

M. LANGMAN.
CLOTH CUTTER.

APPLICATION FILED SEPT. 8, 1909.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

957,070.

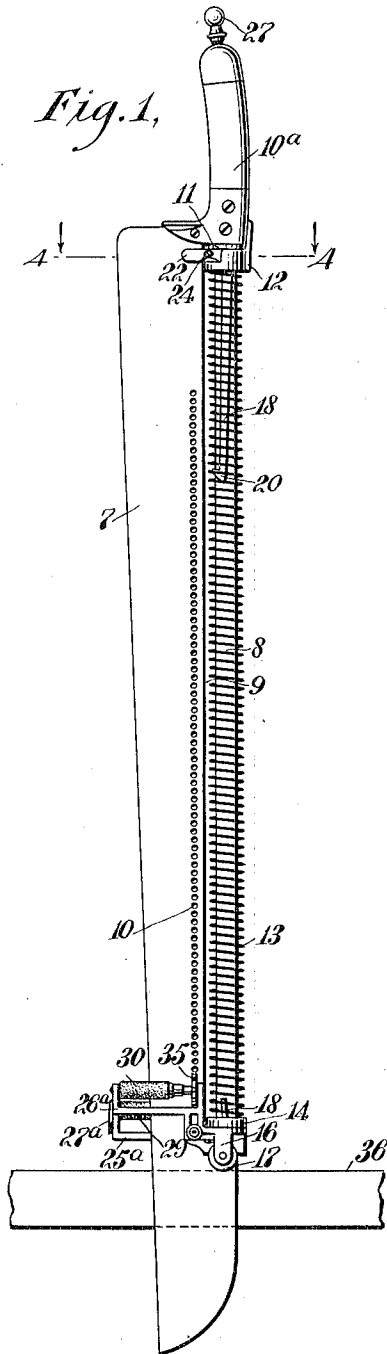


Fig. 1.

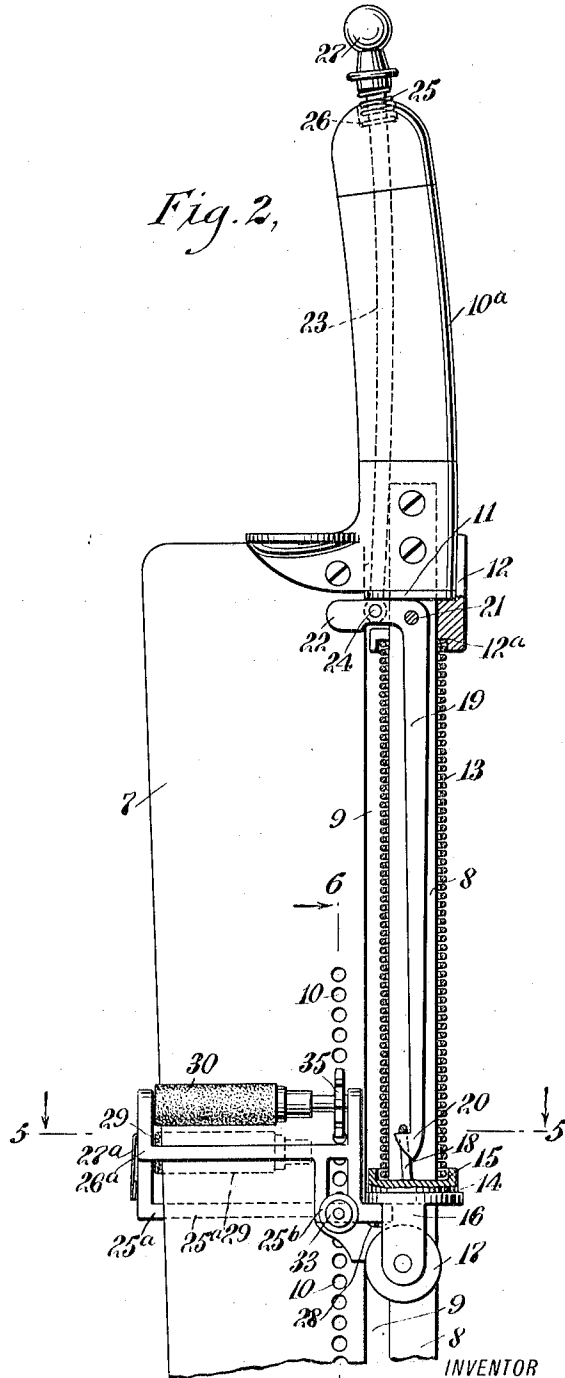


Fig. 2.

