Dec. 24, 1929. S. CLAUSEN ET AL 1,740,575

BUNCH TRANSFER FOR CIGAR MACHINES

Filed Oct. 5, 1928

Fig. 1.

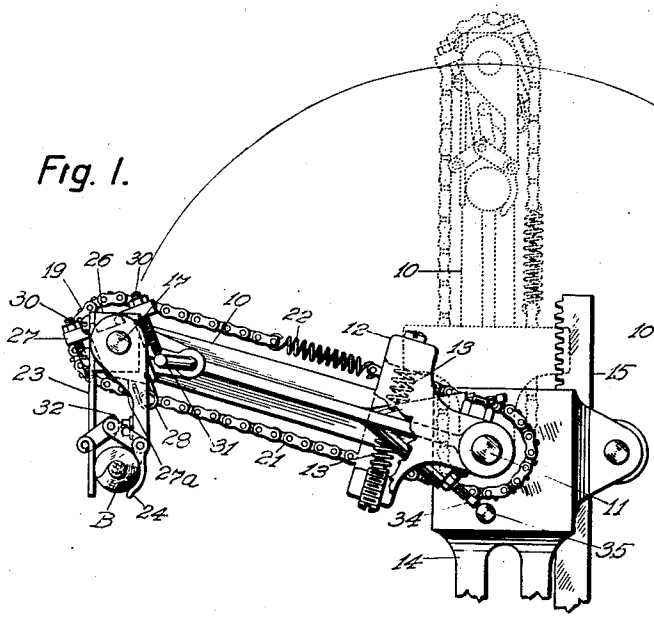


Fig. 1a.

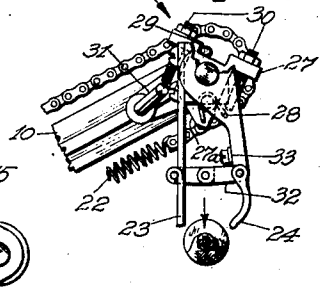


Fig. 3.

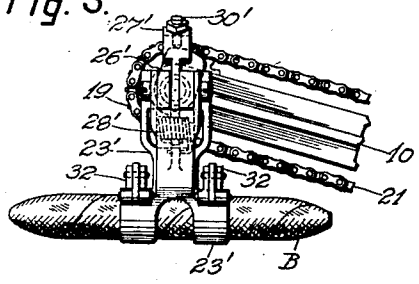


Fig. 2.

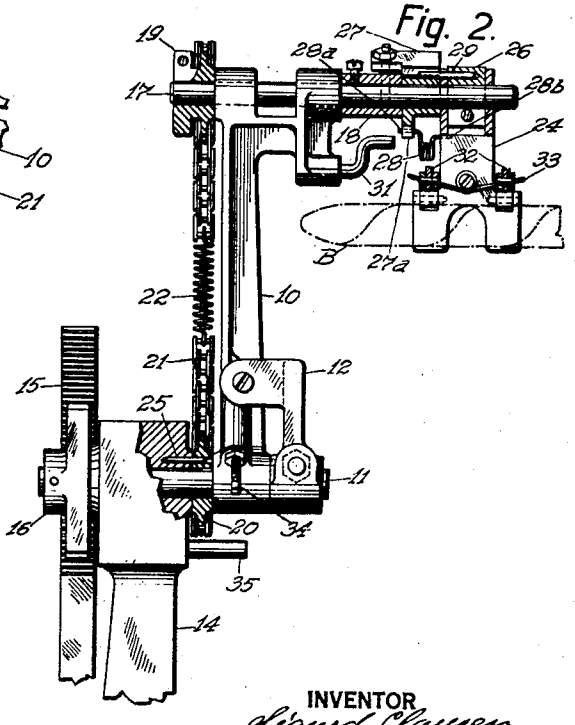
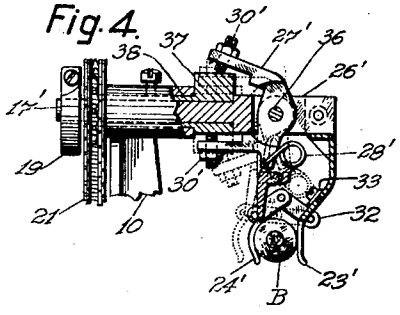


Fig. 4.



