

A. WARTH.

Machines for Cutting Cloth.

No. 130,343.

Patented Aug. 6, 1872.

Fig. 1.

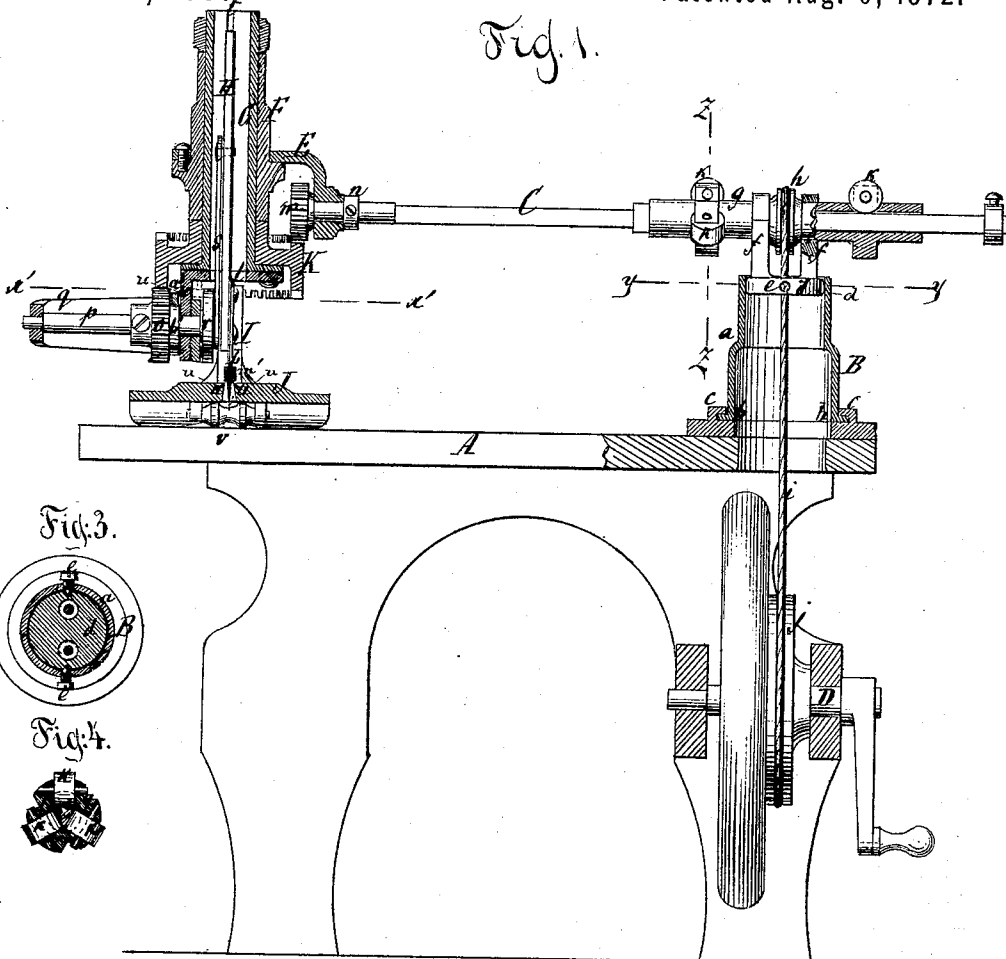


Fig. 3.

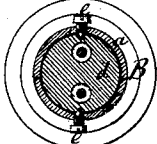


Fig. 4.



Fig. 2.

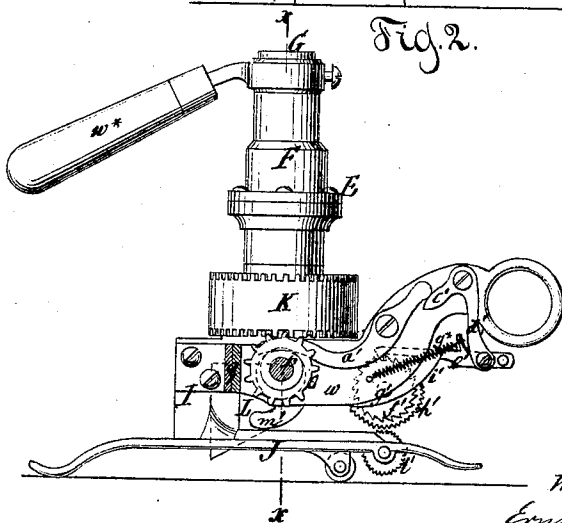


Fig. 5.

