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CIGAR PERFORATOR

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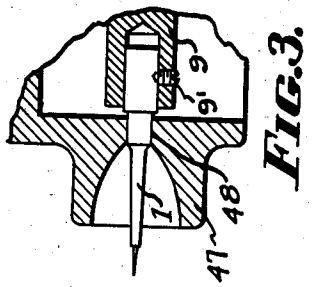


FIG. 3.

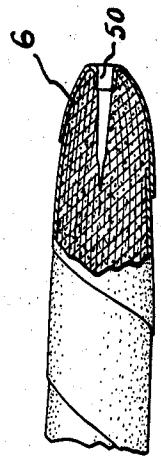


FIG. 4.

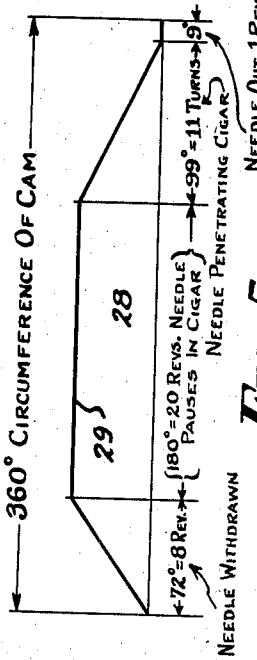


FIG. 5.

