March 31, 1942. L. S. BLOUNT 2,277,686

APPARATUS FOR PERFORATING AND CLEANING CIGARS

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Fig. 1

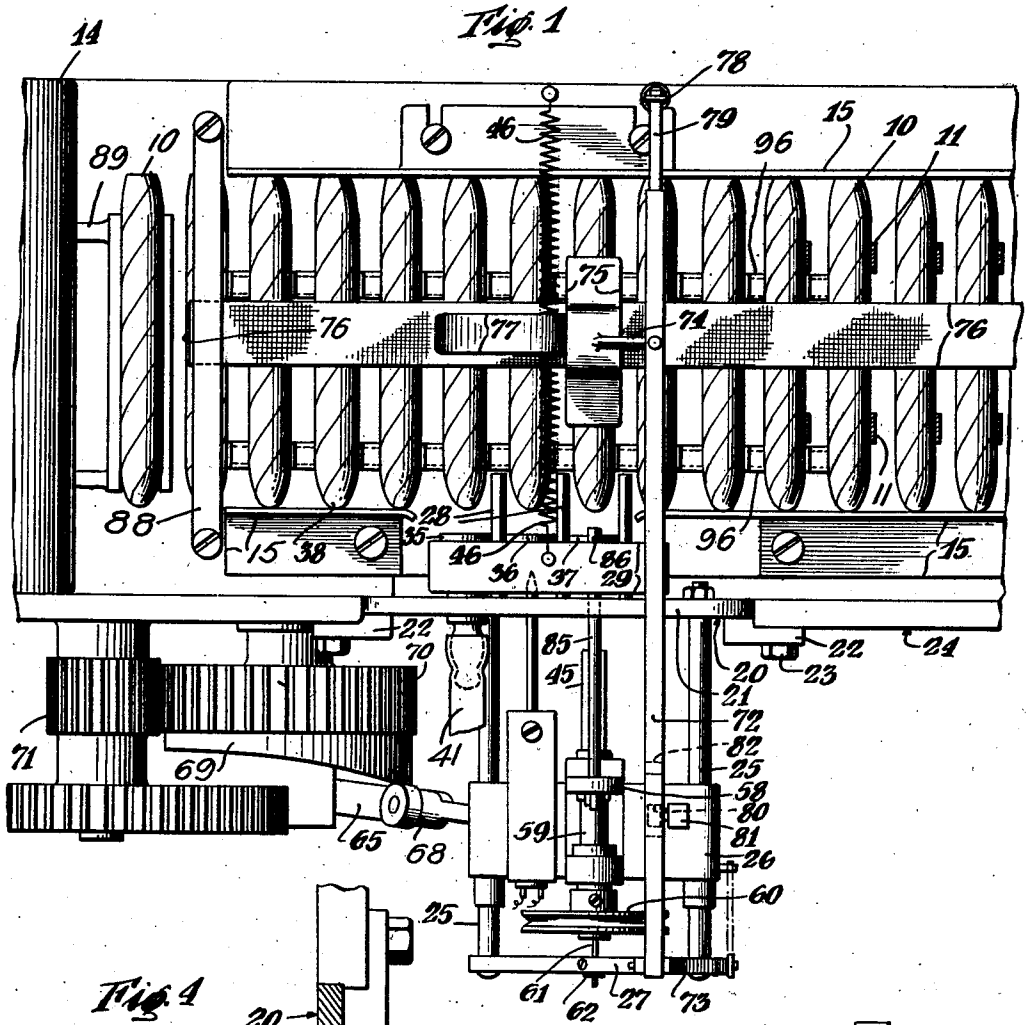
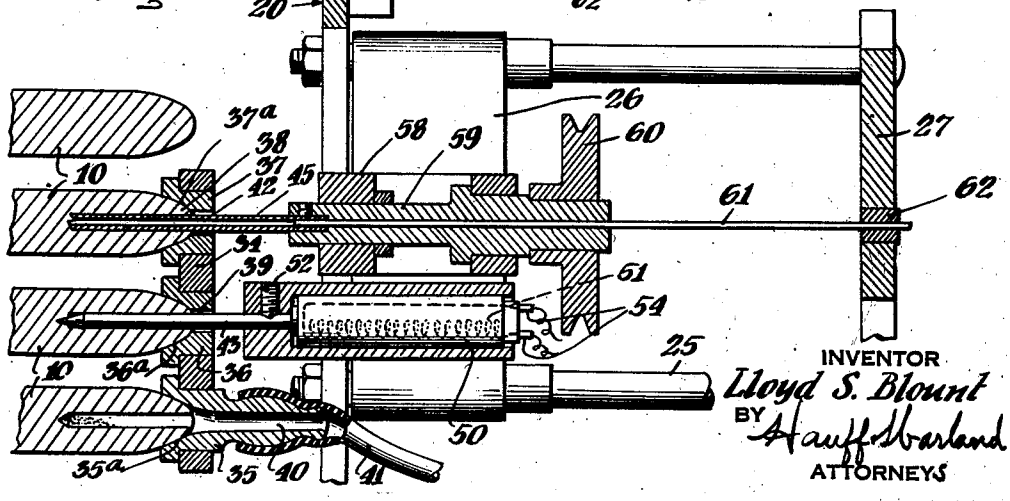


