Dec. 23, 1941. K. E. GRANSTEDT ET AL 2,267,648

CIGAR MACHINE

Filed June 15, 1938

3 Sheets-Sheet 1

FIG. 1

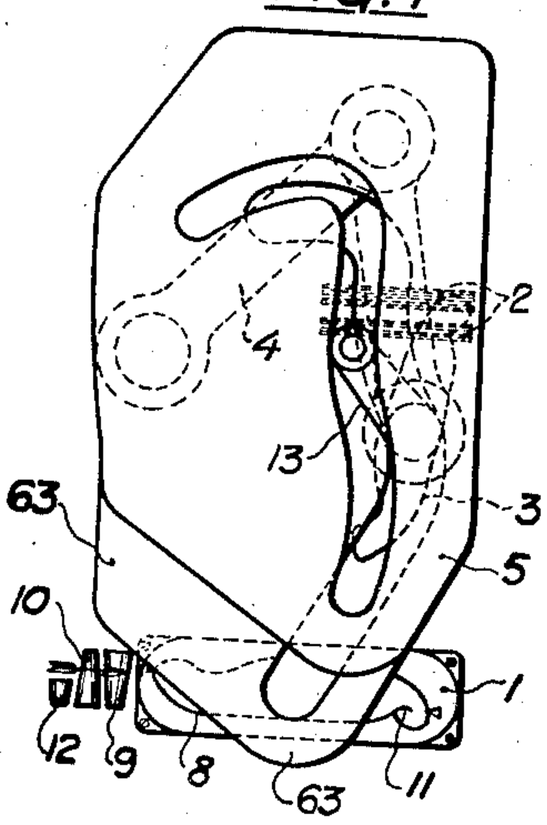
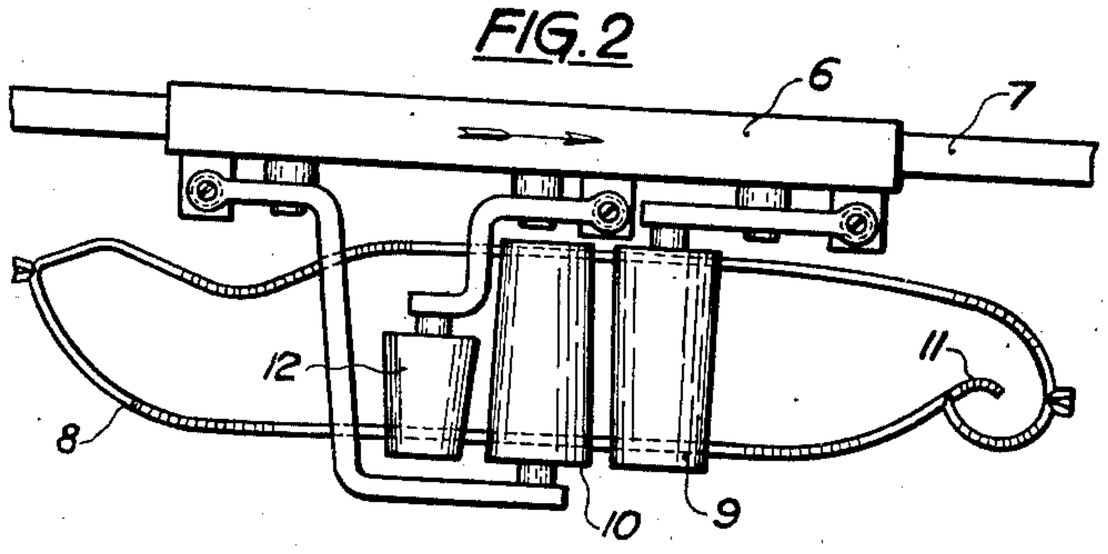


