

May 18, 1926.

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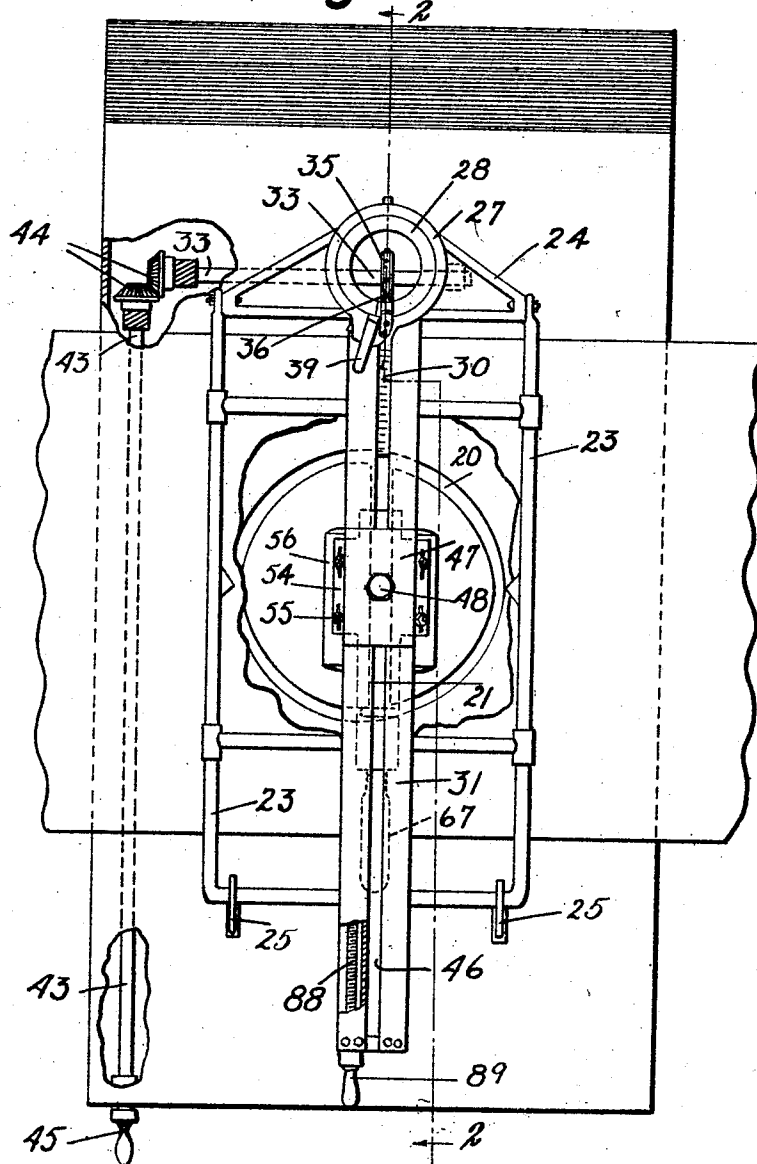
M. F. BIERSDORF
CLOTH CUTTING MACHINE

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Filed July 27, 1923

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Fig. 1.



