3 Sheets--Sheet 1.

A. WARTH.

Cloth-Cutting Machine.

No. 165,636. Patented July 13, 1875

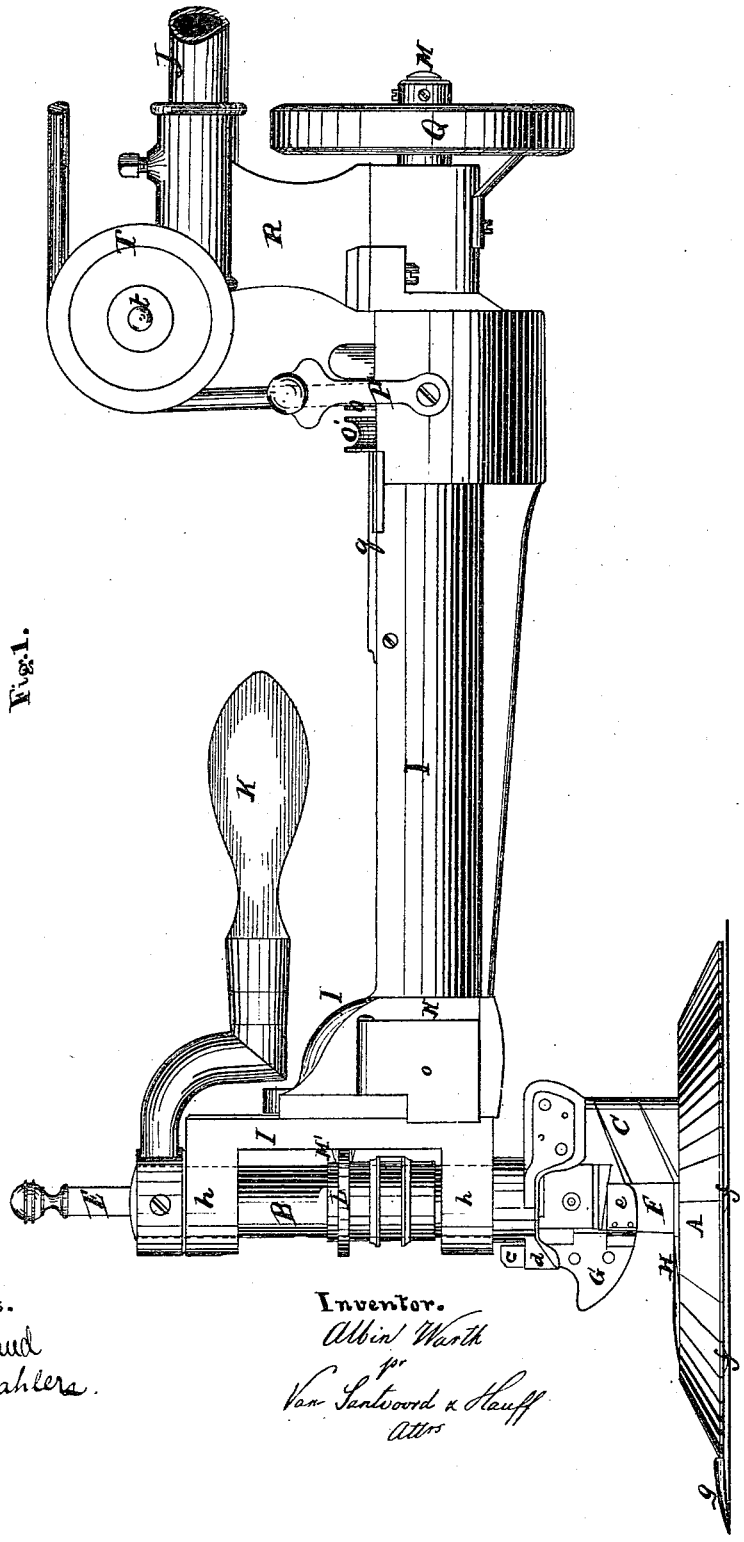

Fig. 1.

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A. WARTH.

Cloth-Cutting Machine.

No. 165,636. Patented July 13, 1875.

