Oct. 9, 1934. F. GROVER 1,975,938

AUTOMATIC FEED FOR CIGAR WRAPPING MACHINES

Filed May 12, 1930 3 Sheets-Sheet 1

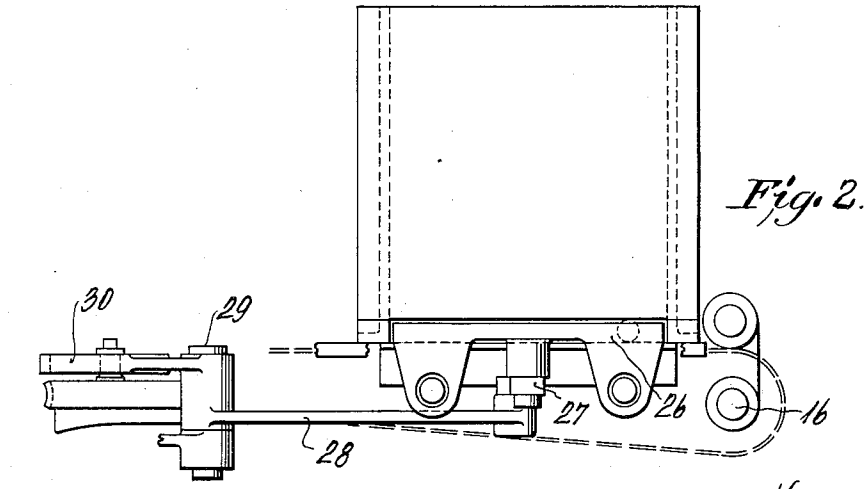


Fig. 2.

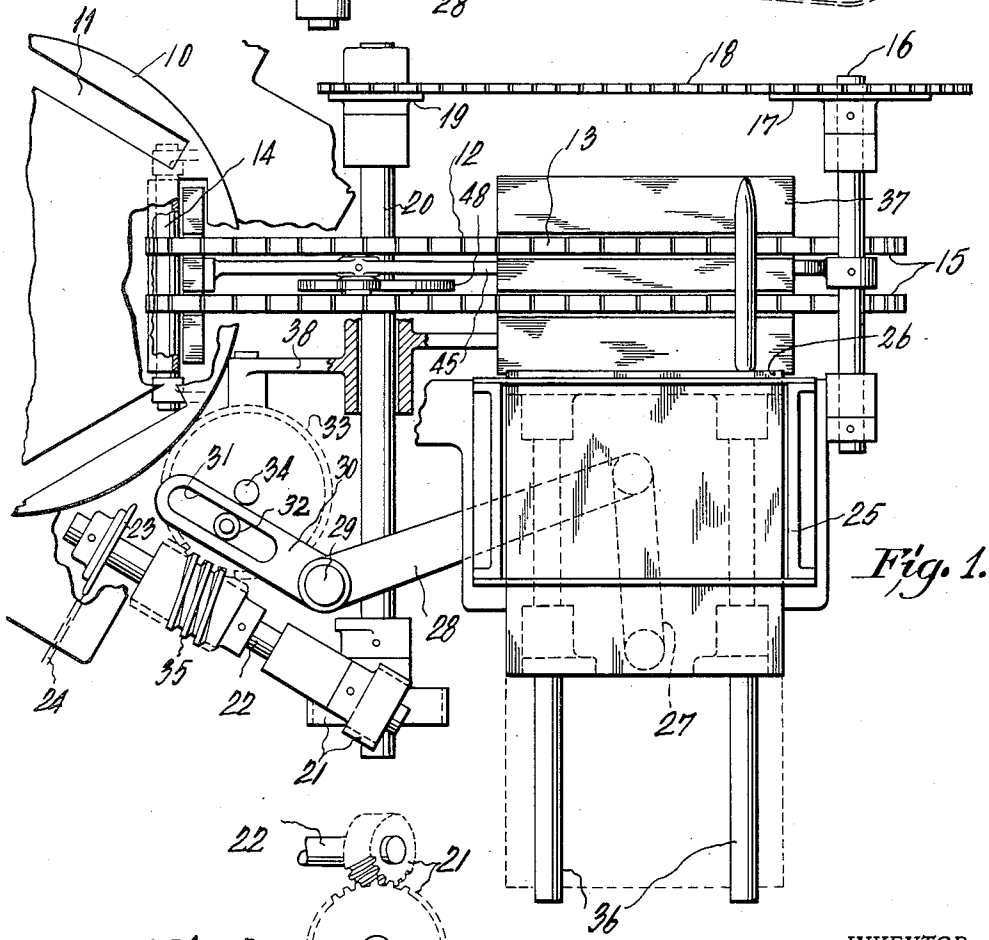


Fig. 1.