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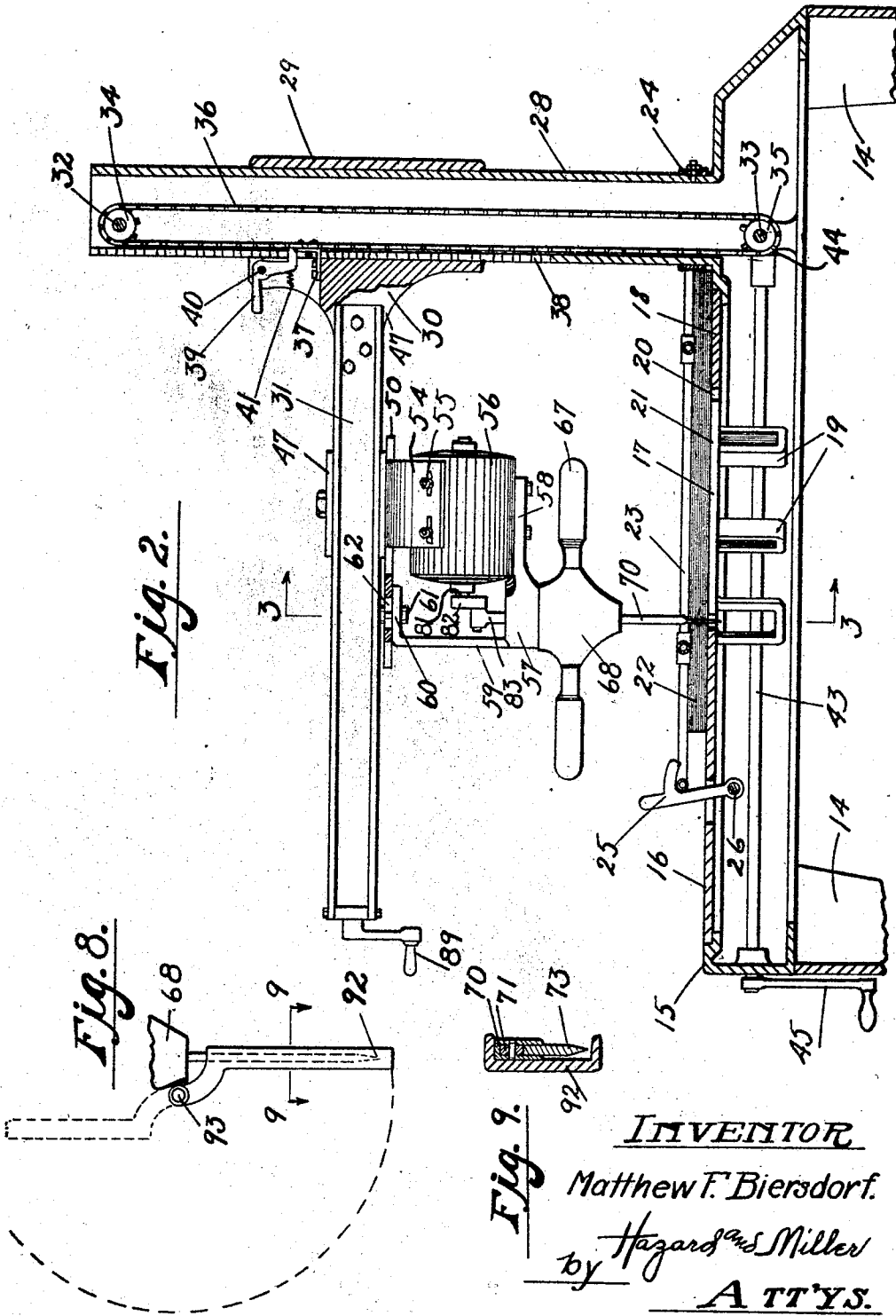
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UNITED STATES PATENT OFFICE.

MATTHEW F. BIERSDORF, OF LOS ANGELES, CALIFORNIA.

CLOTH-CUTTING MACHINE.

Application filed July 27, 1923. Serial No. 654,167.

My invention relates to and has for its purpose the provision of an apparatus by which a plurality of layers of cloth can be simultaneously cut to provide neck openings, pockets, or the like.

Although I have herein shown and will describe only one form of cloth cutting apparatus embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention and the spirit and scope of the appended claims.

In the accompanying drawings,

Fig. 1 is a view showing in top plan, with portions thereof broken away, one form of cloth cutting apparatus embodying my invention.

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2.

Figs. 4, 5 and 6 are sectional views taken on the lines 4—4, 5—5 and 6—6, respectively, of Fig. 3.

Fig. 7 is a detailed perspective view showing the carriage block comprised in the apparatus.

Fig. 8 is a view showing in side elevation a knife guard in applied position to the knife of the apparatus shown in the preceding views.

Fig. 9 is a transverse sectional view taken on the line 9—9 of Fig. 8.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings, and particularly to Figs. 1 and 2, my invention, in its present embodiment, comprises a table including a frame 15 supported on legs 14 and on which is removably supported a platform including plates 16, 17 and 18 associated with each other through the medium of U-shaped brackets 19, to provide a continuous curved slot 20 and a linear slot 21, all as clearly shown in Fig. 1.

Upon the table, layers of cloth, designated at 22, are adapted to be supported in spanning relation to the slots 20 and 21, and securely held in this position by means of a clamping frame 23, mounted for pivotal movement upon a yoke 24, so as to occupy a clamping position, shown in Fig. 2, when it is engaged by latch hooks 25 pivoted as at 26 and extending through suitable slots formed in the plate 16.

