

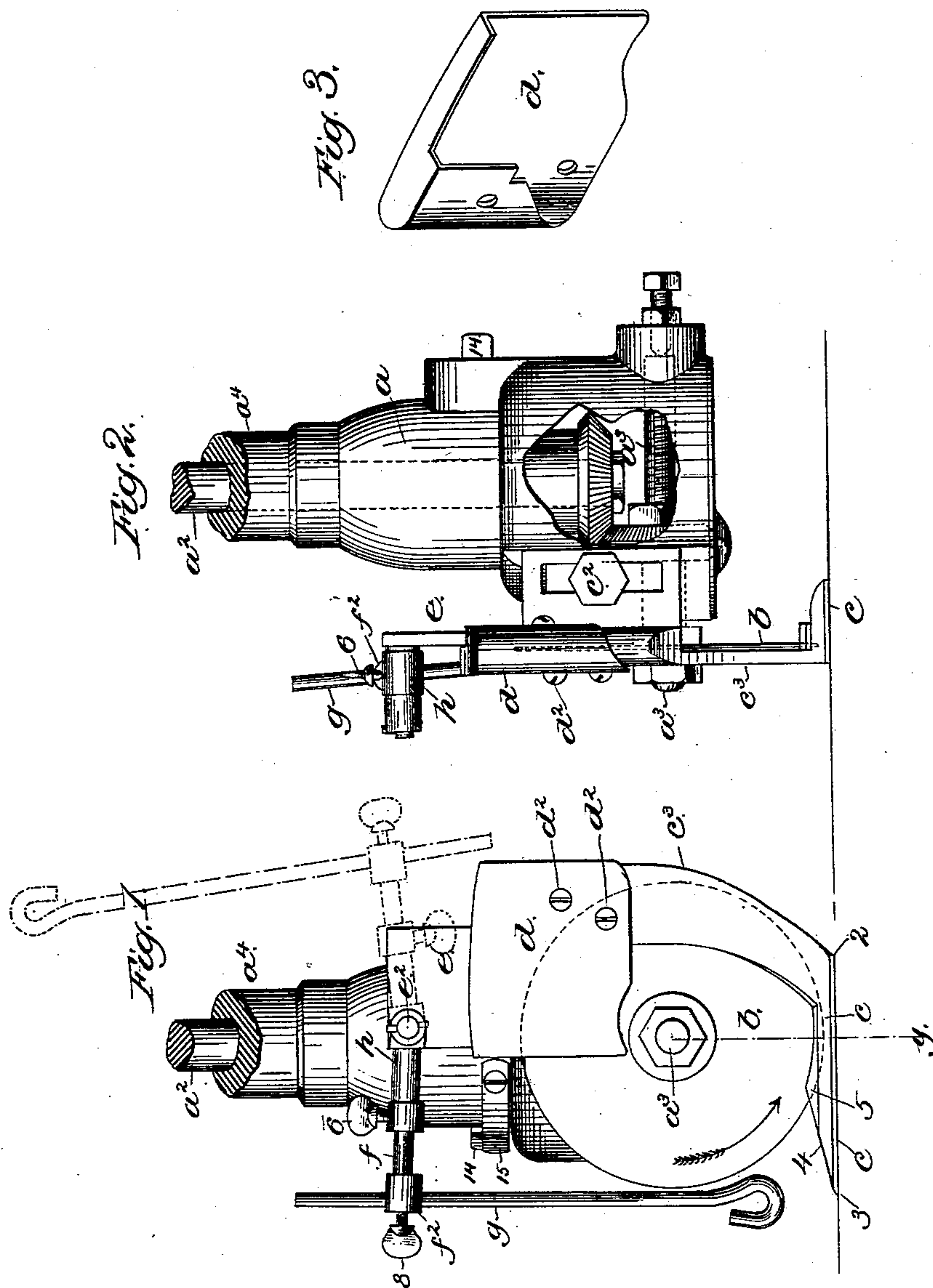
(No Model.)

2 Sheets—Sheet 1.

P. HOWE.
CLOTH CUTTING MACHINE.

No. 280,827.

Patented July 10, 1883.



Witnesses.

John F. C. Prinschke

Wm. H. Lunkel

Inventor

Patrick Howe.

By Crosby & Gregory
Attys.