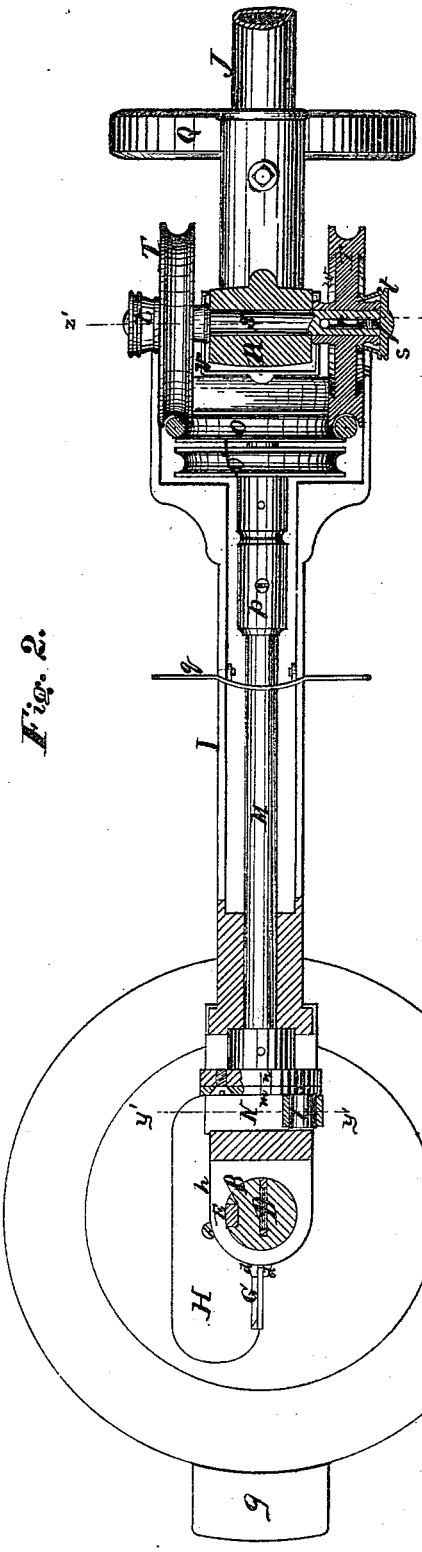

Fig. 2.

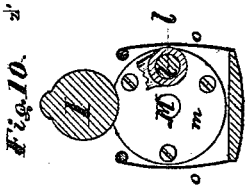

Fig. 10.

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Fig. 4.

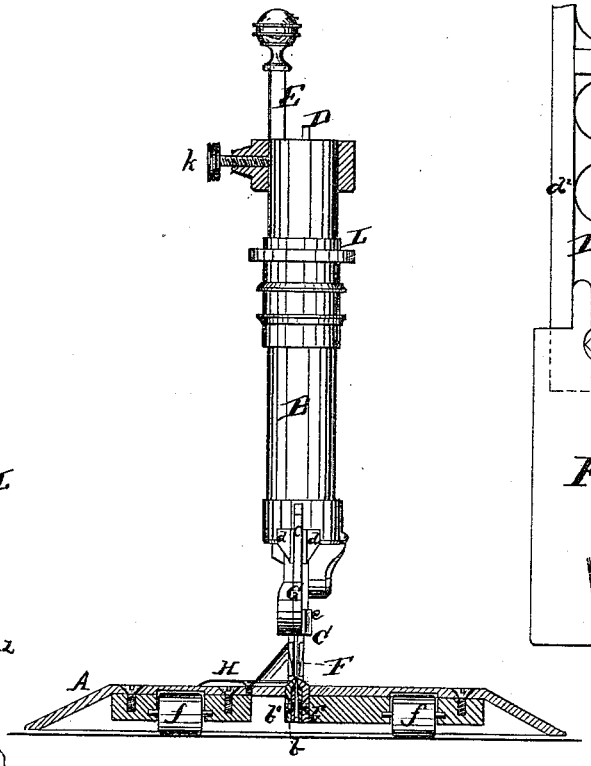
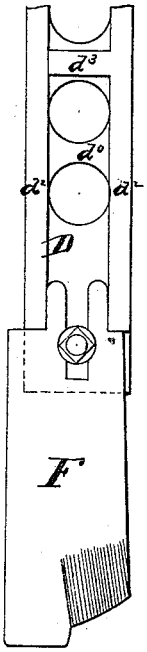


Fig. 6. Fig. 7.



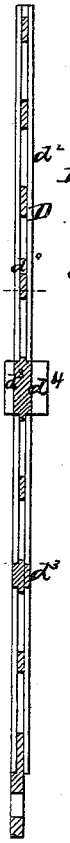


Fig. 8.

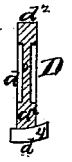


Fig. 3.

