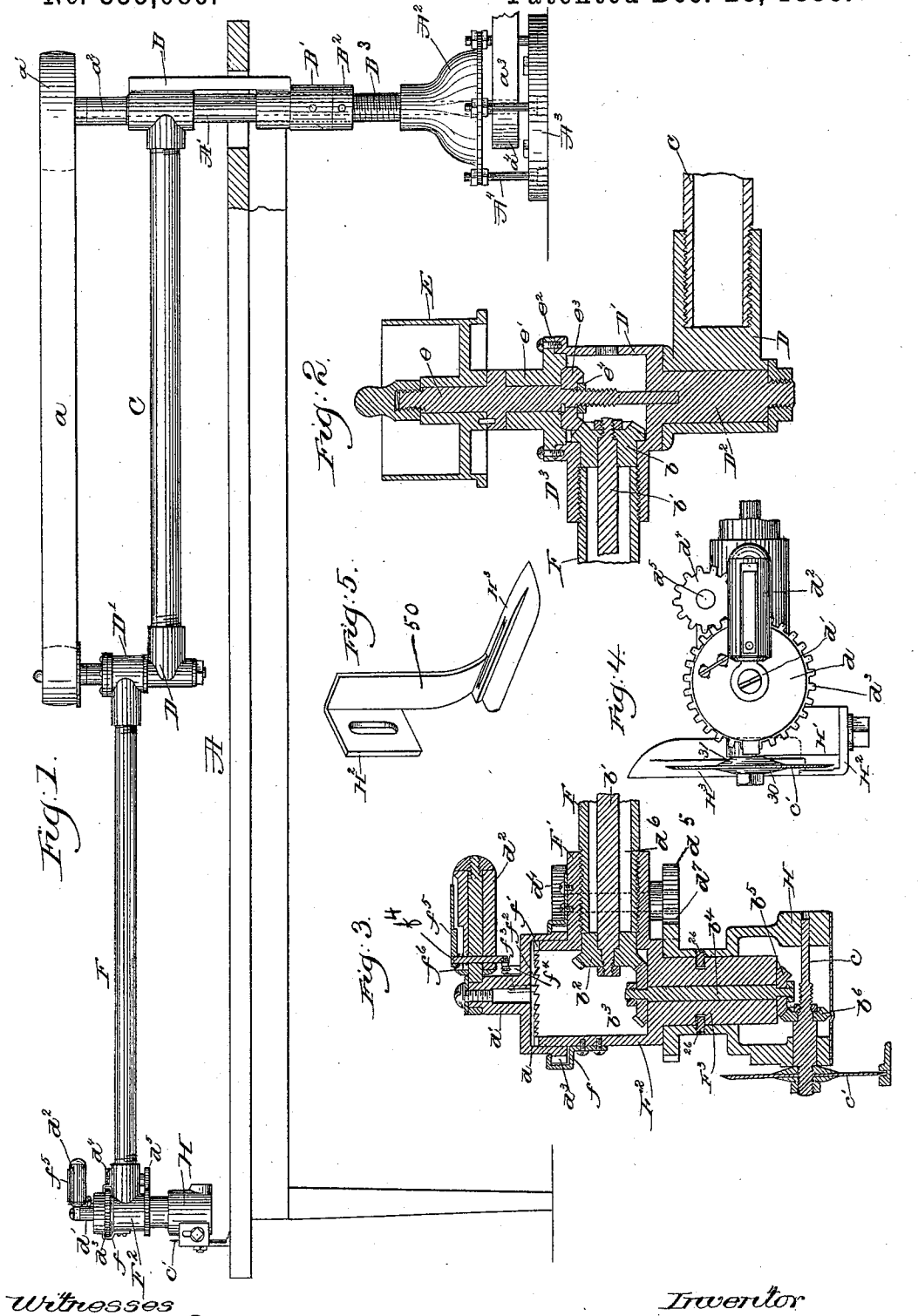
(No Model.)

P. HOWE.

CLOTH CUTTING MACHINE.

No. 355,086. Patented Dec. 28, 1886.



Witnesses
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UNITED STATES PATENT OFFICE.

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CLOTH-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 355,086, dated December 28, 1886.

Application filed March 18, 1886. Serial No. 195,685. (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, like letters on the drawings representing like parts.

This invention relates to and is intended as an improvement upon the class of cloth-cutting mechanism shown in United States Patent No. 129,327, dated July 16, 1872, to which reference may be had, the present invention having for its object to simplify the mechanism and increase its efficiency. In this my present invention I employ two jointed swinging arms, one of which carries the cloth-cutting devices, means being provided for raising and lowering the said swinging arms, and also for adjusting them into a plane parallel with the surface of the table on which the cloth to be cut is laid. The rotary cutter employed is revolved by a system of rotating shafts and gearing, means being provided whereby the head carrying the rotary cutter may be revolved on an axis at right angles to the axis of the shaft carrying the said rotary cutter.