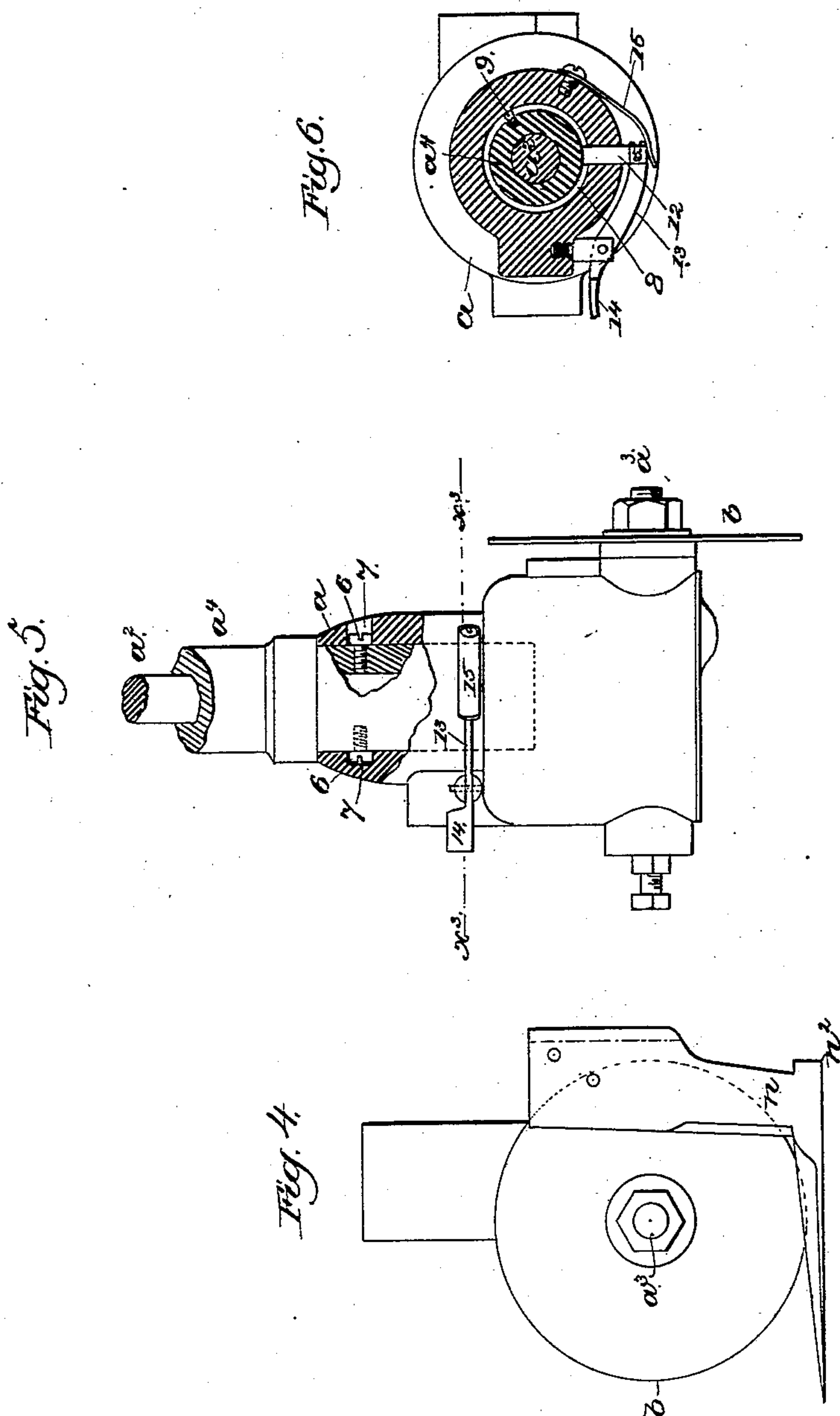
(No Model.)

2 Sheets—Sheet 2.

P. HOWE.
CLOTH CUTTING MACHINE.

No. 280,827.

Patented July 10, 1883.



Witnesses.
John F. C. Prentiss
Wm. H. Funcher

Inventor:
Patrick Howe
by Crosby Gregory
Attys.

UNITED STATES PATENT OFFICE.

PATRICK HOWE, OF BOSTON, MASSACHUSETTS.

CLOTH-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 280,827, dated July 10, 1883.

Application filed May 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HOWE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Cloth-Cutting Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention in cloth-cutting machines is an improvement on United States Patent No. 129,327, granted July 16, 1872, to which reference may be had for a description of the mechanism for actuating the rotating cutter. In the said patent the rear edge of the cutter is exposed beyond the shank of the foot. In the use of the machine shown in the said patent it was found desirable to set the shank of the foot on the hither side of the cutter and far enough back to cover the rear edge of the cutter, so as to protect the goods as the operator, guiding the cutter-head by his right hand, cuts curves by turning the cutter-head and cutter toward the right, or in the direction in which the hands of a watch are turned. This change of position of the shank of the foot resulted in making the heel of the foot-piece so long and placing it so far from the axis of rotation of the cutter that the capacity of the cutter to cut short curves or curves with short radii was greatly lessened. To obviate this latter disadvantage, and yet retain the benefits of covering the rear edge of the cutter or knife, I have curved the rear part of the shank of the foot forward, so as to bring the heel of the foot-piece as near as may be to the center of motion of the cutter when the latter is swiveled to turn corners or to cut curves. In the patent referred to the forward end of the toe of the foot-piece terminated considerably to the rear of a perpendicular line tangent to the foremost portion of the curved edge of the cutter. As a consequence, whenever the pile of cloth to be cut was thicker than the vertical distance between the extremity of the toe of the foot and the cutting-edge of the knife, the upper layers of cloth were cut in advance of such vertical line, and the downward motion of the cutting-edge at that place tended to press the bottom piece of the pile of cloth in front of the foot hard against the surface of the table, and rendered it difficult for the toe of the foot-piece to be advanced without dis-

