April 4, 1950 R. G. AMES 2,502,499

COMBINED TAPE AND MASTIC APPLICATOR

Filed June 2, 1945 2 Sheets-Sheet 1

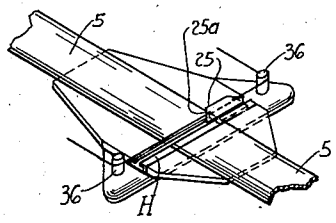


Fig. 10

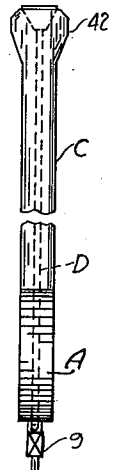


Fig. 8

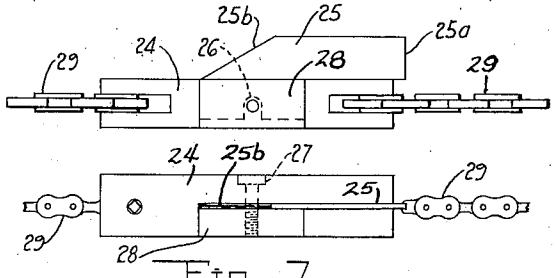
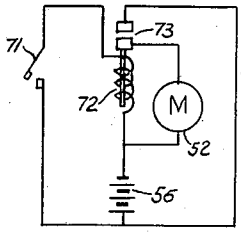


Fig. 7

Fig. 9



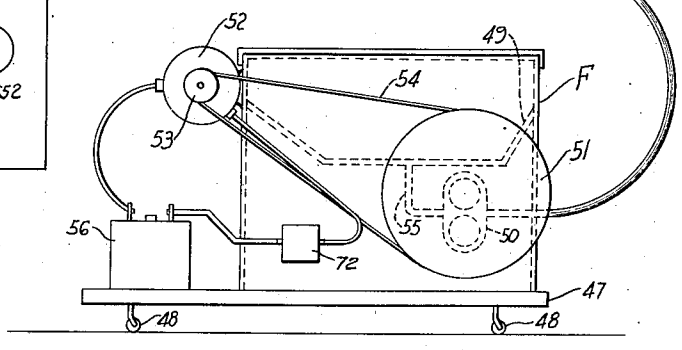


Fig. 1

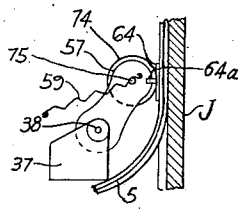


Fig. 11

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COMBINED TAPE AND MASTIC APPLICATOR