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Patented Dec. 24, 1929 1,740,575

UNITED STATES PATENT OFFICE

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BUNCH TRANSFER FOR CIGAR MACHINES

Application filed October 5, 1928. Serial No. 310,547.

This invention relates to improvements in bunch transfers for use in cigar machines, and is particularly designed to improve the action of the bunch grippers.

In former bunch transfers, the action of the grippers has not been as quick and positive as desired. Generally, a substantial movement of the transfer arm has been required to cause movement of the grippers from open to closed position, and vice versa, so that action of the grippers was slow, and the grippers tended to grip oversize bunches too early and undersize bunches too late in the movement of the transfer arm toward and away from the bunch.

It is, therefore, an object of the invention to produce a bunch transfer in which the grippers act quickly and positively at a desired point in the travel of the transfer arm.

Another important object of the invention is to produce a bunch transfer in which actuation of the grippers to seize a bunch will occur only when the grippers are in proper relation to the bunch for gripping it, even though the positions of successive bunches differ somewhat. The present device is designed to aid in properly aligning the bunch with respect to the grippers. Accordingly, the present transfer is particularly adapted for use in connection with mechanisms which move the cigar into the gripper fingers or in which successive bunches are likely to be held in somewhat different positions for seizure by the transfer device.

Another object is to produce gripper operating mechanism which is simple in construction, having relatively few moving parts and consequently freedom from lost motion and loss of adjustment due to wear of its parts. In furtherance of this object, the same few parts which cause the quick actuation of the grippers to open or closed relation are also designed to maintain said grippers in that relation during transfer, until the gripper is again actuated.

With these and other objects in view, the invention consists in certain constructions and combinations which will be fully described hereinafter and then set forth in the hereunto appended claims.

In the accompanying drawings which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a side elevation of the improved cigar bunch transfer, the full lines showing the device when the transfer arm is in position to pick up a cigar bunch, and the dotted lines showing the same at the middle position of the transfer arm;

Fig. 1[a] is a detail side elevation, showing the position of certain of the parts shown in Fig. 1 when the device is delivering a cigar bunch;

Fig. 2 is a front elevation, partly in cross section, of the transfer, shown at the middle position;

Fig. 3 is a side elevation, partly in cross section, of a modified form arranged to produce lengthwise travel of the cigar bunch; and

Fig. 4 is a front elevation of the gripper mechanism shown in Fig. 3.

In carrying the invention into effect, there are provided in combination with an oscillating transfer arm, bunch grippers on said arm, one of said bunch grippers being movable to open or closed position to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to the gripper at the end of each oscillating movement of the arm, together with means engaging said trip member and the gripper and cooperating therewith to maintain the gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction. In the best constructions, the means cooperating with the trip member and the gripper is resilient and preferably comprises a spring connecting the trip means and the gripper. In carrying the invention into effect, there are also provided in combination with the transfer arm and oppositely disposed bunch grippers on the same, means for swinging said arm to move said grippers into position to act on a bunch, mechanism for actuating said

grippers to cause same to seize the bunch, and means operated by contact with the cigar bunch to permit actuation of the grippers only when said grippers are in proper relation to the bunch for seizing same. In the best constructions, said contact operated means include a toggle connecting oppositely disposed grippers.

The means above referred to may be widely varied in construction within the scope of the claims, for the particular machine selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention, therefore, should not be restricted to the precise details of the structure shown and described.

Referring to the drawings, as shown in Figs. 1 and 2, the transfer arm 10, which is loosely mounted on shaft 11, is held in place by a yoke 12 having springs 13 engaging either side of the transfer arm. This yoke 12 is clamped on shaft 11, supported on pedestal 14 and oscillated by the rack 15 driven from the cigar machine and meshing with the gear sector 16 mounted on shaft 11.

A shaft 17 is journalled in the free end of the transfer arm, being held therein by a collar 18 and by the sprocket 19. This sprocket is connected with a stationary sprocket 20 of the same diameter by a chain 21 provided with a chain tightener spring 22. The stationary sprocket 20 is loosely mounted on the shaft 11 and is held stationary with respect to the pedestal 14 by the pin 25, so that as the transfer arm oscillates, sprocket 19 is turned by the exact amount required to keep the grippers 23 and 24 in pendant vertical position throughout the movement of the arm.

