March 6, 1945. K. E. GRANSTEDT 2,370,791

METHOD OF PACKING CIGARS

Filed Sept. 26, 1941 9 Sheets-Sheet 1

FIG. 1

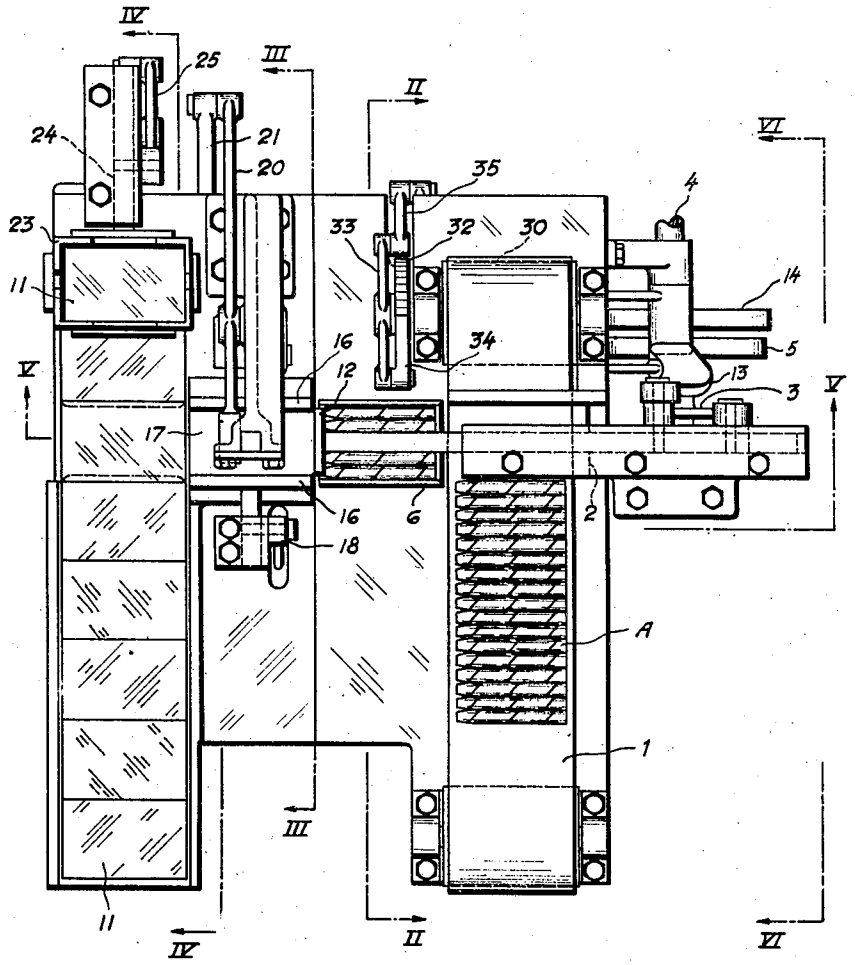

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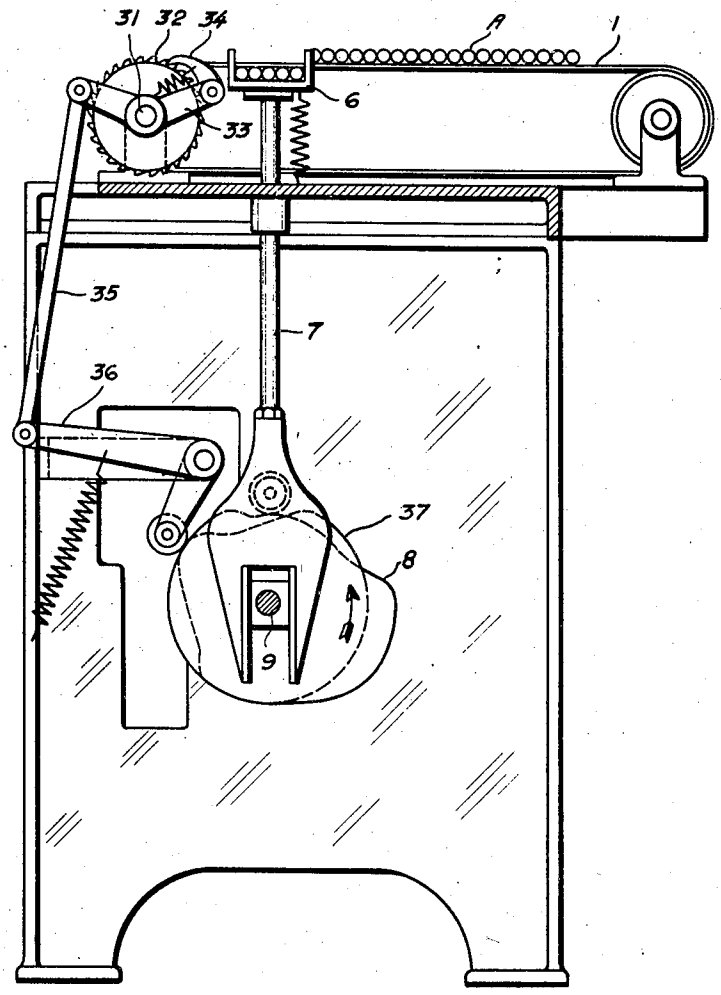
FIG. 2



