

No. 649,862.

Patented May 15, 1900.

R. PHILLIPS.
CLOTH CUTTER.

(Application filed Aug. 10, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

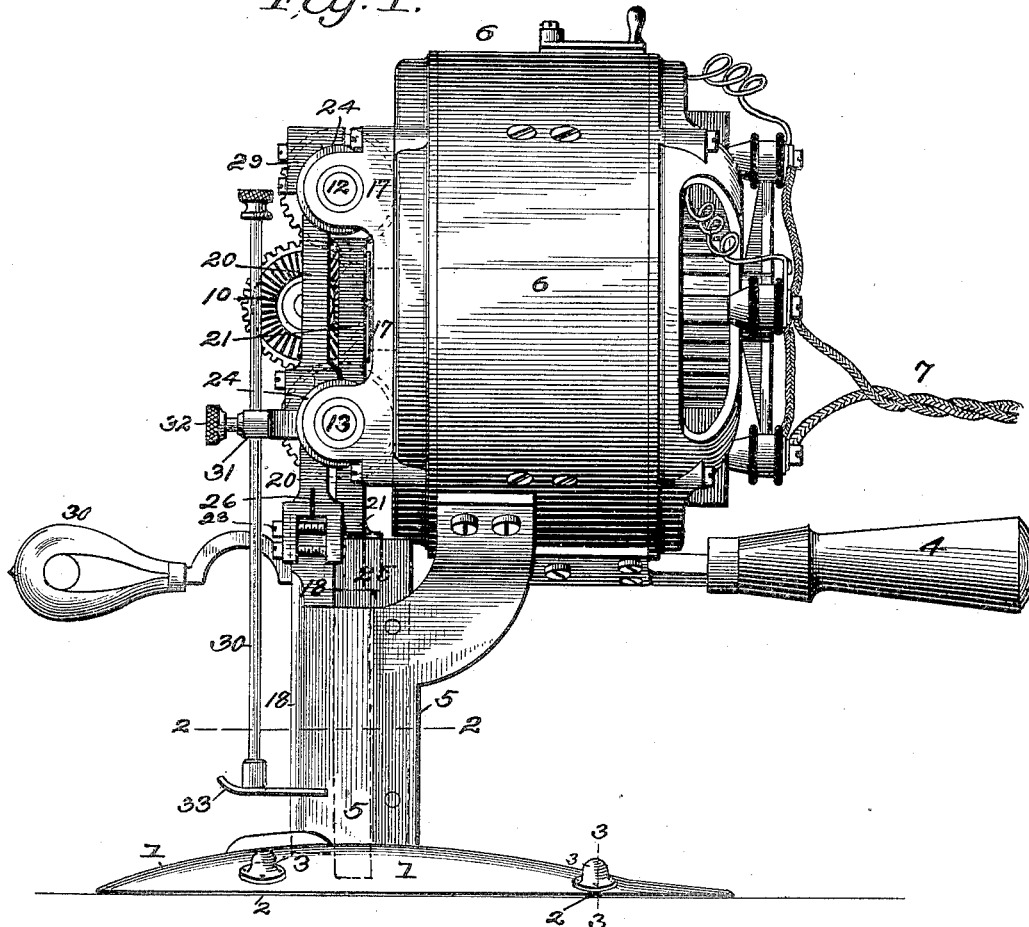


Fig. 2.

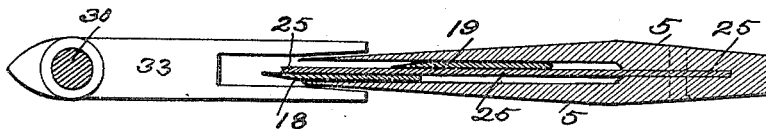
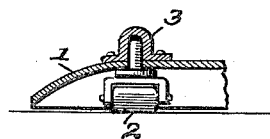


Fig. 3.

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ATTORNEYS.

