(No Model.) 3 Sheets—Sheet 1.

J. H. CLARK.

SEWING MACHINE.

No. 485,371. Patented Nov. 1, 1892.

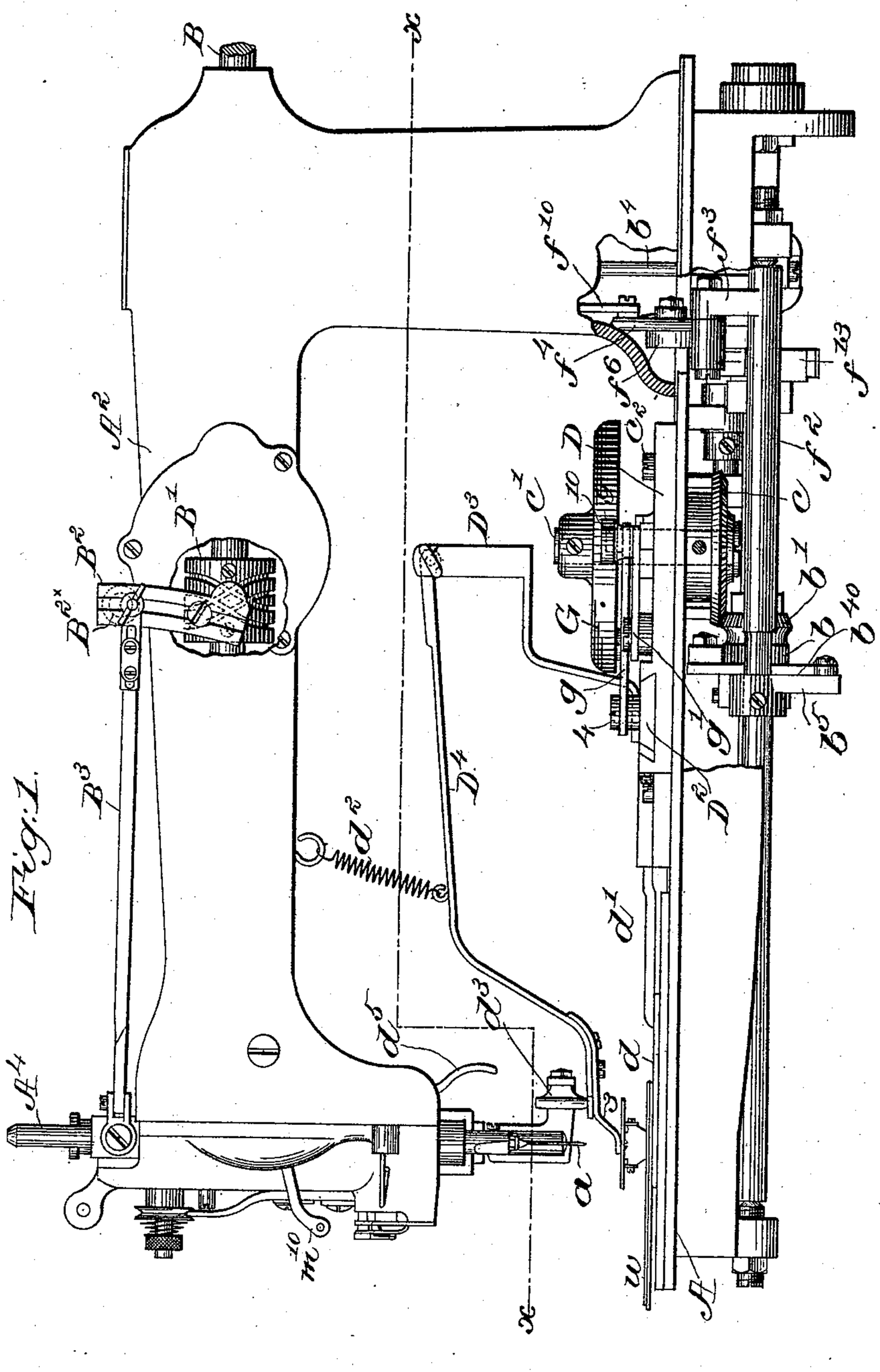

Fig. 1.

Witnesses.
Fred S. Grundy.
Edward F. Allen.

Inventor.
James H. Clark.
by Crosby & Gregory Attys.

(No Model.) 3 Sheets—Sheet 2.