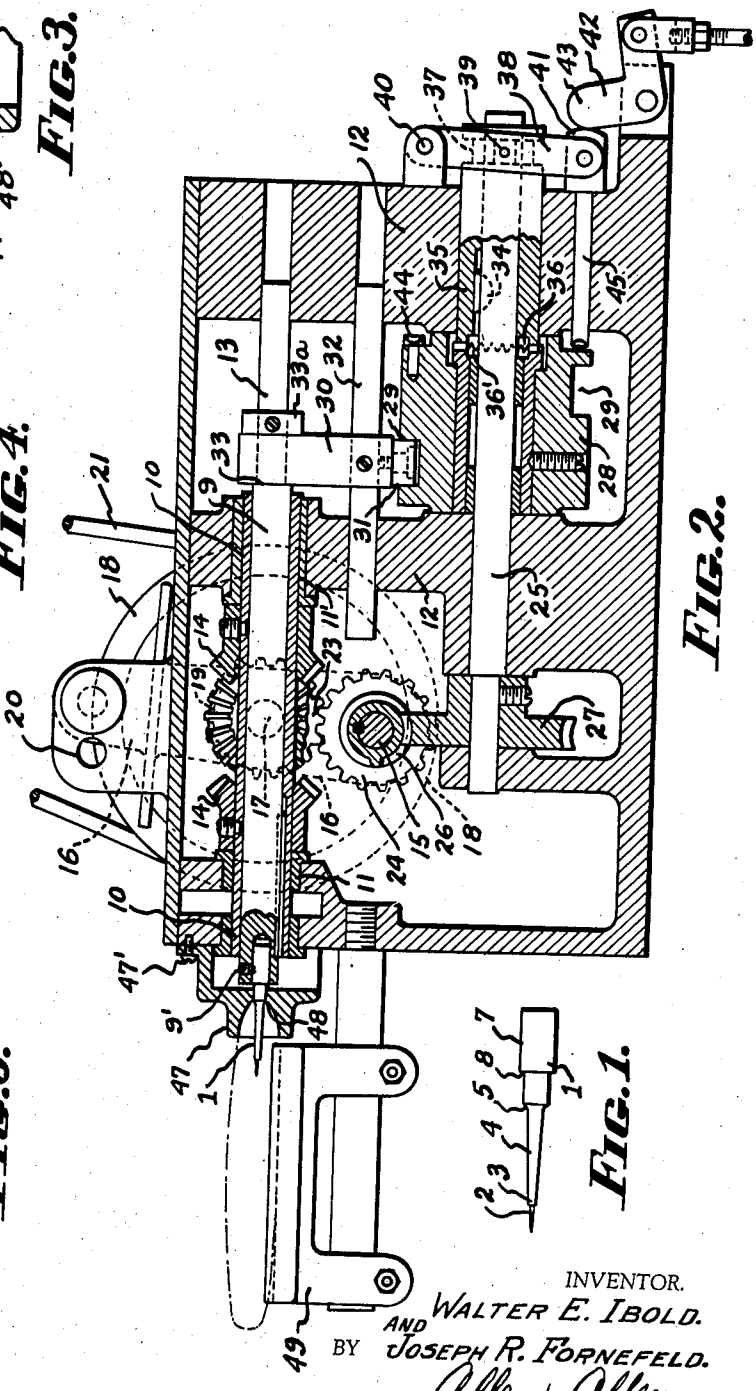


FIG. 2.

FIG. 1.

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CIGAR PERFORATOR

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2 Claims. (Cl. 131—20)

Our invention relates to cigar perforators for piercing the head of a cigar to facilitate free drawing while smoking and to eliminate the necessity of clipping or biting the end of a cigar previous to smoking.

The usual cigar when it has been rolled and finished presents the head, which is the end that is placed in the mouth, as completely covered by the cigar wrapper. This therefore necessitates the piercing or biting off of the head in order to obtain an aperture into the cigar body so as to facilitate drawing. Biting off the head of a cigar is very apt to tear the wrapper and the tobacco contained in the body of the cigar then comes out into the mouth of the smoker. If the cigar is perforated by a pin or such, the wrapper is torn and eventually during smoking is apt to unravel and thus permit the tobacco enclosed in the body to enter the mouth of the smoker.

There have been a number of machines and piercing implements on the market for piercing the head of a cigar before smoking, but all of these devices have decided disadvantages. If the cigar is pierced at the store where it is purchased by a machine and then carried around in the pocket, the torn wrapper is very apt to unravel. On the other hand if the smoker pierces his cigar just before smoking it, it necessitates the carrying around of a piercer which is a nuisance. Even the piercing of the cigar just before smoking does not insure that the wrapper will not unravel during smoking, if pierced by the usual needle on the market since the wrapper is fractured and no provision is made for preventing it from further tearing and unraveling.

It is an object of our invention to provide a cigar perforator which eliminates the necessity of clipping the end of a cigar previous to smoking, and which insures free drawing during smoking.

It is a further object of our invention to provide a cigar perforator which while perforating the head of the cigar, insures that the wrapper will not further fracture and will not unravel. This is an especial advantage since it permits the perforation of the cigar at the factory and insures that it will not unravel if carried around in the pocket of the smoker before smoking.

A further object of our invention is to provide a device which perforates the head of a cigar quickly, evenly and automatically, and thus insuring that each cigar will be perforated exactly the same as every other. This permits quantity perforation at the factory where the cigars are manufactured.

Still a further object of our invention is to provide a device which forms an aperture in the head of a cigar after it has been made and rolled in the usual manner, and which therefore eliminates any special rolling or handling. Our device is applicable for cigars which are rolled either right or left, and in both cases insures that the wrapper covering the head will not unravel and expose the inner tobacco contained in the body, to the mouth of the smoker.

These and other objects of our invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, we accomplish by that certain construction and arrangement of parts of which we shall now describe a preferred embodiment. Reference is now made to the drawing which forms a part thereof, and in which:

Figure 1 is a perspective view of our novel needle used in perforating a cigar head.

Figure 2 is a cross-section of the machine used to insert the needle into the head of the cigar and to retract it therefrom.

Figure 3 is an enlarged section of a portion of Fig. 2 showing the position of the needle in the machine.

Figure 4 is a cross-section of a cigar head showing the perforation in the head placed there by our novel invention.

Figure 5 is a diagrammatic plano-development of the face of the cam shown in Fig. 2.