turbing or pushing out of place the lower layer or layers of the pile of cloth. To obviate this difficulty the machines constructed under the said patent were in practice provided with a foot-piece the toe of which was extended out somewhat beyond the foot of a perpendicular line tangent to the foremost portion of the edge of the cutter; but in so doing the slope of the upper part of the foot became so acute as to fail to offer the requisite resistance to overcome the tendency of the knife to draw itself forward while in the cloth, by reason of the friction of the cutter against the edges of the cloth just previously cut. To obviate this last difficulty, and yet retain the advantages resulting from the use of a long toe, I have so constructed the foot, as herein shown, that its upper surface has a forward incline or slope steep enough to resist the tendency of the cutter to draw forward in the cut of the goods against the will of the operator; but this, again, of itself would only partially attain the advantage derived by my present invention, for, if the whole of the foot-piece were as thick throughout as at the top of the incline of the toe, the capacity of the cutter would be correspondingly limited, so far as the thickness of the pile of cloth which it could cut is concerned, which would be a serious limitation with a knife of small diameter. Accordingly, after having provided the toe with an incline of the necessary steepness, I have sloped the upper surface of the foot downward and backward from the summit of the incline toward the rear of the shank of the foot, thus providing a greater space for the pile of cloth directly under the axis of the cutter. The guard in front of the cutter is so hung or pivoted that it may be easily turned or thrown up partially by the cloth as the latter, after being cut, is lifted at one side of the cutter, to enable the latter to be turned to cut a corner, the said guard falling again into place as soon as the cloth resumes its normal level or position.

Figure 1 represents in side elevation a sufficient portion of a cloth-cutting machine to illustrate my improvements, the dotted lines showing the guard swung back, as it may be, above the cutter; Fig. 2, a rear elevation of Fig. 1, partially broken out to show the gearing within the cutter-head. Fig. 3 represents

the shield detached. Fig. 4 represents a form of foot which has been used. Fig. 5 represents a partial broken section from the left of Fig. 1; and Fig. 6, a section on the line x^3 , Fig. 5.

The cutter-head a , the vertical shaft a^2 , horizontal spindle a^3 , bevel-gearing to connect them, quill a^4 , and the rotary cutter b are and may be all as usual.

Referring first to Fig. 4, which shows the foot which has been used to some extent instead of the foot shown in the Patent No. 129,327, it will be noticed that the shank n of the foot-piece is extended back far enough to cover the rearmost part of the cutter b , which places the heel n^2 of the foot-piece so far from the axis of the cutter as to greatly limit the capacity of the cutter for cutting cloth in curves of small radii; and so, also, the said figure shows the very slight slope given to the top of the foot-piece, which made the same objectionable, because it failed to produce the requisite amount of resistance to overcome the tendency of the knife or cutter to draw itself forward while in the cloth, as described.

In this my present invention the foot-piece c , to rest upon the table, pass under the material to be cut, and lift it from the said table, has its shank c^3 adjustably connected with the head a by a bolt or screw, c^2 . (See Fig. 2.) The shank c^3 of this foot-piece is curved or bent forward, as shown in Fig. 1, so as to guard the edge of the cutter on its hither side, and enable the heel 2 of the foot-piece to be brought as near as possible under the axis of the cutter, thus enabling the rearmost edge of the cutter to be guarded effectually and permit curves of small radii to be cut. The top of the foot-piece is provided, from its toe 3 backward, with an upward incline, 4, the summit of which is at 5. The pitch of this incline 4 and the location of the summit 5 are such with relation to the line $y y$, let fall vertically from the center of the cutter b , as to enable the said incline, by its friction on the under ply or layer of material, to offer sufficient resistance to prevent the cutter from being drawn forward by its own friction in the cloth, whereas with the foot shown in Fig. 4 the resistance offered by the top of the foot was insufficient to prevent undue forward movement of the cutter in the material.