In order that grippers 23 and 24 may operate to seize and release a bunch at the proper moment, gripper 24 is made relatively movable about shaft 17 and gripper 23 is relatively stationary, being fixed to said shaft by a clamp 26. A trip block 27 is mounted for limited movement on the shaft 17 and is moved thereon relative to the gripper 23 at the end of each oscillating movement, or stroke, of the transfer arm by a pin 31 fixed to the arm, which engages one or the other of two adjustable screws 30 mounted on projections of the trip block on either side of the shaft 17. It will be seen from Figs. 1, 1^a and 2, that the projection 27^a of the trip block travels past the gripper 24 in a plane approximately parallel to the plane of movement of said gripper.

Quick and positive actuation of the gripper 24, in response to movement of the trip block, is obtained by means of a connecting spring 28. This spring so connects the relatively moving trip block and the gripper that the gripper is first urged away from the block in one direction and then as the block passes the gripper, the gripper is thrown in the opposite direction, thus positively and almost instantaneously opening or closing the gripper. The spring 28 is of the torsion spring type and is provided with laterally extending ends 28^a and 28^b, which are pivotally mounted in perforations in the downwardly projecting portion 27^a and in the gripper 24. The spring is under compression and constantly urges the downwardly projecting portion of the trip block and the gripper apart. One end (28^a) of the spring is mounted nearer the axis of shaft 17 than the other end, so that the spring will tend to rotate about the end 28^b as an axis.

As will be seen from Figs. 1 and 1^a, during the bunch carrying stroke of the transfer arm, the projection 27^a of the trip block approaches and then passes the gripper 24, and in doing so the end 28^a of the spring is made to approach and then pass the end 28^b. During this approach of one end of the spring towards the other, the gripper 24 will be maintained in a closed position by the tension of the spring and will thus securely hold the bunch. As the ends of the spring pass, the spring will be quickly rotated and reversed in position, so that the gripper 24 is almost instantly urged towards open position and accordingly will immediately release the bunch. On the return movement of the transfer arm, the spring will again be reversed in exactly the same way to close the grippers.

Movement of the trip block on shaft 17 is halted when the block has reached the proper position to maintain the gripper in open or closed position, as the case may be, by means of a pin 29 fixed with respect to the shaft and entering between the spaced shoulders of a cutout portion of the block.

To prevent closing of the grippers before a bunch is in proper position to be gripped and to render it possible to close the grippers when they are in proper relation to the bunch, even when the positions of successive bunches vary somewhat, the closing of the grippers is controlled by means which contact the cigar bunch. For this purpose, the toggle joints 32 are located between the grippers and are arranged to be broken by contact with the bunch. The toggle joints are held straight, so as to prevent closing by a spring 33 attached to gripper 24. The trip block 27 is ordinarily so adjusted that the direction in which the spring 28 urges the gripper is reversed to open the gripper before the cigar bunch comes into engagement with the toggle joints. The spring 33 will then act on the toggle joints to hold the grippers open until the toggle joints have been broken by contact with the cigar bunch, as shown in Fig. 1. To accurately adjust the end positions of the transfer arm, adjustable stop screws 34 are provided in said arm which engage a stop pin 35 attached to the pedestal 14.

Referring to Figs. 3 and 4 showing the modified form of the device for supporting

the bunch lengthwise of the direction of transfer, the head block 26′ is made integral with the gripper supporting shaft 17. This head block is provided with a slot into which a trip arm 27′, corresponding to trip block 27, is inserted, and this arm is pivoted on a cross pin 36 held by said head block. The gripper 24′ is pivoted on the cross pin 36 and the relatively stationary gripper 23′ is fixed to the head block. In the modified form, the trip arm 27′ is actuated through adjustable screws 30′ on spaced arms of the trip arm, between which rotates the cam 37 secured to a sleeve shaft 38 fastened in the swinging arm 10. The shaft 17′ passes through the sleeve shaft and is held in place by the sprocket 19. The coaction of the spring 28′ with the trip arm 27′ and the gripper 24′ is the same as that already described in connection with the corresponding parts 28, 27 and 24 of the device shown in Figs. 1, 1ª and 2, and further description of the operation of this form is, therefore, omitted for the sake of brevity.

