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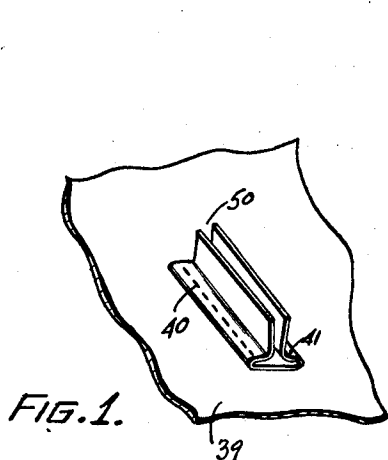
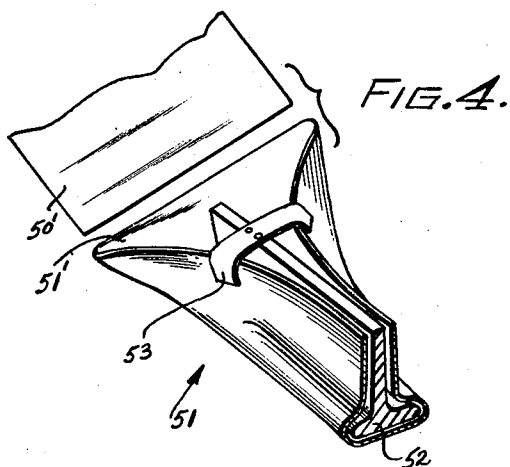
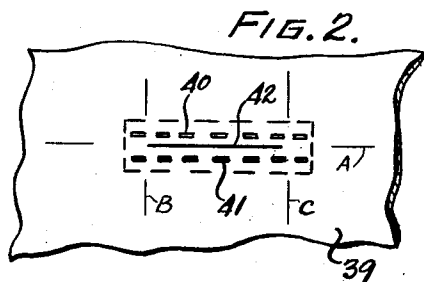
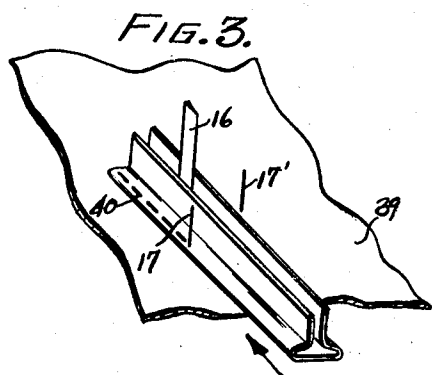
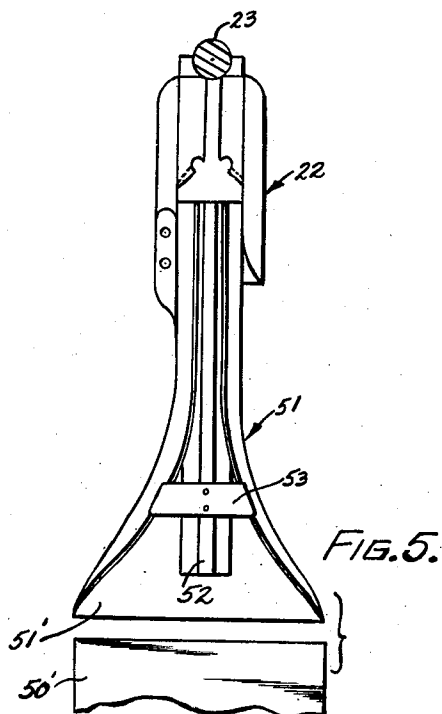
F. PANTUSCO ET AL.