WITNESSES

Edward Thorpe
Walton Harrison

INVENTOR

Max Langman

BY *Mum Co*

ATTORNEYS

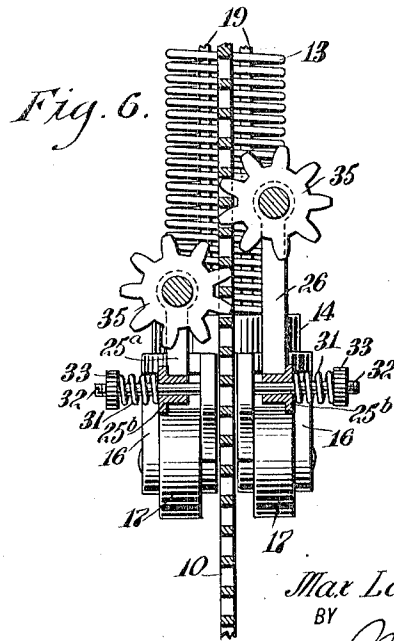
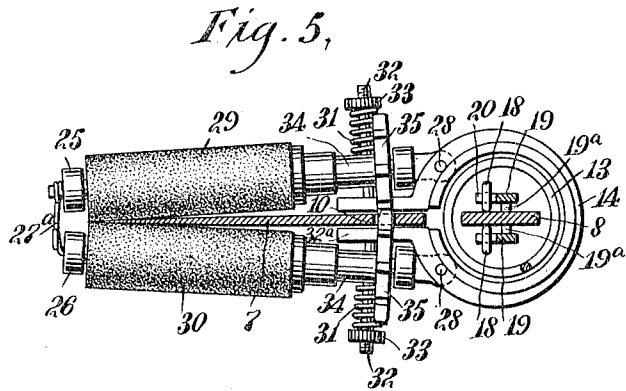
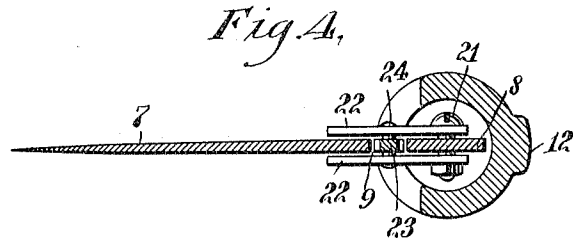
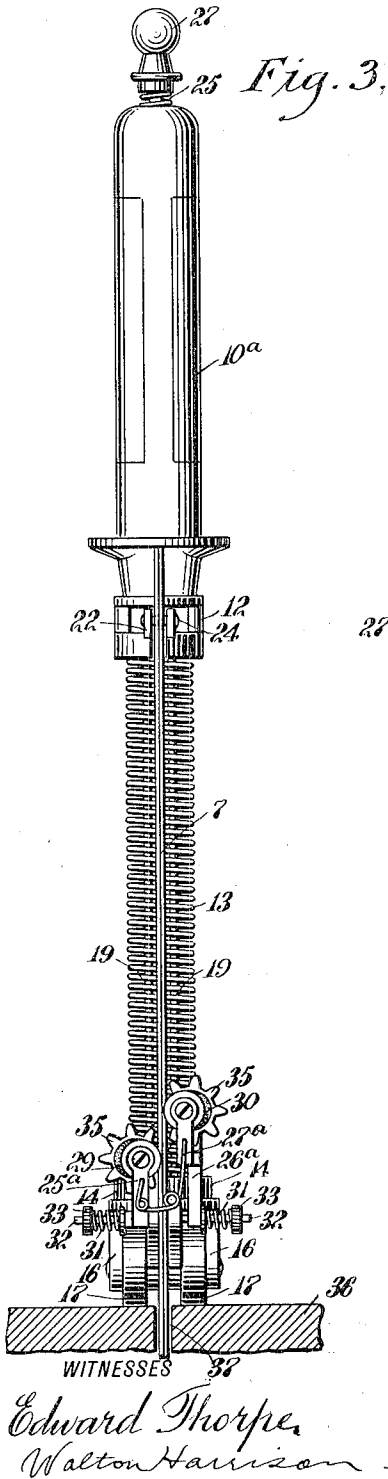
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UNITED STATES PATENT OFFICE.

MAX LANGMAN, OF NEW YORK, N. Y.