FIG. 2



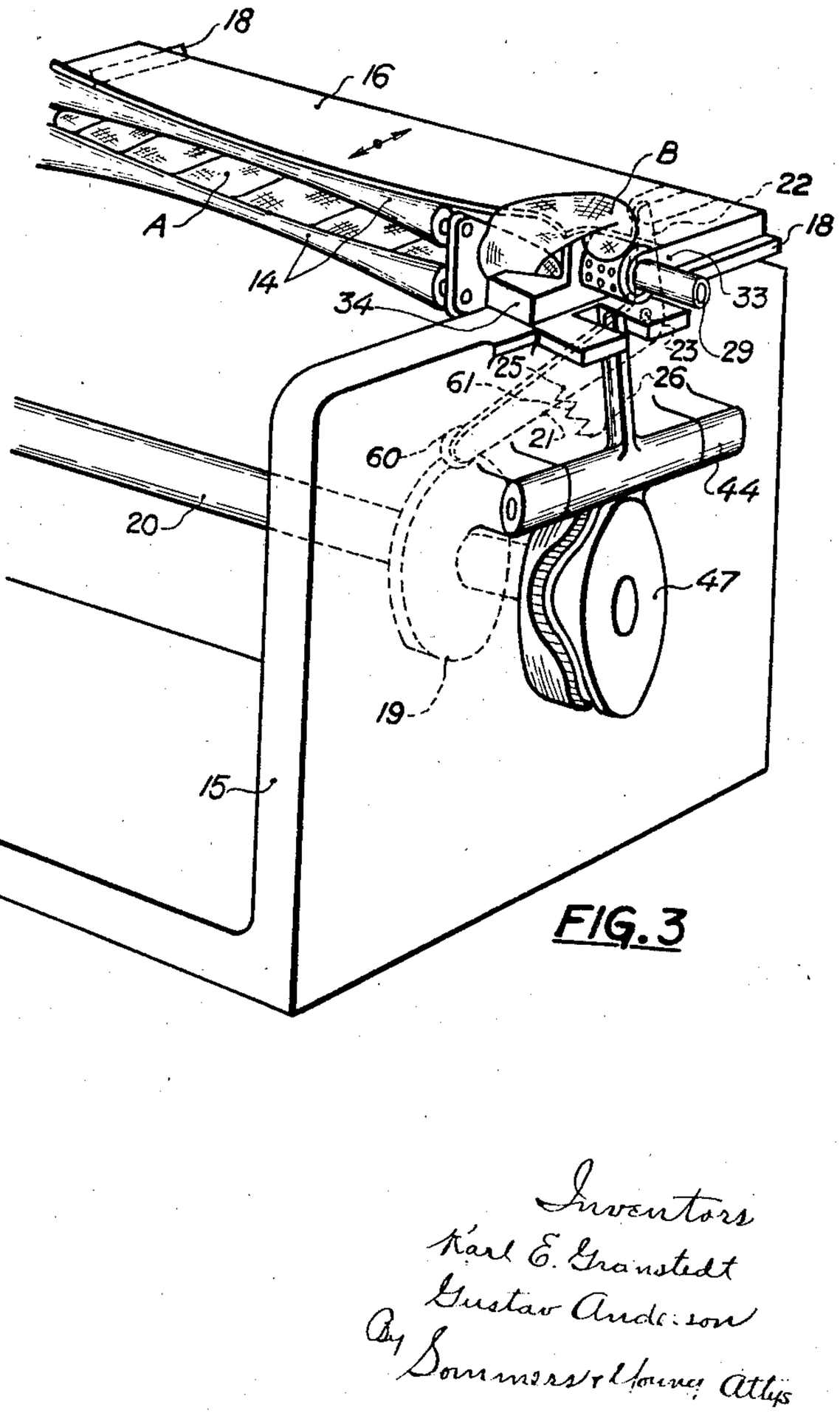


FIG. 3

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FIG. 5