2,620,759

MACHINE USED IN THE MAKING OF PIPED BUTTONHOLES

Filed Oct. 16, 1950

3 Sheets-Sheet 1



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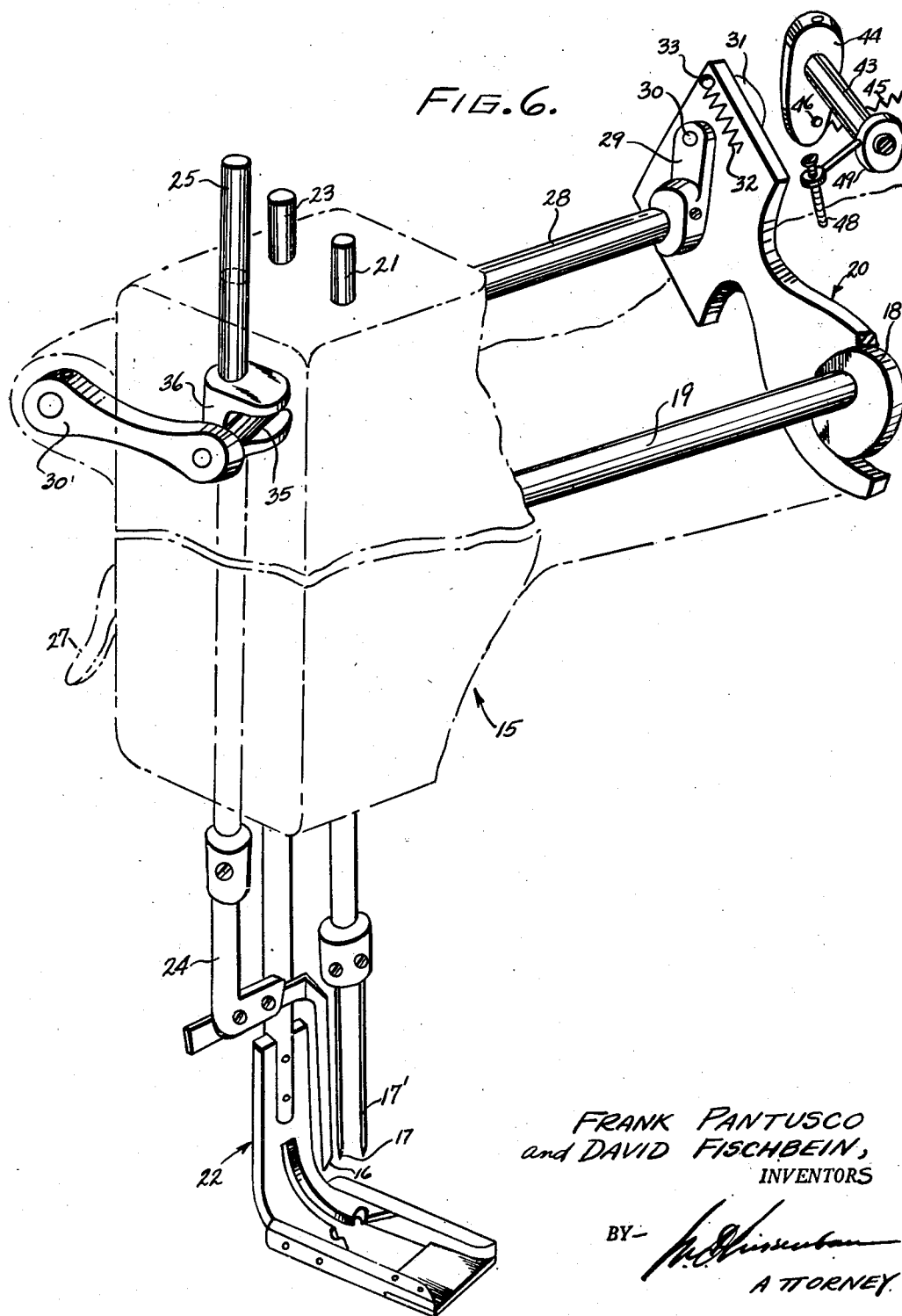
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MACHINE USED IN THE MAKING OF PIPED BUTTONHOLES