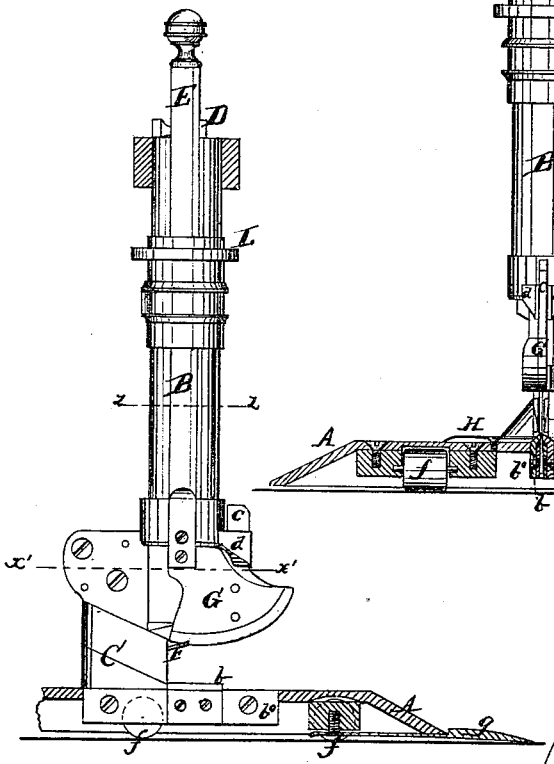


Fig. 5.

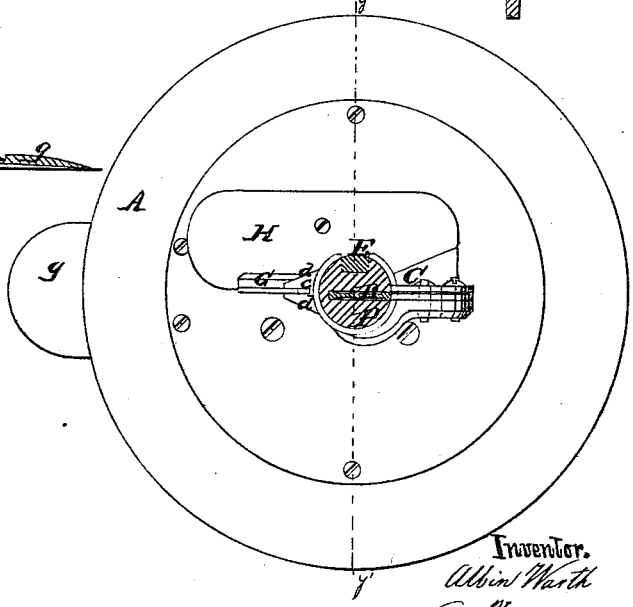
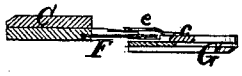


Fig. 9.



Witnesses.
Otto Hufeland.
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Inventor.
Albin Warth
per
Van Santvoord & Hauff
Attys

UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

IMPROVEMENT IN CLOTH-CUTTING MACHINES.

Specification forming part of Letters Patent No. **165,636**, dated July 13, 1875; application filed May 26, 1875.

To all whom it may concern:

Be it known that I, ALBIN WARTH, of Stapleton, in the county of Richmond and State of New York, have invented a new and useful Improvement in Machines for Cutting Textile and other Materials, which improvement is fully described in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a side view. Fig. 2 is a plan or top view. Fig. 3 is a sectional side view of the cutter-head, the line *x x*, Fig. 5, indicating the plane of section. Fig. 4 is a similar view of the same, the plane of section being indicated by the line *y y*, Fig. 5. Fig. 5 is a horizontal section of the cutter-head in the plane *z z*, Fig. 3.

The remaining figures are details, which will be referred to as the description progresses.

Similar letters indicate corresponding parts.

This invention relates to certain improvements on that class of machines for cutting textile and other materials which I have described in my Patent No. 151,456, May 26, 1874, and which I term "traveling cutting-machines."

