Dec. 29, 1931. H. H. WHEELER 1,838,167

FEED FOR CIGAR ENVELOPING MACHINES

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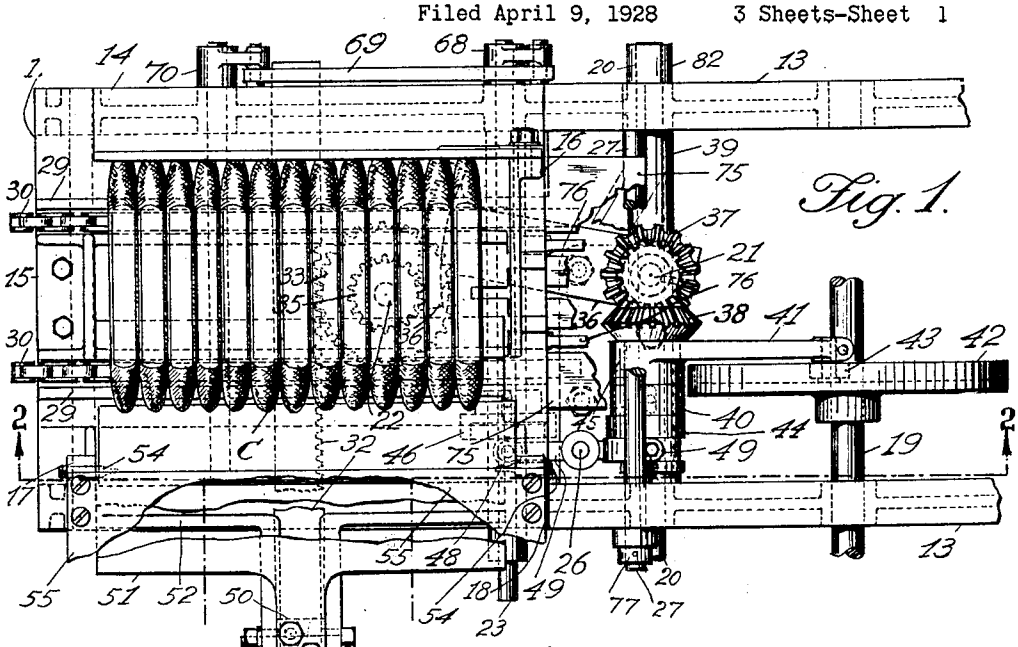


Fig. 1.

