(No Model.)

2 Sheets—Sheet 1.

A. WARTH.

CLOTH CUTTING MACHINE.

No. 469,072. Patented Feb. 16, 1892.

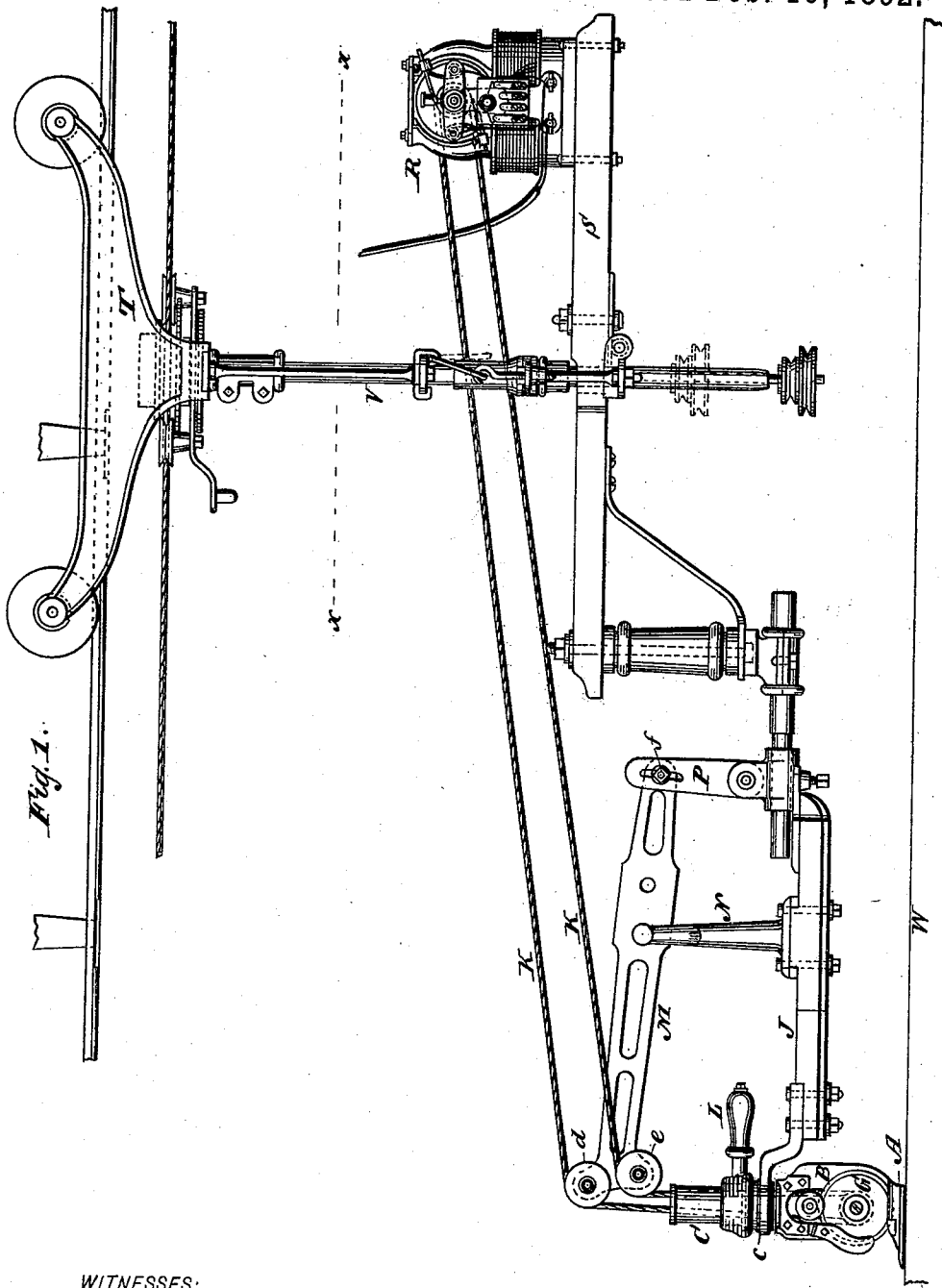

Fig. 1.