The toggle joint arrangement above described, is particularly well adapted to close the grippers on a bunch which is upwardly ejected from one of the mechanisms of the cigar machines. In this case, the ascending bunch closes the grippers after entering fully within the same, spring 28 having already acted to urge the grippers to closed position. When, on the other hand, the bunch remains stationary at the mechanism from which it is to be transferred, the descending toggle joints may be arranged to close the grippers immediately before or at the instant at which the action of the spring 28 is reversed. In this case, the toggle joints serve as a safeguard to insure that the grippers fully embrace the bunch before gripping same, despite variations in the position, size and shape of the bunch. The toggle joints, since they are spaced as far apart as the width of the gripper 24 will allow and, therefore, contact the bunch at spaced points along its length, serve the additional purpose of properly aligning the bunch with respect to the grippers.

What is claimed is:

1. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize a bunch respectively, a trip member movably mounted on said arm, mechanism for moving said trip member on said arm relative to said gripper at the end of each oscillating movement of the arm, and means cooperating with said trip member and said gripper to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction.

2. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm, and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction.

3. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm, and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, said bunch grippers including a relatively stationary bunch gripper opposed to said movable bunch gripper.

4. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, said mechanism operating to move a portion of said trip member past said gripper and said means including a spring interposed between said gripper and said portion of the trip member.

5. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to

said gripper at the end of each oscillating movement of the arm, and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, said means comprising a spring connecting said trip means and said gripper.

6. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm, and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, said means comprising a spring under compression pivoted at one end to said trip means and at the other end to said gripper.

7. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm, and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, said means comprising a spring connected at one end with said trip member and at the other end with said gripper, and said mechanism operating the trip member to cause one end of said spring to approach and pass the other end, whereby the direction in which said gripper is urged by said spring is instantly reversed.

8. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm, and resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, said means comprising a spring connected at its opposite ends to said trip member and said gripper respectively, said trip means and said gripper coacting with said spring to overturn and substantially reverse the same during said relative movement.

9. In a cigar bunch transfer, the combination with an oscillating transfer arm, of bunch grippers on said arm, one of said bunch grippers being movable to open or closed positions to release or seize the bunch respectively, a trip member on said arm, mechanism for moving said trip member relative to said gripper at the end of each oscillating movement of the arm, resilient means engaging said trip member and said gripper and cooperating therewith to maintain said gripper in one of said positions until said trip means has reached a predetermined position in its movement relative to said gripper and then to throw said gripper to the other position while said trip member continues to move in the same direction, and means actuated by contact with a cigar bunch to permit closing movement of said gripper only when the same is in proper position to grip the bunch.

10. In a cigar bunch transfer, the combination with a transfer arm, of oppositely disposed bunch grippers on said arm, means for swinging said arm to move said grippers into position to act on a bunch, mechanism for actuating said grippers to cause the same to seize the bunch, and control means operated by contact with the cigar bunch to permit actuation of the grippers only when said grippers are in proper relation to the bunch for seizing the same.

11. In a cigar bunch transfer, the combination with a transfer arm, of oppositely disposed bunch grippers on said arm, means for swinging said arm to move said grippers into position to act on a bunch, mechanism for actuating said grippers to cause the same to seize the bunch, and control means operated by contact with the cigar bunch to permit actuation of the grippers only when said grippers are in proper relation to the bunch for seizing the same, said control means including a toggle connecting oppositely disposed grippers.

12. In a cigar bunch transfer, the combination with a transfer arm, of oppositely disposed bunch grippers on said arm, means for swinging said arm to move said grippers into position to act on a bunch, mechanism for actuating said grippers to cause the same to

seize the bunch, and control means operated by contact with the cigar bunch to permit actuation of the grippers only when said grippers are in proper relation to the bunch for seizing the same, said control means including a toggle joint arranged to be broken by contact with said bunch.

13. In a cigar bunch transfer, the combination with a transfer arm, of oppositely disposed bunch grippers on said arm, means for swinging said arm to move said grippers into position to act on a bunch, mechanism for actuating said grippers to cause the same to seize the bunch, and control means operated by contact with the cigar bunch to permit actuation of the grippers only when said grippers are in proper relation to the bunch for seizing the same, said control means including a pair of toggles between oppositely disposed grippers arranged to contact the bunch at spaced points to align the bunch with respect to the grippers.

In testimony whereof, we have signed our names to this specification.

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VICTOR GEORGE HANSON.