Fig. 3.

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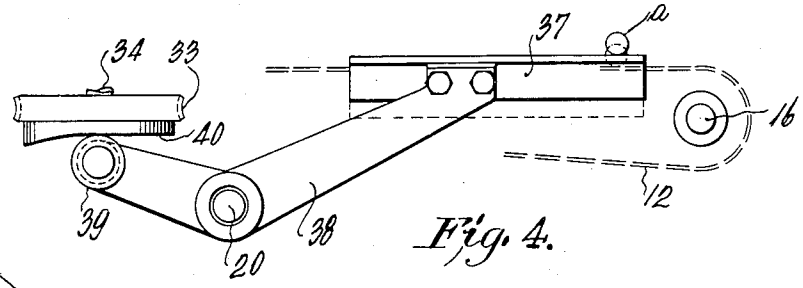


Fig. 4.

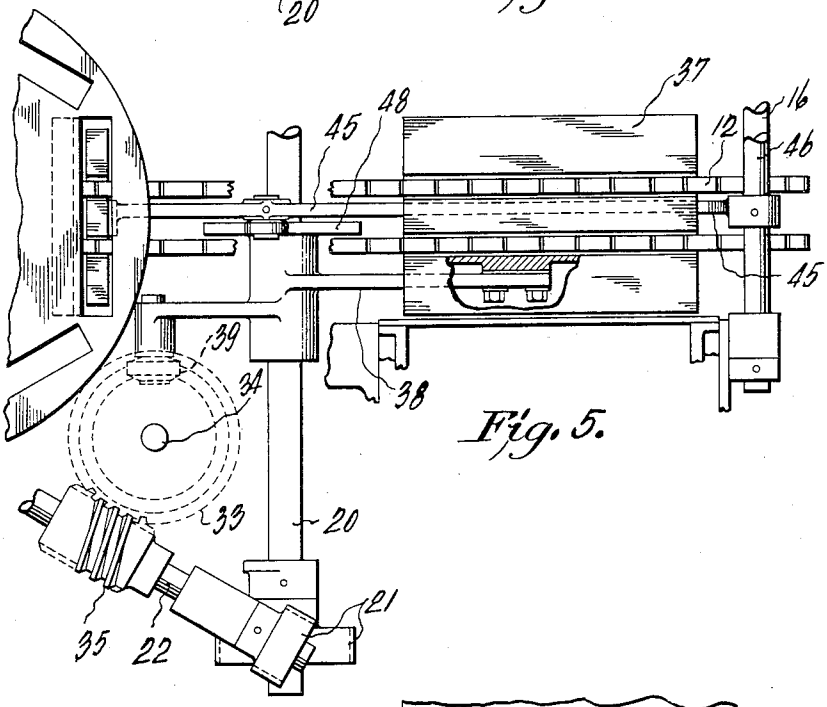


Fig. 5.

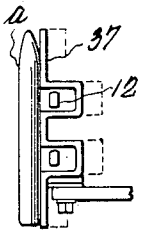


Fig. 6.