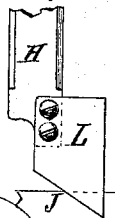
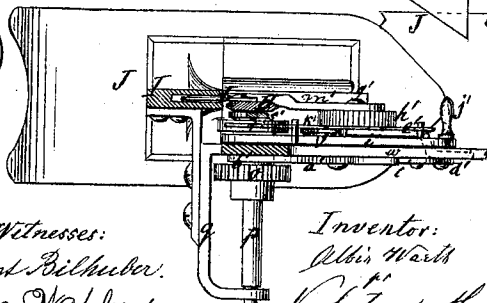


Fig. 6.



Witnesses:  
 Ernst Bilhuber.  
 Chas. Wahlers.

Inventor:  
 Albin Warth  
 Per Carlsson & Söner  
 Attn

# UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

## IMPROVEMENT IN MACHINES FOR CUTTING CLOTH.

Specification forming part of Letters Patent No. 130,343, dated August 6, 1872.

*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 Improved Machine for Cutting Cloth, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of my invention, the plane of section of the cutting mechanism being indicated by the line *x x*, Fig. 2. Fig. 2 is a sectional side view of this invention. Fig. 3 is a horizontal section of the universal swivel-head in the line *y y*, Fig. 1. Fig. 4 is a transverse section of the sliding and revolving shaft in the line *z z*, Fig. 1. Fig. 5 is a detached section of the knife and carrying-bar. Fig. 6 is a horizontal section of the cutting mechanism in the plane *x' x'*, Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in combining with a knife-carrier a revolving and sliding shaft, said knife-carrier being allowed to turn around an axis at right angles to the direction of the sliding shaft in such a manner that by said shaft the required motion is imparted to the knife, and at the same time the knife-carrier, together with the knife, can be carried in any direction against the material to be cut; also, in the combination of a mechanical feed with a knife-carrier and a sliding revolving shaft in such a manner that the knife, which receives the required motion by the action of the revolving shaft is fed automatically toward the material to be cut. Further, in combining with the knife-carrying bar a hollow tubular guide-rod, which forms the bearings for the gear connecting said knife-carrying bar with the driving-shaft, and to which is secured a handle in such a manner that by turning said hollow guide-rod the knife can be turned in any direction without throwing it out of gear with the driving-shaft; also, in the combination of a throat-plate, with a revolving sliding shaft and a knife-carrier, said throat-plate being provided with a socket, one or both edges of which form cutting-edges to cooperate with the cutting-edge of the knife in

such a manner that said throat-plate follows the sliding motion of the shaft in either direction and forms the support for the material to be cut in whatever position the knife may be brought; further, in a bracket rising from the throat-plate and forming the support for the tubular guide-rod of the knife-carrying bar, and for a shaft, which is geared together with a sliding and revolving shaft, and from which motion is imparted to the knife-carrying bar, said bracket being provided with a handle in such a manner that the throat-plate, together with the cutting mechanism, can be conveniently guided to follow the pattern to be cut out; also, in a hinged lever connected to the bracket of the throat-plate, and forming the bearing for a pin which supports the feed-wheel, in combination with a cam which receives a rotary motion from a sliding revolving shaft, from which motion is transmitted to the feed-wheel in such a manner that the feed-wheel is always in gear with the sliding and revolving shaft in whatever position the throat-plate may be brought, and that by raising the hinged lever the feed-wheel can be adjusted to the thickness of the material to be cut, or lifted clear above said material; further, in a finger or index hinged to the center pin of the feed-wheel, said pin being secured in a hinged lever, while the finger extends in front of the knife for the purpose of indicating the direction in which the knife is to cut; also, in a universal swivel-head, in combination with the sliding and revolving shaft, and with the throat-plate carrying and cutting mechanism, in such a manner that the sliding and revolving shaft, together with the parts attached to it, can be swung or moved in any desired direction without throwing it out of gear with the driving-shaft, and by these means the knife is free to accommodate itself to the position or nature of the material to be cut.

