April 11, 1950 R. E. PUGH 2,503,353

CLOTH CUTTING APPARATUS

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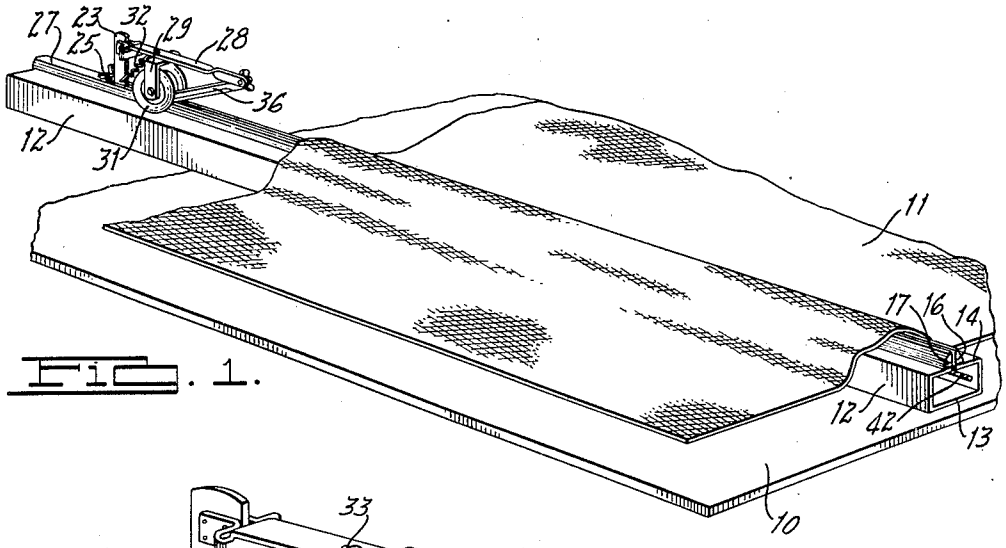


Fig. 1.

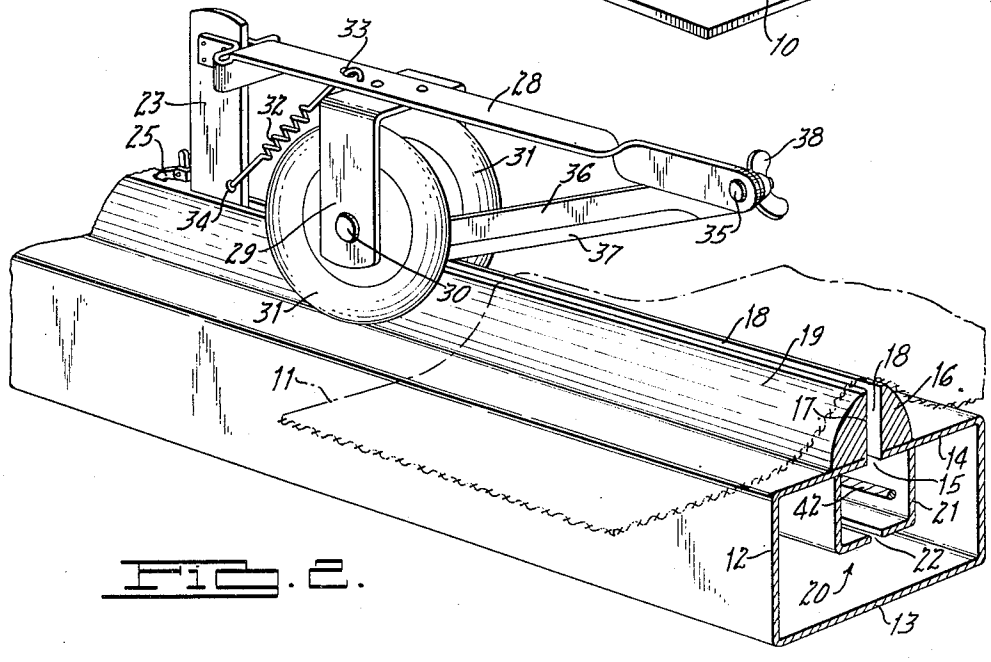


Fig. 2.

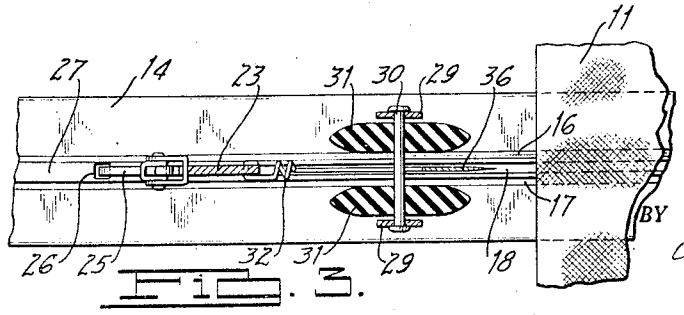


Fig. 3.