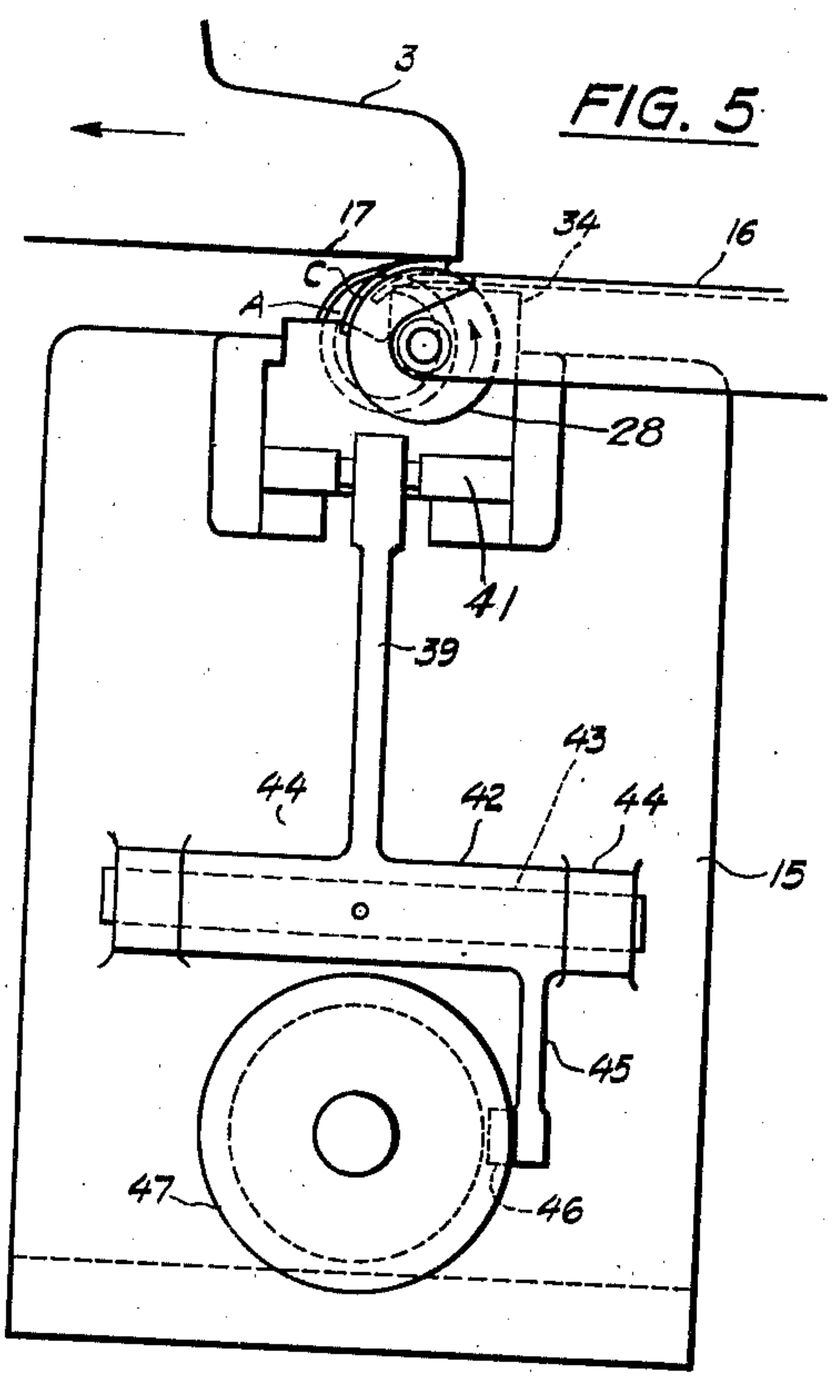

FIG. 4

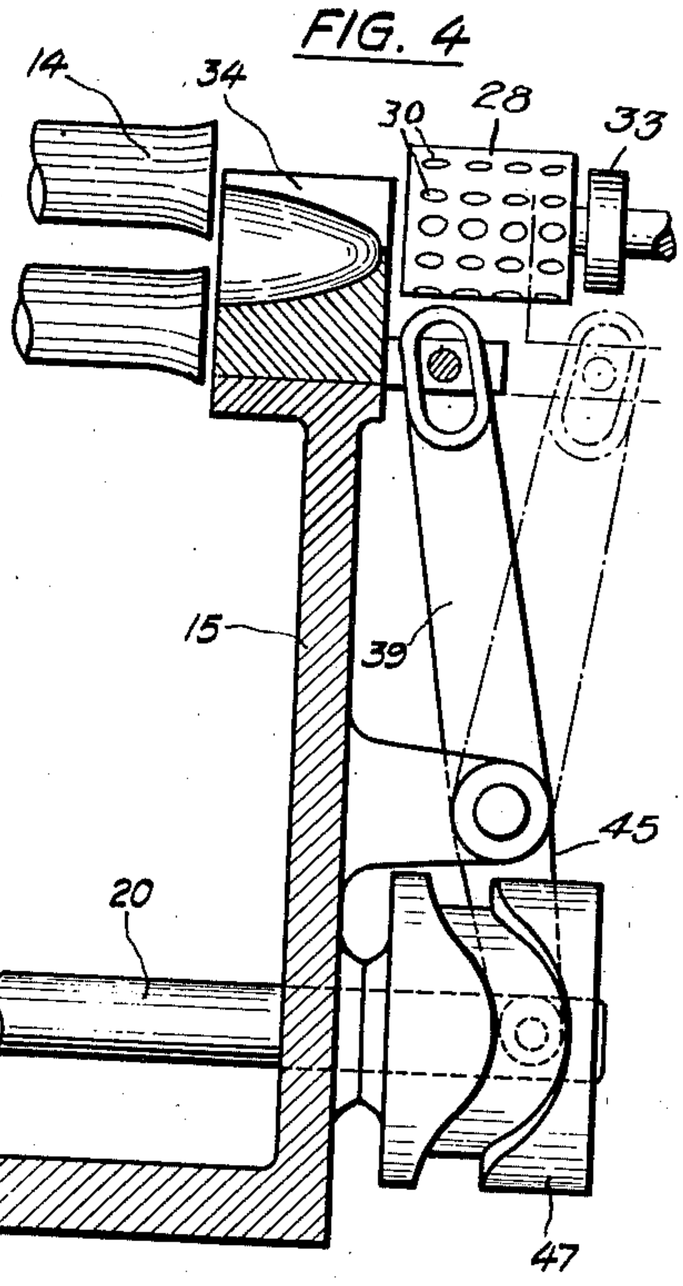

FIG. 7

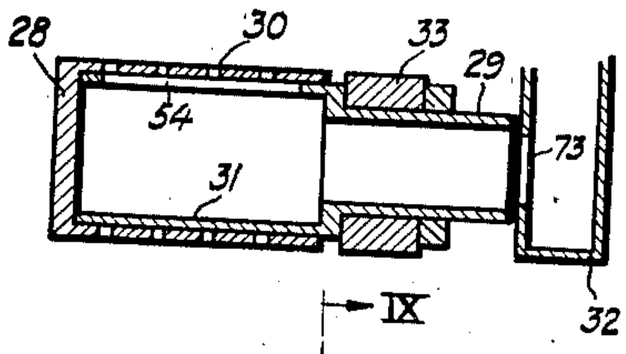

FIG. 9.

