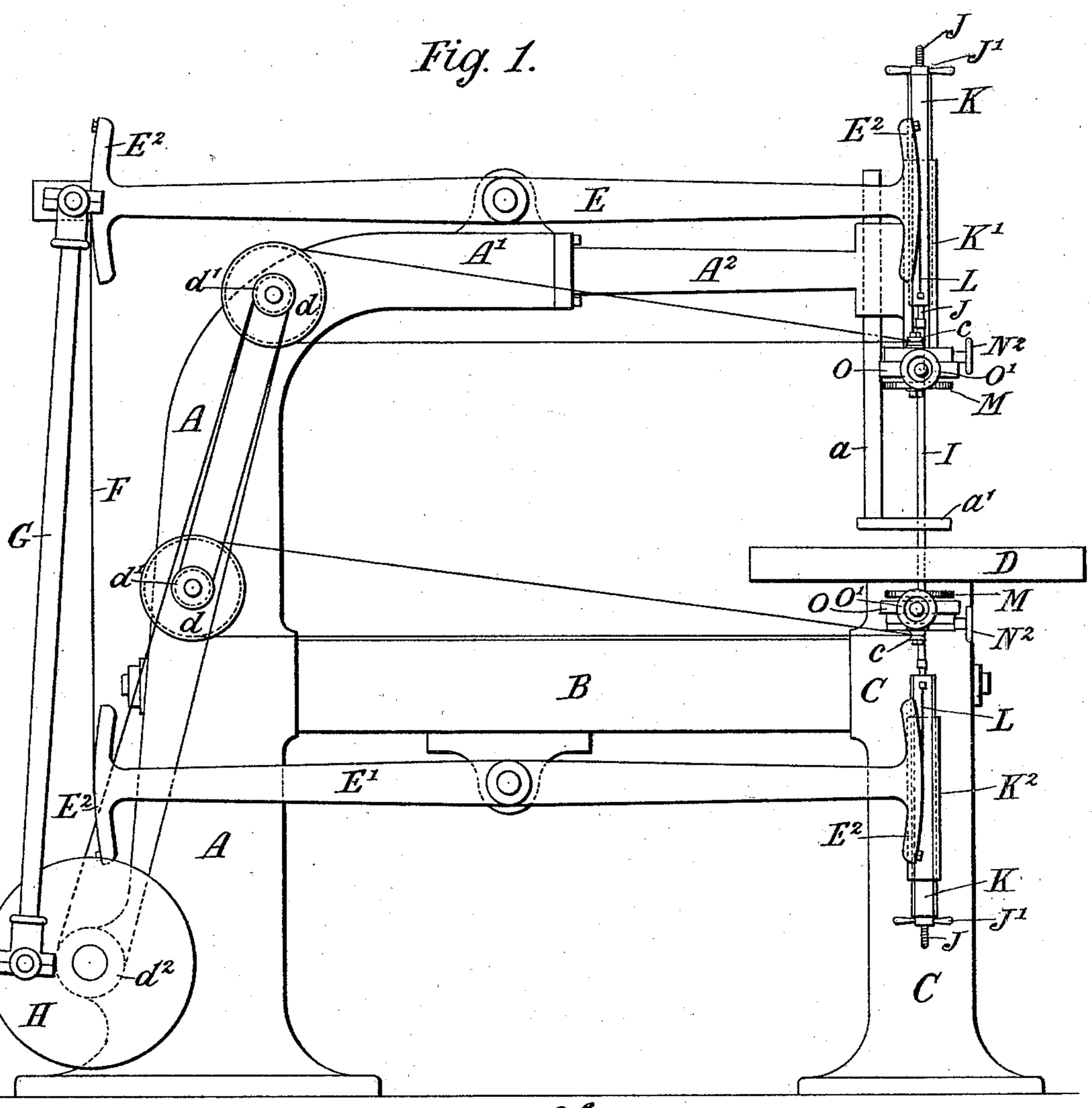
(No Model.)

E. DREDGE.

CLOTH CUTTING MACHINE.

No. 368,758. Patented Aug. 23, 1887.

Fig. 1.



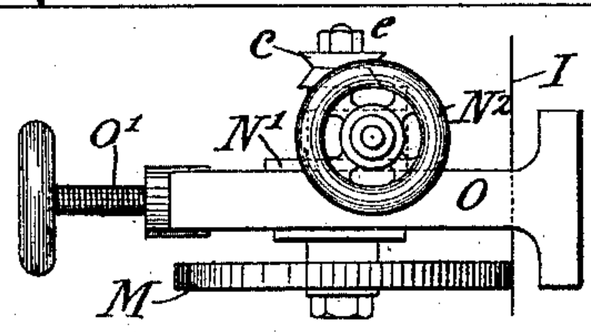


Fig. 2.