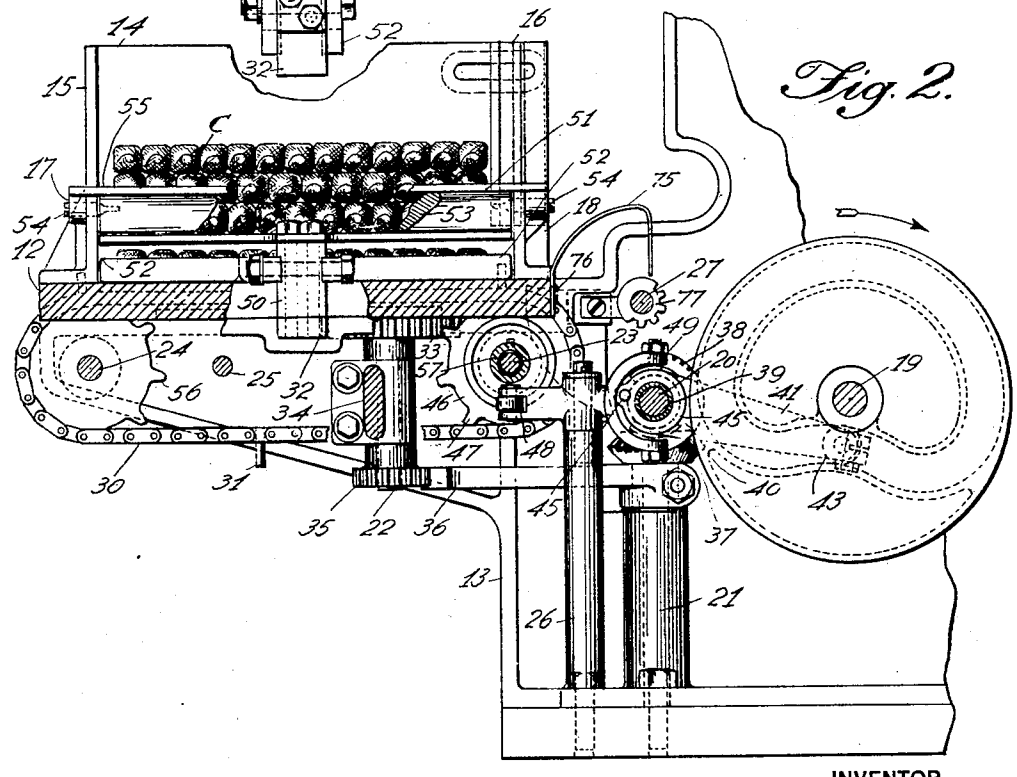


Fig. 2.

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Fig. 3.

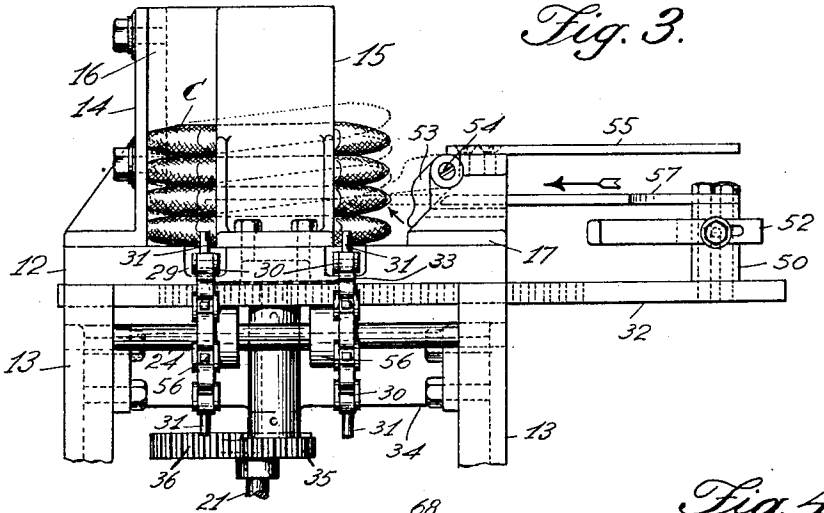
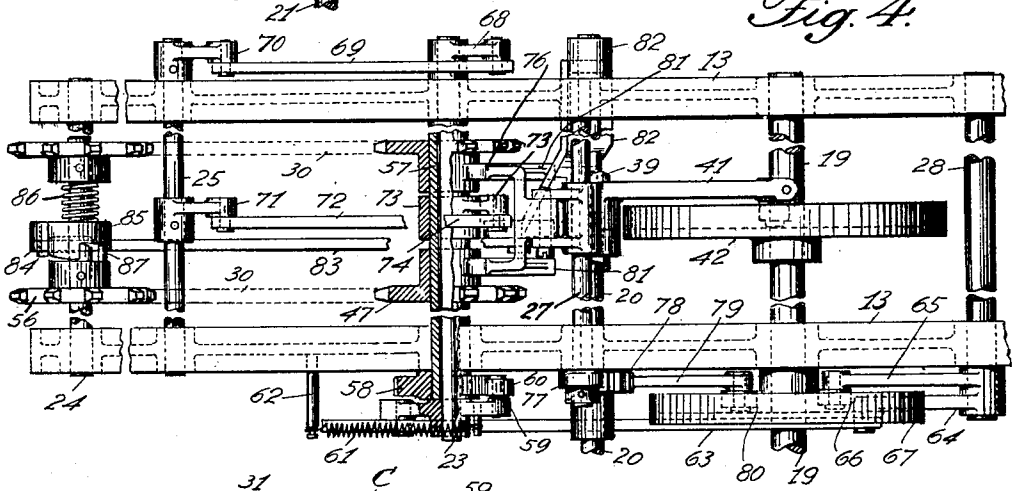


Fig. 4.



