Nov. 27, 1945. G. E. MARBLE 2,389,800

CUTTER SHIFTING APPARATUS FOR CLOTH SHEARS

Filed Dec. 7, 1942 2 Sheets-Sheet 1

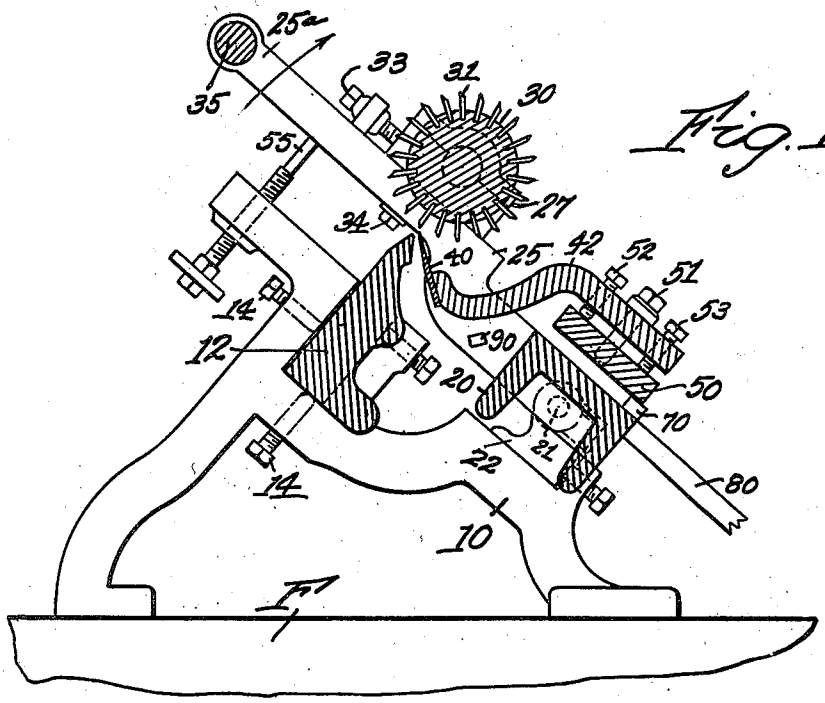


Fig. 1.

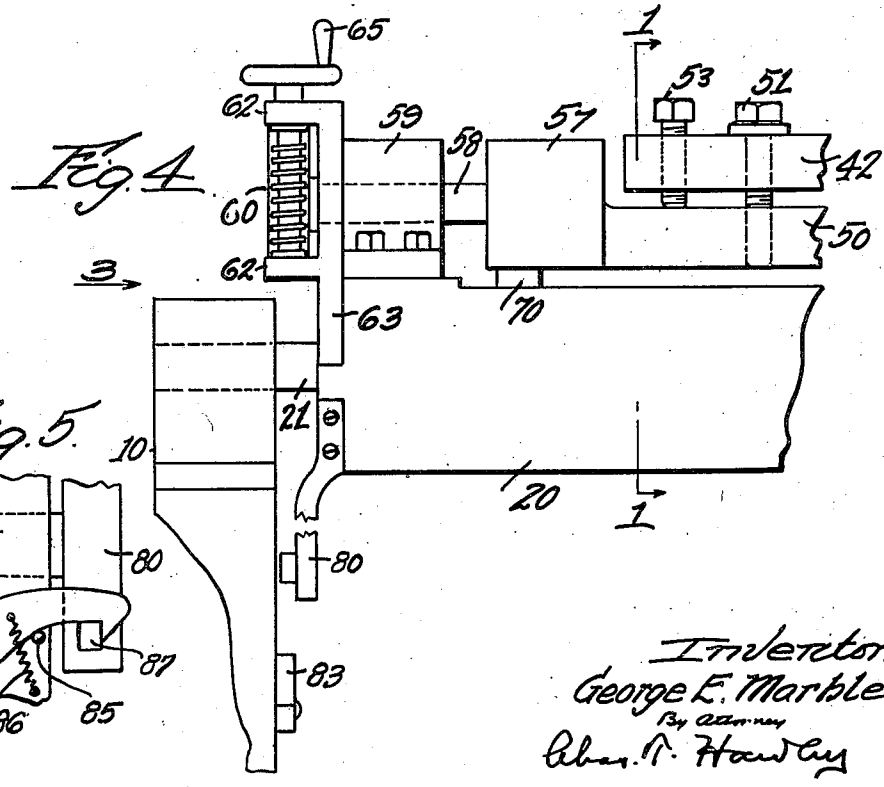


Fig. 4.

Fig. 5.