Briefly our invention comprises a perforating needle having a sharp point, a shoulder behind the point and a tapered portion extending from the shoulder to a fillet. The needle is revolved and inserted and withdrawn from the head of a cigar. The inserting and withdrawing means is automatically governed and in phase with the revolving means so that the needle will enter the head in a given number of revolutions, remain in the head for a given number of revolutions and be withdrawn from the head in a given number of revolutions. The cycle of reciprocation of the needle is started by a lever and is stopped automatically after the completion of the cycle. Means for reversing the rotation of the needle is also provided so that it may be used with a cigar which has been rolled in either a left hand or right hand direction.

Briefly in the practice of our invention we provide a perforating needle 1 having a sharp point 2 and a shoulder 3 directly behind the point 2. There is a shank portion 4 which runs from the shoulder 3 to a fillet 5 near the base of the needle. The shank portion 4 is tapered evenly

from the shoulder 3 to the fillet 5 with the smallest portion of the taper at the shoulder 3. The portion of the needle from the point 2 to the fillet 5 is the portion which is injected into the cigar head 6, and we also provide a base shank 7, which may have a shoulder 8, for holding the needle in the machine for actuating it.

The needle 1 is immovably held in the end of a shaft 9 by being placed in an aperture at the end and held in place by a set screw 9'. The shaft 9 is slidably but non-rotatably mounted in a hollow shaft 10, which in turn is journaled in bearings 11 and 11' in the supporting casting and casing 12. Therefore, when the hollow shaft 10 revolves, shaft 9 revolves also. The shaft 9 is so mounted in the hollow shaft 10 that the end carrying the needle 1 may project from one end of the shaft 10 and a portion 13 of the shaft 9 projects from the other end of the hollow shaft 10. Mounted on and keyed to the shaft 10 are two oppositely faced bevel gears 14, and these may be so mounted as to prevent the longitudinal movement of the shaft 10 in the bearings 11 and 11'.

Journaled on suitable bearings is a shaft 15 which is mounted so as to be below and transverse to the shaft 10. This shaft 15 is so mounted that it crosses the shaft 10 between the two oppositely faced bevel gears 14. Journaled on the shaft 15 is an upstanding arm 16 which carries journaled therein a shaft 17. The shaft 17 is so placed and of such a length that one end projects between the two bevel gears 14 while the other end projects through the arm 16 and carries a pulley 18 keyed thereto. On the end of the shaft 17 projecting between the two gears 14 is keyed a bevel gear 19 formed to mesh with either of the bevel gears 14. The gear 19 may be made to mesh with either one of the two gears 14 by movement of the free end of the arm 16, and there is a means 20, which may consist of a plate carrying two holes which register with a hole in the free end of the arm 16 and so positioned that if a pin is inserted in one of the two holes and in the hole in the arm 16 the gear 19 will be held in engagement with either one of the two gears 14. The pulley 18 is driven from some power source not shown through the belt 21.

From the above description it is apparent that the revolving of the pulley 18 will revolve the needle 1 in either direction depending with which of the two gears 14 the gear 19 is meshed; and that the revolution of the needle 1 may be reversed by moving the free end of the arm 16 to the other position and holding it there by the holding means 20.

The above description shows the manner in which the needle 1 is revolved and may be reversed at the will of the operator. We will now take up the means for reciprocating the needle into and out of the cigar head 6.