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METHOD OF PACKING CIGARS

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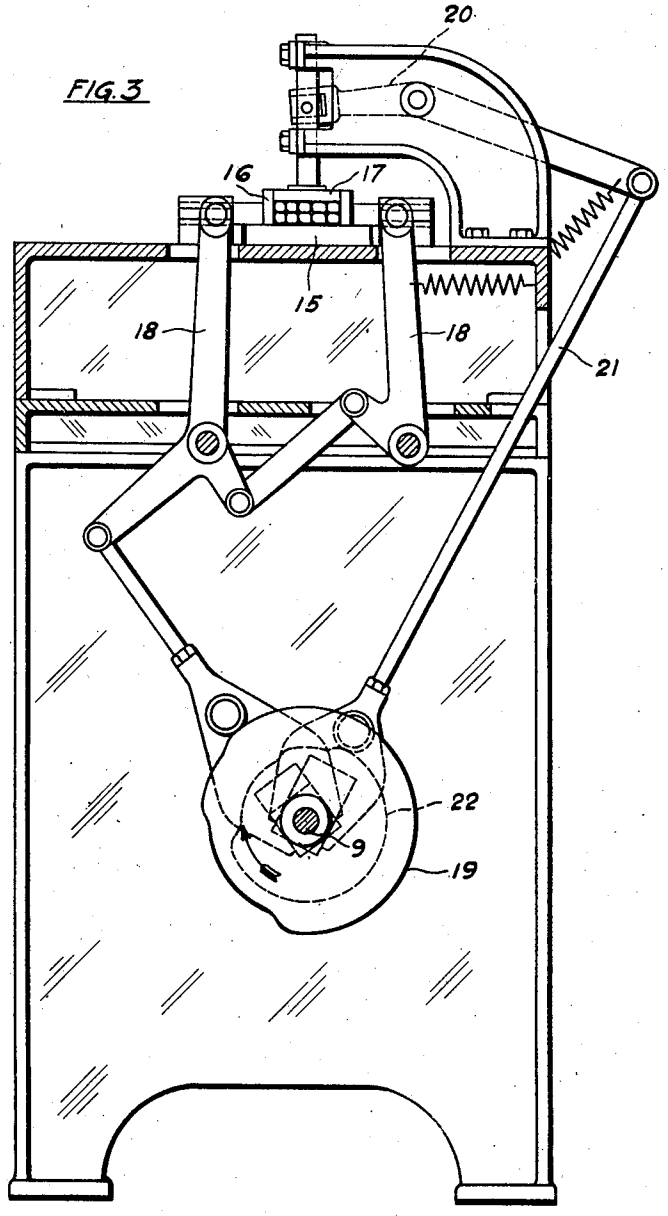
FIG. 3



