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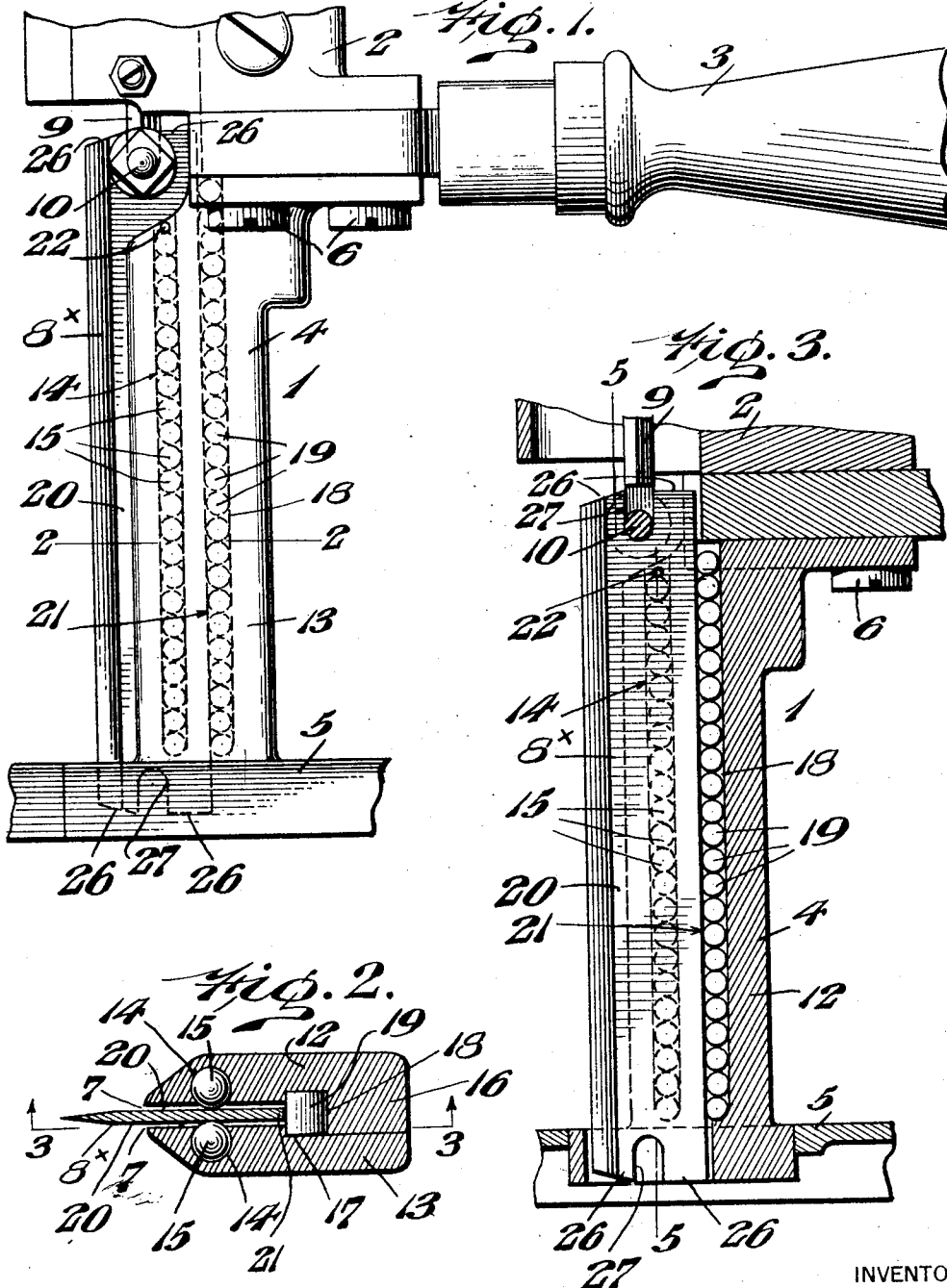
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I. APPELBAUM

CLOTH CUTTING MACHINE

Filed Feb. 4, 1928

2 Sheets-Sheet 1



INVENTOR:

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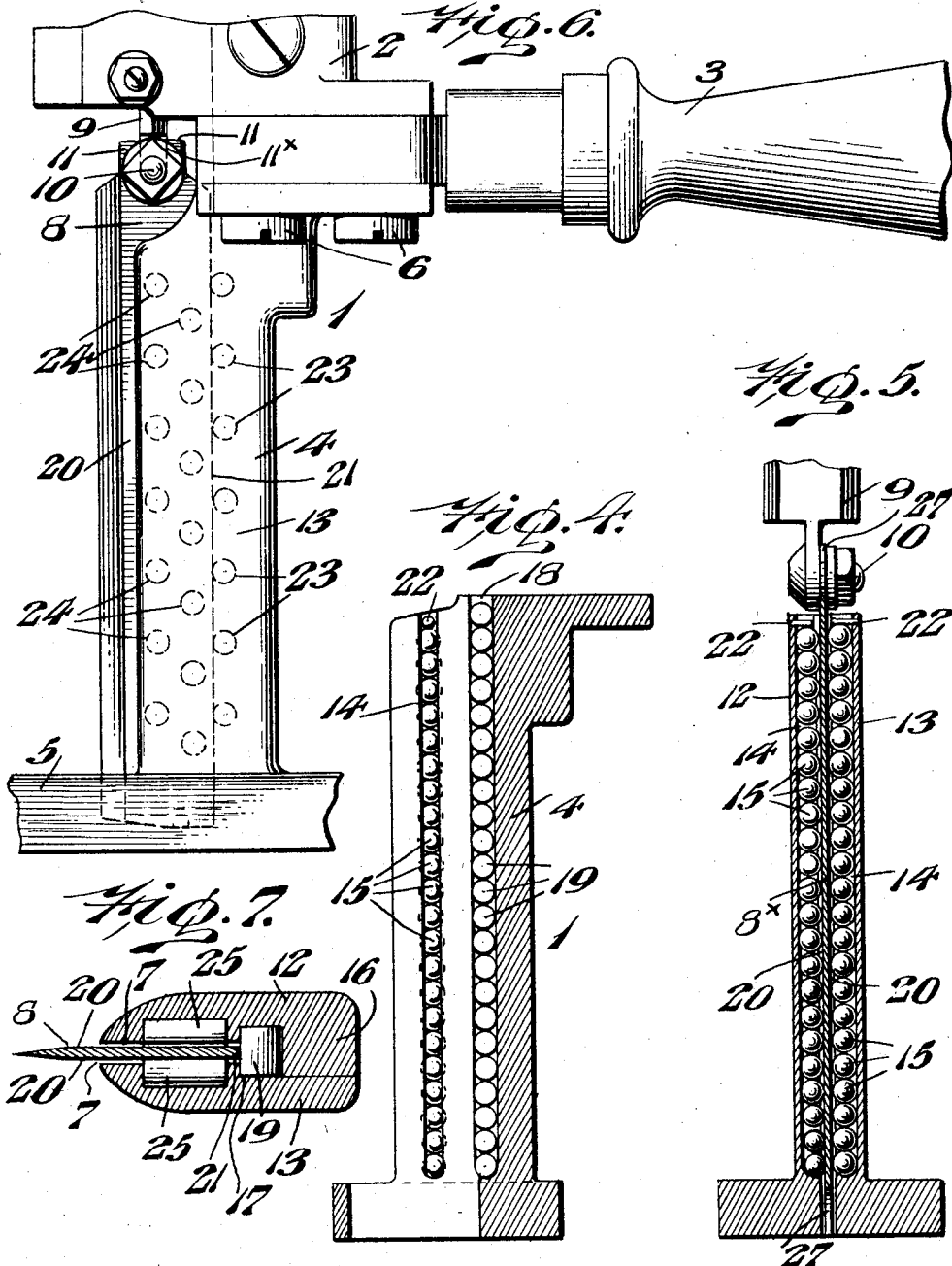
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I. APPELBAUM

CLOTH CUTTING MACHINE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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CLOTH-CUTTING MACHINE.

Application filed February 4, 1928. Serial No. 251,796

My invention relates to a new and useful cloth cutting machine and more particularly to a novel construction wherein the blade or cutting element of the machine is guided in an anti-friction bearing whereby the heat and friction ordinarily incident to the rapid movement of the blade is greatly reduced.

In cloth cutting machines made heretofore the blade is adapted to reciprocate in a longitudinal groove or slot provided in the upright column which also forms a support for the upper motor casing and carries a handle whereby the cutting machine is manipulated. Due to the very rapid movement of the blade which generally attains a speed of 2000 strokes per minute, a very great amount of frictional heat is developed which "burns" the blade and takes away the temper from the cutting edge thereof. It often happens that the blade is warped or distorted due to the great friction encountered and the lack of adequate guiding means.

It is the object of my invention to provide an anti-friction bearing for guiding the blade of a cloth cutting machine whereby the blade is not only accurately guided in its bearing but whereby also, the heat produced by the rapid movement of the blade is greatly reduced thus preventing the burning and warping of the blade with obvious attendant disadvantages.

To the above ends, my invention consists in providing the guide slot of the blade of a cutting machine with ball and roller bearings or a combination of both whereby the blade is constantly guided in proper position and whereby the friction and heat are greatly reduced.

My invention further consists in the various other novel features of construction, arrangement and collocation of parts, hereinafter described.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Figure 1, represents a fragmentary view in side elevation of a cloth cutting machine pro-

vided with a blade embodying my invention.

Figure 2, represents a section on line 2—2 of Figure 1.

Figure 3, represents a section on line 3—3 of Figure 2.

Figure 4, represents a view of the bearing construction with a part of the casing removed to show the internal construction, certain parts being shown in section.

Figure 5, represents a section on line 5—5 of Figure 3.

Figure 6, represents a side elevation of a modified form embodying my invention.