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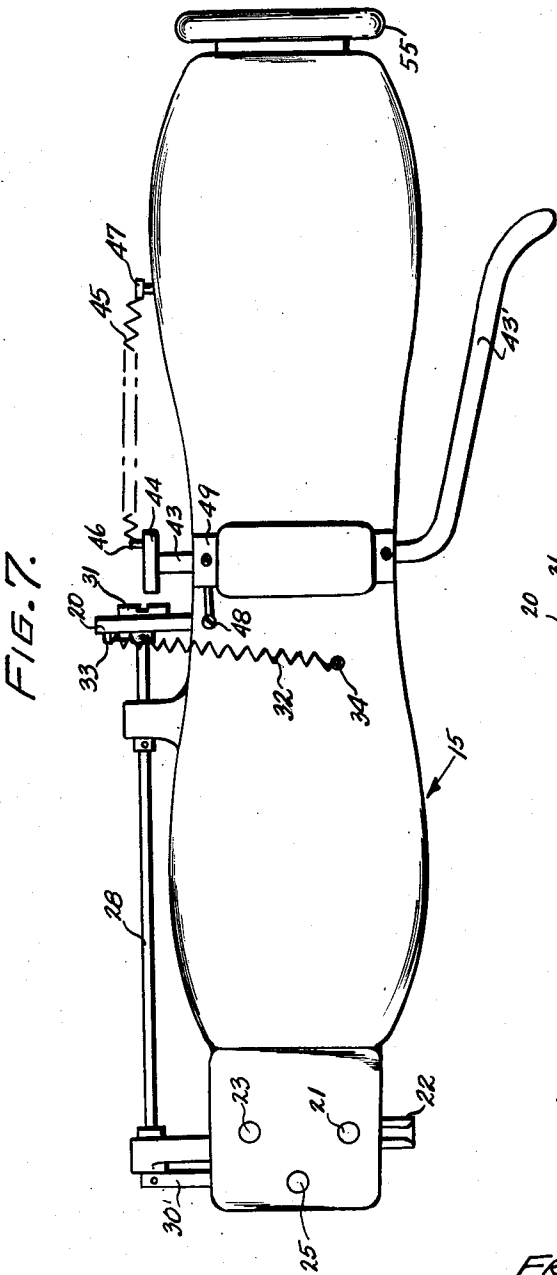
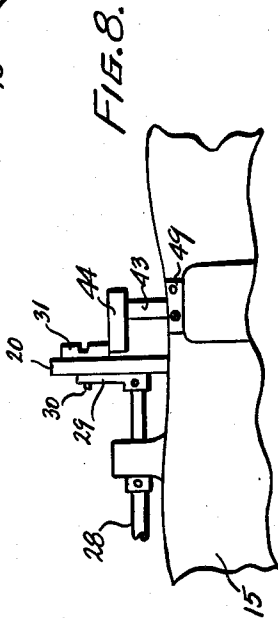
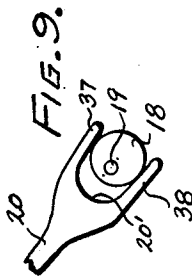
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MACHINE USED IN THE MAKING OF PIPED BUTTONHOLES

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UNITED STATES PATENT OFFICE

2,620,759

MACHINE USED IN THE MAKING OF PIPED
BUTTONHOLESFrank Pantusco, Brooklyn, and David Fischbein,
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Application October 16, 1950, Serial No. 190,257

2 Claims. (Cl. 112—68)

1

The present invention relates to machines for use in the sewing of piped button holes in the tailoring and dressmaking arts.

The principal object of this invention is to provide novel and improved machines which sew on the tapes and cut the required slits preparatory to finishing piped button holes in fabric manufactures.

Another object hereof is to provide a novel and improved machine to do the work mentioned and adaptable for making button holes of any desired lengths without adjustment or replacement of any machine part.

A further object hereof is to provide a machine of the character described, of novel and improved construction, whose slitting blade is operated and controlled in a novel manner.

Still another object of this invention is to provide a novel and improved machine of the type and for the purpose set forth, which is simple in construction, easy to use and efficient in carrying out the function for which it is designed.

Other objects and advantages will become apparent as this disclosure proceeds.

In the accompanying drawings forming part of this specification, similar characters of reference indicate corresponding parts in all the views.