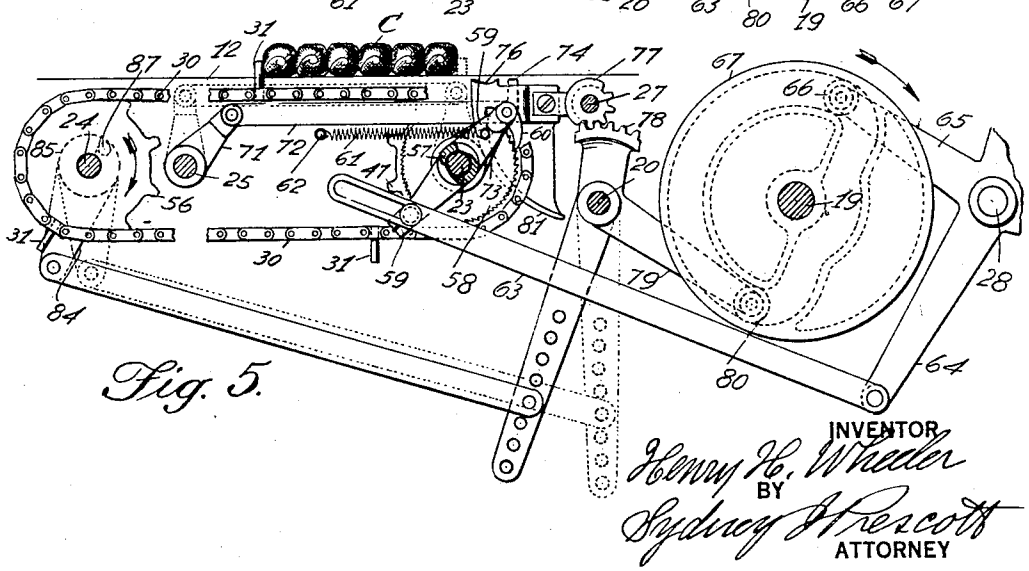


Fig. 5.

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Fig. 6.

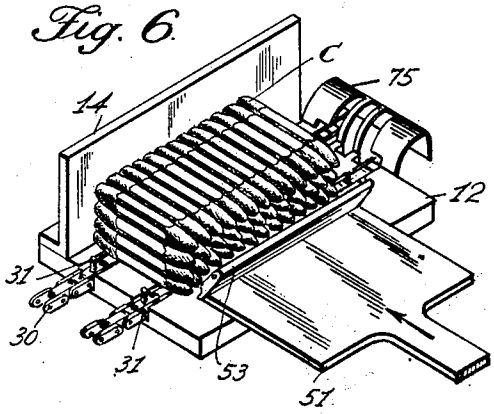


Fig. 9.

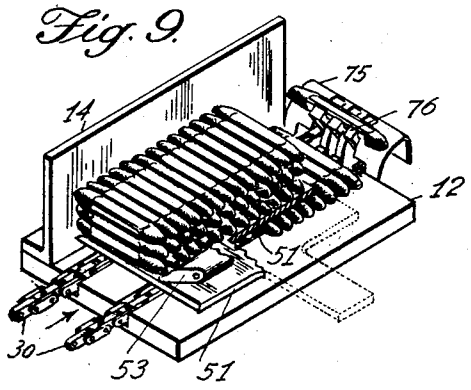


Fig. 7.

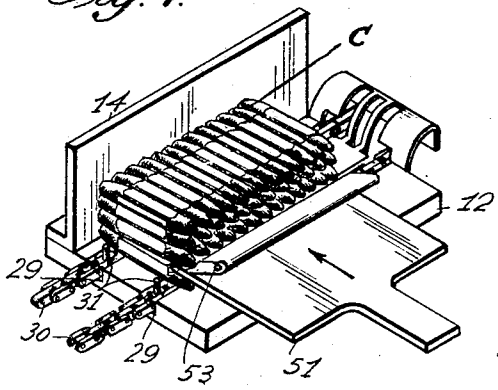


Fig. 10.