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Edward Wolff.
William Miller

INVENTOR:
Albin Warth.
BY
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ATTORNEYS

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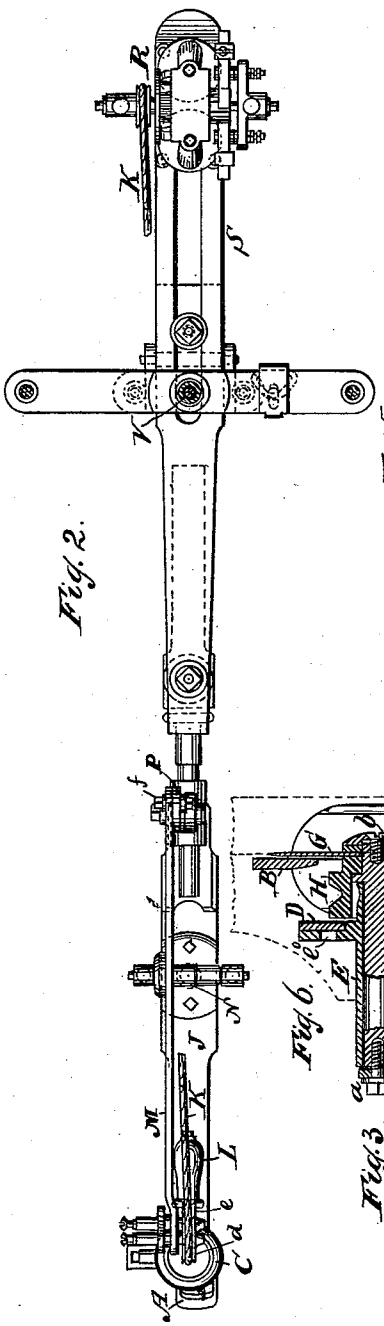

Fig. 2.

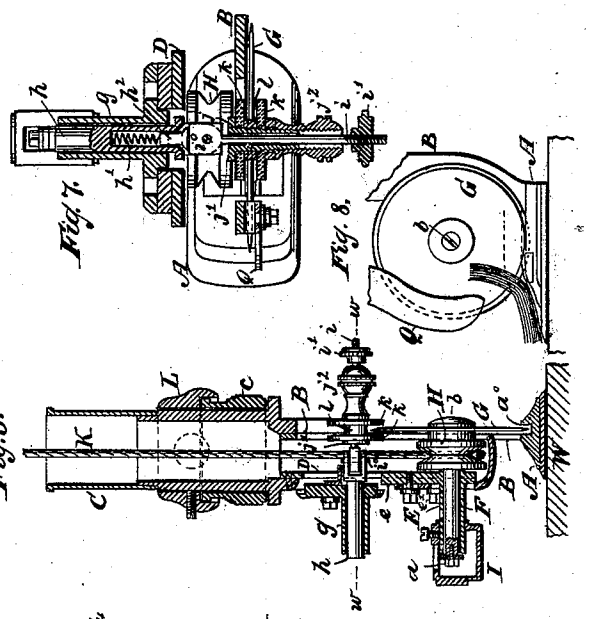

Fig. 7.

Fig. 8.

Fig. 5.

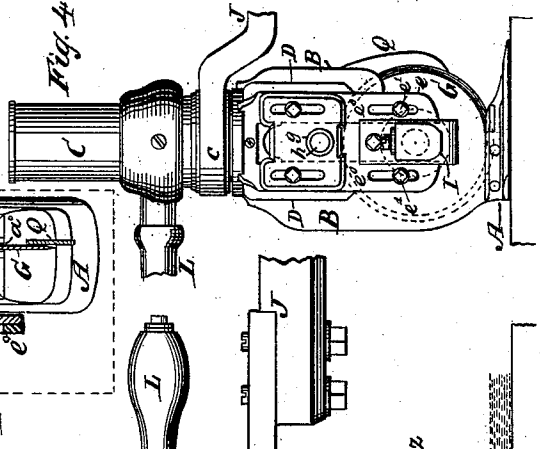

Fig. 4.

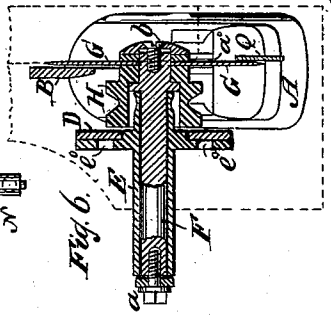

Fig. 6.

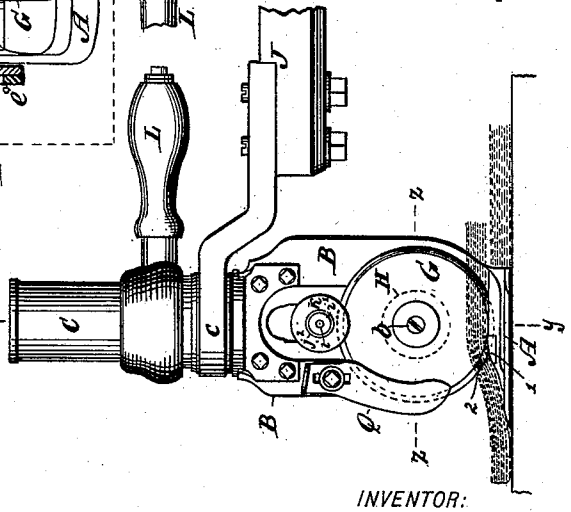

Fig. 3.