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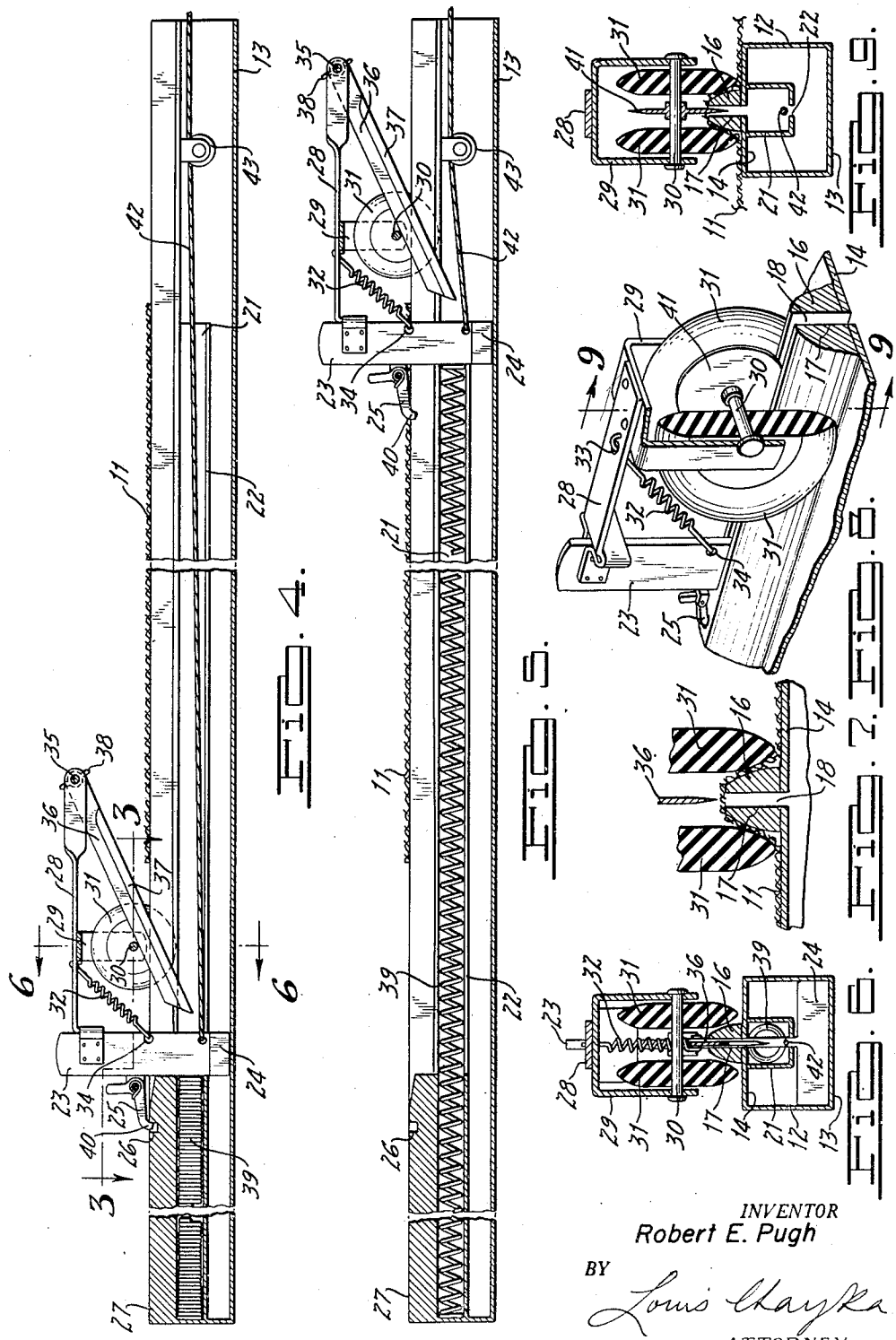


Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

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CLOTH CUTTING APPARATUS

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5 Claims. (Cl. 164—73)

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The apparatus has been designed for a slitting operation and is of a type in which a length of cloth laid out on a table and over a part of my apparatus may be cut by a cutting member adapted to be moved along guiding rails upon which the cloth is stretched. While a number of such cloth cutting machines have already been designed, my improvement pertains to a device whereby cloth to be cut is engaged by means adapted to stretch said cloth in the path of the cutting element as it is advanced along its guide rails. The object of my invention is to provide a cutting apparatus by means of which cloth may be cut straight along a certain line and by means of which said cloth may be held in place against wrinkling, folding or pulling, which all actions might result in a jagged line of cut and a loss of material to be cut.