Other devices devised by me for materially improving the construction of the machine will be hereinafter more fully pointed out.

Figure 1 shows in side elevation a cloth-cutting machine embodying this invention, the table employed being partially broken away to more fully show the adjusting devices employed for raising and lowering the swinging arms; Fig. 2, a vertical section of a portion of the machine, taken at the junction of the two swinging arms; Fig. 3, a vertical section of the cloth-cutting tool and its carrier; Fig. 4, a top view of the cloth-cutting tool and its carrier shown in Fig. 3; and Fig. 5, a detail of the shoe, to be referred to.

The cloth to be cut will be laid, as usual, on a table, A, and to do accurate work the arms carrying the cloth-cutting device must be free to move horizontally in a plane parallel with relation to the top of the table.

The base-plate A^3, located, preferably, upon the floor, receives adjusting-screws A^4, which support in an adjustable manner the foot A^2, rising from which is a hollow standard, A′, on which is mounted loosely the bracket B. The lower end of the bracket B rests upon a loose collar, B′, which in turn rests upon a nut, B^2, screwed upon the threaded part B^3 of the standard A′, adjustment of the nut placing the arms C and F more or less above the table A, and adjustment of the bolts A^4 enabling the arms C and F to be placed parallel to the table A. The arm C is preferably screwed into the bracket B, which is free to swing or revolve about the said standard.

A coupling-piece, D, is screwed to the end of the arm C opposite its connection with the bracket B, the said coupling-piece having a socket which receives an arm, D^2, projecting from an elbow coupling-piece, D′, the other arm, D^3, of the said coupling-piece D′ extending at right angles to the arm D^2, being tapped to receive the tubular arm F, extending in a plane parallel with the arm C, the said arm, by the connection described, being free to revolve upon or with relation to the arm C.

A band-pulley, E, is splined to a spindle, *e*, having its bearing in the coupling-piece D′, and supported by a flanged collar or cap, *e*′, secured to the top of said elbow coupling-piece D′, said spindle carrying a bevel-gear, e^3, adjustably mounted thereon and held in fixed position by a check-nut, e^4, the coupling-piece D′ being hollowed out to thus form a box or chamber in which the gear revolves. The band-pulley E is rotated by a belt, *a*, passing around it and another belt-pulley, *a*′, carried by a shaft, a^2, (see dotted lines, Fig. 1,) extended vertically through the upright or standard A′, the said shaft a^2 being rotated by a band, a^3, on a pulley, a^4, the said pulley a^4 being located above the base-plate A^3 in any usual or suitable manner. The bevel-gear e^3 meshes with a bevel-gear, *b*, located within the box or chamber formed in the elbow-coupling, said bevel-gear being adjustably fixed to a shaft, *b*′, extending longitudinally through the tubular arm F. The opposite end of the arm F is connected with a head, F^2, which carries the cloth-cutting devices, while the rod or shaft *b*′, contained therein, carries a bevel-gear, b^2, similar to the bevel-gear *b*, both of said bevel-gears

having their bearings within the arm F', which receives the said tubular arm F.

The bevel-gear b^2, revolving within the head F^2, meshes with a bevel-gear, b^3, adjustably fixed to the rod or shaft b^4, extending vertically through a downwardly-projecting hub, F^3, at right angles to the rod or shaft b', the opposite end of the rod or shaft b^4 carrying a bevel-gear, b^5, which in turn meshes with a bevel-gear, b^6, mounted upon the shaft c, carrying the rotary cutter c'. The downwardly-extended hub receives upon it the head-block H, supporting the shaft c and the rotary cutter c', said head-block having pins 2 to 26, which enter a groove in the hub F^3, to thus sustain but permit the head-block to rotate freely.

The head-block H, carrying the rotary cutter c, may be rotated manually in either direction desired about an axis at right angles to the axis of the said rotary cutter so long as the operator grasps the hand-piece d^2 and keeps the dog f^2 lifted. To do this the frame F^2 is provided with a cap, d, having a projection, d', to which is attached a hand-piece, d^2.

The cap d, at its lower end, has a series of gear-teeth, d^3, which mesh with a pinion, d^4, mounted upon a shaft, d^5, having its bearings in suitable projections leading from the head F^2, (see dotted lines, Fig. 3,) the opposite end of the said shaft d^5 carrying a pinion, d^6, which meshes with the toothed periphery d' of the head-block H. The cap d is held in place upon and with its under side elevated from contact with the top of the head F^2 by an annular bracket or shield, f, screwed to the said frame, the said shield forming part of a bearing for the cap. The top or crown of the head F^2 is provided with ratchet-teeth f', which are engaged by a pivoted dog, f^2, carried by the fulcrum-lever f^3, pivoted to an upright, f^4, said lever being turned on its pivot by a thumb-piece, f^5, controlled by the spring f^6, seated in a recess in the top portion of the hand-piece d^2.