CLOTH-CUTTER.

957,070.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed September 8, 1909. Serial No. 516,698.

To all whom it may concern:

Be it known that I, MAX LANGMAN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Cloth-Cutter, of which the following is a full, clear, and exact description.

My invention relates to cloth cutters of the type employing a movable blade, my more particular purposes being as follows: I. To keep the blade constantly sharp, by operating upon it for this purpose while it is in action cutting cloth. II. To throw the sharpening mechanism out of working relation at the will of the operator without moving it from the blade and parts associated therewith. III. To provide various details of construction for improving the general efficiency of cloth cutters.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation showing my improved cloth cutter complete and ready for use, this view showing the sharpening mechanism in action; Fig. 2 is an enlarged fragmentary view, partly in side elevation and partly in section, showing the grinding mechanism rendered temporarily idle without interfering with the cutting by the blade; Fig. 3 is a fragmentary elevation, showing the device as it would appear when seen from the left of Fig. 2; Fig. 4 is an enlarged section on the line 4-4 of Fig. 1, looking in the direction of the arrow; Fig. 5 is an enlarged section substantially on the line 5-5 of Fig. 2, looking in the direction of the arrow, and showing certain details of the sharpening mechanism; and Fig. 6 is an enlarged section on the line 6-6 of Fig. 2, looking in the direction of the arrow, and showing other details of the grinding mechanism.

At 7 is a blade made of metal, preferably steel. Parallel with the back of this blade and integral with the same is a guide rod 8 made comparatively thin and separated from the blade by a slot 9. This guide rod is of substantially the same thickness as the back of the blade 7, and aside from the slot 9 might for some purposes be considered as a continuation of the blade. The blade 7

is provided with holes 10 arranged in a row which is parallel with the back of the blade. At 10^a is a handle which is mounted upon the blade and rigidly connected with the guide rod 8. Mounted upon the handle 10^a is a hilt plate 11 and a hilt band 12. This hilt band is provided with an annular depression 12^a into which fits a spiral spring 13. A carriage 14 is slidably mounted upon the guide rod 8 and is provided with an annular channel 15 into which a flat spiral spring 13 fits.

Integral with the carriage 14 are ears 16, and journaled relatively to the latter are rollers 17. The carriage 14 carries a pair of links 18 disposed upon opposite sides of the guide rod 8. A pair of pawl levers 19, each provided with a hook 20, are mounted upon a pin 21 extending directly through the guide rod 8. The pawl levers are provided with projecting portions 22 which extend laterally away from the guide rod 8. A push rod 23 is slidably mounted within the handle 10^a and is connected by a pin 24 with the projecting portions 22 of the pawl levers.

Encircling a portion of the push rod 23 is a spiral spring 25 which is partly mounted in a sink 26 and is also provided with a head 27. By pressing the head 27 toward the handle 10^a the pawl levers 19 are tripped so that the hooks 20 disengage the links 18. When, however, pressure upon the head 27 is relaxed, the elasticity of the spring 25 moves the push rod 23 in the general direction of its length so that this rod pulls upon the pin 24 and rocks the pawl levers 19, so that the hooks 20 engage the links 18.

Journaled upon the lower portion of the carriage 14 are two hangers 25^a, 26^a connected together at their outer ends by a spring 27^a. Rollers 29, 30 provided with roughened surfaces suitable for grinding are journaled in the hangers 25^a, 26^a. Two spiral springs 31 are mounted upon opposite sides of the hangers 25^a, 26^a, for the purpose of forcing these hangers toward each other. Each of these spiral springs 31 encircles a pin 32 which is threaded at its outer end and fitted with a revoluble nut 33. The pins 32 are mounted directly upon the extension 32^a (see Fig. 5) of the carriage 14. The pins 32 are therefore rigid relatively to the handle 10^a and guide rod 8. By turning the nuts 33 the springs 31 are compressed or relaxed as the

case may be and the pressure which they exert relatively to the hangers 25^a, 26^a, is thus varied at will.

The rollers 29, 30 are provided with reduced portions 34 carrying spur wheels 35, the latter extending into the slot 10 and being staggered as indicated in Fig. 6, so as to avoid intermeshing. These spur wheels mesh with the holes 10 so that whenever the handle 10^a is moved relatively to the carriage 14, so as to cause the blade 7 to reciprocate, the spur wheels 35 are turned, as will be understood from Figs. 2 and 6. The pawl levers 19 are provided with spacing pins 19^a (see Fig. 5) which engage opposite sides of the guide rod 8 and thus hold the pawl levers a little apart in order to cause them to engage the links 18 properly.

