

UNITED STATES PATENT OFFICE.

PATRICK HOWE, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF FIVE-SIXTHS
TO FENNO CLOTH CUTTING MACHINE COMPANY, OF BOSTON, MASSA-
CHUSETTS, A COPARTNERSHIP.

ELECTRICAL CLOTH-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 724,869, dated April 7, 1903.

Application filed August 2, 1901. Serial No. 70,639. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HOWE, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts,

5 have invented an Improvement in Electrical Cloth-Cutting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 My invention is an improvement in electrical cloth-cutting machines, its object being to provide a construction which shall be powerful and yet exceedingly light on the table.

As stated more fully in my Patent No. 637,613, granted November 21, 1899, modern cloth-cutters must be electrically operated, and in my said patent I provided a compact construction for this purpose; but in practice I have found that it was impracticable

20 to operate a cloth-cutter having such a heavy weight at its outer end, as, in the first place, its constant use produces too great a strain on the strength of the operator, in the next place this great weight requires a base or

25 foot plate of such shape and dimensions as to prevent the proper cutting of very small and narrow pieces of cloth, and, in the third place, said weight requires rolls and special construction for permitting the movement of the

30 cutter over the table, and these rolls, &c., become rapidly clogged with lint and dirt, all these objections taken together making it practically impossible to use an electrical construction of the said general character.

35 Accordingly in my present invention I have provided an electrical construction which while securing all the desired advantages of economy of space, construction, operation, neatness, and convenience permits

40 the employment of exceedingly-light cutting mechanism capable of cutting the smallest and narrowest pieces of cloth and capable of being swung or moved without exertion freely and rapidly in all directions.

45 The constructional details of my invention will be pointed out more fully in the course of the following description, reference being had to the accompanying drawings, in which a preferred embodiment of my invention is

50 shown, and the latter will be more particu-

larly defined in the appended claims, also forming a part of this specification.

In the drawings, Figure 1 is a perspective view of one embodiment of my invention. Fig. 2 is an enlarged view thereof in side elevation, the table and certain other portions being broken away and shown in section for clearness of understanding. Fig. 3 is a rear elevation thereof, parts being broken away and shown in section. Fig. 4 is a central vertical section taken on the line 4 4, Fig. 2; and Fig. 5 is a sectional view on the line 5 5, Fig. 3, showing the eccentric relation of the motor-bracket.

Mounted on a suitable stand *a*, of any desired construction, is a base *a'* of a post or column *a⁵*, threaded at its lower end, as shown clearly in Figs. 2 and 4, and provided above said threaded portion with a reduced shaft *a⁶*, extending up above the supporting-arm of the cutter, as shown at *a⁷*, which will be presently described. Mounted on this shaft is a sleeve *b*, resting on lugs or a shoulder *c'* of a nut or housing *c*, adjustable on the threaded end of the post *a⁵*. The sleeve *b* is shown as an extension or laterally-projecting portion of an arm *d*, which is connected at its free end to a second arm *e*, carrying the cloth-cutter *f* at its outer end. These arms are connected together in usual manner and carry the operating mechanism of the cloth-cutter, herein shown as comprising a rod *e'*, driven by gearing at *e²* from a pulley *g*, belt *g'*, and pulley *g²* on the armature-shaft of the motor *M*. The motor *M* is carried by a bracket *m*, clamped by any suitable means, as by a bolt *m'*, to the upper end *a⁷* of the post *a⁵*. Said bracket has at its lower end upwardly-projecting ears or studs *m²*, provided with bearing-bolts *m³*, which carry an internal ring *m⁴*, provided with other bearing-bolts *m⁵*, together constituting a universal joint for a central bearing *m⁶* for the lower end *m⁷* of the armature-shaft, on which the pulley *g²* is mounted eccentrically to the swinging center of the arm *d*. The bracket *m* is secured to the shaft *a⁵* eccentrically, as indicated at *m⁸*, Fig. 5, in coaxial line with said pulley for the purpose of tightening the belt *g'* upon being turned slightly around to the rear, Fig. 1, or to the left, Fig. 5, as laced

belts cannot be run with cloth-cutting machines on account of the vibration caused thereby, and hence this provision for tightening the belt without lacing it becomes necessary.

By having the motor located over the stationary shaft or support to which the swinging arms *d e* are pivoted all the weight is removed from the cutter *f*, so that it is possible to employ an exceedingly narrow and small foot-plate *f'* for the disk cutter *f*² to cooperate with. The practical importance and value of this matter will be more apparent when it is borne in mind that sufficient power is required for driving these cloth-cutters through a considerable thickness of cloth, at least one-fourth horse-power being desirable, and to provide such an amount of power electrically would require an amount of iron and copper making the cloth-cutter end *f* of the machine weigh over one hundred pounds, whereas in the construction above set forth the weight of the cutter *f* is reduced to one pound.

The operator cannot shove the one-hundred-pound electrical cutter around on the table all day without great fatigue, whereas there is no difficulty whatever in operating a light cutter of one-pound weight, and yet the cutter is driven just as powerfully in my present construction as in the previous construction.

