No. 656,615. Patented Aug. 21, 1900.

W. E. CALDWELL.

CLOTH CUTTER.

(Application filed Aug. 25, 1899.)

(No Model.)

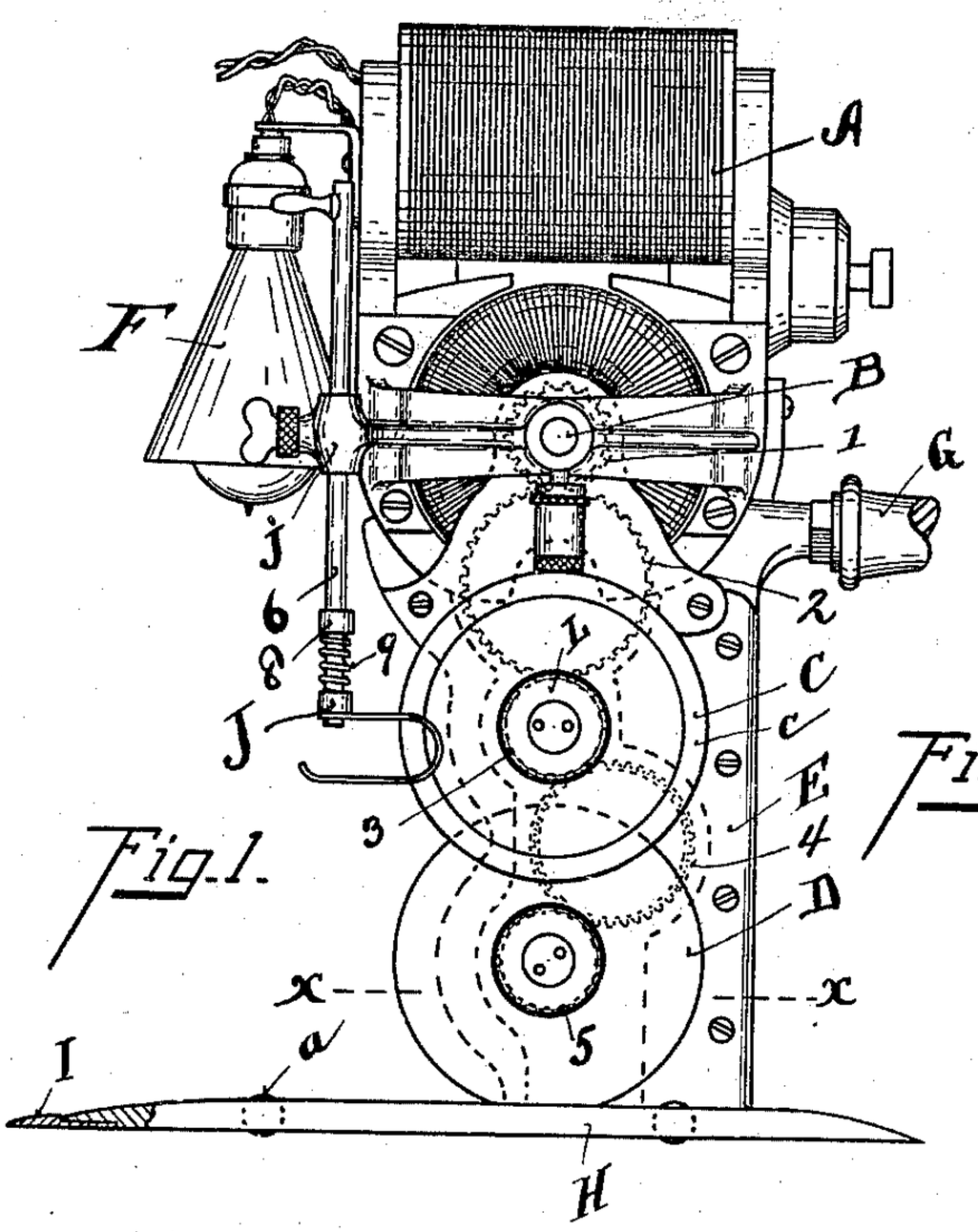

Fig. 1.