To enable me to utilize a cutter of smallest diameter, I have cut away the top of the foot from the summit 5 backward past the axis of the cutter, as shown in Fig. 1. It is obvious that the less the diameter of the cutter the smaller the circle or shorter the curve which can be cut in the cloth, and so, also, that the nearer the heel of the foot to a point under the axis of the cutter the easier the shank of the foot can be turned in the slit made in the material by the cutter. The shield d , to cover the upper and rear portion of the cutter, is attached to the shank of the foot by the screws $d^2 d^3$. Extended above the shield is a plate or

stand, e , having a stud, e^2 , upon which is pivoted loosely the arm h , socketed to receive the end of a rod, f , held therein adjustably by a set-screw, 6. The rod f has a head, f^2 , bored to receive the guard-rod g , which is adjustably held therein by the set-screw 8. The arm, rod, and guard may be adjusted horizontally to suit the diameter of the cutter being used, and vertically to suit the thickness of the pile of cloth being cut, and, being located in front of the cutter, the operator cannot get his fingers against the cutter at front, or into the triangular space between the cutter and incline 4.

When desired, the guard g may be lifted and thrown back, as in dotted lines, Fig. 1. The guard retains its position by gravity, and when the cutter is to cut the cloth to form a corner or a short curve, and the cloth at one side of the cutter is lifted by the operator to turn the cutter, the cloth acts to lift the guard; but as soon as the cloth is permitted to assume its normal level the guard drops to its position near the front of the cutter.

The cutter-head a is provided with a groove, 6, which receives the heads of two screw-studs, 7, carried by the quill a^4 , they connecting the head and quill, so that the head may be turned by the operator about the quill as a center when cutting corners and curves of small radii.

It frequently happens that the operator fails to hold the cutter-head with sufficient firmness, in which cases the cutter-head revolves rapidly upon the quill, destroying the cloth, and doing other damage. To obviate this revolution of the cutter-head completely about the quill when it is not desired that it be moved in such direction, I have provided the quill with an annular groove, 8, in which I have placed a stop-pin, 9, and upon the cutter-head I have placed a movable catch or pin, 12, (in this instance attached to a lever, 13,) having a finger-piece, 14, and acted upon by a spring, 15, the normal tendency of which is to keep the pin 12 pressed into the hole in the cutter-head, so as to engage the stop-pin 9 and arrest the rotation of the cutter-head should the same escape from the control of the operator, thus obviating the liability of damage to the machine and material. When cutting out a coat, for instance, if the operator, by following certain curves, had turned the cutter-head half or more of a revolution about the quill, and should come to an arm-size, which to cut would require about three-fourths of a revolution of the cutter-head about the quill, such extent of motion could not be given to the quill unless the pin were made movable, so as to pass the stop 9.

With the devices herein described in an instance such as stated, the operator, by pressure upon the finger-piece 14, would withdraw the pin to enable it to pass the stop as the cutter-head was rotated; but the pin 12, the finger-piece 14 being released, would, at the next revolution of the cutter-head, act against the stop

9 and arrest the revolution of the cutter-head. If the pin were fixed to the cutter-head under circumstances above stated, the operator would be obliged to withdraw the cutter from the material, put it into a new position in the material, and come to the arm-size from the other direction. The movable pin 12 has, therefore, material advantages over a fixed pin; but the said pin and stop are broadly new and of particular value in cloth-cutting machines of the class herein shown, so I do not limit my invention to the movable pin only.

I claim—

1. The circular cutter and means to rotate it, combined with the foot-piece, having its toe 3 extended beyond the foremost part of the cutter, and having an incline, 4, such as described and shown, with its summit located in advance of a line drawn vertically from the axis of the cutter, substantially as and for the purpose described.

2. The cutter and means to rotate it, combined with the foot-piece *c*, having its shank curved to guard the rearmost edge of the cutter, the heel 2 whereof is thrown forward, as described, and having the toe 3 extended beyond the foremost part of the cutter, with the summit 5 of its incline 4 located in advance of a line drawn vertically from the axis of the cutter, substantially as shown and specified.

3. The cutter and means to rotate it, combined with the foot-piece provided with the incline 4 and depression at the rear of the summit 5 of the said incline, as shown and described.

4. The cutter, means to rotate it, and the cloth-lifting foot, combined with the adjustable guard *g* and means to support it in adjusted position in front of the cutter and above the material being cut, substantially as described.

5. The cutter-head, cutter, means to operate it, and a pin carried by the said cutter-head, combined with a quill and a stop thereon to co-operate with the pin of the cutter-head, substantially as described.

6. The cutter-head, the cutter and means to operate it, and the pin and means to draw it out from engagement with the stop-pin 9, combined with the quill, means to connect the cutter-head and quill loosely, and a stop carried by the quill and co-operating with the pin carried by the cutter-head, substantially as described.

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

PATRICK HOWE.

Witnesses:

G. W. GREGORY,
W. H. SIGSTON.