Fig. 1 is a pictorial showing of the work this machine accomplishes. As mere example, a single tape specially formed, is here used, as is already known in the art of making piped button holes.

Fig. 2 is a bottom view of Fig. 1, and specifically shows the slit made by this machine in the fabric or garment worked on, and the two lines of stitching securing the mentioned tape. At the same time the cutting blade included in this machine makes said slit, it likewise slits the tape. It is to be noted that the tape extends and is sewed on a bit beyond each end of the slit.

Fig. 3 is a pictorial representation showing the tape as it leaves a forming device to bend it into the required shape. This view shows the tape as it is being sewed onto the fabric or garment by parallel seams accomplished by a pair of needles and also shows the position of the slitting blade in relation to said needles as such components appear on the machine.

Fig. 4 is a pictorial showing of the forming device which may be used for forming the tape in its required bent state. This forming device is preferably carried by the presser foot of the machine. Said device is here shown as viewed from the rear of the presser foot.

Fig. 5 is a top view of said tape former means

2

carried on the presser foot, which is also here shown.

Fig. 6 is a fragmentary "fantom" perspective view showing a double-needle sewing machine embodying the teachings of this invention.

Fig. 7 is a top view of the machine, showing only those components which are used to explain this invention. The machine is here shown in condition when the blade operates to accomplish slitting on the work.

Fig. 8 is a fragment of Fig. 7. The machine is here shown when the blade does not slitting.

Fig. 9 shows a side view of a cam and its follower in their relative position when the machine condition is as illustrated in Fig. 8. Said components are part of the blade operating means included in the embodiment herein chosen to set forth this invention.

In the drawings, the numeral 15 designates generally a double-needle sewing machine provided with a comparatively narrow slitting blade 16 which is positioned in a vertical plane midway between, behind and perpendicular to the plane of the needles 17 and 17', and also provided with means to control the slitting action of such blade; such means including an eccentric cam 18 on the main drive shaft 19 of the machine and a follower denoted generally as 20, for said cam. The free end of said blade 16 being downwardly, it is apparent that it can pierce the work in the same fashion as the needles do.

The needles 17 and 17' are mounted extending downwardly from the needle bar 21. The presser foot denoted generally by the numeral 22, is mounted onto the bottom end of the presser-foot bar 23. The slitting blade 16 is mounted on a suitable arm 24 at the bottom end of what may be called the blade-carrying bar 25. All of said bars or rods 21, 23 and 25 are vertically positioned and are mounted for longitudinal sliding reciprocatory movement on the frame of the machine head. As is well known in the sewing machine art, the needle rod 21 is reciprocated upon rotation of the machine's main shaft 19, and the presser foot bar 23, being spring-loaded to remain in lowered position, can be lifted by manual operation of the member 27. Intermediate mechanism to accomplish these functions are well known and hence are not shown. Mechanism for operation and control of the slitting blade 16, will now be set forth.

A shaft 28 is journaled on the frame of the head 15 of the machine, is positioned parallel to the main shaft 19, and carries a crank 29 and also the crank 30'. The crank 29 is pivotally

3

linked to the cam follower 20 by a headed pin 30, so that the cam follower is between the crank 29 and the pin's head 31. A tensed tension coil spring 32 is connected at one end to the cam follower 20 at 33, and at its other end to the frame of the machine at 34, so that said cam follower 20 shall normally press against the peripheral surface of the cam 18. The crank 30' is pivotally linked to the blade-carrying rod 25, in any suitable fashion so that said rod shall reciprocate upon rocking movement of the shaft 28. In the structure illustrated, such connection is effected by a pin 35 extending from the crank 30', engaged by a clevis 36 securely carried on the rod 25.