Fig. 4



INVENTOR
Lloyd S. Blount
BY Hauff & Garland
ATTORNEYS

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Fig. 2

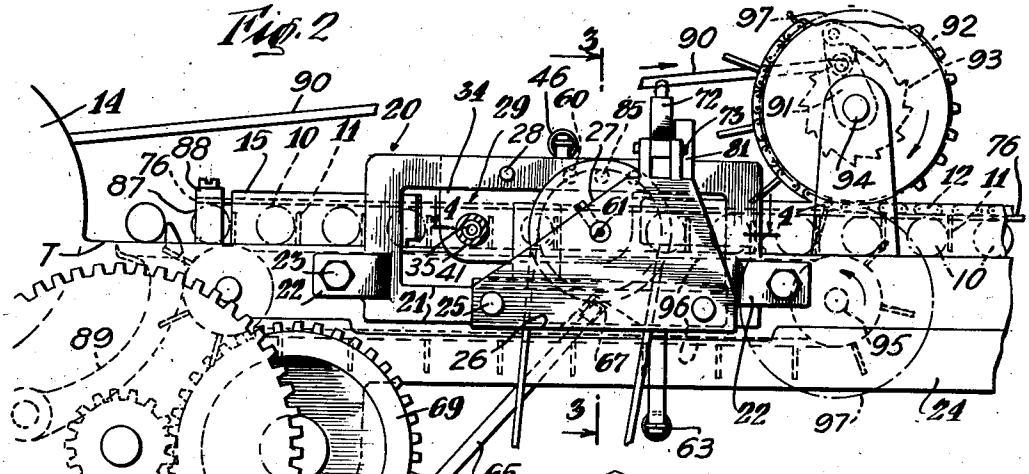


Fig. 5

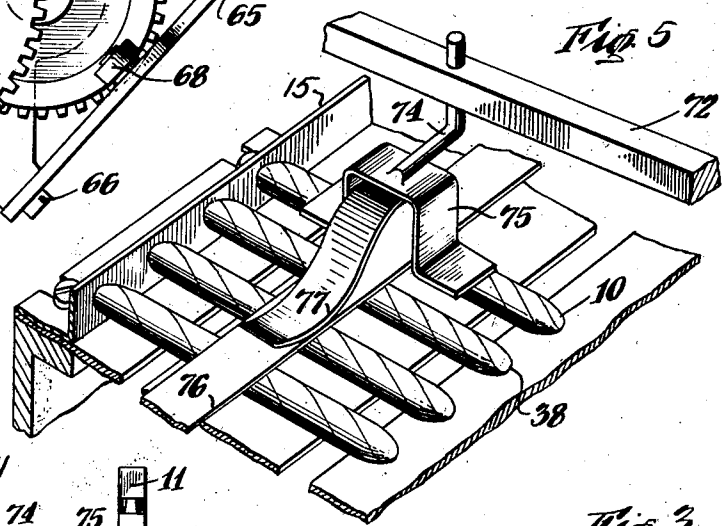
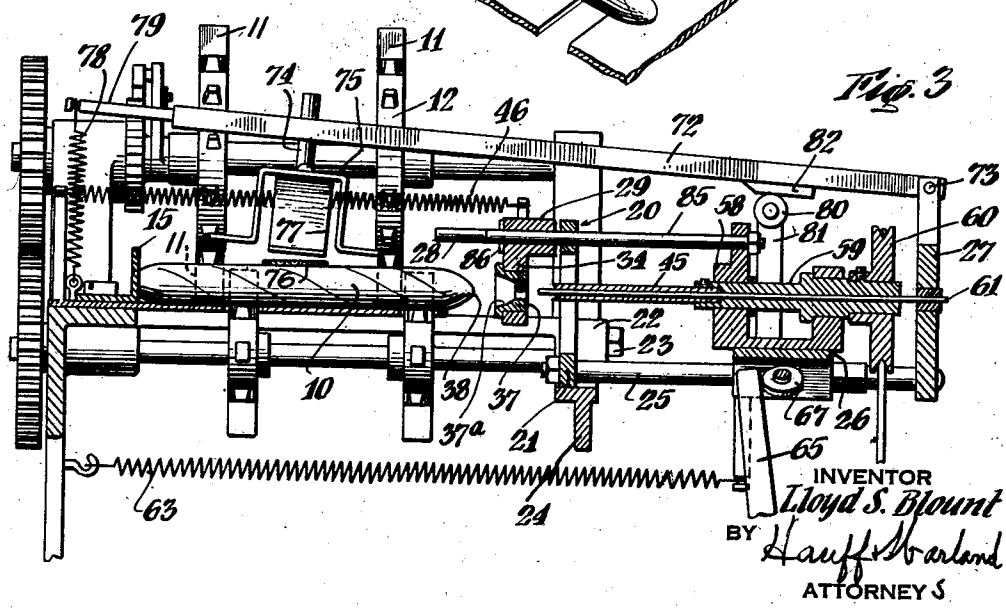


Fig. 3



INVENTOR
Lloyd S. Blount
BY Hauff & Harland
ATTORNEYS

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UNITED STATES PATENT OFFICE

2,277,686

APPARATUS FOR PERFORATING AND CLEANING CIGARS

Lloyd S. Blount, Summit, N. J., assignor, by mesne assignments, to International Cigar Machinery Company, a corporation of New Jersey

Application July 9, 1937, Serial No. 152,716

9 Claims. (Cl. 131—254)

This invention relates to an apparatus for perforating and cleaning cigars and has for its principal object to provide for the perforation of the cigar head without cracking or damaging the same and for the removal of the dust and fines from the entire cigar.

A feature of the invention consists in perforating and cleaning the cigars just prior to wrapping the same and after the cigars have been aged or packed and dried for use. The prompt wrapping of the cigars after the cigar head has been perforated and cleaned prevents dust from accumulating therein after the cleaning operation and also prevents the perforation from being closed by the pressure exerted on the cigars in stacking and packing.

Another feature of the invention consists in ironing or smoothing the tobacco adjacent the perforation after the cigar has been perforated.

A further feature consists in the use of suction for removing the fines and dust from the cigar after the perforating and ironing steps.

Other features consist in the details of construction and combinations of parts hereinafter more fully set forth.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention will be better understood by referring to the following description, taken in connection with the accompanying drawings, in which a specific embodiment thereof has been set forth for purposes of illustration.

In the drawings:

Fig. 1 is a top plan view of an apparatus embodying the present invention;

Fig. 2 is an end elevation thereof;

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 2;

Fig. 4 is a partial longitudinal section taken on the line 4—4 of Fig. 2; and

Fig. 5 is a detail view of the clamp for holding the cigars during the perforating and cleaning operations.

In the following description and in the claims certain specific terms have been used for convenience for referring to various details of the invention. It is to be understood, however, that these terms are to be interpreted as broadly as the state of the art will permit.