The yoke 24 includes a collar 27 which is secured to a tubular standard 28, upon which is supported for vertical sliding movement a sleeve 29 provided with an extension 30, to which an arm 31 is bolted or otherwise secured.

Means are provided for elevating or lowering the sleeve 29 upon the standard 28 to effect a vertical adjustment of the arm 31, and this means, in the present instance, comprises shafts 32 and 33 operatively connected to sprockets 34 and 35 about which is trained an endless chain 36. Through the medium of an angle plate 37, the chain is operatively connected to the sleeve 29, such plate extending through a vertical slot 38 formed in the standard 28, so that when one stretch of the chain is moved vertically, a corresponding movement will be imparted to the sleeve 29. For latching the sleeve in any vertical position, a latching dog 39 is pivoted at the point indicated at 40, and is normally urged by a spring 41 to a position in which it engages teeth formed in the slot 38.

To effect actuation of the chain 36, the shaft 33 is operatively connected to a shaft 43 by means of bevelled pinions 44 (Fig. 1), the shaft 43 being arranged beneath the table top and having one end thereof extended from the table and provided with an operating crank 45.

The arm 31, as clearly shown in Fig. 3, is made up of a pair of channel irons sustained in spaced relation to provide a longitudinally extending slot 46, in which works an eye-block 47. As shown in Fig. 4, a king bolt 48 extends through the eye-block 47 and through the slot 49 of a bracket 50, a washer 51 being mounted upon the lower end of the bolt to confine the latter against displacement from the slot so that the bolt serves as a pivotal mounting for the bracket. The under side of the block 47 is provided with a master guide groove 52 in which works a pin 53 guided by the bracket 50. This pin and groove connection provides positive means for causing the bracket to describe a predetermined path when the latter is moved, it being understood that the slot 49 is such that the bracket is free to respond to the guidance of the pin 53.

As shown in Fig. 3, the bracket 50 is provided with depending arms 54 slotted to accommodate bolts 55 for adjustably securing

a motor 56 to the bracket. A cylindrical head 57 is provided with an arm 58 which is bolted or otherwise secured to the motor 56. A vertical arm 59 is also formed integral with the head and provided with an extension 60 which carries a bolt 61 that extends through a slot 62 formed in the forward end of the bracket 50. As illustrated to advantage in Fig. 3, the head 57 is provided with a reduced lower end to form an annular shoulder 63 and an annular groove 64, the latter receiving a locking ring 65 engaged by a threaded extension 66 carrying handles 67. The extension 66 passes through a head 68 which is interiorly threaded to engage a collar 69 which abuts the shoulder 63 and reposes upon the ring 65, all as clearly shown. The head 68 has secured thereto a depending guiding element 70 in which is secured a shank 71 of a blade 72. The blade 72 is exposed at the lower end of the element and constitutes one of the blades of the cloth cutting knife. The other blade is designated at 73 and is shown as slidably mounted within the guiding element 70. The cutting edges of the blades 72 and 73 are inclined so that the two blades co-operate to provide a pointed knife to facilitate penetration of the layers of cloth and to effect a clean cutting of the cloth, as will be understood. The blade 73 is provided with a shank 74 which extends upwardly through a suitable opening in the head 68 and between the sections of a block 75 (Fig. 5) where it is secured by means of a screw bolt 76. The block 75 is arranged within a cylindrical shell 77, and the block and blade shank 74 are formed with shoulders which co-operate with a shoulder 78 formed interiorly of the shell to define the lowermost position of the blade shank. The uppermost position of the blade shank is defined by a plug 79 threadedly fitted within the shell 77 and engaging a washer 80 interposed between the block and the upper end of the shank blade. Reciprocating movement is adapted to be imparted to the shell 77 by a motor 56, the shaft 81 of the motor being provided with a crank 82 pivotally connected to a link 83 which latter in turn is pivotally connected to ears 84 formed on the block 79. The shell 77 moves in a bushing 85 and is locked against circumferential movement by means of ribs 86 (Fig. 5) which repose within correspondingly shaped grooves formed in the head 57. As the shell 77 is operatively connected to the blade shank 74, it will be clear that when the motor 56 is energized, the reciprocating movement of the shell will be imparted to the blade 73 while the blade 72 remains stationary. The block 75 can be rotated within the shell 77 so as to allow a rotational movement of the blade shank 74, and as the head 68 can be rotated on the head 57, the blades 72 and 73 of the knife

can be circumferentially adjusted during the reciprocating movement of the blade 73 for a purpose which will be hereinafter described.