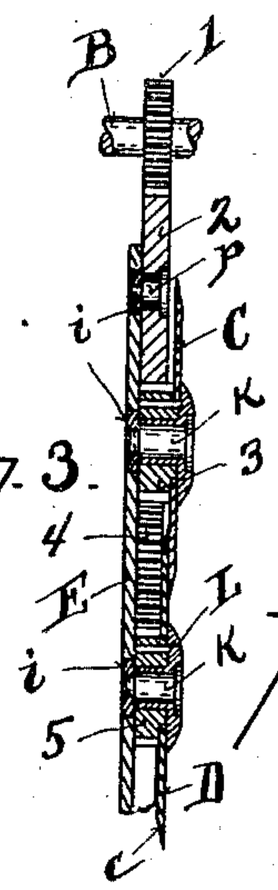

Fig. 3.

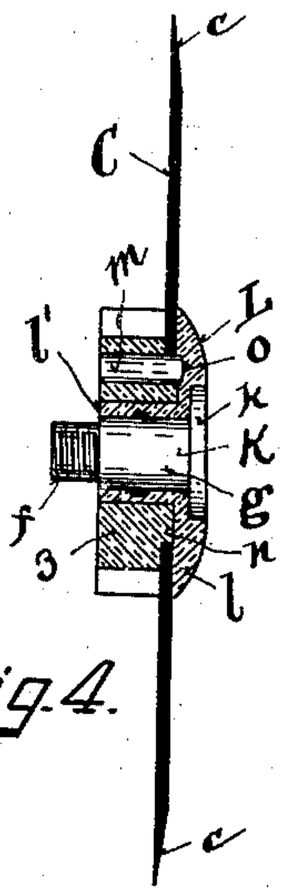

Fig. 4.

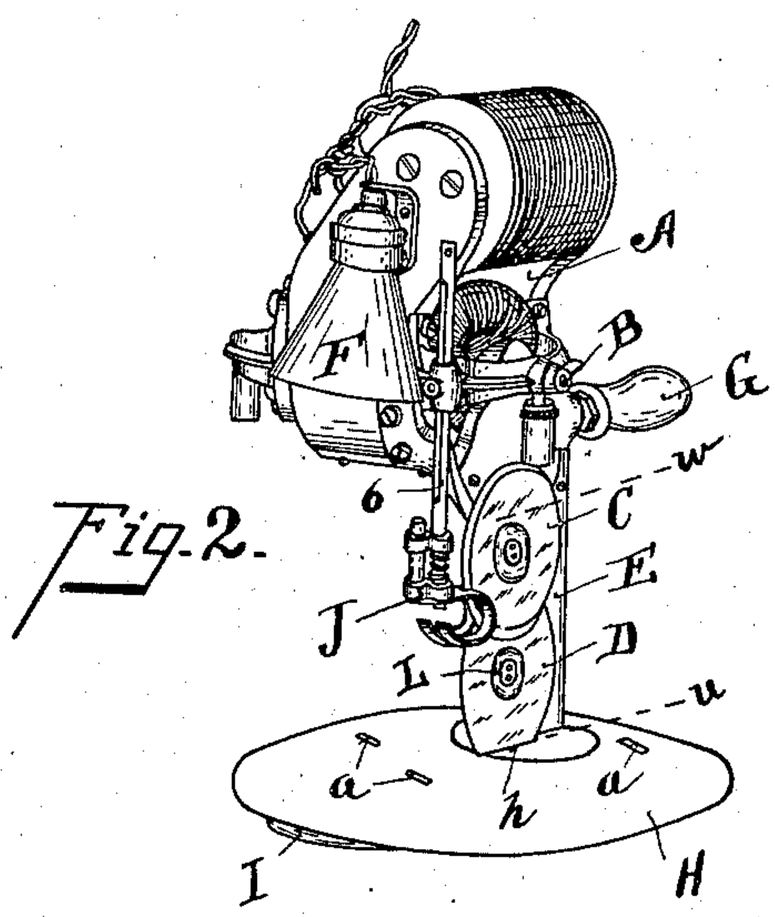

Fig. 2.

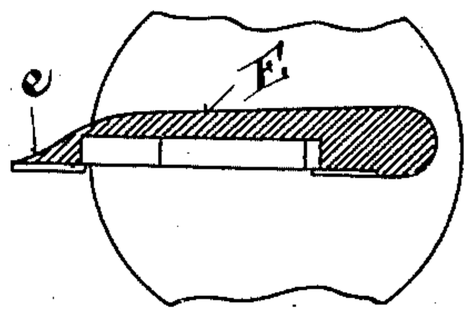

Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM E. CALDWELL, OF DAYTON, KENTUCKY.