Referring more particularly to the drawings, the invention is shown in position to perforate and clean cigars 10 which are held by clips 11 on a conveyor 12 by which they are conveyed from a banding machine, not shown, to a wrapping machine 14 of the type shown in the United States Patent No. 1,899,174, granted February 28, 1933, to Henry H. Wheeler, for Cigar enveloping machine, when is adapted to apply a moisture-proof wrapper to the cigars and constitutes the last step in finishing the cigar. The cigars 10 are positioned by rails 15 as they are fed along by the conveyor 12. It is to be understood that the cigars may be subjected to one or more intermediate steps after leaving the banding machine depending upon the requirements of any particular case. In any event, the perforating and cleaning machine, to be described, is preferably mounted in a position to treat the cigars just prior to the wrapping operation.

In the embodiment shown the perforating and cleaning machine comprises a frame 20 having a base plate 21 attached by lugs 22 and bolts 23 to the frame 24 of the wrapping machine 14 and carrying rods 25 on which a cross-head 26 is adapted to slide. The rods 25 are joined by a head plate 27 to provide a rigid construction. The base plate 21 also carries a plurality of rods 28 which project toward the conveyor 12 and carry a slide 29.

The slide 29 is provided with a depending flange 34, Figs. 3 and 4, carrying a plurality of nipples 35, 36 and 37, which are provided with surfaces 35*a*, 36*a* and 37*a*, respectively, to receive and position the heads 38 of cigars 10. The nipple 35 is provided with a through channel 40 and is adapted to receive a suction hose 41 by which suction is applied to the head of the cigar. The nipple 36 is provided with an aperture 39 adapted to pass a heated needle 43 and the nipple 37 is provided with an aperture 42 adapted to pass a circular drill 45. The nipples are normally held in engagement with the cigar heads by means of a spring 46, Fig. 1.

The cross-head 26 carries a heater unit 50 having an electric heating coil 51 which is adapted to heat the needle 43. The needle 43 is removably held within the unit 50 by means of a set screw 52. It is to be understood that the type of heating element can be varied as desired. In the embodiment shown the coil 51 is provided with terminals 54 which are adapted to be connected to a source of current supply.

The cross head 26 also carries a bracket 58 in which is journalled a sleeve 59 carrying a drive pulley 60 and the hollow drill 45. The drive pulley 60 is driven by a suitable belt, not shown. A ram 61 is attached to the head plate 27 by means of a bushing 62 and extends through the sleeve 59 and into the hollow drill 45. The ram

61 is stationary and is adapted to remove the plug of tobacco from the hollow drill 45 when the drill is retracted.

The cross-head 26 is normally pulled toward the cigar by a spring 63, Fig. 3, and is retracted by means of a lever 65, Figs. 1, 2 and 3, which is pivoted to the frame of the machine by a pivot 66. Lever 65 engages a roller 67 attached to the cross-head 26 and carries a roller 68 engaging a cam 69, carried on a gear 70, which is driven by a suitable gear 71 attached to an operating shaft of the wrapping machine. The cam 69 is adapted to make one revolution at each of the step-by-step movements of the belt 12.

A lever 72 is pivoted to the head plate 27 by a pin 73 and carries a bracket 74 attached to a yoke 75. A band 76 is disposed beneath the yoke 75 and extends over the cigars 10. The band 76 is held in pressure engagement with certain of the cigars 10 by means of a spring 77. The lever 72 may be held in clamping position by means of a spring 78 attached to the end 79 thereof and is raised by a roller 80 mounted on a bracket 81 attached to the cross-head 26 and engaging a cam 82 secured to the lower surface of the lever 72. The rollers 80 and 82 are so arranged that the lever 72 is raised at each actuation of the machine to permit the cigars to be advanced by the conveyor 12, but is released to cause the yoke 75 and the band 76 to clamp the cigars during the perforating and cleaning operations.

The friction band 76 is stretched between supports 87 (Figure 2) to which it is held by clamping strip 88. The other end of the band 76 (though not shown) is similarly mounted and clamped.