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UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

CLOTH-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 469,072, dated February 16, 1892.

Application filed July 9, 1891. Serial No. 398,970. (No model.)

To all whom it may concern:

Be it known that I, ALBIN WARTH, a citizen of the United States, residing at Stapleton, in the county of Richmond and State of New York, have invented new and useful Improvements in Cloth-Cutting Machines, of which the following is a specification.

This invention relates to certain improvements in cloth-cutting machines, as pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation. Fig. 2 is a horizontal section in the plane *x x*, Fig. 1. Fig. 3 is a detached elevation of the cutter-head, on a larger scale than the previous figures, showing one side. Fig. 4 is a similar elevation showing the other side of the cutter-head. Fig. 5 is a vertical section in the plane *y y*, Fig. 3. Fig. 6 is a horizontal section in the plane *z z*, Fig. 3, on a larger scale than Figs. 4 and 5. Fig. 7 is a horizontal section in the plane *w w*, Fig. 5. Fig. 8 is an elevation of a portion of the cutter-head.

In the drawings the letter A designates the cloth-lifting foot-plate, which is movable over the table W and from which rises the standard B, to which is firmly secured the casing C. The standard B carries the knife G, and in the example shown in the drawings, this knife has a circular form, and I impart motion to this knife by means of a belt K, which extends down through the casing C and round a pulley H, carried by the standard B, as will be presently more fully explained.

From the bottom of the casing C extends a bracket D, parallel with the standard B. (Best seen in Figs. 5 and 6.) On this bracket is adjustably secured the tubular bearing E for the spindle F, which carries the circular knife G and the pulley H. The spindle F is adjusted in the tubular bearing E by means of a screw *a*, Figs. 5 and 6, and the knife G and pulley H are secured to said spindle by a screw *b*.

On the rear end of the tubular bearing E is fastened a lubricating-cup I, Fig. 5. The bearing E projects from a plate *e*, which can be adjusted in the proper relation to the knife-receiving socket a^0, Fig. 5, in the cloth-lifting foot-plate A. The casing C engages an eye *c* on the end of the arm J, and on this arm are mounted the two guide-pulleys *d e* for the belt K, which is intended to impart motion to the knife G. This belt extends down through the casing C and engages the pulley H on the knife-spindle F, Figs. 1 and 5. The arm J is connected to an arm S, which swivels on the spindle V, so that the cutter-head can be freely turned in the eye and swung round the spindle V. The pulleys *d e* are arranged one above the other and the standard carrying the knife turns freely in the eye *c* of the arm J, and it can be turned by a handle L, applied to the casing C, or by applying the hand directly to the standard. The pulleys *d e* are mounted on one end of a lever M, which has its fulcrum in a standard N, which rises from the arm J, and the opposite end of said lever is adjustably secured to an arm P, so that it can be raised or lowered and fastened in the required position by a set-screw *f*. By these means the tension of the driving-belt K can be readily adjusted.

On the standard B is adjustably secured a protector Q, which extends down over the face of the knife G. In cutting through a pile of material consisting of a large number of layers the lowest layer in the pile is cut to the point 1, Fig. 3, while the upper layer is cut to the point 2, and in order to produce a square cut that portion of the pile which has passed the knife must be raised from the position shown in Fig. 3 to that shown in Fig. 8. To enable the operative to perform this operation of lifting the pile with safety, the protector must be so arranged that the cut portion on being raised will pass up on the outside face of the protector. This protector is secured to the standard B by means of a set-screw, which passes through a slot in the protector, (see Fig. 1,) so that the latter can be readily adjusted at the required distance from the foot-plate.

In order to keep the edge of the knife G sharp as the cutting operation progresses, I have applied a grinding device, which is constructed as follows: On the bracket D is adjustably secured a tubular socket *g*, which forms the bearing for a rod *h*, in the inner forked end of which is secured a pivot i^0, on which swings a spindle *i*. On this spindle is loosely mounted a tube *j*, on which are mounted the grinding-disks *k k*, which are