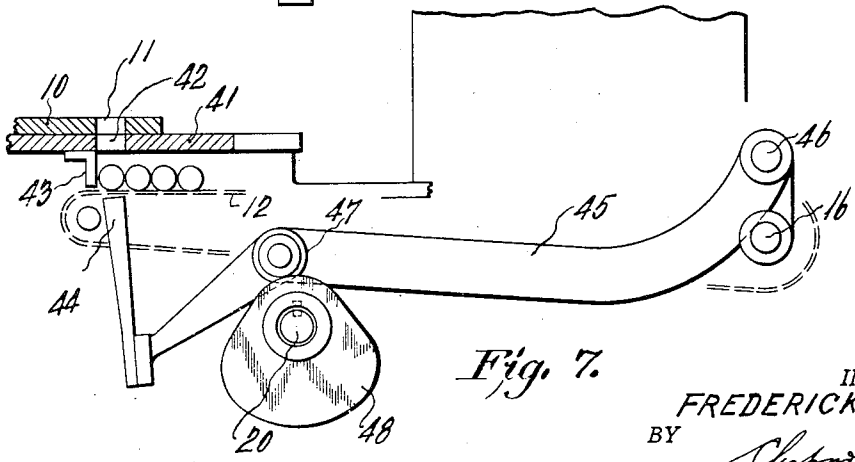


Fig. 7.

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AUTOMATIC FEED FOR CIGAR WRAPPING MACHINES

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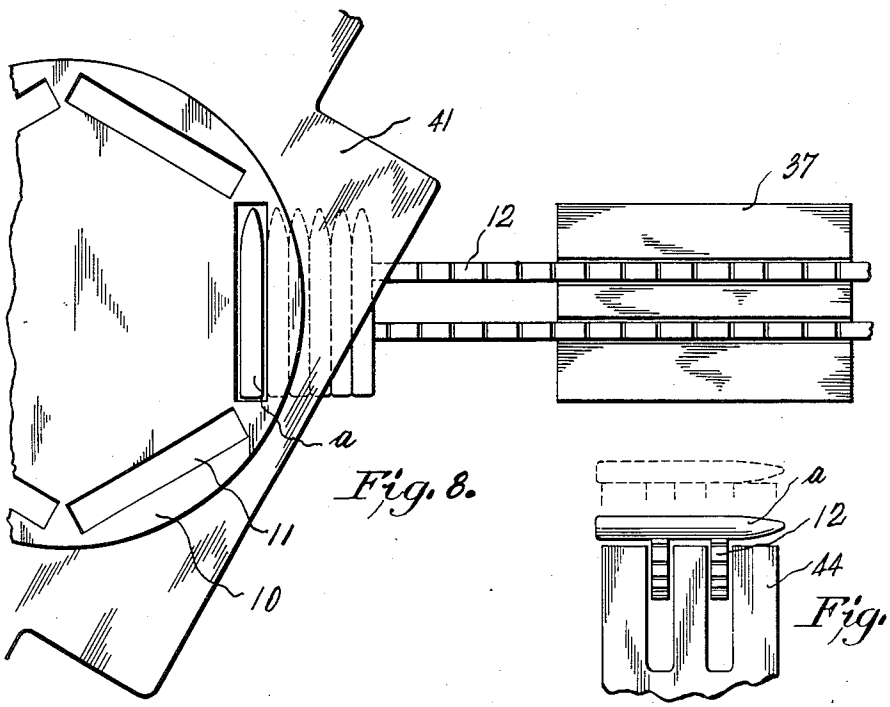


Fig. 8.

Fig. 9.

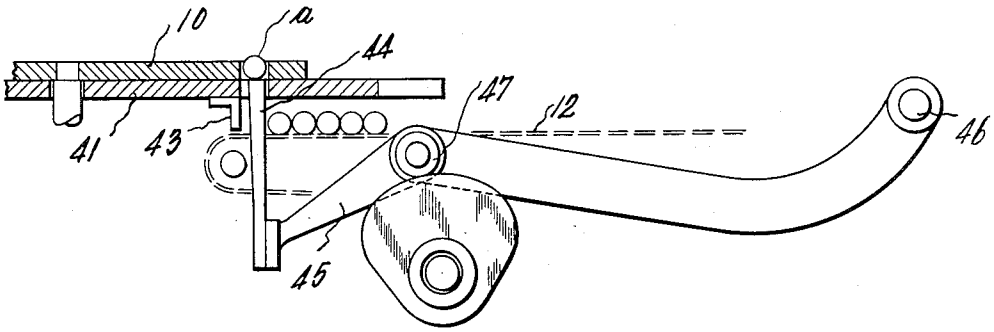


Fig. 10.