The advantage of having the small toe or foot plate *f'* is that it makes it possible to make very small turns and cut very narrow pieces of cloth, both of which are impossible with the large foot-plate and heavy machine as shown in my before-mentioned patent, and also the lightness of the operating end *f* of the machine does away with the necessity of rollers, as already explained, and permits the machine to be moved quickly and freely to follow all sharp turns and special patterns with an accuracy impossible with a heavy moving end.

By turning the nut or sleeve *c* upwardly the arms *d e* and cutter *f* may be raised almost out of contact with the table, thereby permitting the greatest freedom of movement with the least fatigue.

All the aforesaid lightness of construction and facility of movement are made possible by having the motor *M* placed on the stationary standard or support of the machine, where it is practically at the center movement, and instead of placing a prohibitive weight at the end *f* of the machine it gives steadiness of movement, preventing a tendency to vibration in the standard and giving, in a sense, counterbalancing effect, while accomplishing the leading purpose of permitting the machine to be driven electrically by a belt in substantially the same manner as in my Patent No. 355,085, of December 28, 1886.

It will be understood that my purpose is to retain the recognized advantages of the old style of machine—for instance, as shown in

my last-mentioned patent—and yet operate the same electrically, as the modern requirements call for electricity as a motive power, require correspondingly high speed, steadiness, durability, &c., and all these objects are secured by transferring the weight of the motor from the moving end *f* of the machine to the standard *m* or stationary support part of the machine, said motor being supported thereby independently of the movements of the swinging arm.

It will be seen that by the special construction of the present embodiment of my invention the motor, driving-pulley, and adjacent parts do not bring the slightest weight upon the swinging parts of the machine and that the latter are adjustable up and down on the post *a*⁵ without requiring any adjustment of the motor or motor-bracket, the adjustment of the latter by the bolt *m'* being for the purpose of tightening the belt *g'*, as explained.

I am aware that many changes in constructional details and arrangement of parts may be resorted to without departing from the spirit and scope of my invention, and accordingly I do not limit myself otherwise than as explained hereinafter in the claims.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cloth-cutting machine, comprising a rotary cloth-cutter, swinging arms carrying said cloth-cutter and also provided with driving means for rotating said cutter, and including a driving-belt, a fixed standard or support to which said swinging arms are concentrically pivoted, a motor-bracket mounted on said fixed support independently of said swinging arms, an electric motor carried by said bracket, a driving-pulley eccentric of the pivotal axis of said arms on said support and driven by said motor, said belt passing over and being driven by said driving-pulley.

2. A cloth-cutting machine, comprising a rotary cloth-cutter, swinging arms carrying said cloth-cutter and also provided with driving means for rotating said cutter, and including a driving-belt, a fixed standard or support to which said swinging arms are concentrically pivoted, a motor-bracket mounted on said fixed support independently of said swinging arms, an electric motor carried by said bracket, the armature-shaft of said motor extending toward said bracket, a pulley mounted thereon for driving said belt, and a bearing carried pivotally by said bracket for the free end of said armature-shaft.

3. A cloth-cutting machine, comprising a stand, a stationary post or column projecting vertically therefrom and having its upper portion reduced to constitute a supporting-shaft, a rotary cloth-cutter, swinging arms carrying the same at one end, and at their other end provided with a vertical sleeve, a housing adjustably mounted on said post below its reduced part, said sleeve being carried by said

housing and journaled on said reduced part, a bracket secured to and extending laterally from said supporting-shaft above said sleeve, an electric motor mounted on said bracket 5 vertically above said post, and belt and pulley connections from the armature-shaft of said motor for operating said rotary cutter.

4. A cloth-cutting machine, comprising a stand, a stationary post or column projecting 10 vertically therefrom and having its upper portion reduced to constitute a supporting-shaft, a rotary cloth-cutter, swinging arms carrying the same at one end, and at their other end provided with a vertical sleeve, a housing ad- 15 justably mounted on said post below its reduced part, said sleeve being carried by said housing and journaled on said reduced part, a bracket secured to and extending laterally from said supporting-shaft above said sleeve, 20 an electric motor mounted on said bracket vertically above said post, the armature-shaft thereof projecting downwardly and provided at its lower extremity with a pivoted bearing independent of said arms, a pulley on said ar- 25 mature-shaft and driving connections therefrom for driving said cutter.

5. A cloth-cutting machine, comprising a

stand, a stationary post or column projecting vertically therefrom and having its upper portion reduced to constitute a supporting-shaft, 30 a rotary cloth-cutter, swinging arms carrying the same at one end, and at their other end provided with a vertical sleeve, a housing having threaded connection with said post below said reduced part, said housing having 35 an inwardly - projecting shoulder above its threaded part, said sleeve fitting between said housing and said supporting-shaft and carried on said shoulder, a bracket secured to and extending laterally from said supporting- 40 shaft above said sleeve to permit free swinging movement of said arms to any position; an electric motor mounted on said bracket above said post, and driving connections from the armature-shaft of said motor for driving 45 said cutter.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK HOWE.

Witnesses:

GEO. H. MAXWELL,
GEO. W. GREGORY.