held at the proper distance apart by a washer *l*, interposed between them, and which are retained in position upon the tube *j* by a flange *j'* at the inner end of said tube and by a nut j^2, engaging a screw-thread cut upon the outer portion of said tube, Fig. 7. When the nut j^2 is screwed up, the grinding-disks are retained on the tube *j* in such a position that they straddle the knife G, Figs. 5 and 7, one of said disks being situated on the inside of the knife and the other on its outside. At the same time the tube *j*, which carries the grinding-disks, is free to revolve upon the spindle *i*, which can swing in a horizontal plane on the pivot i^0 and which extends transversely across the plane of the knife. On the outer end of the spindle *i* is secured a nut *i'*, which forms a handle and also a stop to prevent the tube *j* from dropping off. When the knife G is in motion, the operative takes hold of the nut or handle *i'* and imparts to the spindle *i* an oscillating motion, whereby the grinding-disks are brought in contact with the sides of the knife, and by this contact a revolving motion is imparted to said disks and to the tube *j*, which supports the same. At the same time a gentle friction is produced between the grinding-disks and the face of the knife, and by this friction the knife-edge is kept sharp. If the spindle *i* is moved into a position at right angles to the plane of the knife, both grinding-disks are out of contact with the knife; but in order to keep the knife perfectly sharp two grinding-disks are required, which are situated on opposite sides of the knife and can be thrown in or out of action simultaneously.

By referring to Fig. 7 it will be seen that the rod *h* is bored out to receive a spring *h'*, which acts upon a plug h^2, the flat face of which bears against the flat inner end of the spindle *i*, so that when this spindle is left free to follow the action of the spring *h'* the grinding-disks *k k* are retained in a position parallel with the knife G, and they act upon the faces of the cutting-edge of said knife only when an oscillating motion is imparted to the spindle *i*.

In the example illustrated in the drawings I have shown two grinding-disks which act upon the opposite sides of the knife; but in exceptional cases a single grinding-disk may be sufficient.

From the foregoing description it will be seen that motion is imparted to the knife G by means of a belt, which is carried down through the interior of the casing C and through the eye *c* of the arm J, so that the cutter-head can be freely turned round in the eye without interfering with the action of the driving-belt. It will be also seen that the two branches of the driving-belt are guided by the pulleys *d e*, which are carried by the arm J, so that when the cutter-head is turned in the eye *c* only that portion of the belt between the guide-pulleys *d e* and the pulley H will be twisted and the action of said belt will not be disturbed. At the same time if the operative happens to release the handle L or the casing C while the knife is in motion the cutter-head in my machine is not liable to be twirled round and to cause damage, and by these means a great defect common to all cloth-cutting machines with circular knives as heretofore constructed is avoided.

By referring to Fig. 1 it will be seen that the belt K receives its motion from an electromotor R, mounted on an arm S, which swivels on the spindle V and carries the arm J, as described in Letters Patent No. 444,286, granted to me January 6, 1891, or said belt may receive its motion from a carriage T and from a steam-engine or other motor, as described in Letters Patent No. 444,287, granted to me January 6, 1891, and I do not claim in this application anything shown and described in the above-named patents.

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

1. The combination, with a standard carrying a cloth-lifting foot-plate, a knife, and a pulley H, from which motion is imparted to said knife, of a casing mounted on the standard and an arm constructed to swing or swivel on a spindle V and to engage the casing, said pulley H being adapted to engage a belt extending down through the casing, substantially as described.

2. The combination, with a standard carrying a cloth-lifting foot-plate and a bracket D, of the tubular bearing E, secured to said bracket, the shaft F, mounted in said bearing and carrying the pulley H and the knife G, said pulley being adapted to engage the driving-belt, and the lubricating-cup I, secured to the tubular bearing E, substantially as described.

3. The combination, with the cloth-lifting foot-plate, the standard B, the shaft F, carried by said standard, the pulley H, and the knife G, mounted on said shaft, of the arm J, the casing C, engaging the eye *c*, formed on said arm, the guide-pulleys *d e*, mounted on the oscillating arm M, the pulleys H, *d*, and *e* being adapted to engage the driving-belt, and means for adjusting the arm M in the required position, substantially as described.

4. The combination, with a standard carrying a rotary knife, of an oscillating spindle carried by said standard and extending in a direction transverse to the plane of the knife, and two grinding-disks situated on opposite sides of the knife and free to rotate on the spindle *i* by frictional contact with the knife, substantially as described.

5. The combination, with a standard carrying a rotary knife, of an oscillating spindle *i*, a tubular bearing *j*, mounted on this spindle and free to rotate on the same, two grinding-disks situated on opposite sides of the knife and mounted on the tubular bearing *j*, and the adjustable bearing *g* for the oscillating spindle, substantially as described.

6. The combination, with a standard car-

rying a rotary knife, an oscillating spindle, and grinding-disk, of the hollow rod *h* and spring-actuated plug h^2, bearing against the inner end of the spindle *i*, substantially as described.

7. The combination, with a standard carrying a cloth-lifting foot-plate, a circular knife, and a pulley H, from which motion is imparted to the knife, of a casing mounted on the standard, an arm constructed to engage the casing, and guide-pulleys *d e*, mounted on the arm, the said pulleys *d*, *e*, and H being adapted to engage a driving-belt extending down through the casing, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALBIN WARTH.

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.