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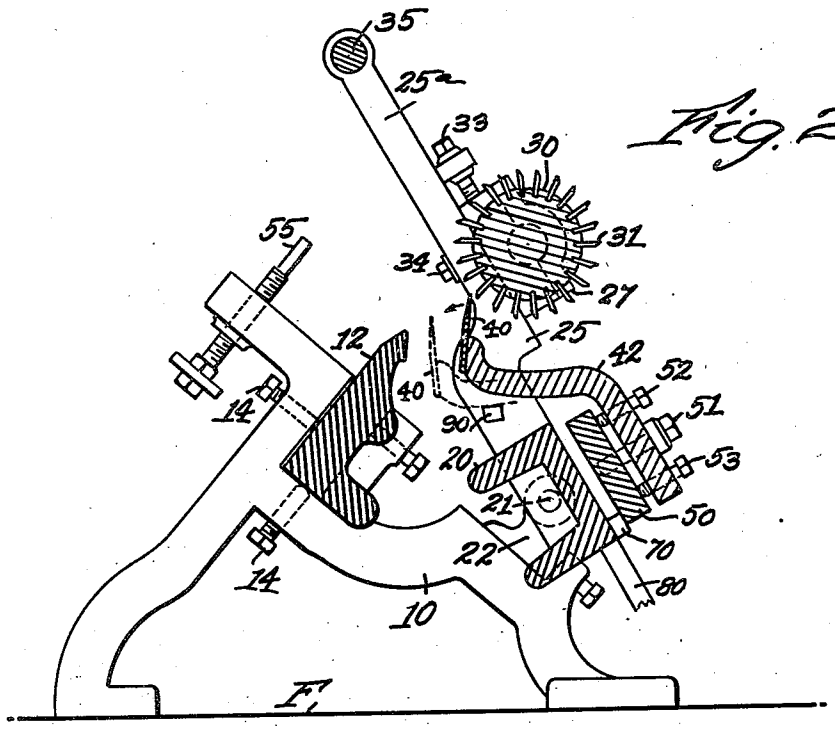


Fig. 2.

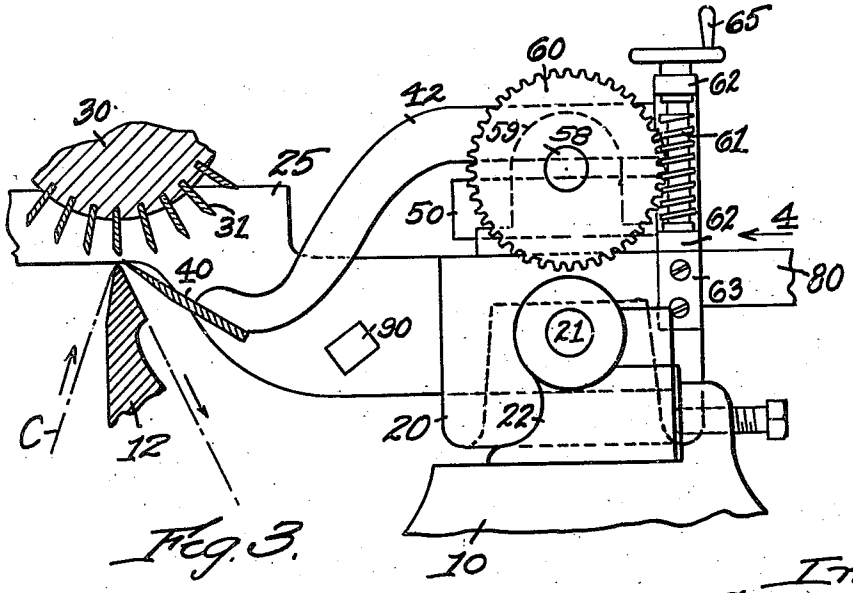


Fig. 3.

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UNITED STATES PATENT OFFICE

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CUTTER SHIFTING APPARATUS FOR CLOTH SHEARS

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Application December 7, 1942, Serial No. 468,122

4 Claims. (Cl. 26—15)

This invention relates to a type of cloth shear in which the cloth is drawn over a cloth rest and alongside a shearing unit which comprises a non-rotated straight blade and a coacting rotated cutter.

In the operation of the machine, it is necessary at times to shift the shearing unit away from the cloth rest, to pass a seam or for other purposes. It is also necessary at times to separate the two cutting elements of the shearing unit to permit honing or sharpening of the non-rotated blade. For a narrow shear, this may be accomplished by bodily removing the rotated cutter manually from its bearings, but for wide shears with long and heavy cutters this procedure is not satisfactory.