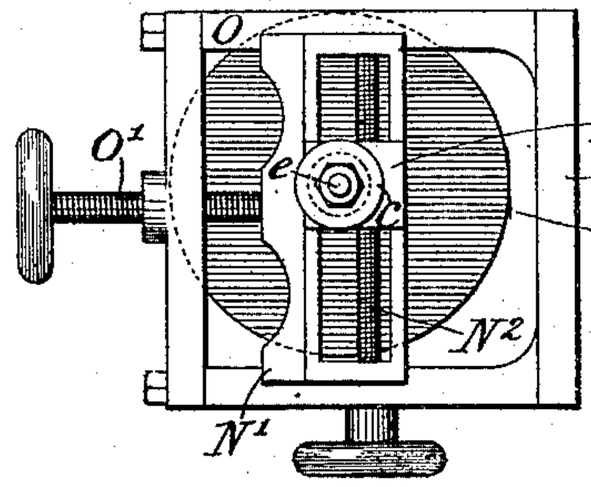


Fig. 3.

Witnesses:

C. Sundgren

Emil Hester.

Inventor:

Edgar Dredge.

by his Attys

Brown & Hall

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EDGAR DREDGE, OF LONDON, ENGLAND.

CLOTH-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 368,758, dated August 23, 1887.

Application filed June 29, 1886. Serial No. 206,578. (No model.) Patented in England November 2, 1885, No. 13,208.

To all whom it may concern:

Be it known that I, EDGAR DREDGE, of Aldersgate Street, in the city of London, England, have invented an Improved Apparatus for Cutting Cloth, Wood, and other Materials, (for which I have obtained Letters Patent of Great Britain, No. 13,208, dated November 2, 1885,) of which the following is a specification.

The chief object of this invention is to provide a simple and compact apparatus for cutting out garments from cloth and other fabrics; but the apparatus is also applicable for cutting leather, rubber, wood, and other substances.

In cutting out a number of garments to be made to the same pattern many thicknesses of cloth are presented to the cutting-instrument at the same time. The cutting-instrument hitherto employed for this purpose has been a band-knife, which is mounted on pulleys carried in adjustable bearings, the object of the adjustable bearings being to permit of tension being put upon the band-knife in order to give it the necessary amount of rigidity required to insure good work. It is, however, practically impossible to put a sufficient amount of tension on a band-knife by these or any other means to prevent its twisting or bending if much pressure is put upon it during the cutting operation, and at the same time allow for easy running of the pulleys, as the greater the tension the more the pulleys are caused to bind on their shafts. The band-knife, in point of fact, acts as a band-brake and prevents the rotation of the pulleys. Thus it is either necessary to work with a comparatively loose knife or with a high motive power or force.

Now, according to my invention, I can obtain a perfectly-rigid knife, and at the same time can work the machine with a low motive force, and I moreover dispense with the use of the band-knife, which is costly, and I use in place thereof an ordinary straight knife of convenient length.

Figure 1 represents a side elevation of a machine for cutting many thicknesses of cloth embodying my invention. Fig. 2 is a front view, on a larger scale than Fig. 1, of one of the knife-sharpening devices which form parts of the machine. Fig. 3 is a plan view corresponding with Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

A is a cast-metal or other standard, which is formed with an overhanging or projecting portion, A′.

B is a beam firmly secured at one end to the standard A, and at the other end to a standard, C, which carries a table, D, to receive the pile of material to be cut.

E E′ are a pair of levers or beams, one of which, E, has its fulcrum on the projecting part A′ of the standard A, and the other, E′, in a bracket secured to the under side of the beam B.

E^2 E^2 are curved plates secured to or formed with the ends of the levers or beams E E′.

The rear ends of the levers E E′ are connected together by a flexible connection—say a metal band, F—which is secured at one end in any suitable manner to the upper edge of the curved plate on the rear end of the lever E, and at the other end to the lower edge of the curved plate on rear end of the lever E′, and the lever E is connected by the connecting-rod G to a pin on the disk or crank H, which is suitably mounted on the standard A, and to which rotary motion is imparted in any suitable manner from a prime mover. I would here remark that the rear ends of the levers may be connected by a rod; but the joints are apt to work loose, and there will always be a certain amount of friction at the joints. For these reasons I prefer the flexible connection, as described, as the band will be rigidly secured at its opposite ends to the levers and has no tendency to wear loose, and it is, moreover, lighter than a rod. The other ends of the levers E E′ are connected together by the knife I, as will be hereinafter described, thus forming a parallelogram, and by the rotation of the crank or disk H a rocking motion will be communicated to the same on the fulcra of the levers E E′.

The knife-blade I is secured at its ends to the inner ends of two rods, J, which pass freely through the two slides K, which slide in stationary vertical guides K′ K^2, the said rods being in line with each other and being screw-threaded at their outer ends, which project through their respective slides K, and receive thumb-nuts J′ on the said projecting screw-threaded parts.

The guide K′ is secured to the end of an arm, A^2, bolted to and projecting from the part A′ of the standard, and the guide K^2 is secured to the standard C in the same vertical plane with the guide K′. The lower end of the upper slide and the upper end of the lower slide are connected by a strong flexible connection, L, (say a band or chain,) with the opposite ends of the curved plates E E^2 on the front ends of the levers E E′. As the rods J project beyond the ends of the slides K and receive the thumb-nuts J′ on their threaded ends, and the slides are secured by the connections L to the levers E E′, it will be evident that by screwing down the nuts J′ on their rods J almost any amount of tension can be put upon the knife I, and the risk of twisting or bending the blade during use will be reduced to a minimum.