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METHOD OF PACKING CIGARS

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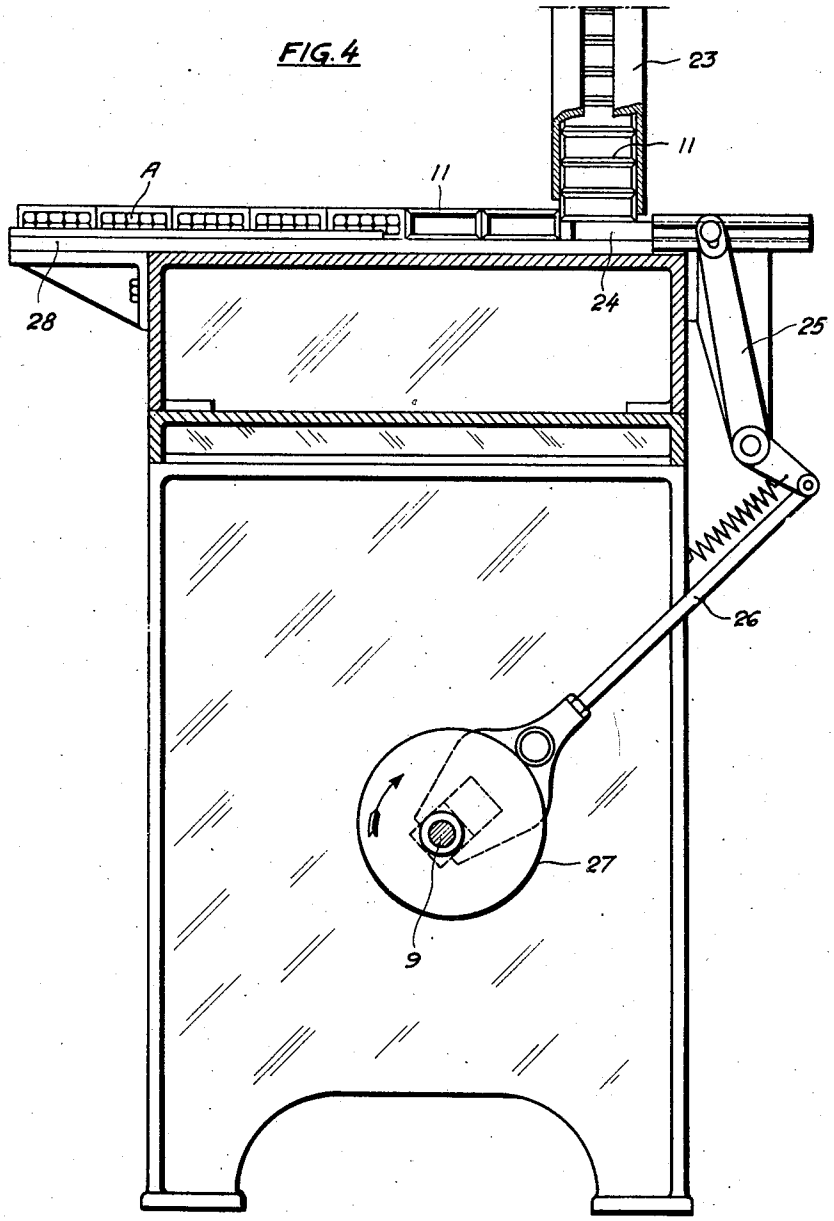
FIG. 4



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METHOD OF PACKING CIGARS

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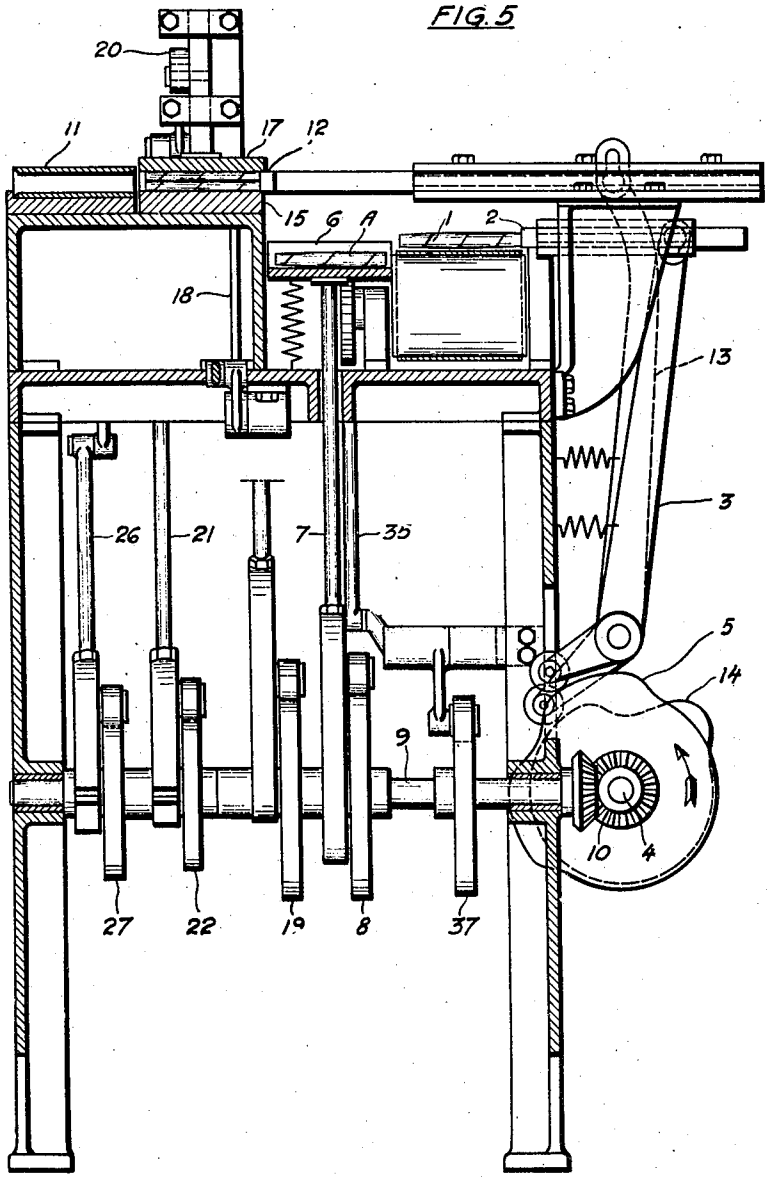
FIG. 5