When power is applied to the machine, the band-pulley E is rotated, and, through the bevel-gearing c^3, shaft b', the gearing b b^2 b^3, shaft b^4, and gearing b^5 b^6, and the shaft c, the cutter c' will be continuously rotated, and as the arms C and F are free to be swung about their pivots, and as the head H is also free to be rotated in either direction about the hub F^3, as described, the cutter c' may be made to follow along any straight or curved line desired. As the power is applied to the machine and the rotary cutter or disk is revolved, as described, were it not for the ratchet-teeth f' and engaging dog f^2 the head-block H would also revolve continuously unless controlled by the hand-piece, and in instances where the operator is obliged to release the hand-piece to fix his work the automatically-operating dog is of especial advantage in preventing the rotation of the head-block, which, if permitted, would result disastrously.

The head-block H is provided with a projection, H', (see Fig. 4,) to which is adjustably attached a shoe, by means of which the cloth is raised from the table. This shoe is composed of a shank, 50, (see Fig. 5,) an ear or projection, H^2, extending at right angles from the upper end of the shank, and a foot, H^3, attached to the lower end of the shank or made integral with it. The ear or projection H^2 is slotted to receive a bolt, by which the shoe is adjustably attached to the projection H' of the head, to admit of vertical movement. Heretofore the shoe has been made from cast-brass and has had to be cut away or grooved, leaving a U-shaped shank, within which the cutter revolved, the said U-shaped shank passing around one side of the cutter, thus serving as a shield; but such construction is very expensive, because the material had to be grooved at the shank to receive the cutter, and as it was not possible to use steel, the shoe had to be provided with a steel bottom plate. By adding the projection H' to the head-block, to which the shoe herein described may be attached by a bolt passing through the slot cut in the ear or projection H^2, I am enabled to dispense with the groove in the shank of the shoe and yet carry the shank sufficiently far backward to serve as a shield for the cutter; and such form of shoe I am able to make very cheap entirely of steel.

The rotary cutter c' is in this instance composed of a disk or plate of very thin steel, and two beveled or inclined re-enforcing disks, 30 31, are secured upon opposite sides thereof, to thus stiffen the disk, the said beveled or inclined disk permitting the cutter to enter the material deeper than were the edges of the said disks as thick as their hubs.

Herein it will be noticed that I employ but one belt above the table, instead of two, as in my former patent, the dispensing with the said belt aiding materially to simplify the machine and facilitate a rapid and easy handling of the parts and a movement of the arm F, which directly supports the cutting mechanism.

The adjustable plate A^2 is of especial advantage when the machine is placed in buildings having uneven floors, to cause the arms F C to swing in a plane parallel with the top surface of the table.

It is obvious that in the machine herein described one or several swinging arms suitably jointed together may be substituted instead of two, as herein shown.

It is also obvious that, in lieu of the belt a employed, a system of shafts and gearing similar to that described for rotating the cutter may be employed directly connected with the main driving-shaft.

I claim—

1. In a cloth-cutting machine, one or more swinging arms, a head-block and cutter carried by the arm, and a standard or upright carrying the said arms, combined with the vertically-adjustable plate to which the said upright is attached, substantially as described.

2. In a cloth-cutting machine, one or more

swinging arms, a head-block and cutter carried by the arm, and the adjustable bracket to which one of the said arms is connected, combined with the standard or upright upon which the said bracket revolves, and the check-nut B^2, to operate substantially as described.

3. In a cloth-cutting machine, a shaft, a rotary cutter thereon, and one or more swinging arms and the standard or upright for carrying the same, combined with the shafts and gearing, substantially as described, turning within the swinging arms, for rotating the said cutter, all as set forth.

4. In a cloth-cutting machine, a swinging arm and cloth-cutting devices carried thereby, consisting of a head and an independently-movable head-block, the rotary cutter and its shaft, carried by said head-block and rotating about an axis at right angles to the axis of the said cutter, and automatic means, substantially as described, for preventing rotation of the head-block, all substantially as described.

5. In a cloth-cutting machine, the arm F and attached head, combined with the independently-movable head-block and cutter carried by it, the cap *d*, and hand-piece and gearing, substantially as described, for manually rotating the said head-block, all as set forth.

6. In a cloth-cutting machine, the head F^2, having ratchet-teeth f^2, the head-block H, carrying the shaft *c* and rotary cutter, and means, substantially as described, for rotating the shaft *c*, the cap *d*, and hand-piece for rotating the cap, and gearing, substantially as described, for rotating the head-block, and means, substantially as described, carried by the cap *d*, for automatically engaging the ratchet-teeth of the head when the hand-piece is released, all as set forth.

7. In a cloth-cutting machine, the head-block H, having the projection H′, the shaft *c*, and rotary cutter *c*′ thereon, combined with the shoe having the shank 50, as described, the ear or projection H^2, and the foot H^3, said shoe being attached directly to the projection H′, to thereby serve as a shield for the cutter, all as and for the purpose set forth.

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

PATRICK HOWE.

Witnesses:
B. J. NOYES,
F. CUTTER.