At 36 is a table upon which the cloth is to be cut. This table is provided with a slot 37 through which the blade 7 is adapted to travel.

The operation of my device is as follows: The operator collects together a number of layers of cloth to be cut and spreads these layers one upon the other, so that they all rest upon the table 36. The blade 7 is next inserted through the slot 37 (see Fig. 3) and the cloth is brought into proximity to the edge of the blade. The handle 10^a is now grasped and moved up and down so that the blade 7 reciprocates. The several thicknesses of cloth being duly pressed against the sharp edge of the blade, the various portions of the cloth are cut all alike. If the blade 7 be dull or if the cut to be made is exceedingly heavy, so that the tendency is to quickly dull the blade, the sharpening mechanism may be maintained constantly in use. If, however, the cut is comparatively light, and especially if the blade is already sharp, it may be desirable to throw the sharpening mechanism out of action. Where the sharpening mechanism is to be kept in action, the device operates as indicated in Fig. 1. Each time the handle 10^a is pressed downwardly toward the table 36, the spring 13 is compressed and the rollers 30 are turned because of the positive rotation of the spur wheels 35. Each time the handle 10^a is raised, the spring 13 becomes elongated and the spur wheels 35 now turn in a direction opposite to that in which they turned when the handle descended. The diameter of the rollers 30 being smaller than the diameters of the spur wheels 35, however, the rollers necessarily drag somewhat in relation to the blade 7; that is to say, the rollers turn in a direction corresponding to the direction of thrust of the blade but do not turn with sufficient rapidity to prevent the blade from being rubbed and ground by the rollers. Hence, the sharpening of the blade is practically constant and continues so long as the cutting continues.

In order to adjust the pressure of the rollers against the opposite sides of the blade, the operator has recourse to the nuts 33, turning the same in either of two directions, and thus adjusting the tension of the spiral springs 31, as above explained. If, now, during the cutting, the operator desires to throw the sharpening mechanism out of action, he can do this without even removing the blade 7 from the slot 37, and in fact, without stopping the reciprocating motion of the blade. He simply presses the handle 10^a once downward a little farther than usual. This brings the hooks 20 into engagement with the links 18, as indicated in Fig. 2. The carriage 14 now becomes fixed relatively to the guide rod 8, because the spring 13 can no longer expand. The result is that upon the next upward stroke the carriage 14, carrying with it the rollers 30 and parts associated therewith, is lifted bodily upward and becomes, for the time being, fixed relatively to the blade 7 and guide rod 8. In other words, the rollers 30 and parts accompanying the same lodge upon the upper portion of the device near the handle and are thenceforth carried up and down as the cutting proceeds. Suppose, now, that the operator, after cutting cloth continuously for some little time, ascertains from the character of the work, or from the resistance offered by the cloth, that the blade is becoming dull, he thereupon desires to throw the sharpening mechanism into action. Still maintaining his grasp upon the handle 10^a he places his thumb upon the head 27 and presses the latter downwardly. In doing this he compresses the spring 25, thereby actuating the pawl levers 19 and withdrawing the hooks 20 from engagement with the links 18. This movement disengages the carriage 14 from its fixed position. Upon the next up stroke, therefore, the carriage 14, being pressed downwardly by the spiral spring 13, is not lifted from its position relatively to the table 36, but the handle 10^a ascends, carrying with it the blade 7 and the guide rod 8. The reciprocating motion of the blade may now be maintained as long as desirable, the carriage 14 simply moving along the top surface of the cloth and having no other movement. The rollers 17 reduce the friction of the carriage to a minimum.

During the operation of the device the carriage 14, by means of the roller 17, holds the cloth steady, against the lifting action of the blade 7. The flat spiral spring 13 also aids the cutter by assisting in raising the blade on its upward stroke. The actual cutting done by the blade is in a direction away from the operator.

It will be noted by an examination of the rollers 29, 30 (see Fig. 3) that the roller to the left of the cutter is above the one on the

right. Hence, upon the downward stroke of the blade—that is, while the cutting takes place—the last grinding stroke of the rough surface of the roller throws the edge of the knife to the left. Now, it is a habit of practically all right-handed operators, in using a cloth cutting knife, to keep the edge of the knife constantly in touch with the left side of the slot through which the knife plays. I take advantage of this fact in distributing the grinding rollers as above stated, and such distribution aids materially in the effectiveness of the knife. For the use of left-handed operators, the order of arrangement of the rollers can be reversed. It will also be noted that during the operation of the cutter, whenever the carriage has been fixed rigidly to the blade and is liberated by the pressure upon the knob 27, the grinding mechanism heretofore idle is instantly thrown into action and immediately resumes its proper relation for the purpose of sharpening the blade.

