(No Model.) 2 Sheets—Sheet 1.

H. L. PHELPS.

MACHINE FOR SEWING ON BUTTONS.

No. 553,687. Patented Jan. 28, 1896.

FIG. 1.

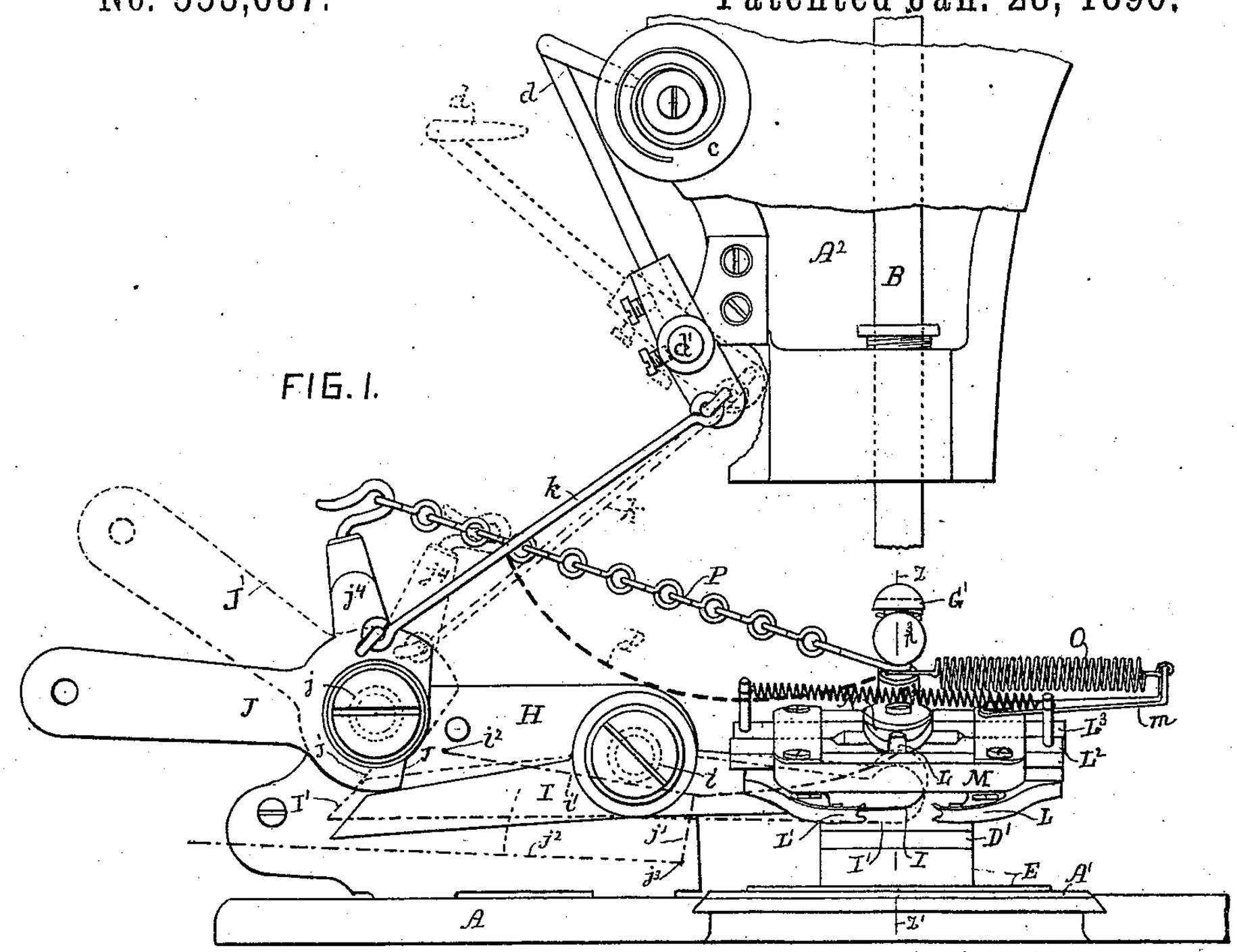
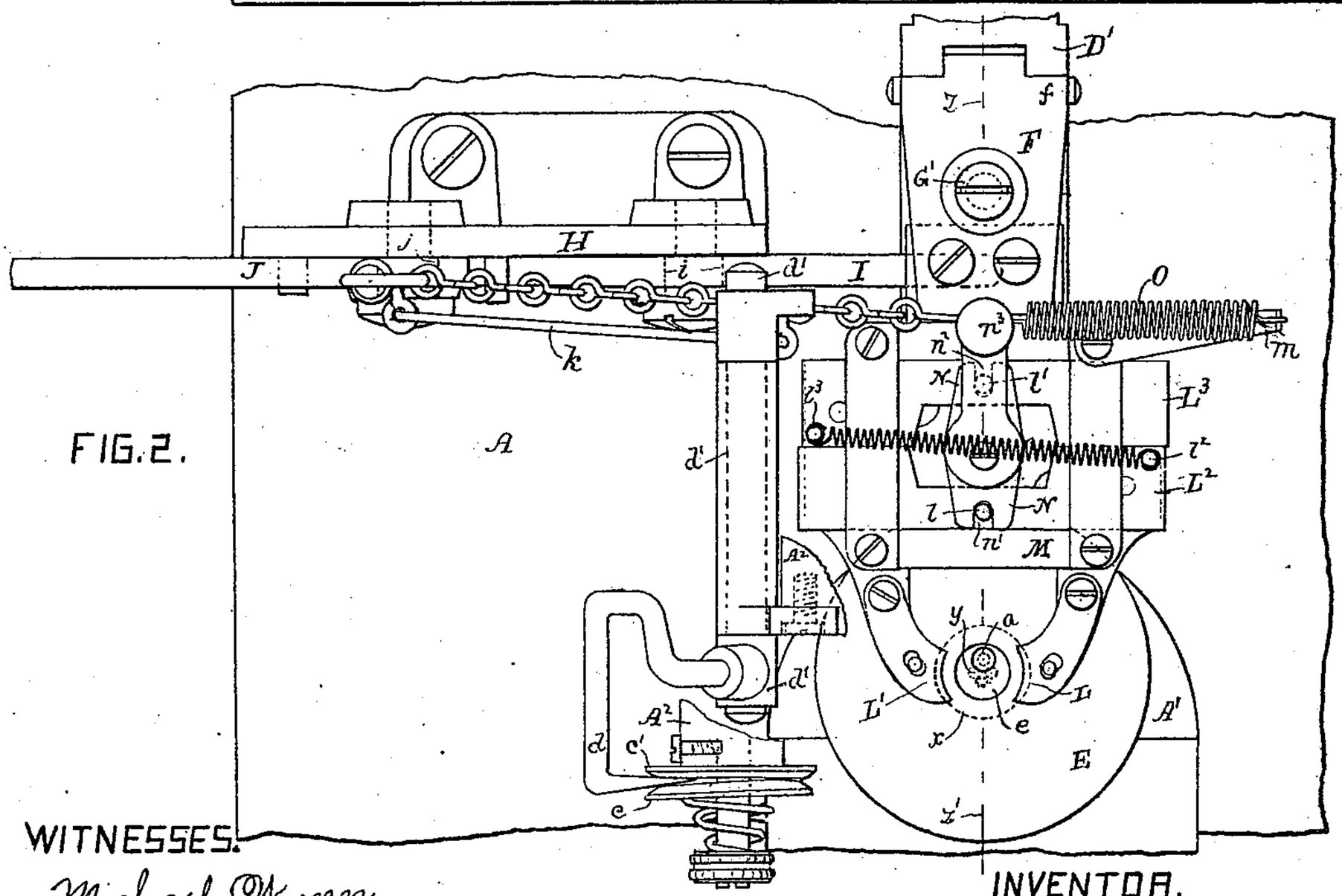