It is the general object of my present invention to provide mechanical means by which the non-rotated blade may be moved away from the rotated cutter for honing but without loss of relative cutting adjustment.

To the attainment of this general object, I preferably provide means for shifting the shearing unit from operative relation to the cloth rest, and additional means for thereafter moving the non-rotated blade away from the rotated cutter.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a sectional side elevation of my improved cutter-shifting apparatus, taken along the line 1—1 in Fig. 4;

Fig. 2 is a view similar to Fig. 1 but showing the parts in a different position;

Fig. 3 is an enlarged end view, partly in section and looking in the direction of the arrow 3 in Fig. 4;

Fig. 4 is a side elevation, looking in the direction of the arrow 4 in Fig. 3; and

Fig. 5 is a side view of a latch to be described.

Referring to the drawings, I have shown portions of a cloth shear which may be of the general construction shown in the prior patent to E. H. Marble, No. 721,903, issued March 3, 1903.

For the purposes of this application, I have shown supplemental frames or brackets 10, one of which is provided at each side of the machine and firmly secured to the main frame F. A cloth rest 12 extends across the machine and is supported by the brackets 10. The rest 12 is secured therein by a plurality of clamping screws 14, and by relatively adjusting the screws 14 the position of the cloth rest in the brackets may be varied within certain limits. In the operation of the machine, the cloth C (Fig. 3) is drawn over the cloth rest 12 and moves in the direction of the arrows shown.

The shearing unit comprises a rigid cross frame member 20 extending across the machine and provided at its ends with gudgeons 21, pivotally mounted in bearings 22 which in turn are supported on and secured to the fixed brackets 10.

Arms 25 extend rearward from the cross frame member 20 and support bearings 27 for the rotated cutter 30, which cutter is of the usual construction and is provided with a series of cutting blades 31 extending lengthwise of the cutter and each disposed in a long spiral relative thereto. The bearings 27 for the rotated cutter 30 may be adjusted on the arms 25 by adjusting screws 33, and the bearings are held in adjusted position by clamping screws 34. The arms 25 are extended beyond the bearings 27, as indicated at 25a in Fig. 1, and support a cross rod or hand rail 35 at their outer ends.

The shearing unit also comprises a non-rotated blade 40, secured to the lower edge of a back plate 42 and normally positioned close to the cutting edges of the rotated cutter blades 31 and also close to the upper end of the cloth rest 12.

The back plate 42 is secured to a subplate 50 by clamping screws 51, and two sets of adjusting screws 52 and 53 are provided, it being understood that a plurality of each of the screws 51, 52 and 53 are provided in spaced relation along the flat upper portion of the back plate 42, the series of screws extending the whole length of the back plate. By relatively adjusting the screws 51, 52 and 53, the non-rotated blade 40 may be set in any desired shearing relation with the rotated cutter 30.

The position of the shearing unit relative to the cloth rest 12 may be determined by adjustable stop screws 55, the upper ends of which engage the arms 25a to determine the clearance of the shearing unit relative to the cloth rest.

The subplate 50 (Fig. 4) is provided with a rectangular enlargement at each end, as shown at 57, and each enlarged portion 57 has a gudgeon 58, the gudgeons being rotatably mounted in boxes 59 which are secured to the cross frame member 20 near each end thereof.

One gudgeon 58 is extended beyond its bearing 59, and a worm wheel 60 is fixed to the extended gudgeon. The shaft of a worm 61 (Fig. 3) is mounted in bearings 62 on a bracket 63 (Fig. 4), and the bracket 63 is rigidly secured to the end of the cross frame member 20. The worm shaft extends above the upper bearing 62 and is provided with a hand wheel 65 by which the worm 61 may be manually rotated.

When the parts are in the normal running position shown in Fig. 1, the lower front edge of the subplate 50 engages an abutment or stop 70, one of these stops 70 being preferably provided near each end of the cross frame member 20.

Arms 80 at one or both ends of the cross frame

member 20 project downward as shown in Figs. 1 and 2. As the shearing unit is shifted from the working position shown in Fig. 1 to the raised position shown in Fig. 2, each arm 80 engages a fixed abutment 81 on a bracket 10. Latches 83 are pivoted at 84 on the brackets 10 and are yieldingly held against stop pins 85 by springs 86.

When the shearing unit is moved to the raised position shown in Fig. 2, the arms 80 swing downward to engage the abutments 81. The latches 83 then engage lugs 87 on the arms 80 and secure the parts in the position shown in Fig. 2. The parts are normally held in the position shown in Fig. 1 by the unbalanced weight of the shearing unit.