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METHOD OF PACKING CIGARS

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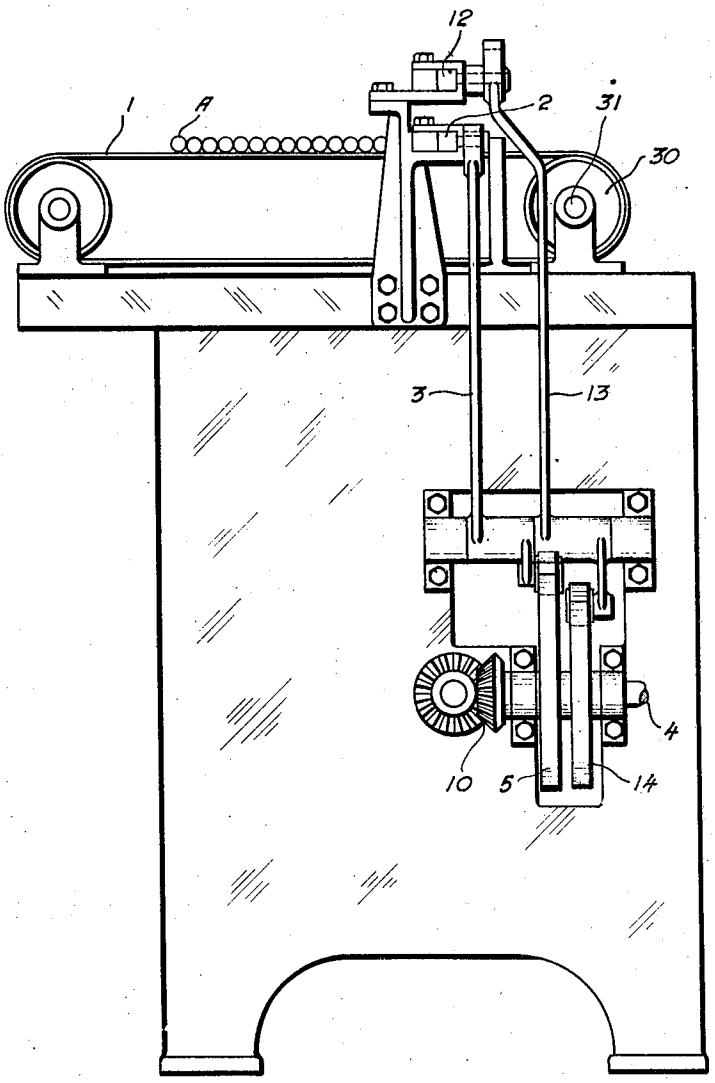
FIG. 6