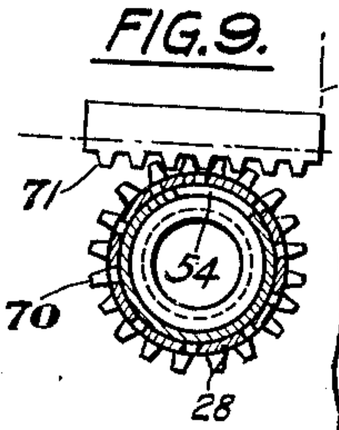

FIG. 6

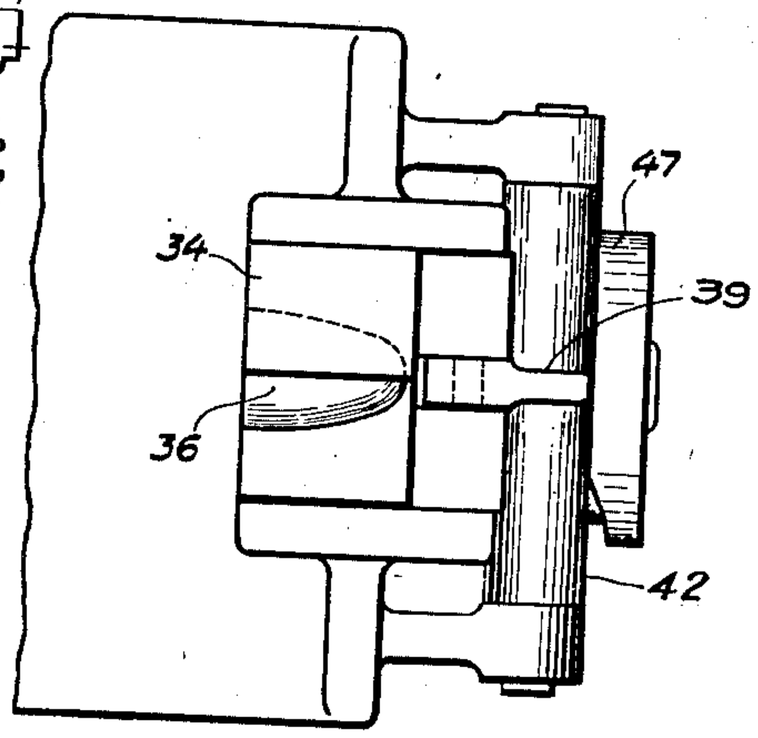

FIG. 8

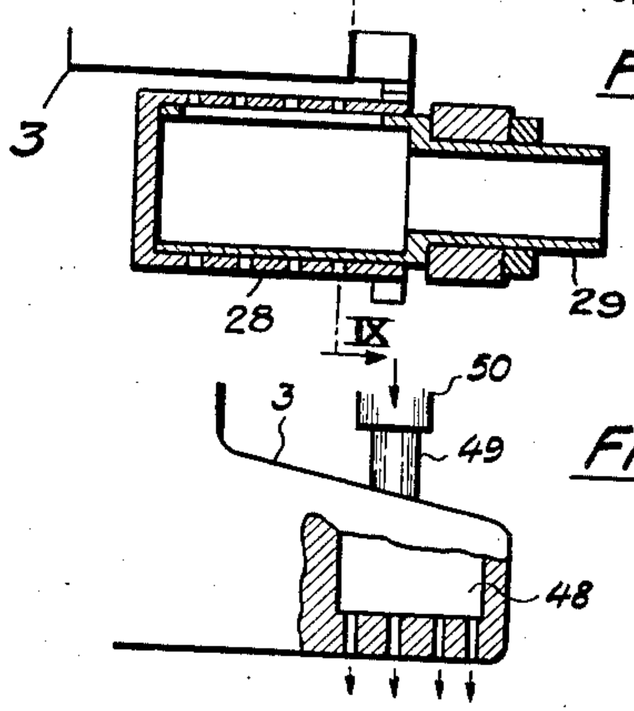

FIG. 10

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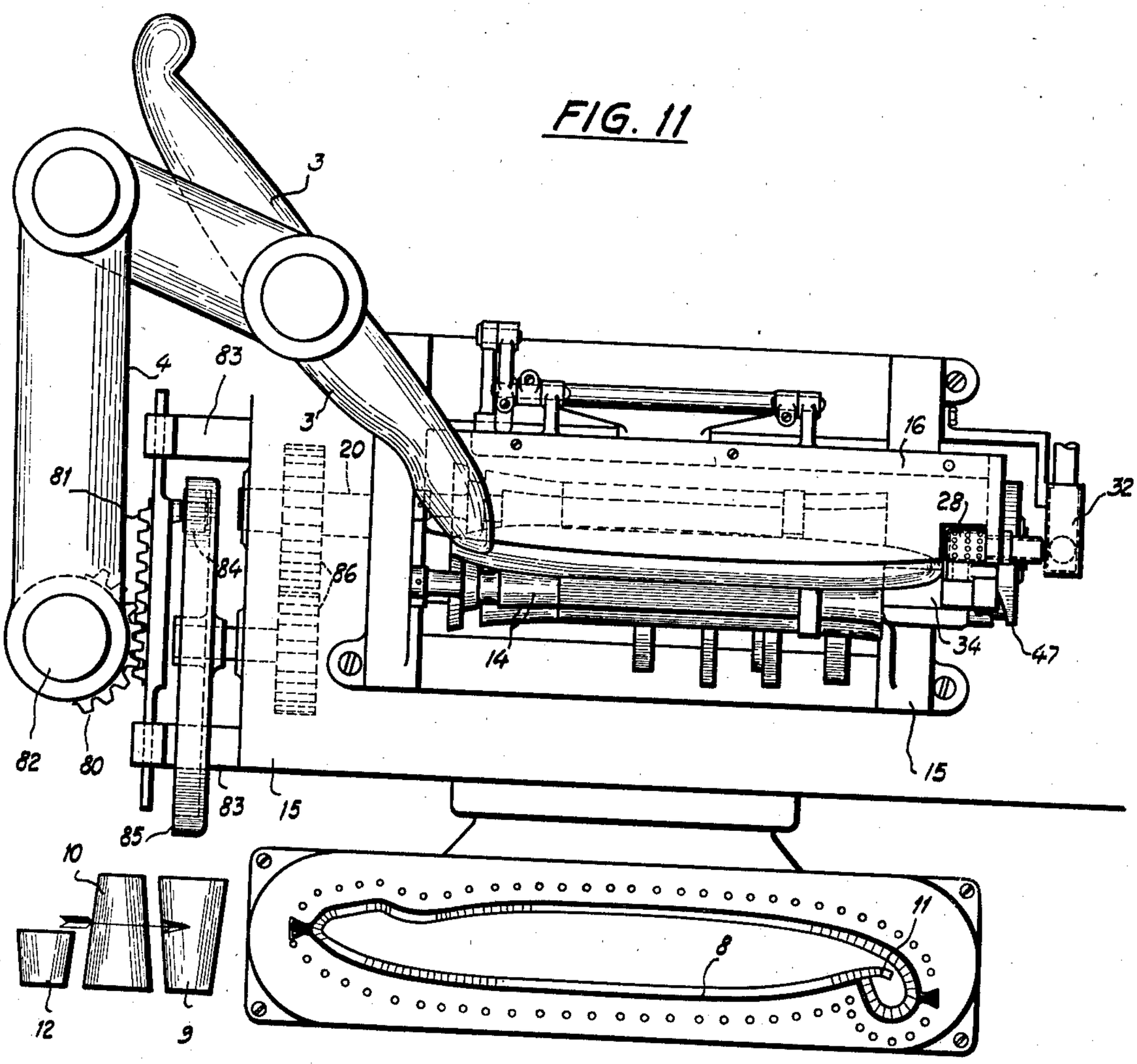
FIG. 11



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Patented Dec. 23, 1941 2,267,648

UNITED STATES PATENT OFFICE

2,267,648

CIGAR MACHINE

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Application June 15, 1938, Serial No. 213,888
In Germany June 19, 1937

4 Claims. (Cl. 131—36)

This invention relates to cigar machines and more particularly to such machines having means for rotating a cigar bunch, means applying a wrapper thereto, and means for adjusting the bunch longitudinally with respect to the rotating means and for heading the cigar. In cigar machines of that kind, hitherto proposed and now in use, the wrapper is cut from a tobacco leaf and delivered to a wrapping mechanism which applies the wrapper to the cigar bunch. During the application of the wrapper to the cigar bunch, an incision is provided in the wrapper flag in order to permit the same to be shaped accurately around the bunch head. Such an incision was provided by means operating on the wrapper flag when said flag is about to be wound about the bunch head. Then the wrapper flag nicking means has to operate close by the usual bunch heading block. Therefore said block cannot embrace the bunch head as completely as desired. Furthermore the nick has made a straight cut and the means for making the cut have not been of such nature as to locate the cut always in the same position in the wrapper wherefore it has been impossible to uniformly apply the flag smoothly to the cigar head. These drawbacks may be removed by cutting a nick in the wrapper flag prior to the delivery of the wrapper to the wrapping mechanism but in such case difficulties will arise as the nicked flag is likely to be split when it is delivered to the bunch and furthermore there is a certain risk that the control of the movement of the flimsy nicked flag will be lost during its application to the bunch head.