CLOTH-CUTTER.

SPECIFICATION forming part of Letters Patent No. 656,615, dated August 21, 1900.

Application filed August 25, 1899. Serial No. 728,409. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. CALDWELL, residing at Dayton, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Electric Cloth-Cutters, of which the following is a specification.

My invention relates to certain improvements in electrically-operated cloth-cutters employing a motor the armature-shaft of which is horizontally arranged and geared to a rotary cutting-disk mounted upon a standard supported on a foot-plate which travels under the cloth. The great desideratum in this class of machines is to obtain as nearly as possible a vertical cut of the greatest possible depth. The mechanical difficulties to be overcome are as follows: No double-disk cutter has been successfully used. In using a single disk it requires a large one to penetrate a sufficient depth of cloth lays. The cutting portion of the disk is in the arc of a circle represented by the disk-periphery, and manifestly the larger the disk used the more arch-shaped and less vertical would be the cut. So great has been the difficulty arising from this fact that special instrumentalities have been provided for finishing the cut at the end of the disk travel to make the bottom of the cut flush with the top. Other attempts have been made to bury a cutter completely in the cloth; but obviously unless a small disk was used the cut resultant would be in the arc of a circle instead of substantially a straight vertical line, and if a disk small enough to give the desired outline of cut was employed it would not penetrate a sufficient depth of cloth lays to be of any great practical value. I accomplish both of these results—to wit, the desired depth of cut and a substantially-vertical cut—by employing two rotary disks revolving in the same direction and one mounted above the other. As both of these disks in operation are to be buried in the cloth lays, it becomes a nice mechanical problem to so journal these disks and the transmitting train of gears in a standard that the width of the standard will not oppose any undue latitude of parts which must follow in the cut made by the advancing edge of the disks and would interfere with such travel if too bulky. It is also obvious that the greater the depth which is to be obtained the more difficult becomes the problem of mounting the disks, gears, and transmitters in a supporting-standard of sufficiently-great vertical dimensions and sufficiently-minute lateral dimensions to meet the conditions of work. These and other features of my invention are more fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my device. Fig. 2 is a perspective view. Fig. 3 is a central vertical section through standard, gearing, and disks. Fig. 4 is an enlarged central vertical section through one of the disks and its journal. Fig. 5 is a section on line *x x*, Fig. 1.

A represents the motor, the armature-shaft B of which is arranged above and horizontal to the cutting-disks C D, journaled upon a standard E. This standard rests on the foot-plate and sustains the entire weight of the motor and superimposed parts, as well as forming a journal for the disks and transmitting-gears, and at the same time is thin enough to travel readily in the cut and is of uniform width, tapering to the front edge.

F represents the electric lamp, arranged to throw the light-rays upon the pattern to be cut out.

G represents a handle for guiding the device.

H represents the foot-plate, upon which the standard and parts are supported, having a slot *h*, through which the lower disk revolves. This foot-plate is mounted upon rollers *a*, enough rollers being used to steady the travel of the device.

I represents a lip pivoted to the front of the foot-plate, adapted to rise and fall with the inequalities of the table and yieldingly feeding the cloth over the foot-plate to the cutters.

J represents a spring-controlled presser-foot adjustably mounted in a bracket *j*. The particular construction will be more fully described hereinafter.

1 represents a gear-wheel fixed on the armature-shaft, meshing with a transmitting gear-wheel 2, journaled in the upper portion of the standard E. 3 represents a gear-wheel

affixed to the disk C, the particular arrangement of which journal will be hereinafter more fully explained. This gear 3 is in mesh with gear 2. 4 represents a transmitting gear-wheel journaled in the standard E, in mesh with the gear-wheel 3 and transmitting power to a similar gear-wheel 5, affixed to the cutting-disk D. These gears 1 2 3 4 5 constitute the train of power-transmitters, in which it is obvious that gears 1, 3, and 5 revolve in the same direction—that is, the cutting-disks both revolve in the direction of the shaft.

The cutting-disks C D are arranged with their faces opposing each other and the bevel-faces *c* facing in opposite directions, the lower edge of disk C and the upper edge of disk D overlapping and almost in contact with each other. Thus a continuous straight vertical edge is presented to front view and a substantially-vertical knife-edge from a side view, the cutting portion of the two disks being between the lines *w* and *u*, Fig. 2, thus utilizing nearly the entire diameter of both disks.