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METHOD OF PACKING CIGARS

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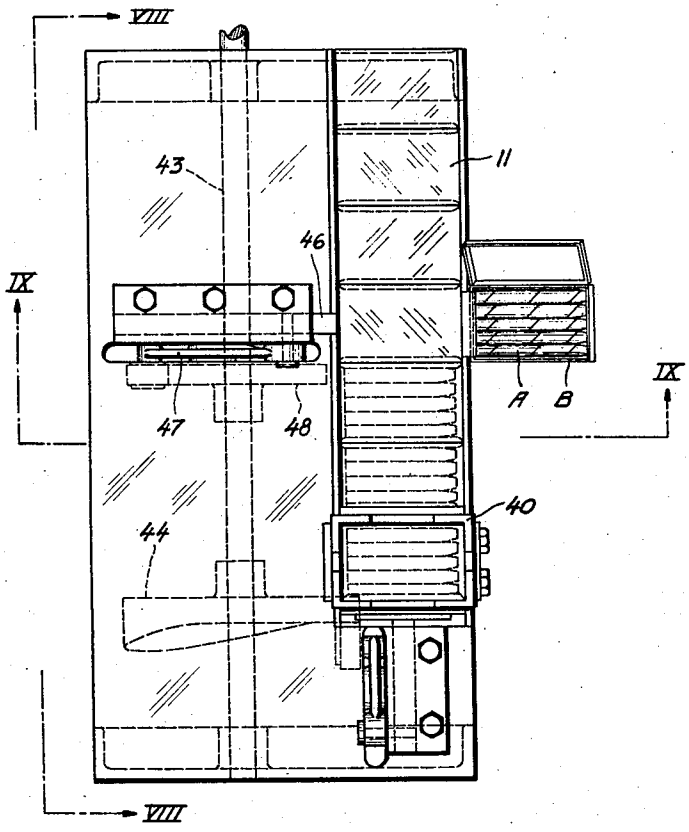
FIG. 7



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METHOD OF PACKING CIGARS

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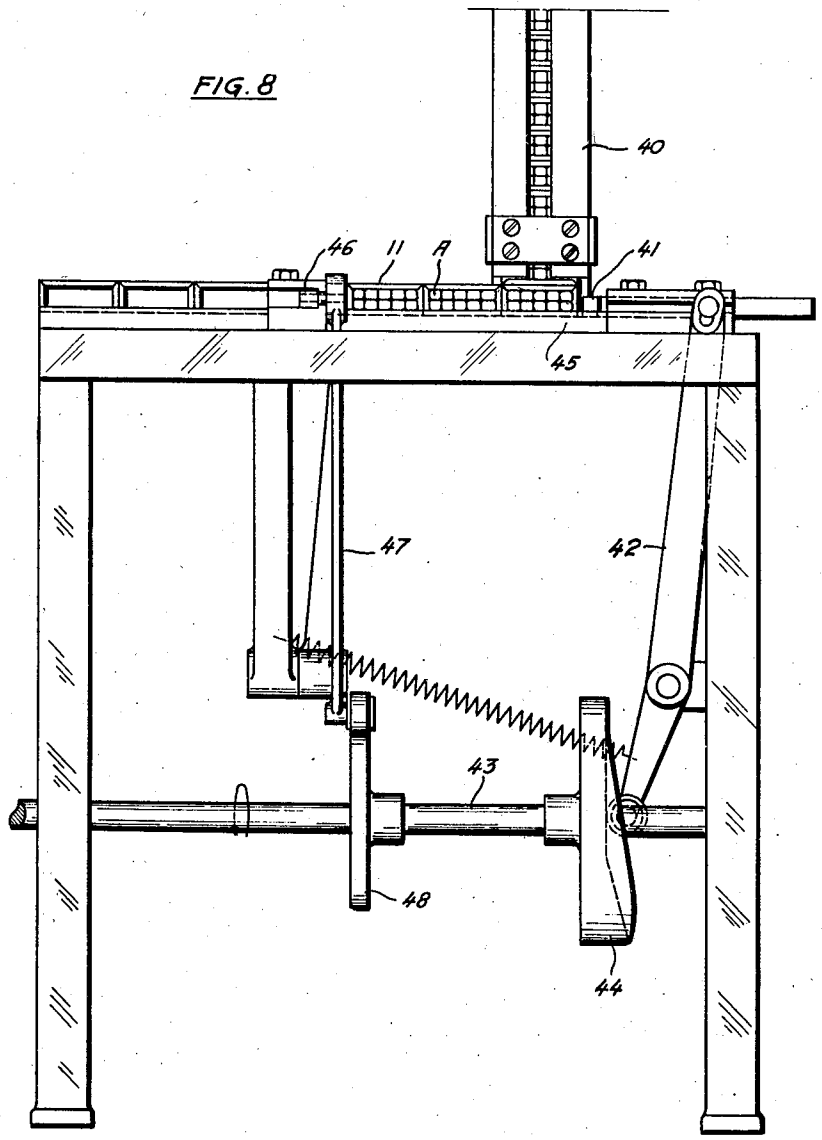
FIG. 8