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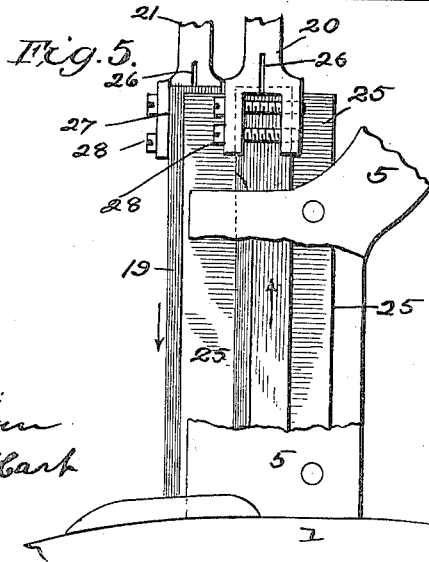
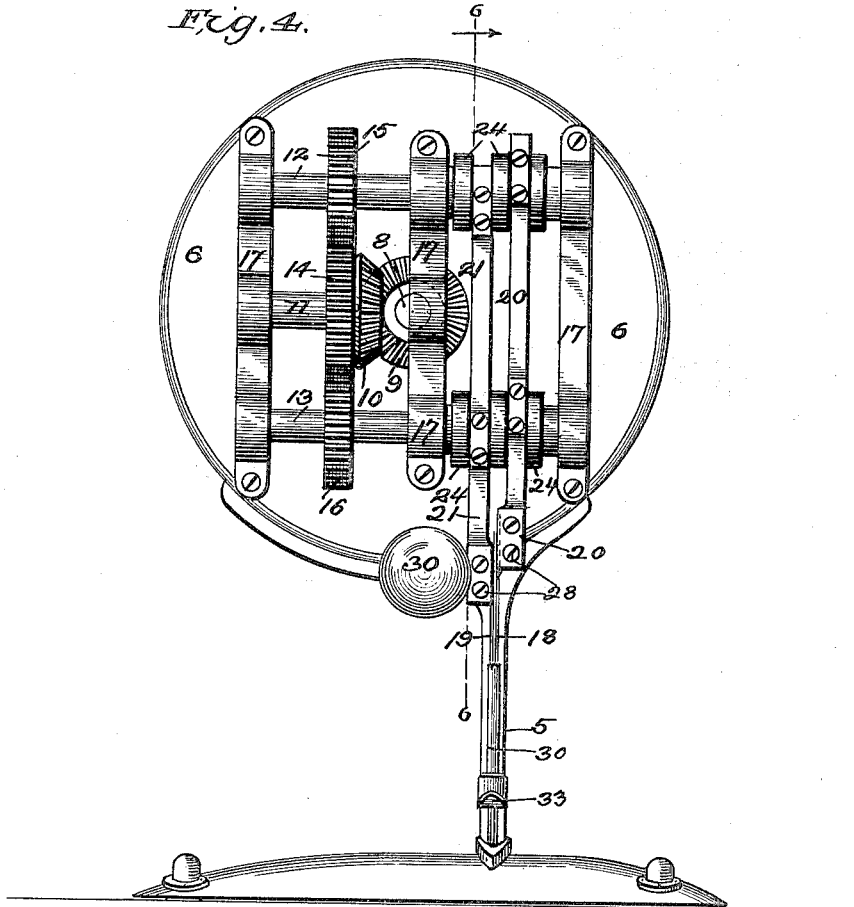
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Fig. 4.



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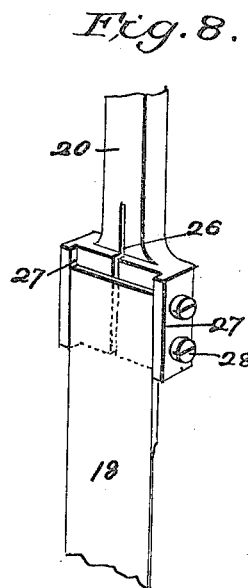
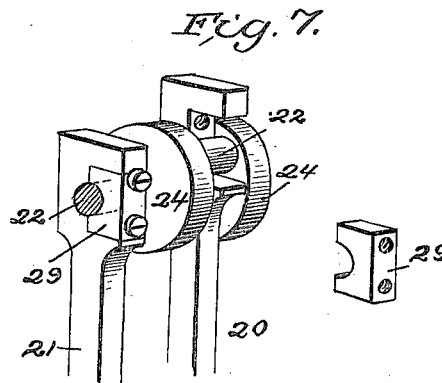
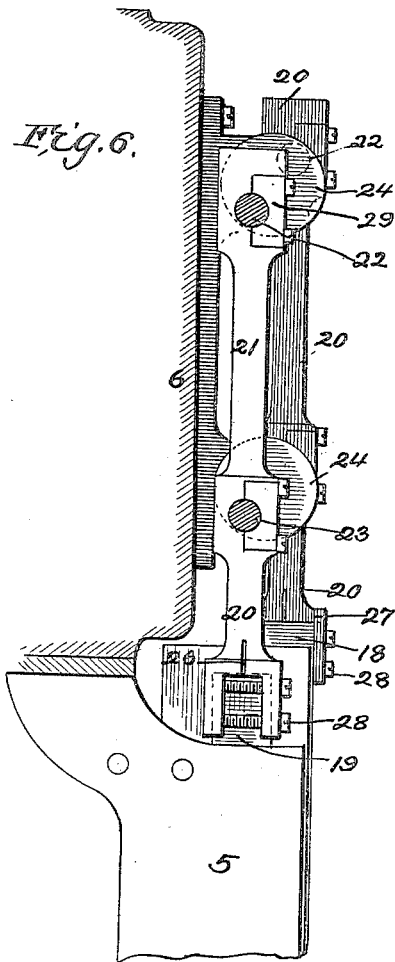
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WITNESSES:
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UNITED STATES PATENT OFFICE.

