

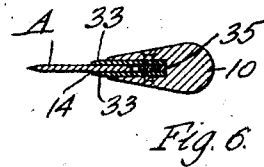
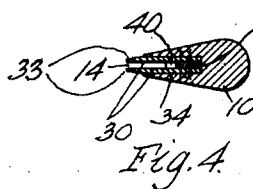
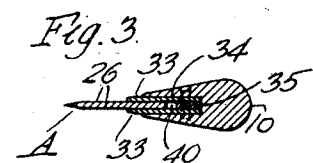
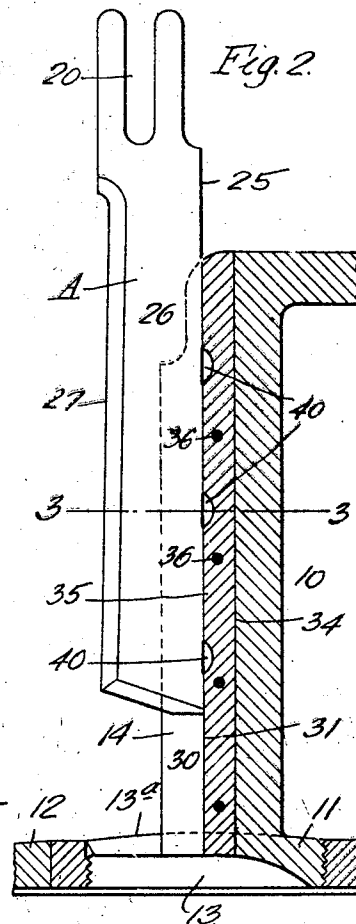
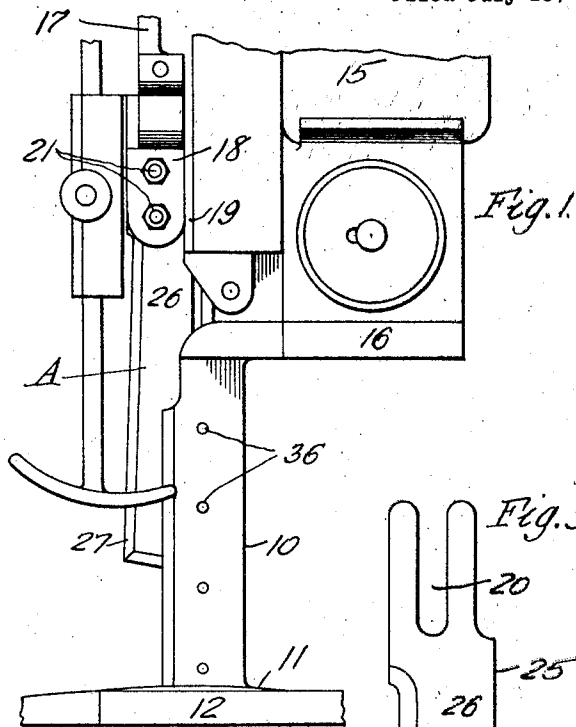
July 13 , 1926.

1,592,679

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CLOTH CUTTING MACHINE

Filed July 13, 1925



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Patented July 13, 1926.

1,592,679

UNITED STATES PATENT OFFICE.

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CLOTH-CUTTING MACHINE.

Application filed July 13, 1925. Serial No. 43,086.

This invention relates to improvements in cloth cutting machines, and particularly to that class of such machines having reciprocating cloth cutting knives.

6 In machines of this kind a straight, thin, elongated knife or blade is secured at one end to a slide or other means for imparting reciprocating motion thereto, and the knife is guided in its reciprocating motion in a substantially upright guide slot formed in a standard or leg on the upper end of which a motor and the necessary driving connections are mounted, the lower end of the standard being secured to, or provided with, 15 a throat plate attached to the usual base plate which moves beneath the cloth or other material being cut. The throat plate is provided with the usual longitudinal throat or opening extending therethrough and 20 which forms a continuation or enlargement of the knife guide slot, and the knife moves in said guide towards and from the throat when cutting the material.