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METHOD OF PACKING CIGARS

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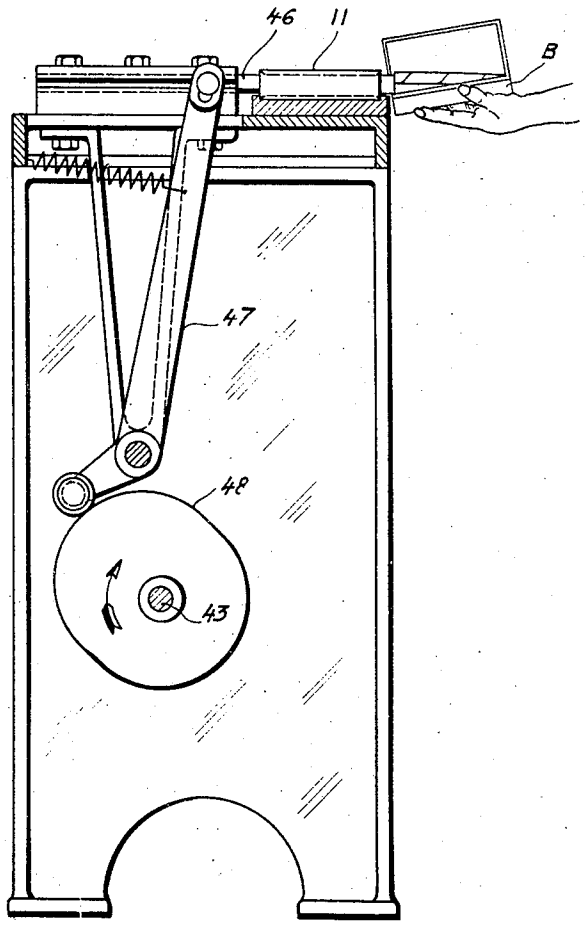
FIG. 9



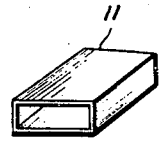


FIG. 10

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Patented Mar. 6, 1945

2,370,791

UNITED STATES PATENT OFFICE

2,370,791

METHOD OF PACKING CIGARS

Karl Erik Granstedt, Stockholm, Sweden, assignor to Aktiebolaget Formator, Stockholm, Sweden, a Swedish joint-stock company

Application September 26, 1941, Serial No. 412,506
In Sweden November 15, 1940

1 Claim. (Cl. 131—107)

This invention relates to the packing of cigars, cigarillos or similar articles of tobacco. In a method hitherto used for packing cigars the cigars are placed manually in open, rectangular pockets of wooden molds, upon which are placed covers that are drawn tight to subject the cigars to pressure action and impart to each portion of cigars in a pocket the desired shape and size. For that purpose the filled molds are assembled in piles, and the cigars are subjected to pressure for some time until the portions have set, whereafter the mold covers are removed and the cigars are picked out of the pockets and packed. In this method, the cigars are likely to be injured by the cover when the latter is applied to the mold, and, furthermore, it might happen that the longitudinal edges of the cigars become irregular, particularly if the mold cover has been used for some time and is worn out to some extent. Furthermore, this known method is tedious and troublesome, and large spaces are necessary for the storage of the molds and for their placing at the different stations of operation. In the mechanical packing, some of the above-mentioned drawbacks are overcome, but the attempts hitherto made to pack mechanically have not been successful, since sufficient time was not available to impart to the cigars their final size and shape, i. e. to make them set before they are packed, i. e. introduced into a box or other envelope.

It is an object of the present invention to make provision for mechanically packing cigars, cigarillos or similar articles of tobacco, whereby the portions of cigars or the like will nevertheless obtain a substantially permanent size and shape, before they are introduced into the box or other envelope. Thus the present invention relates to a method for the purpose referred to, in which the advantages of both the known methods are utilized, whereas their drawbacks are not present.