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Patented Oct. 9, 1934 1,975,938

UNITED STATES PATENT OFFICE

1,975,938

AUTOMATIC FEED FOR CIGAR WRAPPING MACHINES

Frederick Grover, Leeds, England, assignor to Forgrove Machinery Company, Leeds, England

Application May 12, 1930, Serial No. 451,688

5 Claims. (Cl. 198—24)

This invention relates to mechanism for feeding a succession of separate articles such as cigars to a treating machine such as a cigar wrapping or banding machine. Articles of this character are generally supplied in layers from the pressing machine and are initially stacked, according to my invention, in layers in a magazine.

It is the object of the invention to provide a mechanism for removing the articles one layer at a time from the magazine and supplying them singly and successively to the article treating mechanism.

The invention will now be described in connection with the accompanying drawings, in which—

Fig. 1 is a plan view of the improved article feeding mechanism showing its connection with a conventionally illustrated article treating machine;

Fig. 2 is a side elevation of a portion of the mechanism shown in Fig. 1;

Fig. 3 is a side elevation of some gearing shown in Fig. 1;

Fig. 4 is a detail of certain layer handling mechanism;

Fig. 5 is a plan view of the mechanism shown in Fig. 4, illustrating its connection with the remaining mechanism;

Fig. 6 is a right-hand elevation of some of the mechanism shown in Fig. 5;

Fig. 7 is a detail of the mechanism for delivering the articles singly;

Fig. 8 is a top plan view thereof;

Fig. 9 is a detail illustrating the structure of the article delivering plunger; and

Fig. 10 is a view similar to Fig. 7 but illustrating the parts in a different position of operation.

The machine is shown as designed for the delivery of single cigars to an article treating machine of which only its feeding disk 10, having article receiving pockets 11, has been shown in this case. It is of course immaterial what form of treating mechanism is employed, but the fraction of the mechanism shown is sufficient to illustrate the problem to which the present invention is directed; that is, to place cigars singly and successively within the pockets 11, which are then moved in the customary manner to carry the cigars into a wrapping or other article treating mechanism.

The articles *a* are conveyed to a point under the disk 10 by a pair of parallel chains 12 (Fig. 1) which are formed of flat-backed links 13 so that they present a substantially continuous cigar receiving surface upon their upper sides. The chains pass around sprockets 14 adjacent the disk 10 and sprockets 15 spaced therefrom. The chains receive a continuous slow forward motion through the latter sprockets, these being mounted upon a shaft 16. This shaft also carries a sprocket 17 which is connected by a chain 18 with a sprocket 19 on a parallel shaft 20. The shaft 20 is joined by spiral gears 21 with a shaft 22 which, in the case shown, is angularly arranged and bears a sprocket 23 joined by a chain 24 with a portion of the driving mechanism of the article treating machine so that it operates in timed relation therewith.

Positioned at one side of the chains 12 is a magazine 25. At its bottom the magazine has an opening from side to side through which a plunger 26 reciprocates in a horizontal direction. This plunger is joined by a link 27 with an arm 28 pivoted to a vertical stub shaft 29. An arm 30 extends at the other side of this shaft and is slotted at 31 to receive a pin 32 mounted upon the top of a worm gear 33, continuously rotatable upon a shaft 34. Rotation of this worm gear is derived from a worm 35 upon the shaft 22 previously mentioned so that it rotates at a lower speed than the shaft 22 but in definite ratio therewith. The plunger 26 is mounted upon slides 36 which support it during its reciprocation.

The cigars *a* are delivered from the magazine by the plunger 26 at an elevation slightly above the top surface of the chains 12 and are received in this position by a vertically movable table or plate 37 preferably bent or otherwise formed, as shown in Fig. 6, to clear the chains. When the plate is in its uppermost position it is substantially in line with the layer of cigars pushed out of the magazine by the plunger. When it is lowered (dotted lines in Fig. 4), it drops these cigars upon the surface of the conveyer chains so that while the cigars are forced out of the magazine in parallel formation, they are carried away by the chains 12 in single file in a direction at right angles to that in which they emerged from the magazine.