FIG. 2.



WITNESSES:

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Edgar P. Lansing.

INVENTOR.

Herbert L. Phelps,

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(No Model.) 2 Sheets—Sheet 2.

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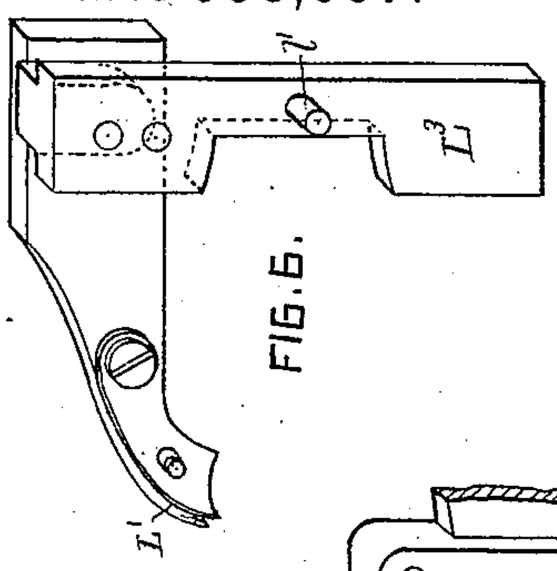
FIG. 6.



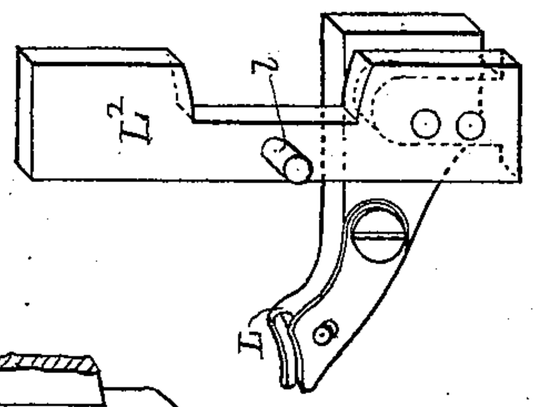


FIG. 5.

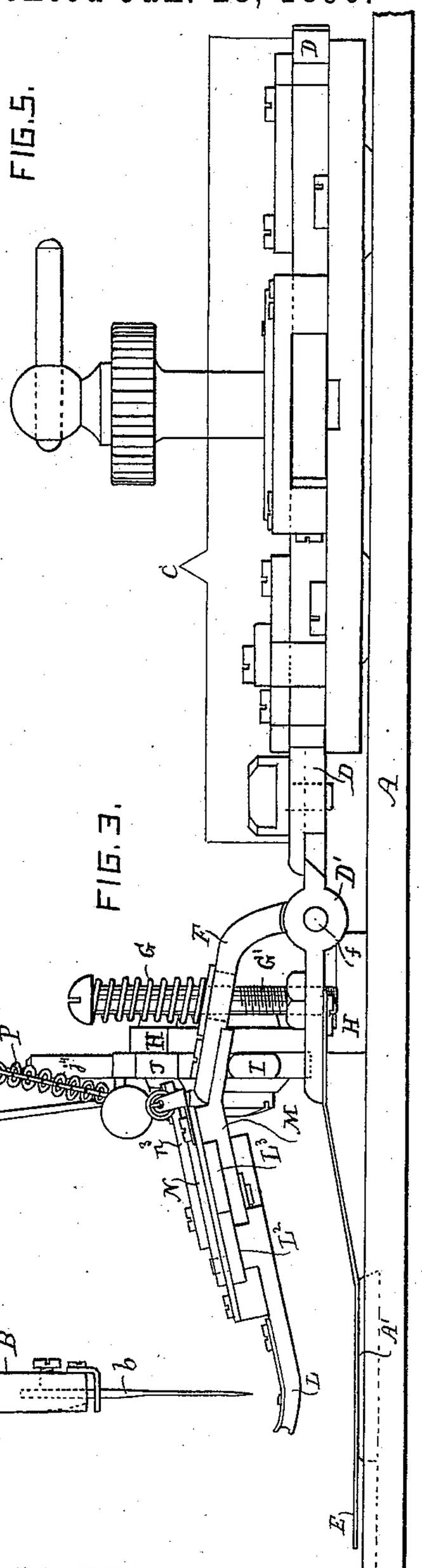


FIG. 8.

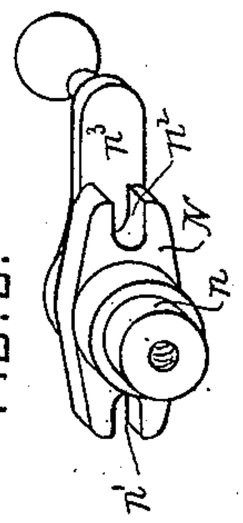


FIG. 7.