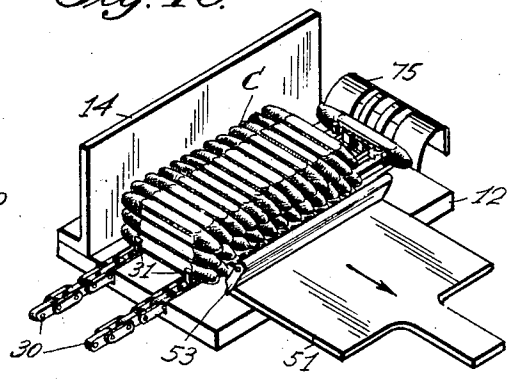


Fig. 8.

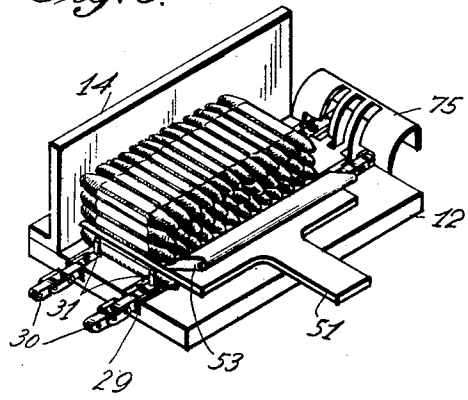
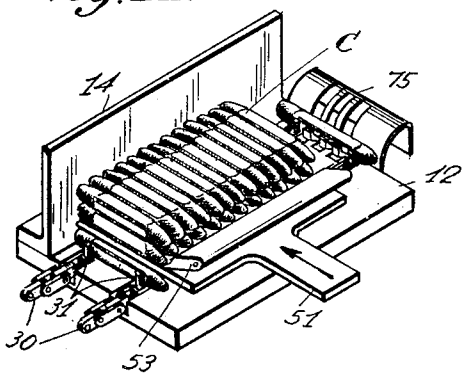


Fig. 11.



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Patented Dec. 29, 1931 1,838,167

UNITED STATES PATENT OFFICE

HENRY H. WHEELER, OF BROOKLYN, NEW YORK, ASSIGNOR TO INTERNATIONAL CIGAR MACHINERY COMPANY, A CORPORATION OF NEW JERSEY

FEED FOR CIGAR ENVELOPING MACHINES

Application filed April 9, 1928. Serial No. 268,434.

This invention relates to cigar feeds for enveloping and banding machines, such as that disclosed in my co-pending application Serial No. 203,082, filed July 2, 1927, its object being to receive cigars as taken in bulk from a packed box and feed them into the machine, layer by layer, the bottom layer first, so that as they emerge from the machine they can be replaced in the box in their original order and position.

If the cigars are not replaced in their original order, they will not fit the original box, and if forced into the box the cigars, which are relatively dry and brittle as compared to their condition when first packed, may be injured. It is, therefore an object of the invention to feed the cigars so that on emerging from the machine, they can be replaced in the original box without material forcing and consequent danger of injury to the cigars.

Segregation of the layers is achieved by means of a cam operated slidable plate, which is moved into cigar supporting position slightly above the lowermost layer of the cigar bulk on a feed table, thereby lifting all but the lowermost layer of the bulk from the table and leaving the lowermost layer with sufficient head room to be freely forwarded by a conveyor. To effect the insertion of the carrying plate into the cigar bulk without injury to the cigars, a lifter is so hinged to stationary supporting brackets that the carrying plate engages it on its inward movement and thereby causes it to swing under and raise the ends of the cigars in the row adjoining the lowermost layer. A conveyor feeds the lowermost layer into the machine and when the entire layer has been fed, the cigar supporting plate is moved out from under the cigars, thus dropping the remainder of the bulk upon the feed table, whereupon it is again brought into cigar supporting position, leaving the second layer of the original bulk free to be conveyed into the machine, and so on until the entire bulk has been taken away.

The conveyor, which consists of two endless chains running in grooves provided in the feed table and having suitable driving pins projecting therefrom, is intermittently driven by a pawl and ratchet, and is provided with mechanism for automatically adjusting the feed to varying numbers of cigars in the different layers. Means are also provided for manually adjusting the feed for difference in the lengths of the layers due to different thicknesses of cigars.