As shown in Figs. 3 and 7, the block 47 has secured thereto a screw threaded sleeve 87 through which extends a screw threaded shaft 88 which is capable of being manually rotated by means of a crank 89 whereby longitudinal adjustment of the block 47 upon the arm 31 can be effected to vary the horizontal position of the knife and its driving means.

The operation of the apparatus is as follows: As shown in Fig. 1, the several layers of cloth to be cut can be securely clamped in spanning relation to the slots 20 and 21 by means of a clamping frame 23. Normally, the knife is elevated to allow the application of the layers of cloth, but the knife can be lowered so as to penetrate the several layers of cloth and thus dispose the blade 72 within the slot 20 while manipulating the crank 45 to lower the arm 31. The horizontal positioning of the knife with respect to the groove 20 can be effected by a longitudinal adjustment of the block 47 on the arm 31 through actuation of the crank 89. In order to facilitate passage of the knife through the several layers of cloth, the motor 56 is energized to cause reciprocation of the blade 73. The blade 72 may be considered a guiding blade and the blade 73 as the cutting blade. The blade 72 extends into the slot and remains at the same depth in the cloth throughout the cutting action. The blade 73 reciprocates and cuts with a stabbing action as distinguished from a shearing or ripping type of cut.

Now that the knife occupies the position shown in Fig. 1, a cutting of the several layers of cloth to form a neck or similar opening can be effected by manually gripping the handles 67 and thus moving the knife and its mounting horizontally through the slot 20, it being understood that the motor 56 and its supporting means will swing about the kingbolt 48 as a center to allow this movement of the knife. The knife is caused to accurately follow the path defined by the groove 20 owing to the influence of the pin 53 moving within the groove 52, as it will be understood that the groove 52 defines in miniature the same path as the groove 20. During manual movement of the knife, the blade 73 continues to be reciprocated by the motor 56 so that the layers of cloth are cleanly cut as the knife advances. By virtue of the mounting of the blades 72 and 73, they can be turned in one direction or the other so as to at all times present the cutting edge of the blade 73 foremost in effecting the proper cutting of the layers of cloth.

If it is desired to slit the layers of cloth, as when forming pockets, this can be effected

by first locking the bracket 50 against movement upon the block 47. The block 47 can now be adjusted so as to dispose the knife within the straight slot 17 when, by operation of the crank 39, the block 47 can be moved horizontally upon the arm 31, thereby causing the knife to be moved along the slot 17 but under the guidance of the hands of the operator, as will be understood. In this operation, the blade 73 continues to be reciprocated so as the knife is advanced the several layers of cloth are cut.

To effect a locking of the bracket 50 with respect to the block 47, I provide a screw 90 which is threadedly fitted in a bracket 50 so as to engage within a recess 91 formed in the block 47, thereby preventing movement of the bracket about the kingbolt 48, and thus providing a rigid connection between the block and bracket.

In Figs. 8 and 9, I have shown a guard 92 for the knife of the apparatus which is pivotally mounted at the point indicated at 93 to occupy the guarding position shown in solid lines in Fig. 8 or the non-guarding position shown in dotted lines. It will, of course, be understood that when the knife is operating the guard will occupy the dotted line position, but when inactive, the guard is swung to the guarding position so that the cutting edges of the blades are properly protected.

What I claim is:

1. A cloth cutting apparatus comprising a knife including a stationary guiding blade and a reciprocating cutting blade, having a stabbing action, and a mounting for said knife by which it can be moved in any predetermined path.

2. A cloth cutting apparatus comprising a table upon which layers of cloth are adapted to be supported, a knife sustained above the table and including a stationary blade and a reciprocating blade, means for driving the reciprocating blade, a support for said driving means and said knife, and means formed on the table support by which the knife is caused, when moved, to describe a predetermined path through the layers of cloth on said table.

3. A cloth cutting apparatus comprising a table, means for clamping layers of cloth to said table, a manually movable knife above the table including a stationary blade and a reciprocating blade, means for driving the reciprocating blade, a vertically adjustable arm for supporting said driving means and knife, and means on the arm and table for causing said knife, when moved, to describe a predetermined path through the layers of cloth on said table.