25 The knife is usually formed with a straight, continuous, square or flat heel portion or back edge, and the opposite sides or faces of the knife extend parallel, or substantially parallel, to each other. The guide slot has heretofore been made of similar 30 shape, so that the rear wall thereof fits closely against the back of the knife and with the sides of the slot engaging portions of the side faces of the knife, so as to leave the cutting edge exposed or extending out of the guide slot. The back of 35 the knife, therefore engages with the back of the guide slot for the full length of the knife in its movement up and down therein.

40 In practice this construction, and the resulting continuous contact of the knife with the rear wall of the guide slot, has been found to be objectionable for the reason that small particles of lint, and other accumulations from the material being cut, enter the guide slot, with the result that the lint and other foreign material becomes packed in the knife slot between the knife and the walls of the slot. This produces excessive friction which causes heating of 50 the knife and also impedes the free action of the knife to such an extent that the proper working of the machine is impossible without frequent cleaning of the guide slot and 55 knife.

The objects of the present invention are to provide a cloth cutting machine of the character described, having a guide slot which is formed or is provided with means to overcome the difficulties outlined above 60 so as to prevent the clogging of the guide slot and consequent interference with the free movements of the cutting knife; also to provide a machine of this sort with a guide slot formed with a portion or portions 65 located preferably behind the knife into which lint and the like substances entering the guide slot may accumulate so as to prevent the guide slot from becoming clogged, and also preventing the knife from becoming 70 heated; also to form said guide slot with lint receiving portions so that the lint and other foreign matter and the lubricant supplied for the knife will act to improve and maintain the lubrication of the knife instead 75 of impeding the knife and interfering with the proper lubrication thereof; also to improve the construction of cloth cutting machines of the character described in the other respects hereinafter specified and claimed. 80

In the drawings,

Fig. 1 is a fragmentary side elevation of a cloth cutting machine of the reciprocating type, provided with the improved knife guiding means embodying the invention. 85

Fig. 2 is a longitudinal, sectional elevation, on an enlarged scale, of the standard, throat plate and knife of the machine showing a preferred form of the knife guiding means of the present invention. 90

Fig. 3 is a horizontal section thereof on line 3—3, Fig. 2.

Fig. 4 is a similar view with the knife omitted.

Fig. 5 is a view similar to Fig. 2 showing 95 a slightly modified arrangement of the knife guiding means.

Fig. 6 is a horizontal section thereof on line 6—6, Fig. 5.

A portion of a reciprocating cloth cutting machine of the sort to which the improved knife guiding means of the present invention is to be applied, is shown in Fig. 1 of the drawings, in which 10 is a fixed upright or standard secured at its lower end to a throat plate 11, and which in turn is rigidly 100 attached to the usual base plate 12. The throat plate 11, see Figs. 2 and 5, is provided with a throat or longitudinal recess 13 extending therethrough to the bottom of the 110

base plate and having a reduced, narrow opening 13^a in the top, and the standard 10 is formed with a knife guiding slot 14 extending from the top of the standard to the bottom and ending in the throat opening 13^a.

A motor 15 is fixed to a radial arm 16 of the standard, said motor being adapted to actuate suitable reciprocating mechanism, including the crank or pitman 17 pivotally secured to a slide 18 movable up and down in a vertical guide 19. The slide 18 is rigidly secured to the bifurcated upper end 20 of the cutting knife A by bolts or other fastenings 21, whereby the necessary vertical, reciprocating movements are imparted to the knife A.

The knife A is of a well known form commonly in use and which is provided with a straight, vertical back edge 25, side faces 26, and a front or cutting edge 27, and the knife guide slot 14 is formed with parallel side walls 30, and a rear or back wall 31 adapted to closely engage respectively with the side faces 26 and the rear face 25 of the knife A.