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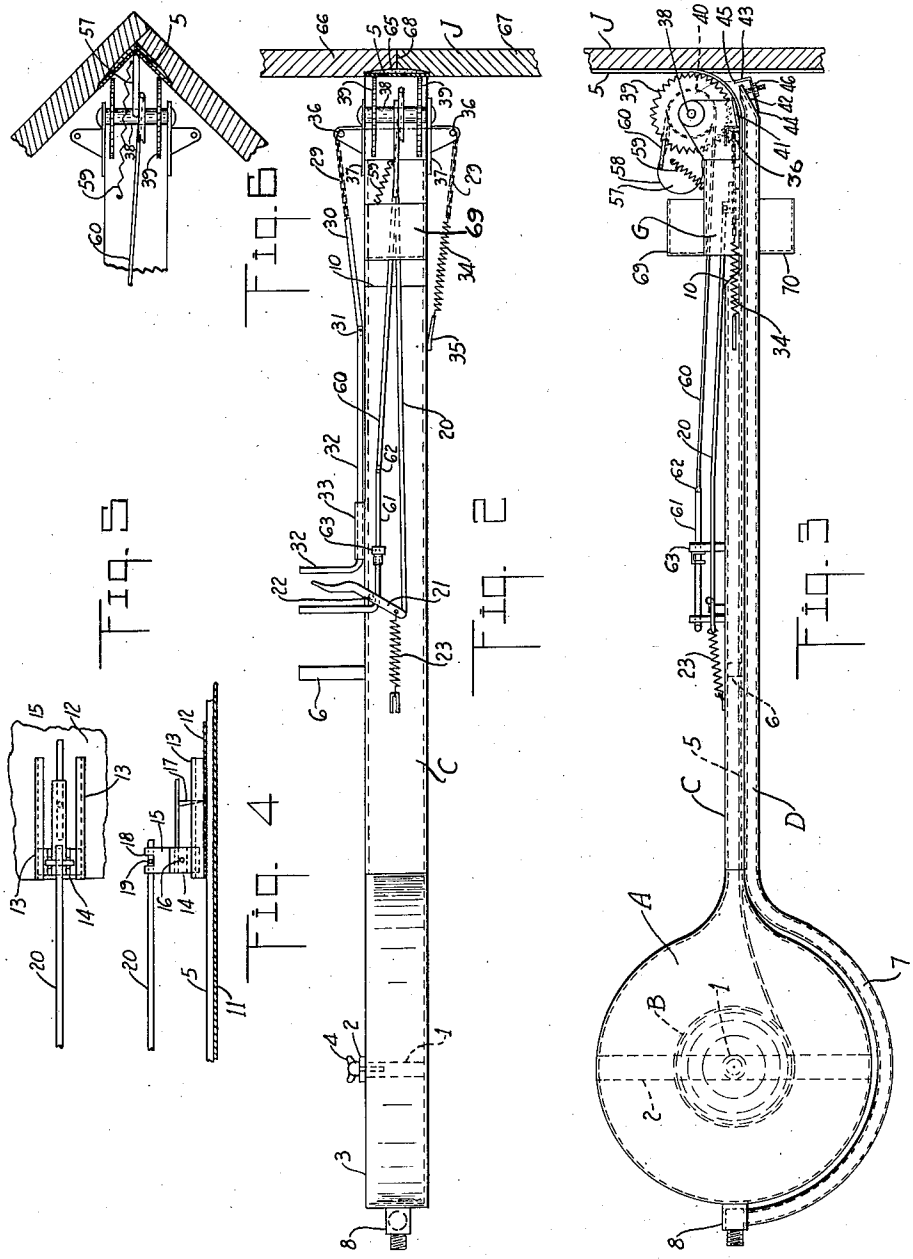


Fig. 5

Fig. 4

Fig. 2

Fig. 3

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COMBINED TAPE AND MASTIC APPLICATOR

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Application June 2, 1945, Serial No. 597,345

13 Claims. (Cl. 216—22)

1

An object of my invention is to provide a combined tape and mastic applicator which is an improvement over the form of my invention shown in my Patent No. 2,300,398, issued November 3, 1942. In the patented device I show means for feeding a tape past a nozzle where a layer of mastic is applied to the tape and then means is provided for applying the tape with the mastic directly to the wall-board. The patent further shows a hand-actuated mechanism for severing the tape so that the device can be used for applying tape and mastic to a joint in a wall-board, whether the joint is long or short.

In the present form of my invention I make use of a portable hopper and mastic feeding means so that mastic under the desired pressure can be fed to the tape as required. The portable mastic feeding means is shown in my co-pending application, Serial No. 567,826, filed December 12, 1944, now Pat. No. 2,436,783.

In the present tool I show a new type of mud-feeding nozzle which will apply a layer of mud or mastic to the tape of the desired thickness and of the desired cross sectional shape or contour. I further provide an improved type of tape cutter. The tool also has a tape feeding means which will move the new section of tape into a position at the end of the tool to receive a layer of mud or mastic.

A still further object of my invention is to provide a device of the type described which has novel means for applying a pressure member to the tape immediately after the tape with its layer of mastic has been applied to the wall. The pressure member can be changed to a disc-like member for creasing the tape at its center and for forcing the fold into a corner joint when the device is used for sealing such a joint. All of the levers for actuating the various mechanism are grouped together so that the operator may manipulate any one of them readily. I provide receptacles on both sides of the tool head for catching any excess mastic and for preventing this mastic from dropping onto the floor.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which:

Figure 1 is a schematic view of the entire device shown operatively connected to a portable mastic pressure feeding means;

2

Figure 2 is a plan view of the underside of the device;

Figure 3 is a side elevation of Figure 2;

Figures 4 and 5 show side and plan views, respectively, of the tape feeding means;

Figure 6 illustrates the mechanism for forcing the tape into a corner joint;

Figures 7 and 8 show plan and side views, respectively, of the cutting blade carrier;

Figure 9 is a wiring diagram;

Figure 10 is an isometric view of the cutting blade and associate mechanism; and

Figure 11 shows the pressure blade for pressing the tape into position immediately after the tape has been applied to a flat wall-board joint.