This invention has for its object to provide means for overcoming the difficulties referred to. Thus it is an object of the invention to provide means for cutting a nick of any desired configuration in the wrapper flag prior to the delivery of the wrapper to the wrapping mechanism and thereafter to accurately control the nicked wrapper flag until its application to the bunch head has been finished. Another object of the invention is to utilize such nicking by improving the means for shaping the bunch head, heading the cigar and smoothing the cigar head after the wrapper flag has been applied thereto.

Other objects and advantages of this invention will become apparent from the following specification and accompanying drawings, in which:

Fig. 1 is a diagrammatic plan view showing the general arrangement of the device including the subject matter of the invention;

Fig. 2 is a plan view of a wrapper cutting mechanism;

Fig. 3 is a perspective view of the wrapping mechanism;

Fig. 4 is an elevational view partly in section of part of the device shown in Fig. 3;

Figs. 5 and 6 are an end view and a plan view, respectively of part of the arrangement shown in Fig. 4;

Fig. 7 is a longitudinal sectional view of part of the device shown in Fig. 3;

Fig. 8 shows a modified embodiment of the device shown in Fig. 7;

Fig. 9 is a sectional view taken on the line IX—IX of Fig. 8;

Fig. 10 is a sectional view of a modified embodiment of the wrapper carrier shown in Fig. 5;

Fig. 11 is a plan view showing various parts of the device in cooperative relationship.

Referring first to Fig. 1, the device illustrated therein has a wrapper and flag cutter 1, a mechanism 2 for applying the wrapper to a cigar bunch and a carrier 3 by which the wrapper is transferred from the wrapper cutter to the wrapping mechanism. Furthermore there is a supporting arm 4 for the wrapper carrier and cams 5 and 63 for controlling the movements of the wrapper carrier. Another arm 13 serves to swing the wrapper carrier 3 about its own center. The means now mentioned are more particularly described in the Patent No. 1,952,546 to Granstedt. The arm 4 and thereby the carrier 3 is driven by means of a rack 81 meshing with a toothed segment 80 on a vertical shaft 82 to which the arm is secured. The rack 81 is slidably mounted in brackets 83 projecting from the frame 15. The rack 81 has a roller 84 guided by a cam 85 which is by means of a gear 86 driven from the continuously revolving main shaft 20, rotatably journalled in the frame 15 and driven in any well-known manner. Thereby the rack 81 will reciprocate in timed relation to the other operating members of the wrapping device.

The wrapper cutting device (Fig. 2) has a head 6 which is slidably mounted on a rail 7. Means (not shown) are provided for reciprocating said head. A wrapper cutting die 8 is arranged adjacent the path of movement of the head 6 which is equipped with rollers 9 and 10 cooperative with the die 8 in the usual manner to cut out a wrapper. An additional die 11 is arranged within the periphery of the die 8. A roller 12 is supported from the sliding head 6 for cooperation with the die 11 to nick the flag.

The die 11 is shaped to produce a curved cut which will insure a smooth application of the wrapper flag to the cigar head. The die 11 is in fixed position with respect to the die 8 and therefore the flag cut or incision always bears a predetermined relation to the contour of the flag. The cutting edge of the die 11 can be a continuation of the curve tangent to the junction of the cutting edge for the wrapper flag and the wrapper proper so that when the wrapper flag is laid on the bunch head the underlying portion of the wrapper conforms with the shape of the bunch head. The rollers 9, 10 and 12 are supported for yielding vertical movement and each of them is frusto-conical. The arrangement is such that the roller 9 contacts only with the half of the die 8 adjacent the head while the roller 10 contacts only with the remaining half of the die 8 and neither of them contacts with the die 11. The arrangement of the roller 12 is such that it does not contact with the die 8 but does contact with the die 11. With this arrangement accurate cutting of the wrapper without double contact of parts of the die 8 by the rollers is insured.

After the wrapper and flag have been cut and nicked and the sliding head 6 together with its rollers have been retracted the wrapper carrier 3 is moved into position opposite the die 8 and picks up the wrapper in the usual manner by suction. Thereafter the arm 4 is swung back so that the wrapper carrier is moved into position to deliver the cut wrapper to a bunch introduced into the wrapping mechanism 2.