I shall now describe my improvement with reference to the accompanying drawings in which:

Figure 1 is a perspective view of my apparatus as it is used in conjunction with a table on which cloth is spread for cutting, the view showing a length of such cloth;

Figure 2 is an enlarged perspective view of the cutting assembly of my apparatus, the view disclosing parts broken off for the purpose of showing the internal structure of a part of my apparatus;

Figure 3 is a sectional view of elements of my apparatus, the view being taken on line 3—3 of Figure 4;

Figure 4 is a longitudinal sectional view of my apparatus, previous to its operative function;

Figure 5 shows a longitudinal sectional view of my apparatus with a cutting element shown at the end of its operative movement;

Figure 6 is a sectional view taken on line 6—6 of Figure 4;

Figure 7 is an enlarged sectional view of elements of construction of my cutter;

Figure 8 is a perspective view, partly in section, of a modified cutting assembly;

Figure 9 is a sectional view taken on line 9—9 of Figure 8.

Similar numerals refer to similar parts throughout the various views.

The apparatus devised by me may be mounted upon the surface of a table 10 as shown in Figure 1, the table serving also to support cloth 11 which is to be cut. For the purpose of description of the apparatus, it may be said that it includes a guiding assembly and a cutting assembly. The guiding assembly includes an oblong casing 12

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substantially rectangular in shape, said casing having a flat bottom 13 and a flat top 14, the latter being split midway, as shown at 15. Disposed along the edges of the split are two rails 16, said rails having flat opposing faces 17 spaced from each other to form a slot 18. Generally speaking, the rail in cross section is substantially triangular, one flat side of the rail forming a side of the slot, another flat side forming the base of the rail, while the third one, being the outer face of the rail, is preferably curved outwardly as shown at 19. Thus, in cross section, the rail may form a quarter segment of a circle or a quarter segment of an ellipse. Disposed directly under the slot is an oblong channel, generally indicated by numeral 20 and formed of two L-shaped members 21 in opposed relation to each other, but separated by a slot 22.

Mounted within the above said slot 18 and resting upon the bottom 13 of the casing 12, is an upright standard 23 provided with a flat shoe or base 24 slidingly resting upon said bottom 13. A pivoted hook 25, adapted for engagement with a recess 26 in a solid portion 27 of the casing, serves to keep the standard in place against movement longitudinally within said casing.

Mounted upon the upper portion of the standard 23 is a horizontal arm 28 extending parallel to the rails 16 directly over the slot 18 therebetween. Secured to said arm is a transversely disposed bracket 29 having the shape of an inverted letter U, the bracket supporting, by means of a transverse axle 30, two soft rubber rollers 31. The rollers, which are spaced from each other, straddle the rails, the inner surface of each roller below its center being in a frictional contact with the curved side 19 of the respective rail 16. Said rollers are of such a diameter as to be, preferably, slightly spaced from the top of casing 12, as shown in Figure 6. It is intended that the rollers bear down from above against said rails and for that purpose I have provided a length of a coiled spring 32, said spring being at its upper end 33 affixed to said arm 28 and being affixed at 34 to the standard 23. The purpose of the spring is to exert a downward pull upon the arm in order that the rollers may press against the sides of the rail 16. Pivotally affixed at 35 to the outer end of arm 28, is an oblong blade 36 extending downwardly at an angle to said arm 28, and passing downwardly through the slot 18 into the casing 12. The cutting edge 37 is on the underside of the blade, the angle of said blade being adjustable by means of a thumb screw 38, as best shown in Figure 2.

As already indicated, the standard is adapted to move longitudinally within the casing 12 and this may be accomplished either by a manual pull longitudinally with respect to said casing or by some other means. Preferred means considered by the applicant comprise a coiled spring 39 disposed within the channel 20 just under the slot 18. Normally, prior to the operative action of the blade, the spring may be compressed manually until hook 25 becomes engaged within recess 26. When cloth 11 is laid upon the top of rails 16 and the operation is to begin, said hook 25 may be disengaged from recess 26, whereupon the standard will be pushed within the casing along the slot by the expanding spring 39 until it has reached the position shown in Figure 5. Here, hook 25 will engage another recess 40, this serving as a check for the outward movement of said standard 23.

The operation of my apparatus has already been partly described. To supplement said description, I wish to state that a length of cloth which is to be cut is laid over the top of said casing 12 and over the rails 16 so that the line of cut will coincide with the line of the slot 18. It will be understood that in this phase, standard 23 will be in its initial operative position as shown in Figure 4. As hook 25 is withdrawn from recess 26 and the standard begins to move under the pent-up energy of coiled spring 39, the rubber rollers 31 will bear against the cloth along the line of the cut to be made, stretching the cloth over the top of the rails somewhat in advance before said cloth is slit by the blade 36. This is an important feature. That is, care must be taken to adjust the blade in such a manner that the cloth will be first stretched by said rollers before the blade of the knife will engage the respective portion of the cloth in a slitting operation. It is by reason of this adjustment that the line of cut is even, without any jags or deviations. Moved by the action of said spring 39, the standard will continue sliding within the casing 12 till hook 25 has encountered recess 40, whereupon the movement of the standard will come to a close, this being the outer terminal position of said standard 23. In order to repeat the performance, hook 25 may be removed from recess 40, whereupon the standard 23 may be pushed rearwardly to its initial position shown in Figure 4 against the tension of spring 39.