While I have shown only the preferred forms of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit and scope of the invention.

In carrying out my invention, I provide a tool in which a compartment A is used for holding a roll of tape, the roll being indicated at B. The roll is mounted on a central hub 1 and is housed within the compartment or container A. A roll-retaining strip 2 extends diametrically across the open side 3 of the compartment and a wing screw 4, see Figure 2, is inserted through a central opening in the strip and enters a threaded opening in the hub 1. In this way the tape roll is secured in place. It is obvious that a cover may be used for closing the open end 3 instead of the strip, if desired.

The compartment A communicates with a rectangular-shaped tube C through which the tape 5 passes. The tube may be of any length desired and is generally made long enough so that the operator can stand on the floor of a room and tape a ceiling joint, the tape being fed from the free end of the tube and applied to the joint by a mechanism presently to be described. The tube C has a handle 6, see Figure 2, that can be gripped by the operator's right hand.

Referring to Figure 3, it will be seen that a mastic conveying pipe D extends along the top of the tube C and has a curved portion 7 that follows the rim of the container A through substantially one-half of the rim circumference. A connection 8 is placed at the end of the pipe disposed at the back of the compartment A and a valve indicated generally at 9 in Figure 1 is secured to the connection and places the pipe in communication with a flexible hose E, this hose leading to a portable hopper indicated gen-

erally at F and to be described hereinafter. The handle 6 is so placed on the tube that it is convenient for the operator to grip it with the right hand and to manipulate the valve 9 with the left. In this way the operator can open and close the valve 9 at will while still controlling the operation of the tool.

Again referring to Figure 2, it will be seen that the tape 5 passes from the open end 10 of the tube C into a housing indicated generally at G. Within the housing I dispose a tape feeding means and this is shown in detail in Figures 4 and 5. The tape 5 moves over a metal sheet 11, which is a continuation of one wall of the tube C and the housing G has a partition 12 that parallels the wall 11 and is spaced therefrom so that the tape can pass therebetween. The partition 12 carries parallel guides 13 and these guides slidably support a carriage 14. The partition 12 is slotted between the guides. An L-shaped trigger 15 pivoted at 16 has a pin 17 slidable in the partition slot and designed to be forced into the tape 5 when the trigger is moved forwardly or to the right in Figure 4. The other end of the trigger is bifurcated at 18 and receives a pin 19 which in turn is carried by a rod 20. Figure 2 shows the rod 20 pivotally connected to a lever 21 which in turn is pivotally mounted on the tube C at 22. A spring 23 holds the rod in normally retracted position.

When the lever 21 is swung in a counter-clockwise direction when looking at Figure 2, the rod 20 will be moved forwardly and this initial movement will cause the pin 19 to swing the trigger 15 about its pivot for forcing the pin 17 into the tape 5. Further movement of the rod 20 in the same direction will move the carrier 14 along the guides 13 and the pin will advance the tape toward the free end of the tool. When the lever 21 is released, the spring 23 will return it immediately to starting position. The initial return movement of the rod 20 will swing the trigger 15 about its pivot to free the pin 17 from the tape and further rearward movement of the rod will carry the trigger and pin 17, now freed from the tape, back to a new position. Each time the lever 21 is manually actuated, the tape will be stepwise advanced.