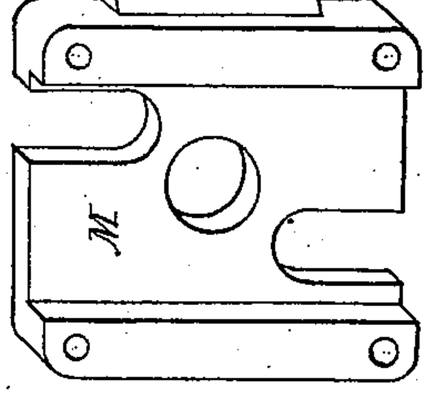


FIG. 4.

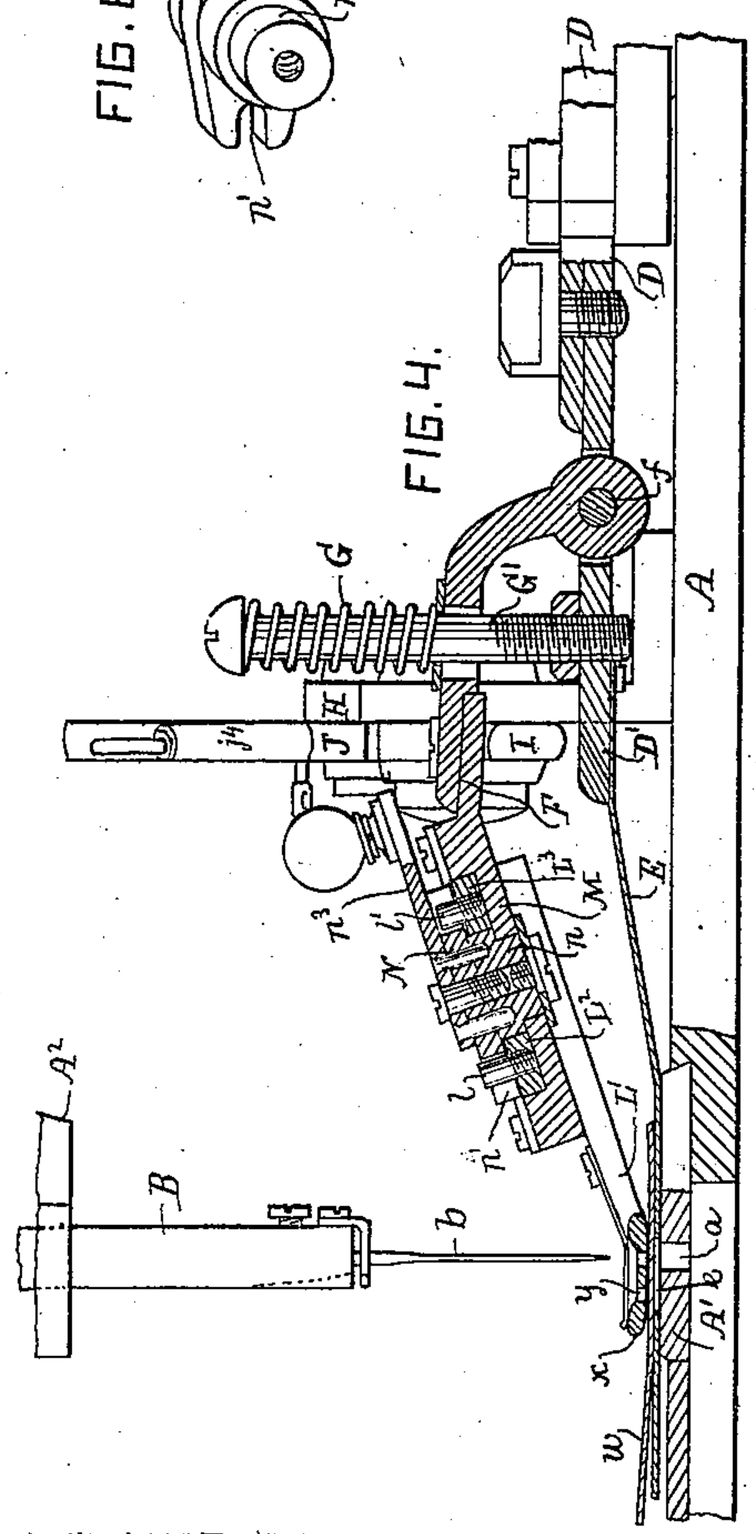


FIG. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SEWING ON BUTTONS.

SPECIFICATION forming part of Letters Patent No. 553,687, dated January 28, 1896.