Having described the details of construction of my improved cutter shifting apparatus, the method of operation will now be described.

The normal position of the parts is as shown in Figs. 1, 3 and 4, with the cloth C passing over the cloth rest 12 and with the cutters 30 and 40 in cutting relation and also closely adjacent the cloth rest 12.

If it is desired to hone the non-rotated blade 40, the operator grasps the hand rail 35 and swings the shearing unit to the raised position shown in Fig. 2, in which position it will be firmly retained by engagement of the latches 83 with the lugs 87 (Fig. 5) at the lower ends of the arms 80.

By this operation, the entire shearing unit is swung manually away from the cloth rest 12. This may be done not only for honing the non-rotated blade but also during the normal operation of the machine to clear a seam or other obstruction.

If the blade 40 is to be honed, the hand wheel 65 and worm 61 are rotated, with the parts locked in the position shown in Fig. 2, and such rotation swings the subplate 50 and supported parts on the gudgeons 58, thus moving the blade 40 from the position shown in full lines in Fig. 2 to that shown in dotted lines. This dotted line position may be determined by stop lugs 90 (Fig. 2) on the arms 25.

After the parts have been moved to this position, the honing operation may be conveniently performed, with the cutter 30 and blade 40 in spaced relation to each other and with the blade 40 spaced from the cloth rest 12. It will be understood that the parts are shown on a much reduced scale in the accompanying drawings, and that substantial clearance for the honing operation is provided in the actual machine.

After the blade 40 has been honed, the hand wheel 65 and worm 61 are rotated in the opposite direction until the subplate 50 engages the stops 70 on the cross frame member 20. Such engagement restores the cutter 30 and blade 40 to their former adjacence and without loss of their cutting relation. The latches 83 are then raised to release the lugs 87, and the shearing unit may be restored to the running position shown in Figs. 1 and 3, the operator controlling this return movement by again grasping the hand rail 35.

I have thus provided very simple and convenient mechanical means for moving the shearing unit away from the cloth rest, for locking the unit in its removed position, and for thereafter giving the non-rotated blade 40 a swinging movement in the reverse direction to an intermediate position between the rotated cutter 30 and the cloth rest 12, in which position it may be conveniently honed. I have also provided means for restoring the parts to operative coacting relation without loss of adjustment.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a cloth shear, a frame, a cloth rest mounted in said frame, a shearing unit comprising a rotated cutter and a non-rotated blade, means to pivotally support said shearing unit in said frame for motion toward and away from operative relation to the cloth rest, a pivotal support for said non-rotated blade in said shearing unit, means to swing said blade about the axis of its pivotal support to positions closely adjacent to or substantially spaced from the rotated cutter, and means to limit the return movement of said blade toward said cutter, whereby the initial cutting relation in said shearing unit may be restored without loss of adjustment.

2. In a cloth shear, a frame, a cloth rest mounted in said frame, a shearing unit comprising a rotated cutter and a non-rotated blade, means to pivotally support said shearing unit in said frame for motion toward and away from operative relation to the cloth rest, a pivotal support for said non-rotated blade in said shearing unit, means to swing said blade about the axis of its pivotal support to positions closely adjacent to or substantially spaced from the rotated cutter, means to limit the return movement of said blade toward said cutter, whereby the initial cutting relation in said shearing unit may be restored without loss of adjustment, and means to firmly hold said blade in adjusted relation to said rotated cutter after such return movement.

3. In a cloth shear, a frame, a cloth rest mounted in said frame, a shearing unit comprising a rotated cutter and a non-rotated blade, means to pivotally support said shearing unit in said frame for motion toward and away from operative relation to the cloth rest, means to define substantially separated operative and inoperative positions of said shearing unit in said frame, a pivotal support for said non-rotated blade in said shearing unit, means on said unit to swing said blade about the axis of its pivotal support to positions closely adjacent to or substantially spaced from the rotated cutter, means to limit the movements of said blade in both directions with respect to said cutter, and means to firmly hold said blade in operative relation to said rotated cutter.

4. In a cloth shear, a frame, a cloth rest mounted in said frame, a shearing unit comprising a rotated cutter and a non-rotated blade, means to pivotally support said shearing unit in said frame for motion toward and away from operative relation to the cloth rest, means to define substantially separated operative and inoperative positions of said shearing unit in said frame, a pivotal support for said non-rotated blade in said shearing unit, a worm and worm wheel on said unit and support to swing said blade about the axis of its pivotal support to spaced positions closely adjacent to or substantially spaced from the rotated cutter, and means to hold said blade in each of said spaced positions.

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