J. H. CLARK.

SEWING MACHINE.

No. 485,371. Patented Nov. 1, 1892.

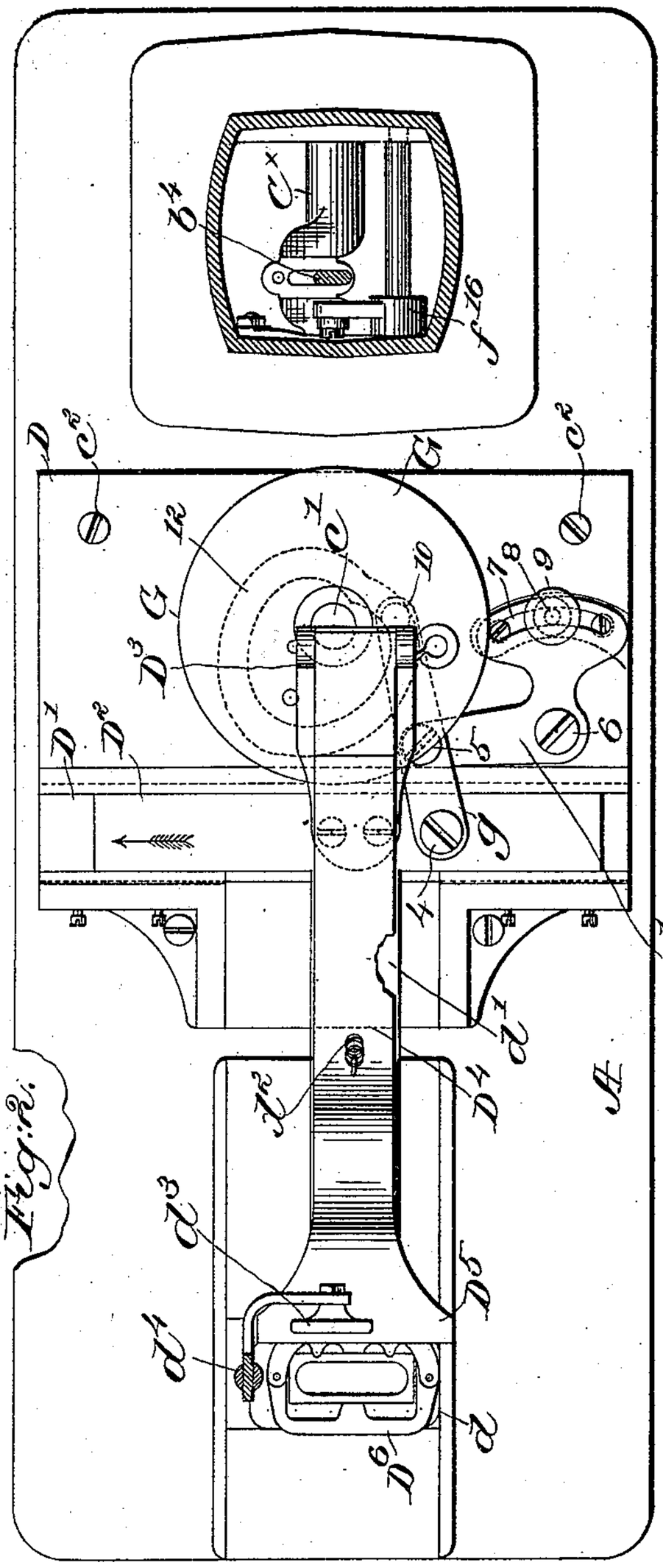

Fig. 2.