Figure 7, represents a view similar to that shown in Fig. 2 showing a further modified form embodying my invention.

Referring to the drawings, in which like reference characters designate like parts, 1 designates a cloth cutting machine comprising the motor 2, handle 3, guide column 4 and base 5, said elements being of any conventional type and the motor 2 being secured to the handle 3 and column 4 by means of the screw 6, as will be understood from Figs. 1 and 6. The column 4 and integral base 5 are provided with a front groove or slot 7 in which is adapted to reciprocate the blade or cutting element 8 which is secured at its upper end to the actuating arm 9 (driven by the motor 2) by means of the screw 10 engaging a notch or recess 11* formed between the shoulders 11 provided at the upper end of said blade, as will be understood from Fig. 6. The column 4 is composed of the two upright sections or members 12 and 13 which are provided on the inner sides thereof with raceways 14 adapted to receive the balls 15. The member 12 is provided with a shoulder 16 while the member 13 is provided on the female counterbore 17 so that when said members are assembled a seat 18 is formed in which are positioned the roller bearings 19 as will be understood from Figs. 1, 2, 3, and 4, so that the sides 20 of the blade 8 bear against the ball bearings 15 while the rear edge 21 thereof bears against the rollers 19. The raceways 14 of the ball bearings 15 are formed closed at one end while the other end thereof is closed by any suitable means 22, to prevent the escape of said balls.

While in Figs. 1, 3, 4 and 5 I have shown continuous registering raceways containing a continuous row of aligning, contiguous balls 15 and a continuous, registering row of rollers 19 in the continuous seat 18, it is within the scope of my invention to vary this con-

struction with a view of affording a greater bearing surface for the sides and rear edge of the blade or with a view to reducing the weight, cost of manufacture and assembly. Thus in Fig. 6 I have shown a series of spaced roller bearings 23 in lieu of the continuous row of bearings 19, and a series of spaced, staggered ball bearings 24 in lieu of the continuous aligning row of ball bearings 15. In this construction, a smaller number of balls 24 and rollers 23 is employed than is needed in the construction shown in the other figures of the drawings, with a resultant reduction in weight, material used and cost of manufacture. Furthermore in this construction the entire area of the sides 20 of the blade 8 is brought into contact with ball bearings 15 at various points, instead of bearing against said balls along one continuous line as is the case in the construction shown in Figs. 1, 2, 3, 4 and 5.

While in Fig. 6 I have shown a blade 8 having shoulders 11 at one end thereof and provided with a recess 11* whereby said blade may be secured to the actuating arm 9, it is within the scope of my invention to employ a blade 8* provided at either end thereof with a recess 27 formed between the inclined shoulders 26 whereby said blade may be reversibly secured to the actuating arm 9 as will be apparent from Figs. 1, 3 and 5. In this embodiment I am enabled to utilize the entire cutting edge of the blade since if the upper portion of said cutting edge becomes dull, the blade is disconnected and the other end thereof is secured to the actuating arm 9 thus bringing the unused part of the cutting edge, that is the part that is still sharp, into action against the cloth being cut, thus effecting great economy in the expense of operation.

In Fig. 7 I have shown a further modification of my construction wherein I employ side roller bearings 25 in lieu of the ball bearings 15 which are employed in conjunction with the rear roller bearings 19, said bearings being arranged either as shown in Fig. 1 or as shown in Fig. 6 as may be desired. The employment of but a few spaced side roller bearings 25 in conjunction with a few spaced rear roller bearings 19 will afford ample guiding and friction reducing contact for the adjacent sides and edge of the blade 8 and will at the same time be inexpensive to produce.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes

thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent, is:—

1. In a device of the character stated, a blade guiding column, a blade mounted to reciprocate therein, oppositely located vertically disposed ball races on each side of said blade, balls therein, and contacting with said blade, a roller chamber in the back of said column, and vertically disposed rollers in said roller chamber, contacting with the rear edge of said blade.

2. A cloth cutting machine comprising a base, a driving element, an intermediate supporting column having a front guide groove therein, a cutting element adapted to be secured at one end thereof to said driving element and to be reciprocated within said guide groove, anti-friction means in said guide groove including ball bearings for the opposed sides of and roller bearings for the rear edge of said cutting element and a handle for manipulating said machine.

3. A cloth cutting machine comprising a base, a driving element, an intermediate supporting column having a front guide groove therein, a cutting element adapted to be carried by said driving element and to be reciprocated thereby within said guide groove, anti-friction means in said guide groove including two opposed continuous rows of aligning ball bearings for the opposed sides, and an intermediate continuous row of aligning roller bearings for the rear edge of said cutting element and a handle for manipulating said machine.

4. A cloth cutting machine comprising a base, a driving element, an intermediate supporting column having a front guide groove therein, a cutting element adapted to be carried by said driving element and to be reciprocated thereby within said guide groove, anti-friction means in said guide groove including spaced, opposed staggered ball bearings for the opposed flat sides and intermediate spaced roller bearings for the rear edge of said cutting element, and a handle for manipulating said machine.

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