4. In a cloth cutting apparatus, a knife mounted for vertical and lateral movement and including a stationary guiding blade, and a reciprocating cutting blade having a

stabbing action and both blades operating from the same side of the cloth.

5. A cloth cutting knife comprising a stationary guide blade and a reciprocating cutting blade sliding along the guiding blade, both blades operating from the same side of the cloth, the cutting edge of the reciprocating blade moving beyond the end edge of the stationary blade.

6. A cloth cutting blade comprising a stationary guiding blade, means to adjust said blade vertically and insert its point through the cloth to be cut, and a reciprocating cutting blade sliding along the guiding blade beyond the point thereof and through the cloth from the same side of the cloth as the guiding blade.

7. A cloth cutting apparatus comprising a table having slots therein, a standard, an arm adjustable vertically on the standard, a knife sustained for movement on the arm and including a stationary blade and a movable blade, said knife being adapted for movement within the slots of said table, driving means for the reciprocating blade carried by said arm, and means interposed between the arm and driving means for causing said knife to describe the path defined by said slots.

8. A cloth cutting apparatus comprising a table having slots therein, a standard, an arm adjustable vertically on the standard, a knife sustained for movement on the arm and including a stationary blade and a movable blade, said knife being adapted for movement within the slots of said table, driving means for the reciprocating blade carried by said arm, and means interposed between the arm and driving means for causing said knife to describe the path defined by said slots, said means comprising a block secured to said arm and having a slot therein, and a pin associated with the driving means and movable in said slot.

9. In a cloth cutting apparatus, a table having slots therein, and means for clamping layers of cloth on the table and in spanning relation to said slots said clamping means comprising a yoke, a frame pivoted to said yoke, and means to hold the frame in clamped position.

10. In a cloth cutting machine, a base, a standard mounted thereon, an adjustable arm on the standard, a block slidably mounted on the arm, a motor supported by the block, means for rotating the motor on the arm, and a reciprocating knife operated by the motor and cutting with a stabbing action.

11. In a cloth cutting machine, a base, a standard mounted thereon, an adjustable arm on the standard, a block slidably mounted on the arm, a motor supported by the block, means for rotating the motor on the arm, and a knife carried by the motor

including a stationary guiding blade and a movable cutting blade, the latter blade cutting with a stabbing action.

12. In a cloth cutting apparatus, a motor, a knife including a stationary guiding blade and a reciprocating cutting blade operatively connected to said motor, said reciprocating blade cutting with a stabbing action, and means by which both of said blades can be moved about their longitudinal axes during reciprocation of the movable blade.

13. In a cloth cutting apparatus, an arm, a block adjustable longitudinally on the arm, said block being formed with grooves, a bracket rotatably mounted on the arm, a pin carried by the bracket and movable in said grooves, a motor carried by the bracket, and a rotatable knife movable with the bracket and including a stationary blade and a reciprocating blade operatively connected to said motor.

14. In a cloth cutting apparatus, an arm, a block adjustable longitudinally on the arm, said block being formed with grooves, a bracket rotatably mounted on the arm, a pin carried by the bracket and movable in said grooves, a motor carried by the bracket, a rotatable knife movable with the bracket and including a stationary blade and a reciprocating blade operatively connected to said motor, and means for locking said bracket against rotational movement on said block.

15. In a cloth cutting apparatus, an arm, a carriage adjustable longitudinally on the arm and including a bracket rotatable on the arm, a motor carried by said bracket, and a rotatable knife movable with the bracket and including a stationary blade and a reciprocating blade operatively connected to said motor, and means for locking said bracket against rotational movement on said block.

16. A cloth cutting apparatus comprising a table having slots therein and upon which layers of cloth are adapted to be supported, a knife movable in said slots and including a stationary blade and a reciprocating blade, means for driving the reciprocating blade, and means for supporting said knife and driving means so that the knife is capable of following the path defined by said slots.

17. In a cloth cutting apparatus, a table upon which layers of cloth are adapted to be supported, knife guiding means formed on the table, an arm mounted for vertical adjustment above said table, a knife adjustable horizontally on said arm and rotatable with respect thereto, said knife including a stationary blade movably engageable with said guiding means and a reciprocating blade, and means for driving the reciprocating blade.

In testimony whereof I have signed my name to this specification.

MATTHEW F. BIERSDORF.