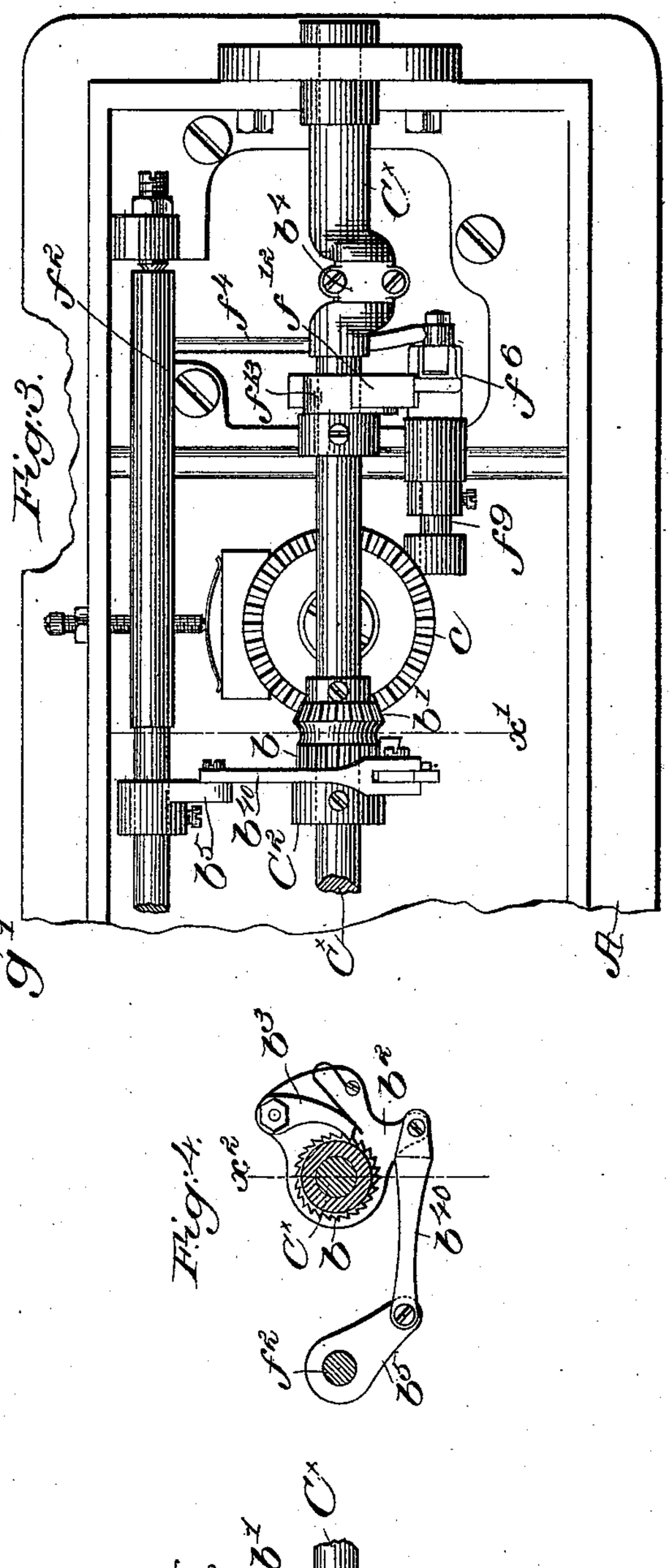

Fig. 3.

Fig. 4.

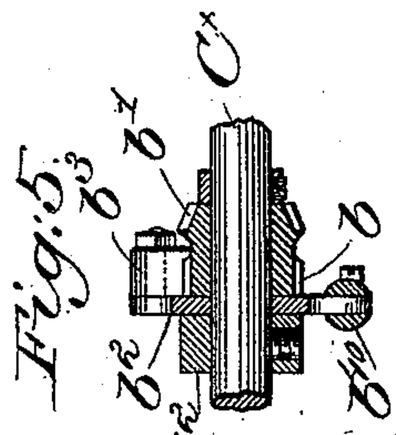

Fig. 5.

Witnesses.
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(No Model.) 3 Sheets—Sheet 3.

J. H. CLARK.

SEWING MACHINE.

No. 485,371. Patented Nov. 1, 1892.

Fig. 8.

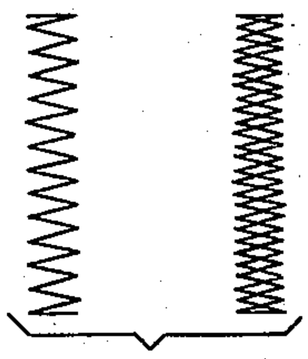


Fig. 7.