The cigar conveying parts of the perforating device are actuated in synchronism with the movement of the cross-head 26 from the drive of the cigar wrapping machine 14. In the latter a Geneva gear of conventional design (not shown) produces the step-by-step motion of the transfer arm 89 which removes cigars from table T whence they are fed by flights 11 and lifted into the pockets of the wrapping turret (not shown). A link 90 transmits the intermittent motion of the wrapping machine to an arm 91 pivoted on shaft 94, which in turn carries pawl 92 coacting with ratchet 93 on the drive shaft 94 of conveyor 12. In order to drive conveyor 96 in synchronism with chain conveyor 12, a gear mounted on shaft 94 meshes with a gear 97 mounted on shaft 95. In this manner the several mechanisms responsible for the step-by-step movement and infeed of perforated cigars into the wrapping machine are associated.

The slide 29 is retracted by a rod 85 attached to the bracket 58, extending through an aperture in the slide 29 and having at its end a pin 86 which is adapted to engage and retract the slide 29.

It is to be understood that the wrapping machine is of standard construction and only so much thereof has been disclosed herein as is necessary to an understanding of the present invention. The perforating and cleaning unit has been shown as attached to the wrapping machine in order to afford the least possible chance of contamination of the cigar between the cleaning and wrapping operations. It is to be understood, however, that the perforating and cleaning mechanism may be incorporated in separate devices if desired.

In the operation of the above described device, the cigars 10 are fed to the wrapping machine by the conveyor 12 in a step-by-step movement. When the conveyor is at rest, the cam 69 permits the cross-head 26 to be moved toward the heads of the cigars by spring 63. This movement of the cross-head 26 first causes the roller 80 to release the cam 82 thereby permitting the band 76 to be brought into engagement with the cigars to be treated. The purpose of this clamp is to hold the cigars firmly while they are being perforated and cleaned so as to prevent the cigars from being damaged or broken during these operations. As the cross-head 26 moves toward the cigar heads, the slide 29 which is held by the pin 86 likewise moves in the same direction until the nipples 35 to 37 engage the heads 38 of the cigars. Thereafter the slide 29 remains stationary and serves to properly position the cigar heads. The cross-head 26, however, continues to move until the hollow drill 45 has entered the head of the cigar, as shown in Fig. 4, thereby removing the plug of tobacco therefrom and perforating the cigar head. At the same time the heated needle 43 enters the perforation of the cigar which has been previously perforated by the hollow drill 45. The needle 43 serves to smooth and iron the tobacco around the perforation and to cause the same to permanently retain its shape. During this time a third cigar head which has been previously perforated and ironed by the drill 45 and the needle 43, is held in the nipple 35 to which suction is applied by the hose 41. This suction draws air through the entire cigar and removes all loose dust and fines which may have accumulated therein.

After the above operations have been completed, the cam 69 causes the lever 65 to retract the cross-head 26. As this takes place, the ram 61 removes the plug of tobacco from the hollow drill 45. When the cross-head 26 is retracted sufficiently to cause the pin 86 to engage the slide 29, the latter is retracted with the cross-head 26 to the position shown in Fig. 1. In this position the roller 80 again engages the cam, releasing the band 76 and permitting the conveyor 12 to be advanced another step.

It will be noted that the above described apparatus perforates and cleans the cigars as they are fed to the wrapping machine without requiring any additional labor. The normal feed of the cigars to the wrapping machine is not interrupted nor retarded by the perforating and cleaning operations. Furthermore, the cigars are wrapped so promptly after the cleaning operation that there is practically no tendency for dust to accumulate thereon. Inasmuch as no further ageing or compressing operations are required, there is no tendency for the perforation to close up before the cigars are used.

This invention is particularly useful with the cheaper grades of short filler cigars which normally contain particles of loose tobacco. These particles are removed and are thus prevented from being sucked into the mouth of the smoker during the normal smoking of the cigar. It is to be understood, however, that the invention is also useful for other types of cigars and has the further advantage that it avoids the necessity for the usual puncturing of the ends of the cigar prior to smoking the same.

Although a specific embodiment of the invention has been shown for purposes of illustration, it is to be understood that various changes and modifications may be made therein as will be apparent to a person skilled in the art. The invention is only to be limited in accordance with

the following claims when interpreted in view of the prior art.