ROBERT PHILLIPS, OF BALTIMORE, MARYLAND.

CLOTH-CUTTER.

SPECIFICATION forming part of Letters Patent No. 649,862, dated May 15, 1900.

Application filed August 10, 1899. Serial No. 726,813. (No model.)

To all whom it may concern:

Be it known that I, ROBERT PHILLIPS, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented a new and Improved Cloth-Cutting Machine, of which the following is a specification.

My invention is an improvement in the class of cloth-cutting machines which are adapted to be guided manually upon a table or other flat support for the cloth and are provided with a motor operated by electricity, steam, or compressed air, &c., for imparting the required movement to the knife or cutter proper.

Heretofore a single knife or cutter has usually been employed and arranged to reciprocate vertically in the particular class of machines to which mine belongs, whereas I employ two cutters working parallel, but out of contact, and making a circular movement, by which they effect a draw cut in the cloth, and thus do rapid and effective work. The two cutters are separated by a thin flat plate, with whose opposite sides they work in contact, and the cutters being beveled exteriorly they are to some extent sharpened by friction with said plate and the cloth.

In addition to the above-described features I have devised others of more or less importance, as hereinafter described.

In the accompanying drawings, (three sheets,) Figure 1 is a side view of the machine. Fig. 2 is an enlarged cross-section on line 2 2 of Fig. 1. Fig. 3 is a vertical section on line 3 3 of Fig. 1. Fig. 4 is a front view of the machine. Fig. 5 is a broken side view of the standard of the machine. Fig. 6 is an enlarged vertical section on line 6 6 of Fig. 4. Fig. 7 is a detail perspective illustrating the connection of the knife-carrying bars or pitmen with the crank-shafts. Fig. 8 is a detail perspective illustrating the attachment of a knife or cutter to a carrying bar or pitman.

1 indicates the conical shoe or base-plate that supports all other parts composing the machine and is itself supported on casters-wheels or elongated rollers 2, (see Fig. 3,) having pintles whose bearings are in the conical caps 3, riveted to the said base. By this arrangement the base 1 may be moved and guided with great ease and facility on the

table beneath the layers of cloth being cut by means of the rigid handle 4, Figs. 1 and 2.

The vertical standard 5 is rigidly secured to the shoe 1 and supports the cylindrical casing 6, which contains an electric motor and carries the other movable parts of the machine. In practice said motor is operatively connected by conductors 7 with a dynamo or other suitable source of electric energy. The rotary armature of the motor is mounted upon a horizontal axis or shaft 8, (see Fig. 4,) arranged concentrically in the casing 6. A bevel driving-gear 9 is keyed on the projecting front end of shaft 8, and this gear meshes with another similar one 10, which is keyed upon a shaft 11, arranged horizontally on the face of the casing 6 between two parallel crank-shafts 12 and 13. A gear 14 on shaft 11 meshes with two like gears 15 and 16, mounted on the respective crank-shafts 12 and 13. The three shafts 11 12 13 have suitable bearings in vertical bars 17, attached to the flat vertical face of the casing 6. It will now be apparent that the rotation of the armature of the electric-motor gear 9 imparts like movement to the shaft 11, and thereby to the parallel crank-shafts 12 and 13; also, that by reason of the arrangement of the three meshing gears 14 15 16 the crank-shafts 12 and 13 rotate in the same direction and at the same speed. Thus the desired reciprocating circular movement is imparted to the two knives or cutters 18 and 19, as will be seen from the following description: The said knives are arranged vertically and attached to the respective carrying-bars or pitmen 20 and 21. (See Figs. 4 and 6.) The pitmen are journaled on the cranks 22 and 23 of the respective shafts 12 and 13. (See Figs. 4, 6, and 7.)

The journal of each crank 22 and 23 connects two parallel disks 24, between which the pitmen 20 21 work. Each two adjacent cranks are set one hundred and eighty degrees apart—i. e., exactly opposite. Furthermore, the opposite journals of the two crank-shafts 12 and 13 are arranged in the same position or at the same angle, and both shafts being rotated at the same speed it results that each knife-carrier or pitman is held vertical while describing a circular movement. The knives 18 and 19 being rigidly secured to the pitmen,

they necessarily retain the vertical position while describing the same circle as the pitmen, and the arrangement of the cranks is such that one knife moves forward and descends as the other moves backward and ascends. Thus the knives make alternately a forward, downward, and consequently a draw cut in the cloth. As demonstrated by practical experience, this operation is most effective, the cloth being cut with ease and certainty, and the knives clearing themselves from the fabric at once the forward and downward movement ends.