The cigar groups may each consist of any suitable number of cigars, cigarillos, or the like or of a single tobacco article, which obtains its final shape before it is packed, for instance enclosed in an envelope. The method according to the invention can be performed in a particularly simple and efficient manner if the tobacco articles are introduced into tubular mold channels of stiff casings, whereafter said casings are removed from their filling station and stored to dry and make the cigars set, whereafter said casings are inserted into a packing machine in which they are emptied by transferring the articles to boxes or other envelopes. Thus the filled casings may be heated to dry and set the portions of cigars or the like in said casings. The casings are resistant to rough treatment. Therefore, each group of cigars can be treated (dried, conveyed and packed) practically as if it were a rigid article. It can be considered substantially as resistant to rough treatment as any hollow metal article. The cigar groups can be taken or conveyed from a portioning and compressing device as rigid packings (i. e. covered by rigid casings), stored, dried and thereafter supplied to the packing machine as articles insensible to shocks and other external action. The device for the filling, transport and emptying of the casings is very compact, inexpensive and easy to manage. The empty or filled casings can be fed through funnels, chutes or any means for feeding pieces. The cigar groups enclosed in the mold casings can before their packing be easily stored and conveyed to the packing machine practically irrespective of the extent of the space available in the factory. Furthermore, the cigars can be dried rapidly and nevertheless gently, so that the entire process is accelerated. For example, the casings with their contents can be piled up in a drying chamber, so that the heating air will be brought into a much better contact with the cigars than if the latter were enclosed in wooden molds which, besides, absorb much heat. The casings can have any desired interior shape, i. e. the cigars or the like can be given practically any desired shape, which is not possible if the known divided wooden molds are used.

Conveniently, the cigars or the like are fed in a row side by side to a compressing station and inspected during their travel and turned or transposed, so that the cigars or the like of each portion that is fed to the compressing station are smooth and substantially of the same tint at their upper, visible surfaces. By this step of the grouping it will be possible to obtain an upper surface having a uniform and attractive tint, even though the grouping is effected much more rapidly than when using the old wooden molds. Conveniently, the casings are marked so that their correct positions in the packing machine can be controlled.

The accompanying drawings show by way of example a device for carrying out the invention.

Fig. 1 is a plan view of a grouping machine, in which mold casings are filled with groups of cigars.

Figs. 2 to 5 are vertical sectional views taken

on the lines II—II, III—III, IV—IV and V—V, respectively, of Fig. 1.

Fig. 6 is a side view in the direction VI—VI of Fig. 1.

Fig. 7 is a plan view of a packing machine, in which the cigar groups are expelled from the mold casings and packed.

Fig. 8 is a side view of the packing machine in the direction of the line VIII—VIII of Fig. 7.

Fig. 9 is a vertical sectional view on the line IX—IX of Fig. 7, and

Fig. 10 is a perspective view of a mold casing for a cigar portion.