What is claimed is:

1. A device for perforating cigars, comprising a step-by-step conveyor means, and a reciprocating member carrying a drill and a heated needle cooperating with the head of a cigar at successive stations of said conveyor to drill a perforation in said cigar and to form and iron said perforation.

2. A device for perforating and cleaning cigars, comprising a step-by-step conveyor means, a rotating drill, a heated needle, and a suction head, adapted to engage cigars in successive stations of said conveyor to drill a perforation in the head of the cigar, to iron and form the same, and to remove dust and fines therefrom.

3. A device for perforating and cleaning cigars, comprising a step-by-step conveyor means, a rotating drill, a heated needle, and a suction head, adapted to engage cigars in successive stations of said conveyor, and means advancing and retracting the said drill, needle and head in synchronism with the movement of said conveyor.

4. A device for perforating cigars, comprising a step-by-step conveyor means, a cross-head carrying a hollow drill and a heated needle, a slide mounted independently thereof and having members adapted to engage the head of a cigar in successive stations of said conveyor, said members having apertures through which said drill and said needle respectively pass into the cigar head, spring means normally urging said cross-head and said slide toward said cigars, means to retract said cross-head for withdrawing said drill and heated needle from the cigar heads and means associated with said cross-head to engage and retract said slide to permit the cigars to be advanced on said conveyor.

5. A device for perforating cigars, comprising a step-by-step conveyor means, a cross-head carrying a hollow drill and a heated needle, a slide mounted independently thereof and having members adapted to engage the head of a cigar in successive stations of said conveyor, said members having apertures through which said drill and said needle respectively pass into the cigar head, spring means normally urging said cross-head and said slide toward said cigars, means to retract said cross-head for withdrawing said drill and heated needle from the cigar heads, means associated with said cross-head to engage and retract said slide to permit the cigars to be advanced on said conveyor, clamping means to clamp and hold the cigars for treatment by said drill and needle, and means to release said clamping means when the cross-head is retracted.

6. A device for perforating and cleaning cigars, comprising a step-by-step conveyor means, a cross-head carrying a hollow drill and a heated needle, a slide mounted independently thereof and having members adapted to engage the head of a cigar in successive stations of said conveyor, two of said members having apertures through which said drill and said needle respectively pass into the cigar head, a third of said members having a channel to which suction is applied, spring means normally urging said cross-head and said slide toward said cigars, cam means adapted to retract said cross-head for withdrawing said drill and heated needle from the cigar head, and means associated with said cross-head to engage and retract said slide to permit the cigars to be advanced by said conveyor.

7. A device for perforating and cleaning cigars, comprising a step-by-step conveyor means, a cross-head carrying a hollow drill and a heated needle, a slide mounted independently thereof and having members adapted to engage the head of a cigar in successive stations of said conveyor, two of said members having apertures through which said drill and said needle respectively pass into the cigar head, a third of said members having a channel to which suction is applied, spring means normally urging said cross-head and said slide toward said cigars, cam means adapted to retract said cross-head for withdrawing said drill and heated needle from the cigar head, means associated with said cross-head to engage and retract said slide to permit the cigars to be advanced by said conveyor, clamping means to clamp and hold the cigars for the above treatment, and means to release said clamping means when said cross-head is retracted.

8. The combination with means for periodically advancing a row of cigars with an interval of rest between successive advancements, a rotary tubular piercing cutter axially aligned with a cigar during an interval of rest, means for continuously rotating said cutter at relatively high speed, means for axially reciprocating said cutter to pierce the end of the cigar cutting a core therefrom, and means for holding the cigar from movement during retraction of said cutter.

9. A cigar perforating machine comprising a support, a traveling carrier provided upon said support, means for locating and holding a plurality of cigars having tapered ends on said carrier, piercer carrying members provided on said support in longitudinal registration with said cigar locating means, a piercer provided in connection with each of said members for engaging and piercing cigars moved into its range of action by said carrier, cigar engaging bushings disposed adjacent each of said piercers, each of said bushings and piercer carrying members being independently movable and arranged to operate on said tapered ends of cigars, and means for moving said piercer carrying members and said bushings toward and away from the cigars held on said carrier.

LLOYD S. BLOUNT.