Keyed to the shaft 17 is a spur gear 23, and keyed to the shaft 15 is a spur gear 24. These two spur gears 23 and 24 intermesh with each other. There is a shaft 25 journaled in appropriate bearings held in the casting 12, which shaft 25 is parallel to the shaft 13 and at right angles to, and with an end projecting under the shaft 15. The end of the shaft 15 carries a worm gear 26 keyed thereto which intermeshes with a pinion gear 27 keyed to the shaft 25. It is apparent from the above that the driven pulley 18 drives the shaft 25 through spur gears 23, 24, shaft 15, worm gear 26 and pinion gear 27. Mounted so as to revolve on shaft 25 and connected thereto by means of a clutch (to be described later), is a drum cam 28 carrying a track 29. There is a fixture 30 clamped around the shaft 13 and carrying a cam roller 31 on the end. This clamp fixture 30 may be held in position by being fastened to a sliding rod 32 parallel to the shafts 13 and 25. The fixture 30 is so positioned that the cam roller 31 rides in the cam track 29 at all times. The portion of the shaft 13 on which the fixture 30 is journaled may be cut away to form a shoulder to prevent the fixture 30 sliding laterally thereon, or may be provided with a shoulder 33 and a collar 33a for the same purpose. It is apparent that the arrangement of parts is such that while the shaft 13 may revolve in the fixture 30, the movement of the cam track 29 will reciprocate the revolving shaft 13. The incident or cycle of reciprocation of the shaft 13 and the needle 1, is of course determined by the track 29 on the cam 28.

Slidably positioned around the shaft 25 adjacent to the side of the barrel cam 28, but prevented from revolving on the shaft 25 by means of a sliding key or woodruff 34 is a sleeve 35. The outside of the sleeve 35 may, as illustrated, act as the bearing of the shaft 25. One end of the sleeve 35 projects from the bearing surface and from the casting 12. The other end of the sleeve 35 where it abuts the side of the cam 28 contains teeth 36 while the abutting surface of the side of the cam 28 also contains registering teeth 36'. From the above it is apparent that if the sleeve 35 is pressed against the side of the cam 28 the teeth 36 and 36' will engage and the cam 28 will revolve with the shaft 25, and will continue to revolve with the shaft as long as the teeth 36 and 36' remain in engagement. The free end of the sleeve 35 which projects beyond the casting 12 contains an annular groove 37 and there is an arbor 38 having a saddle 39 which rides in the groove 37. The saddle 39 is positioned in about the center portion of the arbor 38 and one end of the arbor 38 is pivoted at 40 to the casting. The other end of the arbor 38 also contains a pivot aperture which is attached to a lug 41 which in turn is on the end of a rod 45, which is slidably held in an aperture in the casting 12. Pivoted on a projection of the casting is a bell crank 42 the end 43 of which bears against the lug 41 and the other arm of which is fastened to a pedal for foot actuation or some manually actuating means for rocking the bell crank 42 so that the arm 43 presses against the lug 41 and thus moves the arbor 38 on its pivot 40, so as to press the sleeve 35 against the side of the cam and force the teeth 36 and 36' to engage. The side of the cam 28 has a projecting lug 44 in the form of a wedge with the line of the bite of the wedge on a line radial with the center or bearing portion of the cam 28. The end of the rod 45 also is formed in the shape of a wedge and is so positioned that when the cam 28 is in a given position of rotation, the wedge 44 on the cam will contact the wedge shaped end of the rod 45 and force the rod 45 and the lug 41 contained thereon outwardly. This in turn will rock the arbor 38 on its pivot 40 and will draw the sleeve 35 with its teeth 36 away from the side of the cam 28 and the clutch will be disengaged and the cam 28 will stop rotating. From the construction illustrated it is apparent that the cam 28 will make one complete revolution before it stops. The shaping of the projection 44 and the end of the rod 45 is such as to prohibit the stopping of the cam 28 in such a position that the

operator cannot depress the rod **45** and engage the clutch. Whether or not the bell crank **42** remains in position after it has engaged the clutch is immaterial since it is only necessary to rock the bell crank **42** to make the cam **28** perform one cycle or revolution.