While no particular length of blade is essential, I prefer to use a tolerably long blade, as indicated in the drawings.

I do not limit myself to any particular material, nor to the exact arrangement of the parts as disclosed.

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

1. A device of the character described, comprising a blade, a guide rod disposed parallel to said blade, a carriage through which said guide rod extends, said carriage being provided with rollers, a handle connected with said blade and with said guide rod for the purpose of actuating said blade, and revoluble sharpening members carried by said carriage and provided with surfaces for engaging said blade.

2. A device of the character described, comprising a carriage to be moved along a table, a blade to be reciprocated relatively to said table, a guide rod connected with said blade, a spiral spring encircling said guide rod and adapted to press said carriage toward said table, means for actuating said blade and said guide rod relatively to said table, grinding rollers journaled upon said carriage, and connections from said blade to said grinding rollers for the purpose of enabling the motions of said blade to turn said grinding rollers.

3. The combination of a carriage, a blade connected with said carriage and movable relatively thereto, grinding mechanism mounted upon said carriage, and means controllable by motions of said blade for actuating said grinding mechanism.

4. The combination of a carriage, grinding mechanism carried thereby, a blade movable relatively to said grinding mechanism, means controllable by movements of said

blade for actuating movements of said grinding mechanism, and means controllable at will for temporarily securing said carriage rigid in relation to said blade.

5. A device of the character described, comprising a carriage, a blade movable relatively thereto, a guide rod movable relatively to said carriage and disposed parallel to a portion of said blade, a spring encircling said guide rod, means controllable at will for securing said carriage rigid in relation to said guide rod, and mechanism controllable by movements of said blade relatively to said carriage for sharpening said blade.

6. The combination of a blade provided with a number of holes disposed in a row, a carriage relatively to which said blade is movable, grinding rollers journaled upon said carriage, spur wheels connected with said grinding rollers for turning the same, said spur wheels being provided with teeth for entering said holes in order to enable motions of said blade to turn said spur wheels, and means for guiding said blade relatively to said carriage.

7. The combination of a carriage, a blade movable relatively thereto, a handle connected with said blade for actuating the same, revoluble grinding members mounted upon said carriage, and means controllable by movements of said blade for actuating said revoluble grinding members.

8. The combination of a carriage, a blade movable relatively to the same, grinding rollers carried by said carriage, and adjusting mechanism controllable at will for adjusting the pressure of said grinding rollers relatively to said blade.

9. The combination of a carriage, a blade movable relatively thereto, grinding members engaging said blade for the purpose of sharpening the same, said grinding members being exposed upon opposite sides of said blade and one of said grinding members being higher than the other for the purpose of compensating for an undesirable turning of said blade.

10. The combination of a carriage, a blade movable relatively to the same, a handle for actuating said blade, and a spring connected with said handle for lifting said blade upon said up stroke.

11. The combination of a carriage, a blade movable relatively to the same, a spring for lifting said blade in one direction of its stroke, and means controllable at will for temporarily securing said spring relatively to said blade in order to prevent relative movement between said spring and said blade.

12. The combination of a carriage, a blade movable relatively to the same, grinding mechanism mounted upon said carriage, means for temporarily locking said carriage rigid in relation to said blade for the pur-

pose of throwing said grinding mechanism out of action, and means controllable at will for releasing said carriage in order to throw said grinding mechanism into action.

- 5 13. The combination of a carriage, a blade movable relatively thereto, a spring engaging said carriage and connected with said blade, a handle for said blade, grinding mechanism carried by said carriage for
10 sharpening said blade as said blade is moved relatively to said carriage, means for temporarily locking said carriage rigid in relation to said blade, a rod extending through

said handle, means connected with said rod for disengaging said carriage relatively to 15 said blade in order to permit freedom of movement between said carriage and said blade, said rod being movable by hand.

In testimony whereof I have signed my name to this specification in the presence of 20 two subscribing witnesses.

MAX LANGMAN.

Witnesses:

WALTON HARRISON,
JOHN P. DAVIS.