In the accompanying drawings:

Fig. 1 is a plan view of the automatic cigar feed partly broken away;

Fig. 2 is a sectional side elevation of the same;

Fig. 3 is an end elevation of the same;

Fig. 4 is a plan view, partly in section and with the feed table removed, showing the conveyor operating mechanism;

Fig. 5 is a fragmentary side view, partly in section, of the mechanism shown in Fig. 4; and

Figs. 6 to 11 are perspective views showing the successive steps in the operation of the feed.

In carrying the invention into effect, there is provided a support on which the cigars are arranged in superposed layers and means is provided for segregating the lowermost layer and forwarding this layer lengthwise, the action of the forwarding means being controlled by the cigars. In the best constructions, the segregating means is operative to raise the layers above the lowermost layer and includes a lifter swingable over the lowermost layer and under one end of each cigar in the layer above, together with means for actuating the lifter. The best constructions also include an endless conveyer provided with layer engaging devices for forwarding the segregated layer and means governed by the cigars to produce intermittent movement of the conveyor. The best constructions also include means for successively delivering cigars from the forwarded layer, consisting of an oscillating lifter.

Referring to Figs. 1, 2 and 3, the cigar feeding mechanism is mounted on a table 12 supported by the frame 13 of the enveloping or banding machine in connection with which the device is used, the table 12 having a stationary side wall 14, a stationary end wall 15, and an adjustable end wall 16, and also car-

rying brackets 17 and 18. The machine frame 13 supports a cam shaft 19, drive shafts 20, 21 and 22, conveyor shafts 23, 24 and 25, and fulcrum shafts 26, 27 and 28.

The cigars C to be fed into the enveloping or banding machine, as taken from a packed box by means of a tape or cradle laid into it for this purpose before filling it, are placed in bulk upon the feed table 12, in grooves 29 of which run conveyor chains 30 having cigar engaging pins 31 attached to a number of their links spaced more than a cigar-box length apart.

Below the table 12 is slidably supported, in the frame 13, a rack 32 which meshes with a spur gear 33 on a vertical shaft 22 supported in the bracket 34 and carrying a gear 35 meshing with a gear segment 36 on the shaft 21. The shaft 21 has a bevel gear 37 meshing with a gear 38 keyed to a sleeve 39 on the shaft 20. A clutch 40 is mounted on sleeve 39. A cam lever 41, which is loosely mounted on the sleeve 39 between the gear 38 and the clutch member 40 and is actuated by a cam 42 on the shaft 19 through a roller 43, makes one swing for every revolution of the cam 42, but turns the sleeve 39 only when a shift collar 44 pushes a pin 45 carried thereby through the clutch member 40 into a hole in the cam lever 41, which occurs only when a cam 46 attached to a sprocket 47 actuates a roller 48 carried by a clutch shifting lever 49 supported on the shaft 26, which it does for every new layer of cigars. Thus when the lowermost layer has been completely fed, the cam 46 through lever 48, operates the pin 45 to connect sleeve 39 and the cam lever 41.

Rocking of cam lever 41 will, through gear 38 secured to the sleeve, segmental gear 36, gear 35, spur gear 33 and rack 32, withdraw the plate 51, permitting the next layer to drop on to the feed table. Continued rocking of the cam lever 41 will then move the plate 51 back toward the cigar stack.