The standard E must be tapered at its front edge *e*, as shown in Fig. 5, and at its widest portion it must be of slightly-greater diameter only than the gear-wheels of the cutting-disks, or otherwise it would be too bulky to lie snugly within the cut made by the disks. In order to accomplish this, I provide the following instrumentalities, more thoroughly illustrated in Fig. 4:

K represents a journal-bolt having the screw-threaded end *f*, the journal-barrel *g* of greater diameter, and the outer flange-head *k*. This journal-bolt is passed through a brass bushing L of the same lateral dimensions as the flange and journal portion of the journal-bolt. This bushing is provided with a flange-head *l* and its recess *l'* is shaped to fit and receive the journal-barrel and flange-head of the journal-bolt, so that the flange-heads of the said bolt and bushing are flush with each other. Upon this bushing is mounted one of the gears 3 or 5, having the lateral locking-pin *m*. This gear-wheel is provided with a shoulder *n* on the outer edge of its periphery, facing the bushing flange-head, forming a seat for the cutting-disk, which lies between the said gear and the bushing-head. The disk has an orifice through which the pin *m* is passed. The outer end of this pin seats in a recess *o*, formed in the inner face of the flange-head, the pin serving the function of locking the gear, disk, and bushing together, so that they revolve as a single part upon the journal-bolt. The journal-bolt taps a screw-threaded orifice in the standard E. Orifices are formed in the journal-bolt head, leading to the bearing-surface thereof, for access of oil. It is obvious that this standard should have just sufficient lateral dimension to receive the screw portion *f* of the journal-bolt, which construction allows an extremely-thin standard to be used with ample strength and rigidity for supporting the motor, cutting-disks, and journals. The parts are readily detachable from the standard and from each other, so that they can be easily replaced when worn.

The journals of the transmitting-gears 2 4 are substantially the same as that described for 3 and 5, with the exception that as they do not support a cutting-disk the gears are not provided with the shoulders forming a seat for such disks, and a collar-bushing is employed. It should be further stated that in the case of these transmitting-gears 2 4 the bushings are not essential, and the gear-wheels turn on the journal-bolt or a bearing-collar *p* of suitable material. (See Fig. 3.) The standard is made of bronze, and in order to give sufficient strength to support the ends of these journal-bolts I provide steel collars *i*, internally screw-threaded and appropriately placed in orifices formed in the standard.

The preferred construction of the presser-foot is as follows: 6 represents a rod supported in the bracket *j*, the presser-foot J being sleeved upon this rod. This sleeve 8 has a spring 9, which gives a yielding action to the presser-foot. This presser-foot is bifurcated, the foot being hook-shaped, the body of the hook being inturned, the advance edges of one or both cutting-disks traveling between the limbs formed by the bifurcation, the front ends of said limbs being upturned to ride smoothly over the cloth lays. This presser-foot prevents buckling of the goods and adds to the efficiency of the operation.

I believe I am the first to successfully employ two cutting-disks mounted one above the other in the same vertical plane and entirely sustained upon a single supporting-standard without increasing the thickness of the standard, producing a substantially-vertical cut through lays of greater thickness than it has been found possible hitherto to penetrate and cut up at one operation. This improvement almost doubles the capacity of my cutter over previous devices employed for this purpose, as well as producing superior workmanship.

Having described my invention, I claim—

1. In combination with the standard of an electric cloth-cutter, a journal-bolt provided with a flanged head, the said bolt tapping the standard, a bushing having a flanged head coincidently mounted on said bolt, a gear-wheel mounted on the bushing having a shoulder on its inner face abutting the bushing-head, a disk seating on said shoulder and means for securing the said parts together whereby they revolve as a unit on the journal-bolt, substantially as described.

2. In combination with the standard of an electric cloth-cutter, a journal-bolt provided with a flanged head, a journal-bearing adjacent to said head, the other end of said bolt being of reduced diameter and screw-threaded engaging into the standard the end of the journal-bearing portion of the bolt forming a square shoulder abutting the standard, a

bushing having a flanged head coincidently mounted on the journal-bearing of said bolt, a gear-wheel mounted on the bushing, a shoulder on the inner face abutting the bushing-head, a disk on said shoulder, and a pin uniting the said gear, disk and bushing, substantially as described.

In testimony whereof I have hereunto set my hand.

WILLIAM E. CALDWELL.

Witnesses:
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W. R. WOOD.