Vertical reciprocation of the plate 37 is secured by the following mechanism. As best shown in Fig. 4, the plate is fastened to a lever 38 freely pivoted upon the shaft 20 and bearing upon its other end a cam roll 39. This roll coacts with a crown cam 40 secured to the lower side of the worm gear 33 previously mentioned. Due to the reduction in rotative speed of the worm gear 33 as compared with the shaft 20, the plunger 26 and the plate 37 are given their reciprocations at a speed which is slow in com-

parison with the mechanism for handling single cigars which will now be described.

Underneath the disk 10 at the point to which the cigars are delivered by the chains 12 is a plate 41 (Fig. 7) having an aperture 42 with which the pockets 11 register successively when the disk 10 is at rest. Secured to the bottom of this plate is a stop 43 against which the leading one of the file of cigars is brought to rest. The feed of the cigars given by the chains 12 is slightly greater than that required to bring the cigars into place against the stop 43 so that contact of the leading cigar with this plate is always assured. Reciprocating from a point below the stop 43 to a position in which it has just passed through the aperture 42 is a plunger 44 suitably slotted as shown in Fig. 9 to clear the chains 12. This plunger is secured to the end of an arm 45 pivoted at 46 to the machine and bearing a roll 47 coacting with a cam 48 on the shaft 20. The shaft 20, it will be remembered, runs at a speed much faster than the worm wheel 33 and the cam 48 is thus given a plurality of complete rotations for each reciprocation of the plunger 26 or the plate 37. In the usual case, there will be about fifteen cigars in a layer and thus the plunger 44 will be given fifteen vertical reciprocations for each horizontal reciprocation of the plunger 26. Any other ratio can be secured readily by a simple interchange of gearing. The plunger 44 is preferably formed, as shown in Fig. 9, to pass the chains 12 so that it may pick up the leading cigar and carry it, as shown in Fig. 10, into the pocket in the disk 10. The plunger remains in its elevated position supporting the cigar *a* while the disk 10 starts its rotation. As soon as the cigar has passed into the body of the plate 41, the plunger 44 drops as the necessity of its supporting the cigar has by this time passed.

What I claim is:—

1. A feeding device for cigars or similar articles which comprises a magazine, means for feeding successive layers of cigars from the magazine, a vertically movable plate receiving each layer as it is fed from the magazine, a conveyer continuously movable under said plate when the plate is elevated and adapted to remove cigars therefrom when the plate is lowered, and means for feeding the cigars one at a time from the end of the conveyer.

2. A feeding device for cigars or similar articles which comprises a magazine, means for feeding successive layers of cigars from the magazine, a continuously movable conveyer positioned adjacent the magazine but on a lower level than that on which the layers of cigars are fed from the magazine, and a vertically movable plate positioned to receive the cigars from the magazine when in its elevated position and to deposit the cigars on the conveyer when in its lowered position.

3. A feeding device for cigars or similar articles which comprises a magazine, means for feeding successive layers of cigars from the magazine, a continuously movable conveyer positioned adjacent the magazine but on a lower level than that on which the layers of cigars are fed from the magazine, a vertically movable plate positioned to receive the cigars from the magazine when in its elevated position and to deposit the cigars on the conveyer when in its lowered position, and means for delivering the cigars singly and successively from the conveyer.

4. A feeding device for cigars or similar articles which comprises a magazine, a plunger reciprocable horizontally for feeding successive layers of cigars from the magazine, a continuously movable conveyer positioned adjacent the magazine but on a lower level than that on which the layers of cigars are fed from the magazine, a vertically movable plate positioned to receive the cigars from the magazine when in its elevated position and to deposit the cigars on the conveyer when in its lowered position, a vertically reciprocating plunger for delivering the cigars singly and successively from the conveyer, and timing mechanism coordinating the two plungers so that the horizontal plunger reciprocates once while the vertical plunger reciprocates a number of times corresponding to the number of cigars in a layer.

5. A feeding device for cigars or similar articles which comprises a continuously moving conveyer, a plate mounted adjacent the conveyer for movement from a position below the conveyer to a position above it, means for placing a group of articles upon the plate when the latter is in its upper position, and means for moving the plate vertically to deposit the articles upon the conveyer.

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