My present improvements consist in a gravitating toe secured to the foot-plate which supports the cutting mechanism, said toe being so arranged that it catches beneath the material to be cut, and conducts the same upon the foot-plate and beneath the cutter; also, in a knife-receiver composed of two detached cutting-blades, forming a socket, which blades are secured to the foot or to the foot-plate by means of screws, so that the same can be conveniently hardened; and either of them can be renewed without disturbing the other; also, in combining, with the foot-plate and the knife-receiver, a raised supporting-plate, to carry the material to be cut freely over the knife-receiver; further, in combining, with the presser-foot and its slide, an additional guide, for the purpose of retaining said presser-foot in the required position; also, in combining, with the presser-slide a set-screw for the purpose of adjusting and retaining the presser-foot positively in the required position in regard to the material to be cut; further, in a knife-slide, made of a thin perforated plate, with projecting ribs, and with one or more cleaners, whereby the weight of said slide is materially reduced, and, at the same time, the fibers which become detached from the material to be cut during the operation of cutting are prevented from interfering with the motion of the slide; further, in the combination, with the eccentric wrist-pin and with the cross-head transmitting motion from the main shaft to the knife-slide, of an oil-chamber, to which access can be had by means of a hinged door, (one or more,) so that the lubricating material can be readily applied to the desired points, and, at the same time, said lubricating material is prevented from dripping down upon the material to be cut; further, in combining with the supporting-arm and with the main shaft a fast and a loose pulley and a belt-shipper, which can be conveniently reached by the workman operating the cutting-machine, so as to enable him to start and stop the cutting mechanism with convenience and with the requisite accuracy.

In the drawing, the letter A designates the foot-plate of my cutting-machine, which is, by preference, made circular, but which may be made of any other suitable form. From this foot-plate rises a bracket, C, which forms the support for a standard, B, that is furnished with two guide-grooves, one for the knife-slide D, and the other for the presser-slide E. To the lower end of the knife-slide D is secured the knife F, the back of which is guided in the bracket C, and which works through a slot or receiver, *b*, in said bracket, so that its cutting-edge is steadied, and enabled to pass clear through the material to be cut. Said knife-receiver is composed of two detached side blades, which are secured to the bottom flanges b^0 (see Figs. 3 and 4) of the bracket C by means of screws, and the upper edges of which are sharp, so that they co-operate with the cutting-edge of the knife.

By making the side blades of the knife-receiver detached I am enabled to harden the same without difficulty; and, if one of them becomes worn, it can readily be replaced without disturbing any other portion of the cutting mechanism.

The knife-slide D (see Figs. 6 and 7) is composed of a thin perforated plate, d^0, with strengthening-ribs d^2, so that the same is ren-

dered sufficiently strong for the purpose, and yet very light, which is a desideratum, so as to reduce the momentum when the cutting mechanism is in operation.

If it is considered that the knife in my machine makes from eighteen hundred to two thousand strokes per minute it will be understood that the reduction of the momentum of the knife-slide is of considerable importance.

With the perforated plate d^0 and the strengthening-ribs d^2 of the knife-slide are combined clearers d^3, (one or more,) which extend across the plate and fit the guide-slot in the standard B. These clearers prevent the fibers, which become detached from the work during the operation of cutting, from being carried up into the guide-slot of the knife-slide and accumulating in the holes of the slide, whereby the clogging up of the guide-slot is avoided.

The presser slide E is received in a recess in the standard B, and on the upper end of said standard is secured a ring, from which extends the handle K. Through this ring passes a thumb-screw, *k*, (Fig. 4,) which serves to fasten the presser-slide and to retain the presser-foot G positively in the position required for the thickness of the pile of material to be cut. Said presser-foot is provided with a vertical arm, *c*, which fits between two lugs, *d*, projecting from the standard B, so that the presser-foot is effectively prevented from turning, and that the same is retained in the direction of the cut. The inner part of the presser-foot extends to one side of the knife, and an arm, *e*, which is fastened to the presser-foot, extends on the opposite side of said knife so as to form an effective protector, so that the fingers of the operator may not be hurt by the knife. In practice, I prefer to make the presser-foot and the protector in two parts, since it is desirable that the protector shall be of steel and hardened, while the presser-foot itself may be of iron, or any other suitable metal. (See Fig. 9.)

The cutting-blades which form the receiver project above the surface of the foot-plate A, and on the foot-plate is secured a supporting-plate, H, which carries the material up to a level with the top edge of the receiver, so that the same will move freely and easily over the foot-plate, and will not be liable to catch in the receiver.

The foot-plate rests upon friction-rollers *f*, and on its under surface is secured a gravitating toe, *g*, which by its own weight bears down upon the table supporting the foot-plate, and which serves to carry the material up onto the foot-plate and under the knife. This toe may be made in any desirable form or shape, its front edge being sharp, so that it readily enters between the supporting-table and the material to be cut.