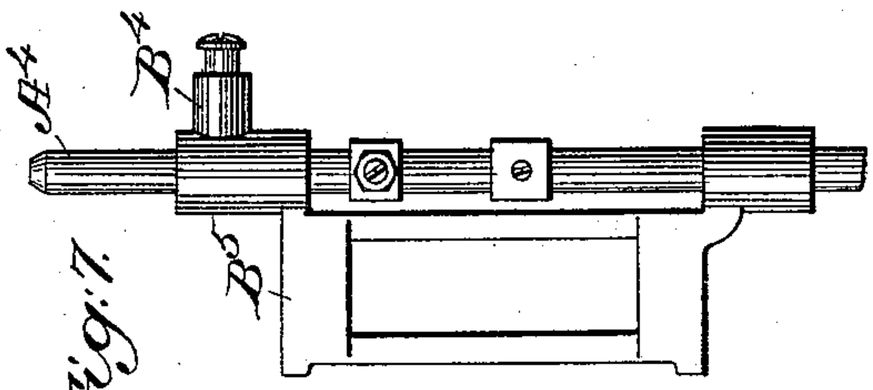
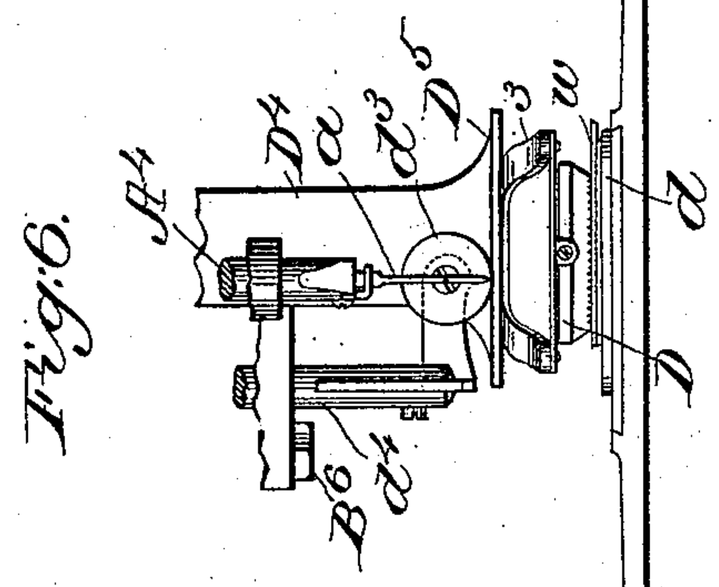


Fig. 6.



Witnesses.
Fred S. Gunnell.
Edward F. Allen.

Inventor:
James H. Clark.
by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

JAMES H. CLARK, OF CHICAGO, ILLINOIS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 485,371, dated November 1, 1892.

Application filed September 7, 1891. Serial No. 404,966. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. CLARK, of Chicago, county of Cook, State of Illinois, have invented an Improvement in Sewing-Machines for Staying, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

In the manufacture of wearing-apparel it is desirable, and customers are beginning to demand, that certain parts subjected to considerable strain shall be stayed. To do this effectively, I have devised a machine to be described.

In accordance with this invention the material to be stayed is held in a suitable clamp, which has imparted to it movement in the direction of the length of the stay for a distance depending upon its length, and then the clamp has imparted to it a return movement or a movement in the opposite direction to enable one series of overseaming-stitches to be superimposed over or upon the first series. This clamp will preferably derive its movements through or by the intervention of a cam, preferably some form of a heart-cam. The cam used herein derives its step-by-step or intermittingly-rotating movement by or through a clutch mechanism, preferably of the ratchet class, the said clutch in this instance of my invention being actuated by or from a rock-shaft, which in the machine herein described, it being of the Wheeler & Wilson variety, is common to and forms a part of the usual feed motion.

Figure 1 in side elevation represents a sufficient portion of a Wheeler & Wilson sewing-machine, style D^{12}, to which my improvements have been added to enable my invention to be understood, part of the framework being broken out to represent parts which otherwise would be concealed. Fig. 2 is a plan view taken below the section line x, Fig. 1. Fig. 3 is a partial under side view of the machine; Fig. 4, section in the line x', Fig. 3; Fig. 5, a section in the line x^2, Fig. 4. Fig. 6 is a partial left-hand end elevation of the machine shown in Fig. 1. Fig. 7 shows the gate detached, together with the needle-bar in the bearings of the gate; and Fig. 8 is a diagram showing the first and second rows of stitches of the staying.

My invention consists, essentially, in a sewing-machine for staying wearing-apparel, including the following instrumentalities, viz: overseaming stitch-forming mechanism, a clamp to hold the material to be stayed, the said clamp having an extended bearing-surface, a roller-presser acting upon the said surface, a fulcrum-lever, a heart-cam, and lever mounted upon the said fulcrum-lever and actuated by the said cam, and connected with the said clamp to operate substantially as will be described.