The cam 18 is in contact with the tines 37 and 38 of a clevis formed at an end of the cam follower member 20. The diameter of the cam 18 is equal to the distance between the opposite surfaces of said tines, which surfaces are respectively coextensive with the semi-circular concave surface 20', from whose ends they extend in parallel relation. The shaft 19 may be any other shaft of the machine having continuous rotation during machine operation. It is evident that when shaft 19 turns in the arrangement shown in Fig. 6, shaft 28 will be rocked, and the blade 16 carried on the bar 25, will be reciprocated, and dimensions are such that the blade 16 will pierce the work 39 midway between the pair of stitch lines 40 and 41 accomplished by the needles 17 and 17'. The individual stitches are very close, and the width of the blade 16 is such that as it pierces the work, successive stabs thereof shall make a slit in the work, as indicated at 42.

A shaft 43 positioned across the machine head 15 and journaled thereon, is fashioned at its forward end with a crank 43', and at its rear end, said shaft carries a laterally extending finger 44, which is normally near, but out of the path of movement of the pin's head 31. Said finger is in such position maintained, by means of a tensed tension coil spring 45, whose ends are connected to said finger at 46, and to the frame at 47, respectively. Also, there is the stop screw 48 which rests on the frame; such screw being threadedly engaged in a pin extending from a collar 49 secured on shaft 43.

While the machine is working, the operator whenever desired, may bring the blade 16 to rest in raised position above and out of contact with the work 39, by merely moving the crank 43' downwardly, whereupon finger 44 will move into the path of the head of pin 30 and act as a stop for said pin's head 31 as in Fig. 8, and prevent the cam follower 20 from movement at the position where said follower is as shown in Fig. 9. Although the cam 18 continues to revolve, it will in each revolution contact the concave surface 20', but there will be no swinging movement of any appreciable extent of the shaft 28.

It is to be noted that the shaft 19, or any other shaft chosen on which the cam 18 is mounted, shall make at least one revolution per stroke of the needles. It is also advisable that the size of the head 31 should be large enough so that the finger 44 cannot be moved into position behind it, but will be against the top of said pin's head 31, for no more than one revolution of the cam's shaft, and fall into position against the peripheral surface of said head 31 at the outward limit of movement of the cam follower 20.

The operator can let go of hold on the crank or handle 43', after the condition as shown in

4

Fig. 8 is attained, and the cam follower 20 will remain in inactive position, because the spring 32 is comparatively stronger than the rather weak spring 45. However, whenever the operator wishes to set the blade 16 again in operation, he turns the handle 43' upwardly so that finger 44 is moved away from the head 31 of the pin 30, whereupon spring 32 will shift and maintain the cam follower 20 so that its surface 20' is constantly in contact with the peripheral surface of the cam 18, whereby the blade 16 will operate to slit the work. When the handle 43' is let go of operator's hold, spring 45 will cause shaft 43 to turn to initial rest position determined when screw 48 comes to rest on the frame of the machine head 15. It is evident that the operator's hold on the handle 43 need be of very short duration whenever he wants the blade 16 to commence or cease operation, and of special importance is that button hole slits 42 of various lengths may be made without change of blade.

In the making of a piped button hole, it is well known in the art to take a pair of longitudinally folded tapes and sew one along each side of a slit determining the button hole in the work. The remaining manipulations to complete the piped button hole have no concern herein. Instead of using two separate tapes, a better way is to fold a single tape in the form of an inverted T-shaped channel as indicated by the numeral 50 in Fig. 1, sew it over slit position by two stitch lines shown at 40 and 41, and then slit through the tape 50 and the work 39, as shown at 42. Completion of the piped button hole from this point on is well known in the art and therefore needs no further explanation.

The machine illustrated in Fig. 6 is adapted for use using either two single tapes, or else only one tape. The latter is chosen for illustration, and hence a forming device indicated generally by the numeral 51, is attached onto the presser foot 22 in front of the needles. The function of this forming device is to fold the tape 50' so that said tape is in the aforementioned inverted T-shaped channel form near needle position as shown evident in the arrangement illustrated in Fig. 5.

The forming device may be made of a strip of sheet metal formed to admit the tape 50' in flat condition at one end as at 51', and said piece of metal at the other end is shaped in inverted T-form as a channel in which is suspended an inverted T-bar 52 by means of a strap piece 53 soldered to the metal piece as shown.