In the drawing, the letter A designates a table, from which rises the swivel-head B, which supports the sliding and revolving shaft C. Said swivel-head consists of a tubular standard, *a*, which is provided with a bottom flange, *b*, to fit into a grooved bracket, *c*, which is firmly secured to the table A, the tubular standard *a* being free to rotate in said bracket. In the mouth of the tubular stand-

ard is fitted a plate, *d*, which swings between center points *e*, (see Fig. 3,) and from which rise two standards, *f*, that form the bearings for a tubular shaft, *g*. By means of the center points *e* this shaft can be swung up or down or brought in any desired inclination toward the table A, while the tubular standard *a* allows the same to turn freely in either direction in a plane parallel to the surface of the table. On the tubular shaft *g* is mounted a pulley, *h*, which connects by a belt, *i*, with a pulley, *j*, mounted on the driving-shaft D, that has its bearings in boxes secured to one of the legs of the table A, and which receives motion by a hand-crank, or by a treadle, or by any other suitable means. The pulleys *h* and *j* are grooved, so that when the standard is turned round the belt *i* will not be thrown off. The tubular shaft *g* is bored out to receive the sliding shaft C, which is by preference made triangular, but which may be formed in any desirable manner, so that it will not turn in the tubular shaft, while it is free to slide therein. The sliding motion of the shaft C is facilitated by friction-rollers *k*, which project through the sides of the tubular shaft *g* and bear from different sides against the sliding shaft C. (See Fig. 4.)

One end of said sliding shaft is turned off round, and it has its bearing in a bracket, E, which extends from a sleeve, F, fitted on the hollow guide-rod G of the knife-carrying bar H. This hollow guide-rod is supported by a standard, I, which rises from the throat-plate J, said standard being provided with an annular bracket, *l*, (see Fig. 1,) that is screwed up against a flange on the bottom end of the hollow guide-rod, and on said flange rests a double cog-wheel, K, which is dropped loosely on the hollow guide-rod beneath the sleeve F. The upper cogs of said cog-wheel gear into a pinion, *m*, mounted on the end of the sliding shaft C inside of the bracket E, said shaft being prevented from sliding in the bracket by the pinion on one, and by a screw-ring, *n*, on the other side of the bracket. The lower set of cogs on the cog-wheel K gear into a pinion, *o*, which is mounted on a shaft, *p*, that has its bearings in a bracket, *q*, extending from the standard I of the throat-plate. On this shaft is also secured a disk, *r*, carrying an eccentric wrist-pin that connects by a rod, *s*, with the knife-carrying bar H, which moves up and down in grooves *t* in the hollow guide-rod G, and as the shaft C is revolved a reciprocating motion is imparted to the knife-carrying bar. *l* is the knife, which is by preference cut or stamped out of sheet metal, and which is secured to the bar H by screws or other suitable means, the front edge of the knife being so adjusted that it coincides with the center line of the hollow guide-rod, so that by turning this guide-rod the front edge of the knife remains in the same plane. The lower cutting-edge of the knife is inclined, and it co-operates with a cutting-edge, *u*, formed on one side (or both) of a knife-receiving socket or throat, *v*, in the throat-plate J. From the bracket *q*,