Other features of my invention will be hereinafter described, and pointed out in the claims at the end of this specification.

The bed-plate A, the overhanging arm A^2, the under shaft $C^\times$, the link b^4, connecting a crank thereof with a crank on the needle-bar-actuating shaft B in the overhanging arm, the needle-bar A^4, the take-up m^{10}, the cam f^{13} on the shaft $C^\times$, the arm f^{12} on the rock-shaft f^9, provided at one end with a rocking guide-box f^6, in which is fitted a block or stud carried by a link f^4, jointed to an arm f^3 of a rock-shaft f^2, and the link f^{10}, connecting the link f^4 with the feed-regulating shaft f^2 are and may be all substantially as in the said sewing-machine, and also as in United States Patent No. 405,205, wherein like parts are designated by the same letters and figures herein used. Upon the shaft B is a hub B′, having crossing grooves in which is entered a suitable swivel block or shoe of an arm B^2, having at its upper end a horizontally-extended pivot $B^{2\times}$, extended into and suitably mounted upon the overhanging arm, and the arm B^2 is connected by a link B^3 with the ear B^4 of the pivoted gate or frame B^5, (see Fig. 7,) having suitable bearings in which is reciprocated the needle-bar A^4, provided with an eye-pointed needle a. By means of the cam B′, the arm B^2, and link B^3 the gate B^5 may be swung about its pivots, one of which is shown at B^6 in Fig. 6, all in usual manner, to enable the needle of the stitch-forming mechanism to be moved laterally for overedge stitching, all as commonly done in the Wheeler & Wilson machine referred to.

I will now proceed to describe features which I have invented and applied to this well-known form of machine.

I have applied upon the shaft $C^{\times}$, next the collar C^2, a ratchet-wheel b, having an attached gear b', and surrounding the said shaft loosely between the ratchet-gear and the collar I have applied a pawl-carrier b^2, having a spring-beld pawl b^3 to engage the said ratchet, the pawl-carrier being jointed by a link b^{40} with an arm b^5, fast on the shaft f^2, before described, so that the latter shaft, as it is rocked rotates the said ratchet-gear and bevel-gear b' and rotates intermittingly a shaft c', which is extended up through a base-plate D, secured by suitable screws c^2 to the bed of the machine. The base-plate D has a guideway D', (shown best in Figs. 1 and 2,) in which is placed a cross-slide D^2, the said cross-slide having erected upon it a stand D^3, upon the upper end of which is suitably pivoted an arm D^4, the outer end of which, made broad, as at D^5, (see Fig. 2,) has secured to it the yoke 3, to which is attached the holding-foot D^6, which bears upon the upper surface of the material w to be stayed, the latter resting on a throat-piece d, attached to an arm d', extended from the front edge of the said slide D^2, the said parts constituting a clamp for the material. A suitable spring, as d^2, acts normally to keep the upper member of the cloth-clamp elevated, the said cloth-clamp being held down upon the work by a roller d^3, connected to the forming part of a bar d^4, which, in fact, is the same as the usual presser-bar of the said Wheeler & Wilson machine, said presser-bar in practice being held down by a spring and being adapted to be elevated by means of a lever d^5, as in the said machine. The cross-slide D^2 has attached to it by a screw 4 one end of a lever g, having its fulcrum at 5 on one end of a regulating lever g', slotted at or near one end, as at 7, to receive a screw 8, upon which is screwed a clamping-nut 9, the turning down of the said nut clamping the regulating-lever in adjusted position. This regulating-lever constitutes what I shall call an "adjustable or movable fulcrum-carrier." The opposite end of the lever g has a suitable roller or other stud, as 10, (shown by dotted lines,) which enters the heart-cam groove 12 in the clamp-actuating cam G, fast on the said shaft c'. Assuming that the material to be stayed is put into position between the upper and lower members of the clamp and that the clamp is in its position toward the front of the machine or toward the operator, the presser-bar will be lowered, putting the roll d^3 upon the end of the arm D^5, it remaining there and rolling on the said arm throughout the movements of the clamp. The rotation of the heart-cam or the cam-plate G by the devices described will in its action upon the lever g, having its fulcrum at 5, cause the cross-slide D^2 and the clamp carried by it to be moved transversely of the bed-plate of the machine or in the direction of the arrow on the said cross-slide in Fig. 2, and during this operation the needle-bar with its usual complementary stitch-forming mechanism common to the Wheeler & Wilson sewing-machine or other suitable machine will produce a series of overseaming or zigzag stitches substantially as in the uppermost diagram of Fig. 8, and, the clamp having been moved the length of the stay to be made, the clamp will be reversed in its movement or moved opposite the arrow referred to, causing a second row of overseaming-stitches to be superimposed upon the first row, leaving a stay finished as represented in the undermost diagram Fig. 8. The length of the stay may be varied as required by adjusting the fulcrum-carrier g', and the width of the staying may be altered by adjusting the length of the connecting-rod B^3.