The knife guide slot 14 may be formed directly in the standard 10, but preferably, as shown in the drawings, is formed by a pair of spaced wear plates 33, which are disposed in parallel relation in a recess or groove 34 in the standard 10, and another relatively narrow wear plate 35 disposed between said plates 33 at the back or bottom of the recess 34, with its exposed edge forming the back wall 31 of the slot. The plates 33 and 35 are removably secured in the recess 34 by screws or other fastening devices 36. All of these parts have heretofore been used in connection with cloth cutting machines and of themselves constitute no part of this invention.

In accordance with the present invention one of the walls of the knife guide slot 14 is formed with one or more recesses or pockets, so that only a portion of the total length of the wall of the guide slot is in contact with the corresponding part of the knife, and in the particular constructions shown by way of example, the rear wall only of the guide slot is recessed, but it will be understood that the other walls may be recessed if desired.

In the construction shown in Figs. 2 to 4, this is accomplished by providing a plurality of spaced recesses or pockets 40 formed by milling or cutting out curved portions or pockets extending rearwardly from the front face of the wear plate 35, that is, into the rear wall of the guide slot, while in the construction shown in Figs. 5 and 6, the same result is obtained by providing a substantially continuous, straight recess 42 extending from the top of the guide slot and ending somewhat above the

highest point reached by the bottom edge of the knife in its reciprocatory movements. The slot 42 is also formed by cutting away a portion of the front edge of a wear plate 35.

By means of the two constructions described, lint or other particles from the material being cut, when carried into the guide slot 14 in the movements of the knife will, instead of packing tightly between the knife and the walls of the knife guide slot, as in the former constructions, find their way into the recesses 40 or the recess 42, thus relieving the pressure on the knife and reducing friction between the back edge and side faces of the knife and the back and side walls of the slot, and this lint and other foreign material mixes with the lubricant supplied in the guide slot for lubricating the knife, and forms a felt-like substance which engages the back edge of the knife in its reciprocatory movements, thereby aiding and maintaining efficient lubrication of the knife, rather than interfering with and obstructing free movements of the knife.

The described improvements in knife guiding means have been found by actual experience to increase greatly the efficiency of reciprocating cloth cutting machines, and the friction and consequent heating of the knives is substantially reduced. The recesses 40 or the recess 42 may be formed at only a slight increase in the cost of the machine, while permitting the use of standard knives heretofore employed. Furthermore, machines of this character already in use may be provided with the improved knife guide means by removing the rear or back wear plate of the machine and substituting therefor a wear plate provided with the recesses for the accumulation of the lint and foreign matter.

I claim as my invention:—

1. In a reciprocatory cloth cutting machine having a cutting knife formed with a substantially straight back edge forming a bearing surface, and a standard having a knife guiding slot therein, a wall of said guide slot against which said knife bears having a recessed portion which is out of contact with said knife.

2. In a reciprocatory cloth cutting machine having a cutting knife formed with a substantially straight back edge forming a bearing surface, and a standard having a knife guiding slot therein, the rear wall of said guide slot against which the back edge of said knife bears having a recess extending rearwardly beyond the back edge of said knife.

3. In a reciprocatory cloth cutting machine having a cutting knife formed with a substantially straight back edge, a standard having a knife guiding slot therein, the rear wall of said guide slot forming a bear-

ing surface for the back edge of said knife, and a plurality of spaced recesses extending into said rear wall from said guide slot and disposed above the highest point reached by the bottom edge of said knife in its reciprocatory movements. 10

4. In a reciprocatory cloth cutting machine having a cutting knife formed with substantially parallel side faces and a straight back edge, a standard having a knife guiding slot, a wear plate at the rear of said slot against which the rear edge of said knife is adapted to bear, and a recess in said wear plate disposed above the highest point reached by the bottom edge of said knife in its reciprocatory movements and communicating with said guide slot. 15

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