The tape passes to the forward end of the housing G while still being confined between the wall 11 and the partition 12. At the free end of the housing, I provide a transversely extending knife guide indicated generally at H, see Figure 10. The guide may be of any shape desired and I have shown it channel-shaped and slidably receiving a block 24. The block slides in the channel and carries a cutting blade 25 of the shape shown in Figure 8. The blade 25 has an end 25*a* extending beyond the block 24 for a purpose hereinafter described. The blade has an inclined cutting edge 25*b* and a niche 26 for receiving a set screw 27. The block 27 has an insert 28 with a threaded opening for receiving the screw and in this way the blade is removably secured to the block. New blades may be substituted for worn ones.

Figures 2, 7 and 8 show chain sections 29 connected to opposite ends of the block 24 and one section is secured to a link 30, see Figure 2, which in turn is pivotally secured at 31 to an L-shaped handle 32. The handle slides in a sleeve 33 which is secured to the tube C. The other section of the chain 29 is connected to a spring 34 and the spring in turn is anchored to the tube C at 35.

A movement of the handle 32 rearwardly or towards the handle 6 will actuate the chain 29 to move the blade holder 24 transversely from one end of the channel H to the other. The channel guides the blade transversely across the tape 5 and the cutting edge 25*b* will sever the tape. The chain sections 29 pass around rollers 36. The handle 32 can move the blade to the position shown in Figure 10 and the rear portion 25*a* of the blade will still engage with a portion of the tape end. As soon as the handle 32 is free, the spring 34 will return the blade to its starting position and since the edge 25*a* contacts with the free end of the tape 5, this return movement can be made without the blade crumpling the tape. The operator can actuate the blade at any time he desires so that any length of tape can be severed from the roll of tape.

It will be seen that parallel ears 37 extend beyond the housing G and the ears carry a shaft 38 on which are rotatably mounted a pair of toothed tape applying wheels 39. Between the toothed wheels I mount a grooved wheel 40 for a purpose hereinafter described. The tape as it emerges from between the partition 12 and the wall 11 passes over a spring blade 41 that bears against the underside of the tape and is for the purpose of scraping away any mud or mastic that might adhere to this side of the tape. The tape then passes around a portion of the toothed applying wheels 39 and Figure 3 shows the tape being applied by the wheels to a wall-board indicated at J.

The tube D has a nozzle end 42 for applying mastic to the side of the tape that will be pressed against the wall-board J. A gate 43, see Figure 3, is hinged at 44 and has an edge 45 that may be moved toward or away from the tape 5 by means of an adjusting screw 46. The space between the gate edge 45 and the tape 5 determines the thickness of the mastic applied to the tape. Furthermore the edge 45 may be of different shapes so as to give a cross sectional shape to the layer of mastic of any desired contour.

From the device thus far described, it will be apparent that the tape with the layer of mud or mastic is applied to the wall-board joint by the toothed wheels 39. It is best now to describe the means for feeding the mastic under pressure to the pipe D. In Figure 1 I show a portable platform 47 mounted on caster rollers 48 and the platform carries the hopper shown at 49. The hopper 49 holds a quantity of mastic which may be sufficient for example for taping all of the wall-board joints in a six-room house. The hopper may be made larger or smaller as desired.

A gear pump 50 is operated by a pulley 51 which in turn is rotated by a motor 52 through the medium of a pulley 53 and a belt 54. The pump 50 draws mastic from the hopper 49 through a conduit 55 and forces the mastic under pressure through the hose E to the pipe D. The platform 47 may carry its own source of electric current, which is shown as comprising a storage battery 56, or the motor may be connected to a source or current. The mechanism for turning the motor 52 on and off as the valve 9 is opened and closed is shown in my co-pending application and is not made a part of this case. Further description need not be given.

Referring to Figures 2 and 3, it will be noted that the grooved wheel 40 carries an arm 57 that has a circular edge 58. The arm may carry a disc, which will be described later in connection with Figure 11, and this disc takes the place of the arcuate edge. A spring 59 normally holds

the arm down upon the housing G. A cable 60 is connected to the arm and is passed around the grooved wheel 40 and is connected to an L-shaped arm 61 at 62. The arm 61 slides in a bearing 63 that is carried by the tube C. A rearward movement of the arm 61 will cause the cable to swing the arm 57 for forcing the curved edge 58 against the tape 5 for folding the tape along a medium line and for forcing the fold into a corner joint being taped, see Figure 6. Figure 11 shows the arm 57 removably carrying a pressure plate 64, the face of the plate extending at right angles to the plane of the arm. When the pressure plate is used, the device will press the tape 5 to a flat wall joint as shown in Figure 2 for forcing the tape into proper position.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

When using the device the lever 21 is actuated for stepwise feeding the tape to the end of the tool and then the valve 9 is opened which will close a circuit from the battery 56 to the motor 52 and cause the pump 50 to deliver mastic under pressure to the pipe D through the hose E. The gate 43 will control the thickness of the mastic layer on the tape and also the cross-sectional shape of a mastic.