Finished cigars or cigarillos A are fed transversely as a row on an endless conveyor belt 1 (Figs. 1, 2 and 6) which moves stepwise five cigars into position in front of a pusher 2 which is connected to a lever 3 that is driven by a cam disc 5 secured to the main drive shaft 4 of the machine. During their travel on the belt 1 the cigars are inspected and if needed turned and transposed, so that juxtaposed cigars adapted to form the upper layer of a portion have similar appearances as to their tints and so that their upper surface is as smooth as possible. The roller 30 for driving the belt 1 is secured to a rotary shaft 31 to which is secured a ratchet wheel 32. A lever 33 is turnably mounted on the shaft 31 and provided with a pawl 34 for driving the ratchet wheel 32. For that purpose the lever 33 is pivoted to a link 35 which, in turn, is pivoted to a lever arm 36 actuated by a cam disc 37 secured to a rotary shaft 9. In front of the pusher 2 at the opposite side of the conveyor belt 1 is arranged a pocket 6 which is movable up and down and adapted to receive a group of cigars. The pocket 6 is mounted on a rod 7 which is moved up and down by a cam disc 8. The cam disc 8 is secured to the shaft 9, which by means of a gear 10 is connected to the drive shaft 4. Primarily, the pocket 6 is in a position somewhat higher than that shown in Fig. 5, and then the pusher 2 transfers five cigars from the conveyor belt 1 to the bottom portion of the pocket. Thereafter the pocket 6 is moved downwards into the position shown in Fig. 5 simultaneously as the conveyor belt 1 advances one step to move five cigars into the position in front of the pusher 2 which transfers them to the pocket 6, so that they rest upon the five cigars already introduced into said pocket. The complete portion thus comprising ten cigars is to be introduced into an open-ended tubular mold casing 11, but first the cigar group is to be given substantially the same shape as the interior shape of the said casing. To this end, the pocket 6 is elevated into a level with a pusher 12, which is connected to a lever 13 that is reciprocated by a cam disc 14 secured to the shaft 4. The pusher 12 transfers the cigar group into a compressing device which has a bottom plate 15, an upper compressing plate 17, and two oppositely disposed side walls 16 which are periodically movable towards each other. The side walls are first moved towards each other by lever arms 18, which are driven by a cam disc 19 secured to the shaft 9, and the plate 17 is moved down by a lever arm 20, which is connected to a link rod 21 which is reciprocated by another cam disc 22 secured to the shaft 9. After the side walls 16 have been moved inwards and the plate 17 downwards they form together with the bottom plate 15 an open-ended tubular compressing channel the interior width of which is slightly less than that of the mold casing 11. Simultaneously as the walls 16 and plate 17 are moved towards each other a casing 11 is moved into position in front of the compressing channel formed by the walls 16 and plates 15 and 17. The casings 11 are stored as a pile in a chute 23 at the bottom end of which is operative a pusher 24 which is advanced periodically to form a bottom of the chute 23, as shown in Fig. 4. The pusher 24 is reciprocated by a lever arm 25 which is actuated by a cam disc 27 secured to the shaft 9. When the pusher 24 is retracted the pile of casings 11 descends so that an empty casing occupies a position in front of said pusher. Thereafter the pusher 24 is advanced and displaces said casing as well as the row of empty and filled casings 11 resting upon a table 28, whereby an empty casing is brought into its cigar receiving position opposite to the compressing channel formed by the walls 16 and plates 15 and 17. From this channel the compressed cigar portion is expelled and introduced into the casing 11 by the pusher 12 immediately after the pressure upon the portion has been released by moving the walls 16 apart and lifting the plate 17 slightly, so that the said compressing channel obtains the same interior width as the casing 11. When another casing 11 is moved into position to receive a cigar portion the casing just having been filled is displaced upon the table 28 from which the filled casings are successively picked up or drop off to be collected and stored in a receptacle, for instance.

After the mold casings 11 with their contents of cigars, cigarillos or the like have been stored for some time in a receptacle or pile or in other suitable manner the groups of cigars or the like have become dried and have shrunk somewhat, i. e. they have set into their final condition for packing, so that they can easily be expelled from the casings 11. The casings 11 with their contents are placed or thrown, for instance into a receptacle of the packing machine, which in the present embodiment consists of a chute 40 which is open at its bottom end and in which the casings 11 are piled up. Below the chute 40 is movable a pusher 41, which is reciprocated to periodically form a bottom supporting the pile of casings 11. The pusher 41 is pivotally connected to a lever arm 42 which is reciprocated by a cam disc 44 secured to a driving shaft 43. When the pusher 41 is retracted, the pile of casings in the chute 40 descends, so that the lowermost filled casing 11 occupies a position upon a table 45 in front of the pusher 41. When the pusher 41 advances, it displaces the row of casings 11 on the table 45, whereby the foremost filled casing of the row is brought into its delivery position opposite to an expeller 46. The expeller 46 is pivotally connected to a lever arm 47, which is reciprocated by a cam disc 48 secured to the shaft 43. An open box B is held in position in front of the expeller 46 at one side of the table 45, or it may be moved into such position by a conveyor. The group of cigars is transferred by the expeller 46 from the casing 11 into the box B, in which said group is packed. Thereafter, the casing 11 is moved further upon the table 45 and removed from the machine in any suitable manner and transferred to the device for filling the casing with another group of cigars or the like.

I claim:

The method of treating groups of cigars or the like, preparatory to their packaging, comprising advancing the cigars in a row side by side, inspecting the cigars, turning and transposing the cigars until juxtaposed cigars of said row have

substantially the same shade at their upper visible surfaces, separating consecutive groups of cigars from said row and subjecting the groups to a compression of short duration in a compressible rectangular mold for flattening their upper surfaces, moving open-ended inflexible mold cells into position facing said rectangular mold, pushing said groups as units out of said compressible mold directly into the mold cells while maintaining the relative positions of the cigars, storing the cells together with the cigar groups until the group has set and assumed substantially the same cross sectional shape as the cells, and then expelling the groups of cigars from said cells to be packaged.

KARL ERIK GRANSTEDT.