consequence of the overpassing of the dead-point position the belt tension itself assures the holding fast of the swing lever in the operating position.

Now in order that, when the roller carrier lever is swung out of the operating position, the belt, whose length of path is thereby shortened, shall not become slack, the arrangement has been made, that the guide roller 7 at the other end of the endless conveyor belt 5 is displaceably pivoted on the machine frame and is fashioned by means of a spring as a tension roller.

In this manner a compensation takes place, which, however, extends only to that portion of the belt which serves for belt return from the upper terminal guide roller to the lower terminal guide roller, while the belt portion situated in the tobacco feed groove and also the belt por-

tion placed around the pulley are not touched by this compensation.

Also, a scraper is provided which acts against the belt situated on the roller to remove the particles of tobacco which may possibly have been carried along by the belt, and which is constructed broader than the tobacco rod groove, so that it can also remove particles of tobacco sidewise of the belt portion which covers the groove.

Furthermore, it has been seen that in the region of the bridge, and as far as the junction with the shaper conveyor belt, a channel has been provided, the floor of which is formed by the bridge 20. At the point where the belt is led back over the roller carried by the swinging frame, the side walls of this channel, the surfaces 26 and 27 hereinabove set forth, are extended upward as far as the scraper. In accordance with the invention, however, these side surfaces, at the reversal point of the belt, commencing from the width of the channel, are

gradually widened outward and are here rounded off, in which connection the widening is greater than the aforesaid width of the scraper. In this way the result is attained that the particles of tobacco, which are removed from the belt by means of the scraper over a greater width than that of the groove, are conducted from the widened side walls to the exposed tobacco rod, and furthermore, that at the point of reversal the belt is not subjected to rapid wear, as would be the case if the wall of the channel were continuously drawn upward in the width of the channel, in which case a friction would always take place on the belt in two concentric lines, whereas in this arrangement the drawn-apart channel boundary comes in contact with ever new belt portions.

I have described several embodiments of my invention, but it will be clear that changes may be made within the principles of the invention described.

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