It is not intended to limit this invention to the exact shape shown, for the heart-cam and, if desired, the shape of the heart may be such as to cause the clamp to be moved in one direction at a faster speed than at the other—as, for instance, it might be moved faster on its return stroke to thus put a series of longer stitches upon a series of shorter overseaming-stitches.

Prior to this invention it has been common to place material to be stitched for buttonholes in a clamp, and the said material has received a series of overseaming-stitches at one side of the center line of the buttonhole, the clamp at such time moving transversely and the needle moving laterally, as well as vertically, and the stitching having been produced for one side of a buttonhole a series of overseaming-stitches parallel thereto and at the other side of the center line of the buttonhole has been made; but such class of machine differs from the invention herein described because herein the one row of overseaming-stitches is superimposed on another row of overseaming-stitches, thus accumulating stitch upon stitch, forming a strong stay.

I am also aware that prior to my invention material previously stitched about the edges of a slit to constitute a buttonhole has been put into a clamp, and the said clamp has had longer movements given to it previous to the length of the buttonhole to form two or more long stitches, crossing the small end of the buttonhole, and that thereafter the said clamp and material held by it has been moved laterally or in a direction at right angles to its former movement to thus enable a needle having only a vertical movement to stitch across the longer stitches first made, and at right angles to them to cover the said longer stitches and bar the end of the buttonhole, as in United States Patent No. 451,000. I do not claim anything shown in United States Patent No. 451,000 or in United States Patent No. 332,676, the latter patent being designed to work a buttonhole, the material held in a clamp being overstitched at the opposite edges of a slit, and the devices shown in the said

patents could not be used to perform the work for which this my invention has been especially devised. My machine is not adapted for buttonhole-stitching, and the heart-cam is an essential feature in my invention, as it, by its action upon the the lever *g*, connected with the cross-slide, enables the said cross-slide and clamp to be moved progressively and positively in one direction to make a series of stitches, the cross-slide and clamp being moved more or less in either direction, according to the length desired for the staying, and thereafter the said cross-slide is moved positively back to its starting-point, the material during each movement in each direction receiving a series of zigzag stitches.

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

1. In a machine for staying, the following instrumentalities, viz: overseaming-stitch-forming mechanism, a clamp to hold the material to be stayed, the said clamp having an extended bearing-surface, a roller-presser acting upon the said surface, a fulcrum-lever, a heart-cam, and lever mounted upon the said fulcrum-lever and actuated by the said cam and connected with the said clamp, to operate substantially as described.

2. In a machine for staying, the following instrumentalities, viz: overseaming-stitch-forming mechanism, a clamp to hold the material to be stayed, the said clamp having an extended bearing-surface, a roller-presser acting upon the said surface, a fulcrum-lever, a heart-cam, a lever mounted upon the said fulcrum-lever and actuated by the said cam and connected with the said clamp, and a clutch mechanism and gear intermediate it and the said cam, and means to move the said clutch, to operate substantially as described.

3. The shaft, the bevel-gear loose thereon and having ratchet-teeth, the pawl and pawl-carrier, means to move the said pawl, the bevel-gear *c*, the shaft *c'*, and the cam G, combined with the two-part clamp having a cross-slide intermediate lever *g*, connected to and moved by the cam to reciprocate the cross-slide to which it is pivoted to thereby move the two-part clamp, and the base-plate having guideways to receive the said cross-slide, the combination being and operating substantially as described.

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

JAMES H. CLARK.

Witnesses:

D. F. FLANNERY,

JACOB S. SCHAFF.