The wrapping mechanism (Fig. 3) comprises a set of bunch rollers 14 which are rotatably journalled in a frame 15. The said set of bunch rollers can be opened to receive a bunch A whereafter the rollers are closed again. This arrangement as well as a mechanism for rotating the bunch rollers are well known in the art and therefore they need no further description herein. The wrapper carrier 3 is connected with a suction source (not shown) through the hollow arm 4 so that its perforated operating surface 17 (Fig. 5) can hold the wrapper in an outspread condition thereon. There is further provided a tension plate 16. This plate runs in a guide 18 and has a movement by which it is periodically brought into a position adjacent the bunch rollers 14. To this end a cam disc 19 is secured to the shaft 20. A lever 21, 22 is pivoted to a shaft 23, its arm 21 having a roller 60 riding on the cam 19 and its other arm 22 conveying the wrapper tension plate 16 to impart reciprocating movements thereto. The roller 60 is forced against the circumference of the cam disc 19 by a tension spring 61, an end of which is connected at 25 to the arm 21 and its other arm at 26 to the frame 15. The end of the wrapper tension plate 16 adjacent the head of the cigar bunch A is slightly curved downwardly and provided with an anti-friction roller 28 which is rotatably journalled upon a socket 31 (Fig. 7) which is mounted on the tension plate and adapted to be connected to a suction chamber 32 which has an opening 73 and may be connected to the suction source above referred to. The cylindrical surface of the roller 28 projects slightly above the upper surface of the wrapper tension plate 16. The cylindrical wall of the roller 28 has perforations 30 and said roller forms a small drum loosely and removably sleeved onto a carrier cylinder 31. The cylinder 31 forms an integral part of the pipe 29. The pipe 29 is secured to a projection 33 of the tension plate 16. The cylinder 31 has in its upper part a longitudinal slot 54 which serves to provide communication between the suction conduit 32 and the uppermost perforations 30 of the drum 28.

It will be understood that the wrapper is held by suction in an outspread condition upon the operating surface of the wrapper carrier 3 throughout the greater part of the relative crossing movement of said carrier and the bunch rolling mechanism 2 whereby the wrapper is delivered from the carrier to the bunch A in the rolling mechanism.

Beyond the ends of the wrapping rollers 14 there is slidably mounted a heading block 34 which is movable longitudinally of the bunch rollers in a guide 34 in the frame 15. Instead of imparting to the heading block a rectilinear sliding movement said block may be reciprocated by a rocking arm to which said block is fixed. The block 34 is closed at its outer end and adapted to embrace the lower and upper part of the head end of the bunch A. For that purpose and in order to allow an easy and accurate introducing and positioning of the bunch A in the cluster of bunch rollers 14 the heading block 34 has a lateral opening or recess 36. The means for reciprocating the heading block 34 comprises a double armed lever one arm 39 of which is pivotally and slidably connected to a pin 40 inserted into a rear extension 41 of the heading block 34. The said lever is formed integrally with a hub 42 which is secured to a shaft 43 which is rotatably mounted in two brackets 44 projecting from the frame 15. The lower arm 45 of the lever coacts by means of an idle roller 46 with a cam 47 which is secured to the shaft 20.

In operating the wrapping mechanism the bunch A is first introduced transversely into the opened cluster of bunch rollers 14. Thereafter the bunch rollers are closed. These operations are performed by any suitable well known mechanism driven for instance by a cam secured to the shaft 20. Thereafter the heading block 34 is advanced from the position shown in dash and dot lines in Fig. 4 into the position shown in full lines. Thereby the heading block is brought into contact with the bunch head and shapes same on displacing the bunch longitudinally between the revolving bunch rollers 14 until the bunch head has occupied a predetermined longitudinal position with respect to the roller 28. Then the nicked wrapper held outspread upon the operating surface of the wrapper carrier 3 is moved in the direction of the arrow to about the position shown in Fig. 5. Then the wrapper tension plate has been advanced by the lever arm 22 into a position adjacent the bunch rollers 14 and is resting in such position whereby the suction pipe 29 registers with the opening 73 of the suction chamber 32. Thereby the operating surface of the wrapper carrier 3 forces the rear wrapper end and the flag B of the wrapper against the upper part of the cylindrical surface of the roller 28 and since said upper part exerts a suction effect upon said parts of the wrapper the latter will safely adhere to said cylindrical surface. Therefore, the rear end and flag of the wrapper are successively and safely pulled away from the suction carrying surface 17 of the wrapper carrier and are pulled further through the recess 36 of the heading block 34 as the roller 28 is caused by the proceeding wrapper carrier to rotate in the direction of the arrow (Fig. 5). Thus the wrapper flag is successively bent down from said operating surface when the carrier

moves in the direction of the arrow. This is very important as the wrapper flag has already been provided with an incision when it is about to be removed from the wrapper carrier. The action of the roller **28** particularly in combination with a suction effect removes the risk of splitting the nicked wrapper flag when the latter is removed from the wrapper carrier. Finally the cut tip C of the wrapper flag has to be wound upon the tip of the cigar. Thereby the rotating cigar pulls the said tip upwardly whereupon the idle roller **28** may rotate in a direction opposite to that indicated in Fig. 5 and convey the tip until it has been applied to the tip of the cigar.