The tool is moved over a groove 65, formed between the two wall-board sections 66 and 67. In certain wall-board constructions, no groove is provided at the joint, and in this case the tape and mastic are applied directly to the joint 68. The tool may be moved along the groove in either direction desired. Usually where the groove is vertical, the tool is started from the bottom of the groove and is moved upwardly. The tape and mastic are applied to the groove and the operator may manipulate the arm 61 for moving the pressure plate 64 against the tape. If a corner joint is being taped, the pressure plate 64 is removed and the curved edge 57 or a disc, the latter being described later in the specification, takes the place of the curved edge and creases the tape longitudinally and forces the fold into the groove as shown in Figure 6.

After the entire groove has been covered with the mastic and tape, the operator actuates the handle 32 to sever the tape. As the same time the valve 9 is closed and the motor 52 is stopped. During the operation of the device, if there is any excess mastic, it will drop into receptacles 69 and 70 provided for this purpose. Before the operator starts taping another groove, he feeds the cut end of the tape to the end of the tool by manipulating the lever 21. The valve 9 can be again opened and the tool used in the manner already described.

In Figure 9 I show a wiring diagram somewhat the same as that disclosed in my co-pending application Serial No. 567,826. In this wiring diagram, the motor 52 is designated M and a switch 71 is closed when the valve 9 is opened. In actual practice the valve arm for the valve 9 will open the switch 71 when the valve is closed. The closing of the switch connects the battery 56 or other source of current to a solenoid 72 and the solenoid will close a motor switch 73 that connects the motor 52 with the current source 56. So long as the valve 9 is kept open, the motor 52 will operate and will cause the pump 50 to deliver mastic under pressure to the device. The closing of the valve 9 will open the switch 71 and this will de-energize the solenoid 72 and cause the motor switch 73 to open, thus stopping further operation of the motor and pump.

In Figure 11 I indicate the arm 57 as carrying a disc 74 and the disc is rotatably secured to the arm at 75. In actual practice the arm 57 will either have a bifurcated end to receive the disc 74 or a pair of arms will be provided and connected together by the shaft 75 that also rotatably supports this disc 74. I have found that a rotatable disc will crease or fold the tape more readily than the arcuate end of the arm 57. When the pressure plate 64 is used, clips 64a will straddle the disc 74 and the pair of arms and will frictionally engage with the outer surfaces of the two arms 57 so as to hold the plate in position.

It is obvious that the handle 32 may be actuated electrically so that the operator may close the switch for causing the cutter to sever the tape.

I claim:

1. A combined tape and mastic applicator comprising a tape feeding means, a mastic feeding means including a nozzle for applying a layer of mastic on the tape, and an adjustable gate associated with the nozzle for varying the depth of the layer of mastic applied to the tape and for giving a desired contour to the cross-sectional shape of the mastic.

2. In a combined tape and mastic applicator, a tape guiding tube, tape feeding means including a carriage movable in the direction of the length of the tube, a trigger pivotally carried by the carriage and swingable about an axis that extends at right angles to the tube length, a rod for moving the carriage in a direction to feed the tape and being pivotally connected to the trigger so that initial forward movement will rock the trigger, a tape-engaging pin carried by the trigger and engageable with the tape during the initial swinging of the trigger, the further movement of the rod in the same direction moving the carriage and trigger to advance the tape, and spring means for returning the rod to starting position, the initial return movement of the rod swinging the trigger to free the pin from the tape, the remainder of the return movement moving the carriage and trigger into a new position over the tape.