To set the machine for use, after needles are threaded and shuttle bobbins are properly set, the operator slowly turns the handwheel 55 to turn the shaft 19. At the same time he brings handle 43' downward and effects the condition as shown in Fig. 8, where the cam follower 20 is held against movement so that the blade 16 is at rest. He then takes the end of tape 50' which may come off a roll, and inserts it through the forming device 51 up to the needle position. At each button hole position to be made, the work 39 is visibly marked with a chalk line along slit line A, and with cross lines B and C which indicate the ends of the slit to be made. He lifts the presser foot 22 by lifting lever 27, and sets the work 39 under the presser foot so that line A is central of the needles 17, 17', and in the plane of the blade 16, and so that line B is in front of the plane of the needles. The formed tape 50 is also placed under the presser foot so that when the machine operates, said formed tape will

5

be fed along with the work. He now sews on the tape up to line B, and quickly pushes handle 43' upward to release the cam follower 20, thereby changing the machine condition from that shown in Fig. 8, to that of Fig. 7. The blade 16 is thus set in operation, and he sews up to line C, whereupon the operator quickly pushes the handle 43' downward to hold the cam follower in position shown in Fig. 9, thereby changing the machine condition from that shown in Fig. 7 to that of Fig. 8. The blade stops in lifted position after cutting the slit 42 between the lines B and C. After sewing a few stitches beyond line C, the sewing is stopped, the tape 50 is cut at line C, and the machine is ready to operate at the next button hole position. It is to be especially noted that without adjustment or replacement of parts, the machine can make button holes of various lengths on the same piece of work.

This invention is capable of numerous forms and various applications without departing from the essential features herein set forth. It is therefore intended and desired that the embodiment shown herein be deemed illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the specific description and showing herein to indicate the scope of this invention.

We claim:

1. In combination, a double needle sewing machine having a constantly rotating shaft and effecting two parallel lines of stitches on a piece of work when in operation, a slitting blade having its cutting edge in a plane between the needles, a member movably mounted on said machine; said blade extending from said movable member, a first means operated by said shaft to reciprocate said member whereby the blade moves through the work; said first means comprising a cam securely carried on the shaft, a follower for said cam, a second shaft journaled on said machine, for rocking axial movement and securely carrying two cranks; one of said cranks being connected to the cam follower whereby said one crank will turn upon movement of said follower, and the other of said cranks being connected to the blade-carrying member whereby said member will be moved upon rotary movement of said second shaft and a second means actuated by the operator of the machine while the machine is in operation, to halt movement of said member at such position where the blade is out of contact with the work; the movement of the blade through the work, effecting a

6

continuous slit in said work during every period said member carrying the blade is free for movement; said second means comprising a manually operated means to hold the cam follower in a position away from the influence of the cam.

2. In combination, a double needle sewing machine having a constantly rotating shaft and effecting two parallel lines of stitches on a piece of work when in operation, a slitting blade having its cutting edge in a plane between the needles, a member movably mounted on said machine; said blade extending from said movable member, a first means operated by said shaft to reciprocate said member whereby the blade moves through the work; said first means comprising a cam securely carried on the shaft, a follower for said cam, a second shaft journaled on said machine, for rocking axial movement and securely carrying two cranks; one of said cranks being connected to the cam follower whereby said one crank will turn upon movement of said follower, and the other of said cranks being connected to the blade-carrying member whereby said member will be moved upon rotary movement of said second shaft and a second means actuated by the operator of the machine while the machine is in operation, to halt movement of said member at such position where the blade is out of contact with the work; the movement of the blade through the work, effecting a continuous slit in said work during every period said member carrying the blade is free for movement; said second means comprising a shaft journaled on the machine, for rocking axial movement, an element carried on this shaft, adapted upon movement of this shaft in one direction, to engage the cam follower when said follower is in position effected by the furtherest throw of the cam, a handle carried on this shaft to turn the latter; the normal position of said engaging element being out of engagement with the cam follower to allow movement of said follower.

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