As the arrangement with the roller **28** facilitates or rather enables the above mentioned provision of an incision in the wrapper flag before the applying of the wrapper to the bunch viz. simultaneously with the shaping of the wrapper the heading block may be developed to embrace the bunch head more completely than if the nicking means were arranged adjacent to said block. Therefore the heading block will cooperate closely with the roller **28** to control the applying of the wrapper flag to the bunch head and the heading block will shape the bunch more accurately than a comparatively open heading block particularly if said block is moved longitudinally into its operative position in which case the bunch may be displaced longitudinally by said block and its head end will always obtain the correct position relative to the wrapper flag applying means. Furthermore such a heading block will prevent the head end of the bunch from ascending within the wrapping mechanism. Such ascending might otherwise occur due to the likeliness of fresh bunches to expand.

Possibly the suction effect of the roller **28** may be combined with or replaced by a pulling effect obtained by means of an air blast that throws the wrapper flag onto the said roller. Means for obtaining such an effect is shown in Fig. 10. The rear end of the wrapper carrier **3** which has to support the flag B of the wrapper may have a separate internal suction chamber **48** which is associated with an air blast mechanism consisting of a pipe **49** to which a hose **50** is connected. The pipe **49** opens in the chamber **48** and any suitable air blast mechanism not shown may be employed for the purpose of creating air blast through the pipe **49** in the chamber **48** at a predetermined time, that is, when the wrapper flag is to be delivered to the roller **28**.

In a preferred embodiment of the invention the roller is driven positively in the direction as shown by the arrow. To this end the roller has a toothed rim **70** (Fig. 9) which meshes with a rack **71** on the wrapper carrier. By this arrangement the roller **28** is driven in the direction of the arrow when the wrapper carrier moves into the position shown in Fig. 5.

We claim:

1. In a cigar machine, a wrapping mechanism having means for rotating a cigar bunch positioned therein, a heading block having a lateral opening and being adapted to embrace more than one half of the periphery of the bunch head, a mechanism for moving said heading block longitudinally of said wrapping mechanism for adjusting the position of the bunch head longitudinally and transversely, a carrier for delivering the wrapper flag to the bunch head through said opening of the heading block, and means for nicking the wrapper flag at a definite position with respect to said wrapper flag carrier so as to position the end of the nick correctly upon the bunch head.

2. In a cigar machine, a wrapping mechanism having means for rotating a cigar bunch positioned therein, a heading block having a lateral opening and being adapted to embrace more than one half of the periphery of the bunch head, a mechanism for moving said heading block longitudinaly and transversely, an anti-friction carrier operable close beyond said heading block to convey the wrapper flag when said flag is delivered to the bunch head through said opening of said heading block, another carrier for delivering the wrapper flag to said anti-friction carrier, and means for nicking the wrapper flag at a definite position with respect to said other wrapper flag carrier so as to enable said other wrapper flag carrier to apply the nick of the wrapper flag to said anti-friction carrier at a definite longitudinal distance from the bunch head.

3. In a cigar machine, a wrapping mechanism having means for rotating a cigar bunch positioned therein, a heading block adapted to embrace more than one half of the head end of the cigar bunch when positioned in said wrapping mechanism, said heading block having a longitudinal opening admitting the nicked wrapper flag laterally into said heading block, an anti-friction carrier for conveying the wrapper flag when said flag is pulled through said recess by the rotating cigar bunch, and means for first moving said heading block longitudinally of said wrapping mechanism to embrace the bunch head and then moving said anti-friction carrier into a position close beyond said heading block.

4. In a cigar machine, a wrapping mechanism having means for rotating a cigar bunch positioned therein, a heading block having a lateral opening and being adapted to embrace more than one half of the periphery of the bunch head, a mechanism for moving said heading block longitudinally of said wrapping mechanism for adjusting the position of the bunch longitudinally and transversely, an anti-friction carrier operable close beyond said heading block to convey the wrapper flag when said flag is delivered to the bunch head through said opening of said heading block, another carrier for delivering the wrapper flag to said anti-friction carrier, means interconnecting both said carriers to drive said anti-friction carrier positively by means of said other carrier, and means for nicking the wrapper flag at a definite position with respect to said other wrapper flag carrier so as to enable said other wrapper flag carrier to apply the nick of the wrapper flag to said anti-friction carrier at a definite longitudinal distance from the bunch head.

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