The standard B has its bearings in lugs, *h*, which project from an arm, I, that connects by a tubular rod, J, with the driving mechanism, as fully described in my Patent No. 151,456, and on said standard is fitted a sleeve, L, which engages with the knife-slide by a nose, d^4, Fig. 8, and which also engages with a fork, M′, that extends from a cross-head which is fitted into guides formed at the end of the arm I, and which receives a reciprocating motion by an eccentric wrist-pin, *l*, which connects with said cross-head by a connecting-rod, or in any other suitable manner. The cross-head is perforated for the sake of lightness.

The eccentric wrist-pin *l*, Fig. 2, is secured in a plate, *m*, which is fastened to a disk, *n*, mounted on the main shaft M by means of screws, so that, if the wrist-pin wears out, the plate *m* together with the wrist-pin can be easily replaced without disturbing the disk *n* or the main shaft M.

The disk *n*, the plate *m*, and the wrist-pin *l* are contained in a chamber, N, formed in the arm I, and this chamber is provided with one or more doors, *o*, so that easy access can be had to the parts to be oiled, and at the same time the lubricating material is prevented from dripping down upon the table or the material to be cut. In Fig. 10 I have shown a transverse section of this chamber.

The arm I is hollowed out to form a chamber for the reception of the main shaft, and this chamber is provided with an enlargement, see Fig. 2, for the reception of the fast-and-loose pulleys O O′. On the side of the enlarged part of the arm I is pivoted a belt-shipper, P, Fig. 1, which serves to throw the driving-belt from the fast pulley O to the loose pulley O′, and vice versa, so as to enable the workman to stop or start the cutting-machine instantaneously.

The loose pulley O′ is confined between the hub of the fast pulley O and between a collar, *p*, which is secured on the main shaft.

A fly-wheel, Q, serves to equalize the motion of the main shaft and of the cutting mechanism.

From the rear end of the arm I rises a standard, R, that forms the bearing for the shaft S of the guide-pulleys T. These pulleys revolve on their shaft, and in each end of said shaft is an oil-chamber, *r*, see Fig. 2, which is closed by a screw-plug, *s*, extending from the inner surface of a cap, *t*.

These caps form receptacles for the surplus oil that may escape from the bearings of the guide-pulleys, so as to prevent such oil from dripping down upon the table or upon the material to be cut. If one of the caps is removed, easy access can be had to the oil-chamber in the corresponding end of the shaft S, and the bearings of the guide-pulleys can be kept lubricated without difficulty.

From the rear end of the standard R extends the tubular rod J, which serves to connect the cutting mechanism with the driving mechanism. The guide-pulleys T are provided on both sides with V-shaped annular recesses *w*, (see Fig. 2,) so that any surplus oil which may escape from the outer ends of the bearings of

said pulleys is caught in said annular recesses and prevented from being thrown out upon the table or upon the material to be cut.

By these means I have materially improved the usefulness of my cutting-machine. I have greatly lessened the danger of soiling the material to be cut, the durability of the mechanism is increased, and if any part wears out it can be easily replaced.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a gravitating toe with the foot-plate which supports the cutting mechanism, said toe serving to catch beneath the material to be cut and to conduct the same up on the foot-plate and beneath the cutter, substantially as set forth.

2. The combination of two detached and reversible cutting-blades with the knife-receiver socket, and adapted to be secured to the standard containing the cutting mechanism, or the foot-plate, substantially as described.

3. The combination, with the foot-plate and with the knife-receiver, of a raised supporting-plate to carry the material to be cut freely over the knife-receiver, substantially as described.

4. The combination, with the presser-foot and its slide, of a vertical arm and lugs, which project from the standard that supports the cutting mechanism, substantially as described, for the purpose set forth.

5. The combination, with the presser-slide, with the standard containing the cutting mechanism, and with the presser-foot, of a set-screw for adjusting and retaining the presser-foot positively in the required position in regard to the material to be cut, substantially as described.

6. A perforated knife-slide provided with strengthening-ribs, and with one or more cleaners extending across the slide, substantially as and for the purpose described.

7. The combination, with the eccentric wrist-pin and its supporting-disk, and with the cross-head transmitting motion from the main shaft to the knife-slide, of an oil-chamber provided with one or more doors to give free access to the bearings and to prevent the oil from dripping on the table or on the material to be cut, substantially as set forth.

8. The combination, with the supporting-arm I and with the main shaft, of a fast and loose pulley contained in a chamber formed in the supporting-arm, and of a belt-shipper pivoted to the side of said chamber, to enable the workman to stop or start the cutting mechanism at any moment, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 21st day of May, 1875.

ALBIN WARTH. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.