I have found it advantageous to arrange the knives 18 and 19 to work in contact with a thin flat separating or division plate 25, (see Figs. 1, 2, and 5,) which is riveted in the standard 5. The flat inner side of each knife is in close contact with said plate 25 and is beveled at the front edge on the outer side. In its reciprocating movement each knife projects beyond the vertical front edge of the division-plate 25, as shown in Figs. 1, 4, and 5, and then recedes therefrom. In Fig. 2 the knives 18 and 19 are shown at the limit of their respective forward and backward movements. For an instant intermediate of the cuts made by the knives the division-plate presses forward in the cut against the cloth and holds its fibers stretched, so that the instantly-succeeding cut of a descending knife is facilitated. If no partition-plate were used, the pressure from the layers of cloth being cut would result in direct friction between the knives and they would become overheated. This is especially true in cutting circles in several layers of cloth. The partition presses into the cut made by the cutters and also stiffens them or prevents their bending. The arrangement is such that each knife makes as many reciprocations as the armature makes revolutions, which are ordinarily nineteen hundred. Thus the two knives aggregate three thousand eight hundred revolutions per minute, so that the effectiveness of the machine greatly exceeds those having but one knife.

The machine may be turned to cut upon sharp curves or at right angles and will do its work effectively. The knives keep their edge for a long time, being practically sharpened by their sliding contact with the plate 25, against which they are pressed with considerable force by the adjacent severed edges of the cloth. They are, however, protected from undue pressure by the beveled sides of the standard 5.

To provide for convenient detachment of the knives from the pitmen 20 21, the enlarged lower ends of the latter are split vertically at 26 (see Fig. 8) and provided with parallel side flanges 27, between which the shanks of the knives are clamped by means of screws 28, as will be readily understood. By this means the knives are held with due rigidity and yet adapted to be easily and quickly detached when required. The pit-

men 20 21 are also adapted for easy attachment to and detachment from the crank-journals 22 23 by the construction and combination of parts shown best in Figs. 6 and 7—that is to say, each pitman is provided with a square recess, in which fits a block or cap 29, the latter being secured by screws. The crank-journals fit in coincident half-round bearings in the pitmen and blocks, as shown. By detaching the latter and pushing the pitmen backward the latter may be freed from the crank-shafts.

I provide a combined guard and presser-foot, as shown best in Figs. 1 and 2. A rod 30 is adapted to slide vertically in a guide 31 and is clamped by a screw 32. A slotted plate 33 is attached to the lower end of said rod, and its forks embrace the front edge of the standard 5. The rod serves to prevent accidental contact of the hand of the operator with the knives, and the plate 33 presses upon the cloth as the machine moves forward.

On the front of the machine I arrange an incandescent electric light 3' to enable the machine to be used efficiently when the natural light is insufficient.

What I claim is—

1. In a cloth-cutting machine, the combination of two straight knives, arranged vertically, with their sides adjacent, and adapted to describe similar circular movements, one advancing as the other recedes, two transverse parallel shafts each having adjacent cranks on which the said knives are mounted so as to maintain a vertical position, said shafts having fixed bearings on each side of, or exterior to, the cranks, the cylindrical motor-casing upon whose flat vertical face the said shaft-bearings are secured, and a shoe and grooved standard supporting the casing and attachments, as shown and described.

2. In a vertical cloth-cutting machine, the combination of two knives arranged vertically and adjacently, means for imparting a circular up-and-down movement to each, while holding them vertical, a division-plate arranged between them, and a standard in which said plate is secured, substantially as shown and described, for the purpose specified.

3. In a cloth-cutting machine, the combination with the conical base, and the slotted standard fixed thereon, of two knives, arranged vertically, and means for reciprocating them circularly, and a thin, flat, division-plate arranged and fixed between the knives, and its front edge projecting beyond the standard, each knife being moved forward beyond the edge of said plate and then receding to a point in rear of such edge, as shown and described.

4. In a cloth-cutting machine, the combination of two parallel shafts arranged horizontally, and each having two sets of cranks which correspond with those of the other shaft in position and angle, two pitmen or knife-carrying bars, each attached to the ver-

tically-alined cranks of the respective shafts, two knives attached to the respective pitmen and held parallel and vertical while making a circular cut and a division-plate fixed between said knives, substantially as shown and described.

name to this specification in the presence of two subscribing witnesses.

ROBERT PHILLIPS.

Witnesses:

EDW. A. SPILMAN,

CHAS. SPILMAN.

In testimony whereof I have signed my