Notwithstanding the great tension that can be put on the knife-blade, the strain on the fulcra of the levers or beams is but slight, and consequently the oscillation of the levers or beams E E′ may be effected with but little power, a small gas-engine, or even a treadle, being quite sufficient. The apparatus can also be driven at considerable speed and with little or no noise.

The projecting arm A^2 carries an adjustable presser-bar, *a*, and foot *a′*, which is slotted to allow the knife to pass through. The office of the bar *a* and foot *a′* is to hold down the material being operated upon during the upward motion of the knife as the levers E E′ rock. The levers may have their fulcra at the center of their length, as shown, or in any other position, according to the amount of reciprocating motion it is desired to give to the knife. The curve of the plates E^2 is struck from the fulcra of the levers E E′, and the plates insure that the pull on the slides shall be always in the same vertical plane.

In order to keep the knife sharp, I arrange below the table an emery-wheel, M, or other rotary sharpening device, which will be driven by a band from the crank-shaft and rotate in contact with the knife. After the knife has been working for some time and the upper part of the blade becomes dull the winged nuts J′ may be loosened, the knife unhooked, turned upside down, inserted again in place, and tightened up. As the machine continues working, the dull portion of the blade will be ground by the rotary sharpener below the table; or I may have two rotary sharpeners, one above and one below the table, as shown in Fig. 1, which arrangement I prefer.

The rotary sharpener M is mounted upon an axle, which rotates in a box, N, which is adjustable in two directions at right angles to each other in a frame, O, the said axle being parallel with the length of the blade I, and the planes of rotation of the sharpener being transverse to the said length. The frame O of the upper sharpening-wheel is secured to the arm A, and that of the lower sharpener or wheel to the standard C. The box N in either case is fitted to a slide, N′, in which it is adjustable by a screw, N^2, as best shown in Fig. 3, in a line parallel, or nearly so, with the face or side of the blade, but transverse to the length thereof, while the said slide itself is adjustable in the frame in a direction toward and from the face of the blade by means of a screw, O′. The last-named adjustment serves to bring the sharpener up to the blade for operation and away from it after operation, and the first-named adjustment serves to bring the sharpener to a position to give the desired bevel to the blade, as may be seen by reference to Fig. 3.

On the axle of the rotary sharpener is keyed a pulley, *c*, which receives motion by a band or cord from a V-pulley, *d*, mounted on a stud-axle bolted to the frame A. Motion is communicated to the pulley *d* by means of a second and smaller pulley, *d′*, round which passes a band or cord from a pulley, d^2, mounted on the main axle.

It will be evident that the improved machine may be employed for other purposes than cutting cloth. Thus, for instance, it is eminently adapted to cutting fretwork, such as that used by piano-forte manufacturers and cabinet-makers. The present apparatus used in this work is of a most cumbrous and antiquated character, and the amount of vibration caused in its use necessitates its being fixed in the most solid manner possible in the workshops, besides requiring greater power to drive it.

In adapting my apparatus to the production of fretwork, I replace the knife by a saw and I dispense with the use of the presser-bar *a* and the foot *a′*, as the wood or other material being operated upon, being rigid, can be held firmly down by the workman.

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

1. The combination, with the blade I, of the rock-levers E E′, provided at the ends with curved plates E^2, the flexible connections L between said levers and the blade, the flexible connection F between the said levers themselves, and means of giving motion to said levers and blade, all substantially as herein described.

2. The combination, with the blade I, of the screw-threaded rods J, connected therewith and provided with nuts J′, the slides K, through which said rods pass, the fixed guides K′ K^2 for said slides, the levers E E′, having curved plates E^2 at their ends, the flexible connections L between the said levers and rods, and the flexible connection F between said levers themselves, and means for giving motion to said levers and blade, all substantially as herein described.

3. The combination, with the straight reciprocating blade in a machine for cutting cloth and other materials, of a rotary sharpener the axis of which is parallel with the length of said blade, and which is adjustable relatively to said blade in a direction toward and from the face thereof and also in a direc-

tion substantially parallel with the face, but transverse to the length of said blade, substantially as herein described, whereby provision is made for bringing the sharpener into and out of operation and for varying the angle of the bevel of the edge thereof, as herein set forth.

4. The combination, with the straight reciprocating blade I, in a machine for cutting cloth and other material, of the rotary sharpener M, its axle *e*, and axle-box N, the slide N′, containing said box, the frame O, containing said slide, the screw N^2 for adjusting said box in said slide, and the screw O′ for adjusting said slide in said frame, all substantially as herein described, and for the purpose herein set forth.

EDGAR DREDGE.

Witnesses:
H. K. WHITE,
A. S. BISHOP,
Both of 6 *Bream's Buildings, London, E. C.*