3. In a combined tape and mastic applicator, a tape guiding tube, tape feeding means including a carriage movable in the direction of the length of the tube, a trigger pivotally carried by the carriage and swingable about an axis that extends at right angles to the tube length, a rod for moving the carriage in a direction to feed the tape and being pivotally connected to the trigger so that initial forward movement will rock the trigger, a tape-engaging pin carried by the trigger and engageable with the tape during the initial swinging of the trigger, the further movement of the rod in the same direction moving the carriage and trigger to advance the tape, spring means for returning the rod to starting position, the initial return movement of the rod swinging the trigger to free the pin from the tape, the remainder of the return movement moving the carriage and trigger into a new position over the tape, a handle on the tape tube arranged to be grasped in an operator's hand, and a movable handle positioned close to the first-named handle for permitting the operator to actuate the rod for feeding the tape with the same hand that grips the first-named handle.

4. In a combined tape and mastic applicator, manually-actuated means for positively project-

ing tape from the applicator, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, and means for pressing the tape against the joint immediately after its application.

5. In a combined tape and mastic applicator, manually-actuated means for positively projecting tape from the applicator, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, and means for pressing the tape against the joint immediately after its application, said last-named means forming a longitudinal fold in the tape for pressing the tape and mastic into a corner joint.

6. In a combined tape and mastic applicator, tape feeding means, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, and means for pressing the tape against the joint immediately after its application, a handle for supporting the applicator, said last-named means including a handle positioned close to the first-named handle so that the operator can operate the second-named handle while still gripping the first handle.

7. In a combined tape and mastic applicator, tape feeding means, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, a tape folding member pivotally carried by the applicator, and manual means for swinging the member into a position to fold the tape along its center and for forcing the fold into a corner joint.

8. In a combined tape and mastic applicator, tape feeding means, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, a tape folding member pivotally carried by the applicator, and manual means for swinging the member into a position to fold the tape along its center and for forcing the fold into a corner joint, a handle for supporting the applicator, said last-named means including a handle positioned close to the first-named handle so that the operator can operate the second-named handle while still gripping the first handle.

9. In a combined tape and mastic applicator, tape feeding means, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, an arm pivotally carried by the applicator, a tape pressing member removably carried by the arm, and manual means for swinging the arm for pressing the member against the tape for smoothing it, said pressing member when removed from the arm permitting the arm to be swung into contact with the tape, said arm being shaped for forming a longitudinal fold in the tape for pressing it into a corner joint.

10. In a combined tape and mastic applicator, tape feeding means, means for applying a layer of mastic to the tape, means for applying the tape and mastic to a surface joint, and means for pressing the tape against the joint immediately after its application, said last-named means forming a longitudinal fold in the tape for pressing the tape and mastic into a corner joint, said tape pressing means including a rotatable disc for contacting with the tape to form a crease therein.

11. In a combined tape and mastic applicator, tape feeding means including a member for applying the tape to a wall surface, means for severing the tape, and means for applying a layer of mastic to the tape between the tape-severing means and the member for applying the tape to the wall surface, so that the mastic will not interfere with the tape-severing means.

12. In a combined tape and mastic applicator, tape feeding means including a member for appilying the tape to a wall surface, means for severing the tape, and means for applying a layer of mastic to the tape between the tape-severing means and the member for applying the tape to the wall surface so that the mastic will not interfere with the tape-severing means, said tape-severing means including a knife, manually controlled means for moving the knife, a guide for directing the knife transversely across the tape when the knife is moved, and yielding means for returning the knife after the tape has been cut.

13. In a combined tape and mastic applicator having a handle, tape feeding means including a member for applying the tape to a wall surface, means for severing the tape, and means for applying a layer of mastic to the tape between the tape-severing means and the member for applying the tape to the wall surface so that the mastic will not interfere with the tape-severing means, said tape-severing means including a knife, manually controlled means for moving the knife, a guide for directing the knife transversely across the tape when the knife is moved, and yielding means for returning the knife after the tape has been cut, the manually controlled means including a lever positioned close to the handle so that the operator can actuate the lever for moving the knife with the same hand that grips the handle.

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