A different cutter is shown in Figures 8 and 9. Here, instead of using an oblong blade of the kind indicated by numeral 36, I am employing a disc-shaped blade 41, the blade being keyed to axle 30, which supports rubber rollers 31. The operation is similar, except that the operative, rotary movement to the blade is imparted by the rotation of the rollers 31. In other words, as the rollers are moved along the rails, said rollers, being in a frictional contact with the cloth to be cut and the rails 16 under the cloth, will cause simultaneous rotation of disc 41. The disc, as will be noted, fits into the slot 18 between rails 16, so that in its rotation it will slit the cloth held in place by the rollers.

To conclude the description of my apparatus, I wish to refer to a cord 42 which is affixed to standard 23 and extends outwardly of the casing 12, over a pulley 43, as shown in Figures 4 and 5. The cord serves as a convenient means of operating the apparatus independently of the coiled spring 39 or in conjunction therewith. However, it will be understood that this cord is

but an optional feature and not a material element of my apparatus.

It will be obvious that some changes may be made in the construction of my apparatus without departing from the inventive principles disclosed herein.

What I therefore wish to claim is as follows:

1. In a cloth cutting machine including an oblong casing, the casing having a top split longitudinally, two rails on said top along the edges of the split and in a spaced relation to each other to form a slot, an upright standard disposed within the split at the top of the casing and the slot and having a sliding base within the casing under the slot, a horizontal arm mounted upon said standard and extending above the rails parallel thereto, two rollers mounted by intermediate means upon said arm, the rollers straddling the rails in a frictional contact with the outer sides thereof, a cutting blade disposed between said rollers and extending into the slot, and means to move the standard longitudinally between the rails.

2. In a cloth cutting machine including an oblong casing split at top, two rails on top of said casing along the edges of the split and in a spaced relation to each other to form a slot in alinement with said split, an upright standard disposed within the slot and said split and having a sliding base within the casing under the slot, a horizontal arm mounted upon said standard and extending above the rails parallel thereto, two rollers mounted by intermediate means upon said arm, the rollers straddling the rails in a frictional contact with the outer sides thereof, a cutting blade disposed between said rollers and extending into the slot, a coiled spring within the casing and bearing against the said standard to cause on compression of said spring to move the standard longitudinally along said rails.

3. A cloth cutting apparatus of the kind described including two oblong rails disposed parallel to each other and spaced from each other to form a slot therebetween, a vertical standard passing through said slot upwardly, an arm mounted on said standard and extending parallel to the rails and over the slot, a bracket mounted on the arm midway its length, two rollers mounted for rotation within the bracket and straddling the rails in a frictional contact with the outer surface thereof, an oblong blade connected to the outer end of the arm and extending rearwardly and at an angle to said arm and downwardly between the rollers and into the slot, and means to move the standard longitudinally along the rails.

4. In a cloth cutting machine of the kind described, an oblong casing split at the top midway its width, two rails mounted on the top of the casing along the sides of the split and spaced from each other to form a slot, a vertical standard having a sliding base within the casing and extending upwardly through the slot, an arm mounted on the standard parallel to the rails and above the slot, a bracket supported by said arm, two rollers mounted for rotation within the bracket, said rollers straddling the rails and being in a frictional contact with the outer surfaces thereof, a coiled spring anchored to the standard and affixed at the other end to the arm to cause the rollers to press downwardly upon the rails, an oblong blade connected to the outer end of the arm and extending rearwardly at an angle thereto and passing between the rollers into the slot, and

means to move the standard longitudinally along said rails.

5. In a cloth cutting machine of the kind described, an oblong casing having a slot in the top extending along its length, two rails along the opposite edges of the slot, each rail in cross section having a straight side to form the side of the slot, a straight base and an outwardly curving side extending from the top of the slot to said base, an upright standard within the slot, a horizontal arm mounted on the standard and above the slot, an inverted U-shaped bracket on the underside of the arm, a horizontal axle journalled within the bracket, two rollers keyed to the axle, the rollers straddling the rails in a frictional contact therewith, a disc cutter mounted on the axle between the rollers for rotation therewith and extended into the slot, the disc being of a diameter smaller than that of the rollers, and means to move the standard longitudinally within the slot.

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No references cited.