The track **29** on the surface of the drum cam **28** is a closed track and a diagrammatic plano-development of this track is shown in Fig. 5. The track illustrated is so configured that in the one cycle of revolution of the cam **28**, the shaft **13** carrying the needle **1** will revolve 11 times as it moves forward into the cigar head **6** (that is through an angle of 99° on the cam), remain in the head of the cigar for 20 revolutions of the needle (180° of the cam), and revolve 8 times as it is being withdrawn from the cigar head **6** (72° of the cam). Of course it is apparent that it is possible to vary this exact procedure by changing the configuration of the cam track, and the gear ratio between the shaft **13** and the cam driving shaft **25**, and we do not intend to limit ourselves to any specific procedure.

In our preferred embodiment illustrated in the drawing, we have shown a cigar head receiving cup **47** which is fastened to the casing **12** of the mechanism by means of a screw or screws **47'**. The needle **1** is projected through an opening **48** in the bottom of this cup **47**. We also provide a cigar holding table **49** positioned so that when the cigar rests on this table **49** the head **6** projects into the cup **47**.

The operation of my device is as follows. The shaft **13** carrying the needle **1**, is started rotating, in either direction, depending on the direction in which the bunch of cigars to be perforated is wrapped, and by adjusting the bevel gear **19** so as to engage either one of the gears **14**. The cigar is then placed on the table **49** so that the head **6** projects into the cup **47**. The operator then actuates the clutch,by either stepping on a foot pedal or by some other means well known in the art, and the needle **1** is projected into the cigar head **6** in accordance with the gearing and the configuration of the track **29** on the cam face.

As the needle **1** moves into the cigar head **6**, the sharp point **2** of the needle first punctures the wrapper of the cigar head **6** and as the needle **1** advances the shoulder **3** folds down an area of the wrapper **50** into the aperture. As the tapered portion **4** of the needle advances into the cigar it further folds in the wrapper **50** and increases the opening in the cigar. When the revolving needle has advanced its full length into the cigar the fillet **5** smoothes and locks the portion of the wrapper **50** into the position and molds the shoulder of the aperture. The aperture is now completely formed and the needle **1**, still revolving retracts from the cigar head **6**. When the needle **1** has been withdrawn its full distance the projection on the side of the cam **44** contacts the end of the rod **45** and the clutch is thrown and the cam **28** stops; thus leaving the needle **1**, withdrawn from the cup **47**. The apparatus is now in position for the next cigar, and the advance to the needle may be started, by again actuating the bell crank **42**.

As is apparent there are numerous forms of machines which may be constructed to revolve the needle and advance it into a cigar head and to withdraw it therefrom, and for that reason we do not intend to limit ourselves to the construction of the machine for actuating the needle, but merely have illustrated an exemplary machine for that purpose.

A cigar head perforated by our novel needle has all of the advantages claimed and presents a cigar head with a portion of the wrapper folded into and locked in the aperture. This of course prevents the wrapper from further fracturing and the tobacco in the body of the cigar coming out into the mouth of the smoker.

Of course a machine may be made which will automatically feed the cigars and place them in position for perforation, and in fact our invention may be incorporated as one of the elements of the usual machine for automatically forming and manufacturing cigars.

It is to be understood that different forms of our preferred form may be made without departing from the spirit of our invention.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A cigar perforator comprising the combination of a perforating needle, means for revolving said needle in one direction at all times during its operation, means for reciprocating said needle into and out of the head of a cigar with a pause in reciprocation when said needle is furthermost in said head, said reciprocating means being cyclic, and including a clutch, means for engaging said clutch for starting said reciprocating means on its cycle, and means for disengaging said clutch at the end of its cycle.

2. A cigar perforator comprising the combination of a perforating needle, means for revolving said needle in one direction at all times times during its operation, means for reciprocating said needle into and out of the head of a cigar with a pause in reciprocation when said needle is furthermost in said head, said reciprocating means being cyclic, and including a clutch, means for engaging said clutch for starting said reciprocating means on its cycle, means for disengaging said clutch at the end of its cycle, said clutch engaging means being manually operated, and said clutch disengaging means being automatically operated.

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