To the rack 32 is attached, by means of a block 50 at its end, a plate 51, the block 50 being of such height that the bottom of the plate 51 clears the lowermost layer of cigars when pushed into the cigar stack on the table 12 by the movement of the rack 32. The block 50 carries adjustable guide bars 52 which, in the extreme position of plate 51, bear against the ends of the cigars in the bottom layer of the stack, to line them up when necessary and guide them while being conveyed. As the plate 51 moves towards the cigar stack (Fig. 6), it engages and raises a swinging bar 53, hinged by means of the pivot screws 54 to the brackets 17 and 18, to which is also attached the guard plate 55 overhanging the rear end of plate 51. As the bar 53 is swung upwardly by the advancing plate 51 (Fig. 7), its concave edge catches under the ends of the cigars in the layer above the lowermost layer, thereby tilting the upper layers of the stack as the plate 51 advances, and lifting them from the lowermost layer a sufficient amount to allow the carrying plate 51 to enter the stack and lift the upper layers clear of the lowermost layer without injuring the cigars (Fig. 8). The plate 51 then remains in this position while the lowermost layer is fed into the machine by the conveyor (Fig. 9). When the last cigar of the lowermost layer is being transferred into the machine (Fig. 10), the plate 51 is moved out from under the stack by the rack 32, permitting the remaining stack to drop upon the table 12, whereupon the plate 51 immediately returns (Fig. 11), enters again into the stack and lifts the remaining upper layers clear of the original second layer which has now become the lowermost layer. This process is repeated until the top layer has become the lowermost layer and is being fed into the machine, when the contents of a new box is deposited upon the plate 51 which then is in carrying position above the feed table.

Referring to Figs. 2, 4 and 5, the conveyor chains 30 run over the sprockets 56 and 47, the former being mounted on the shaft 24, and the latter on a sleeve 57 on the shaft 23. To the sleeve 57 is attached a ratchet 58, and to the shaft 23 an arm 59 carrying the pawl 60 engaging the ratchet 58. The arm 59, the upper end of which is held in rearward tension by a spring 61 anchored to a post 62 attached to the frame 13, is advanced intermittently by a rod 63 having a lost motion connection to the arm, attached at the other end to a bell crank 64—65, fulcrumed on the shaft 28 and carrying a roller 66 engaging a cam 67 on the shaft 19. A crank arm 68 attached to the shaft 23 transmits its motion through a rod 69 to a similar arm 70 mounted on the shaft 25, which has an arm 71 connected by a bar 72 to an arm 73 on the sleeve 57. The bar 72, which is located midway between the two conveyor chains 30, has an upwardly projecting finger 74 which, at each back stroke of the pawl arm 59, due to the action of the spring 61, engages the foremost cigar on the conveyor and thus holds the pawl stationary in this position during the further back stroke of the rod 63, thereby controlling the next forward step of the conveyor. By this arrangement, differences in the lengths of the layers, due to different numbers of cigars, are automatically taken care of, cigars usually being packed in alternate layers of 12 and 13 cigars.

Upon being advanced to the end of table 12 by the conveyor, the leading cigar C is raised on the guide 75, adjacent to which a cigar receiving portion of the enveloping or banding passes for delivery thereto by a transfer arm 76 mounted on the shaft 27. The shaft 27 has a pinion segment 77 meshing with a gear segment 78 mounted on the shaft 20 and

forming one arm of a bell crank lever, the other arm 79 of which carries a roller 80 engaging the cam 67 on the shaft 19. The transfer arm 76 has arcuate downward projections 81 which bar the space beyond its forward edge during its upward motion and thus prevent the cigars on the conveyor from rolling into the path of the transfer arm after it has left its horizontal receiving position.

In order to enable adjustment of the cigar feed for differences in the lengths of the layers due to various thicknesses of cigars, an adjustable arm 82, mounted on the cam operated shaft 20, is connected by a rod 83 with an arm 84 attached to a ratchet 85 loosely mounted on the sprocket shaft 24 and pressed against one of the sprockets 56 by a spring 86, the hub of the sprocket 56 having a pin 87 engaging the spiral shaped face of the ratchet 85. The shaft 20 being rocked once in every revolution of the cam 67, the ratchet 85 moves the conveyor sprockets 56 forward by the required amount as set by adjusting the actuating length of the arm 82.

What is claimed is:

1. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means.

2. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said support including a stationary table provided with grooves in which layer engaging elements of said forwarding means operate.

3. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said support including a stationary table provided with supports for layer engaging elements of said segregating means.

4. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said segregating means being operative to raise layers above the lowermost layer.

5. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said segregating means including a lifter swingable over the lowermost layer and under one end of each cigar in the layer above, and means for actuating said lifter.

6. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said segregating means including a lifter swingable over the lowermost layer and under one end of each cigar in the layer above, and a reciprocating plate actuating said lifter and lifting the other end of each cigar in said layer above.

7. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said segregating means being operative only after said forwarding means has forwarded a previously segregated layer out of its range of action.

8. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said forwarding means including an endless conveyor provided with layer engaging devices, and means controlled by said governing means for producing an intermittent movement of said conveyor.

9. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer, lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said forwarding means including an endless conveyor provided with layer engaging devices, and a cam-actuated ratchet mechanism controlled by said governing means for producing an intermittent movement of said conveyor.

10. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said forwarding means including two chains each provided with layer engaging pins more than a box length apart, and means controlled by said governing means for producing an intermittent movement of said chains.

11. The combination with a support for

cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, and means controlled by the cigars for governing the action of said forwarding means, said governing means including a finger engaging the leading cigar in the segregated layer after each movement of said forwarding means to govern the length of the succeeding movement.

12. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, and means for successively delivering cigars from the forwarded layer.

13. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, and an oscillating lifter for successively delivering cigars from the forwarded layer.

14. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, and cam-controlled means for causing said forwarding means to hold said segregating means inactive until it has forwarded a previously segregated layer out of the range of action of said segregating means.

15. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, and a cam-actuated clutch mechanism and operating connections controlled by a cam on said forwarding means for operating said segregating means when said forwarding means contains no cigars within the range of action of said segregating means.

16. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, and a cam-actuated clutch mechanism and gearing actuated thereby controlled by a cam on said forwarding means for operating said segregating means when said forwarding means contains no cigar within the range of action of said segregating means.

17. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, and means whereby the action of said forwarding means may be varied in accordance with the thickness of the cigars.

18. The combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, means for forwarding the segregated layer lengthwise, means controlled by the cigars for governing the action of said forwarding means, means for successively delivering cigars from the forwarded layer, and means connected with said delivering means whereby the action of said forwarding means may be varied in accordance with the thickness of the cigars.

19. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer having a segregating plate mounted for movement lengthwise of the cigar between the ends of the cigars of the lowermost layer and next overlying layer respectively.

20. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer having a segregating element mounted for movement lengthwise of the cigars between the ends of the cigars of the lowermost layer and next overlying layer respectively, said segregating means including mechanism for advancing and withdrawing said element at intervals to segregate the lowermost layer of cigars for removal and thereafter lower another layer to take the place of the removed layer.

21. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer having a segregating element mounted for movement lengthwise of the cigar between the ends of the cigars of the lowermost layer and next overlying layer respectively, said means including mechanism for periodically imparting said movement to said element, and devices for forwarding the segregated layer.

22. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer having a segregating element mounted for movement endwise between the ends of the cigars of the lowermost layer and next overlying layer respectively, said means including mechanism for periodically imparting said movement to said element, and devices for lifting the adjacent ends of the cigars of the overlying layer in advance of the element.

23. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the

lowermost layer having a segregating element mounted for movement endwise between the ends of the cigars of the lowermost layer and next overlying layer respectively, said means including devices for periodically imparting said movement to said element, and mechanism engaged by said element and operated thereby for lifting the adjacent end of the cigars of the next lowermost layer in advance of the moving element.

24. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, having a segregating element mounted for movement lengthwise of the cigar between the ends of the cigars of the lowermost layer and next overlying layer respectively, said element being mounted for movement in a plane above the upper surface of the lowermost layer and operating to lift the superposed layers to permit free movement of said lowermost layer.

25. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layers, said segregating means including a lifter swinging over the lowermost layer and under one end of each cigar in the layer above, and means for actuating said lifter.

26. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, said segregating means including a plate movable endwise to the cigars between the lowermost and next lowermost layers and a reciprocating slide to which said plate is secured in spaced relation at the end of said plate distant from the cigars.

27. In a feed for cigars, the combination with a support for cigars arranged in superposed layers, of means for segregating the lowermost layer, said segregating means including a plate movable endwise to the cigars between the lowermost and next lowermost layers, a reciprocating slide to which said plate is secured at the end thereof distant from the cigars, and rack and pinion means for operating said slide.

In testimony whereof, I have signed my name to this specification.

HENRY H. WHEELER.