which supports the shaft *p*, extends an arm, *w*, which terminates in a ring, and may serve as the handle for guiding the mechanism during the operation of cutting; or, if desired, an additional handle, *w\**, may be secured to the upper end of the tubular guide-rod G. (See Fig. 2.) On one side of the arm *w* is secured a lever, *a'*, one end of which bears on the surface of the cam *b'*, (see Figs. 1 and 6,) mounted on the shaft *p*, while its opposite end bears against the arm *e'* of a bell-crank lever, *e' d'*, the arm *d'* of which carries a pawl, *e'*, that engages with the teeth of a ratchet-wheel, *f'*. A spring, *g\**, which acts on the pawl *e'*, serves to keep the lever *a'* in contact with the cam *b'*. The ratchet-wheel *f'* is mounted on a pin, *g'*, and it is firmly connected to the feed-wheel *h'*, the spring *g\** being connected with a lever, *i'*, that swings on the shaft *p* on the side of the arm *w* opposite to the lever *a'*. (See Fig. 6.) From this lever *i'* extends a thumb-piece, *j'*, so that the same can be raised, while a spring, *k'*, bears on said lever and serves to depress the feed-wheel *h'* toward a serrated roller, *l'*, which is mounted in the throat-plate. A stop-pawl, *m'*, prevents the ratchet-wheel *f'* and the feed-wheel *h'* from turning in the wrong direction. As the shaft *p'* revolves an intermittent rotary motion is imparted to the feed-wheel *h'*, and if the material to be cut is held stationary the cutting mechanism is fed by the feed mechanism toward said material, the throat-plate J being placed beneath it, so that by the co-operation of the cutting-edges of the knife and of the throat the cutting is effected. The throat-plate may be constructed with one or more caster-rollers on its bottom surface so that it will move easy on the table A, and it may be curved, as shown in Fig. 2, or it may be made in the shape of a flat plate, either oblong or in any desirable form.

This machine is of particular value for cutting out such goods where it is most convenient to move the cutting mechanism toward the material to be cut; and since the cutting mechanism can be readily moved or turned in either direction I am enabled to cut out patterns of any desired form or shape. An index or finger, *m'*, which is hinged to the pin *g'*, enables the workman to guide the course of the knife with ease and facility. This index straddles the knife, and it bears down upon the material to be cut by its own inherent gravity, being free to adjust itself to the varying thickness of said material, while the pin *g'*, which forms the bearing for the feed-wheel and also for said index, rises and falls in accordance with the increased or diminished thickness of the material to be cut.

If desired the feed mechanism may be dispensed with, and the cutting mechanism may be directed entirely by the action of the workman, who can turn the same in any desired direction, or draw it out, or push it in, as the formation of the pattern may require.

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

1. The combination of a revolving-and sliding shaft with a knife-carrier which is free to turn round an axis at right angles to the revolving and sliding shaft, said shaft serving to impart the requisite motion to the knife, substantially in the manner described.

2. The combination of a mechanical feed with a knife-carrier and a sliding and revolving shaft, which serves to transmit the requisite motion to the knife and to the feed mechanism, and allows this feed mechanism to feed the knife toward the material to be cut, substantially as set forth.

3. The combination of a hollow guide-rod, G, with a knife-carrying bar, H, said hollow guide-rod being provided with a handle, and forming the bearings for the gear connecting the knife-carrying bar with the driving-shaft, substantially in the manner described.

4. The combination, with a sliding and revolving shaft and a knife-carrier, of a throat-plate provided with a socket, one or both edges of which form cutting-edges to cooperate with the cutting-edge of the knife, so that the said throat-plate follows the sliding motions of the shaft and also forms the support for the material to be cut during the operation of cutting, substantially as set forth.

5. The bracket I, rising from the throat-plate J, in combination with the tubular guide-rod G, the knife-carrying bar H, shaft *p*, and a sliding revolving shaft, C, substantially as described.

6. The lever *i'*, which is hinged to the bracket I or to any part rigidly connected to said bracket, and forms the bearing for a pin supporting the feed-wheel *h'*, in combination with a cam which receives motion from a sliding and revolving shaft, and from which motion is transmitted to the feed-wheel, substantially as and for the purposes described.

7. The finger or presser *m'*, hinged to the center-pin of the feed-wheel and traveling in front of the knife, said finger being free to adjust itself to the varying thickness of the material to be cut, substantially as set forth.

8. A horizontal revolving cylinder, B, carrying a swiveled head, *d*, which supports a pulley that imparts motion to a revolving and sliding shaft, C, substantially as described, by which is accomplished a universal movement of the cutting mechanism.

ALBIN WARTH.

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.