Application filed November 29, 1892. Serial No. 453,531. (No model.)

To all whom it may concern:

Be it known that I, HERBERT L. PHELPS, a citizen of the United States, residing in the city of Chicago, in the State of Illinois, have invented certain new and useful Improvements in Work-Clamps for Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to work clamps or pressers in machines for sewing on buttons.

The principal objects of this invention are to provide improved means for lifting and holding up a normally-depressed presser having two movable jaws normally pressed toward each other to hold a button and for opening and holding open the jaws to release and receive a button; to provide means to lift and hold up a normally-depressed presser having two movable button-holder jaws normally pressed toward each other, to open and hold open said jaws and to release the thread-tension; to produce a work-presser having two sliding jaws to hold and release a button, and improved means to simultaneously move the two jaws toward and from each other. I attain these objects and others hereinafter specified by the mechanism illustrated in the aforesaid drawings, in which—

Figure 1 is a front elevation, Fig. 2 a plan, and Fig. 3 a side elevation, of my improved work-clamp mechanism, the presser of the work-clamp being shown elevated. Fig. 4 shows a vertical section of some parts of the same work-clamp at the line *z z* in Figs. 1 and 2, the presser being depressed. Figs. 5, 6, 7, and 8 are isometrical views of the principal parts of the improved button-holding presser of said work-clamp.

Similar letters refer to similar parts in the several views.

A is a part of the bed-plate; A′, the throat-plate; A^2, a part of the overhanging head; *b*, the needle; B, a part of the needle-bar; *c c′*, the spring-pressed disks of the tension device, and *d* the tension-releaser mounted on a rock-shaft *d′* to open said disks, all of a well-known "Singer" sewing-machine; and *c* indicates, in part, mechanism described in United States Letters Patent No. 425,422, dated April 15, 1890, for moving the work-clamp carrier D horizontally step by step in a circle to present to the needle the eyes of a button held and carried by the work-clamp in sewing on the button.

D′ is an extension of the work-clamp carrier D and has attached to it a thin plate E, which extends over and is slid upon the throat-plate by said carrier, and has an aperture *e*, Figs. 2 and 4, around the needle-hole *a* and of greater size than the circle of the eyes *y* of a button *x* to be sewed onto a fabric *w*, clamped down upon the plate E, or into its aperture *e*, or upon the plate A′, as by a button-holding presser having a supporting-shank F hinged, as at *f*, to the extension D′, and normally depressed, as by a spring G, between said shank and the head of a vertically-adjustable screw-post G′, extending through an aperture in said shank and screwed into the part D′, essentially as in some prior sewing-machines.

To provide an excellent device for elevating the presser of the work-clamp to a certain predetermined height and automatically holding the elevated presser at such height, and to also avoid having such device mounted on or carried or moved horizontally by the work-clamp or its carrier, I have, preferably, on the bed-plate A a support H and a lifting-lever, as I, Fig. 1, pivoted, as at *i*, to that support and extended under a part of the shank of the presser, and also have a cam-lever, as J, pivoted, as at *j*, to said support, and have the two levers constructed and arranged so that when the presser is normally depressed, as shown in Fig. 4, the levers will then be in about the positions indicated by broken lines at I′ and J′ in Fig. 1, and so that by then turning the cam-lever into its position shown by full lines in Fig. 1 the lifting-lever I will be thereby moved into its place in full lines in that view, and will lift the presser by its shank into the predetermined elevated position, as in Figs. 1 and 3, where it will be automatically retained by the cam-lever bearing against the lifting-lever to permit convenient removal and insertion of work under or into and under the presser. By then turning back the cam-lever into its position indi-

cated by dotted lines in Fig. 1 the presser will be depressed by its depressing-spring. As an equivalent for thus having the lifting-lever I formed with two arms and pivoted between them and the cam-lever arranged to depress one of the arms and thereby lift and hold up the other arm and the presser, the lifting-lever may have but one arm, extending under the shank of the presser, and may be lifted and supported by a cam-lever acting against that arm, as indicated in Fig. 1 by broken lines, of which the line z' indicates the sole arm of the lifting-lever pivoted at i^2 and the lines j' j^2 indicate the cam-lever pivoted at j^3.

To elevate and support the work-presser by means of the lifting-lever I and cam-lever J, as above described, and at the same time release the tension on the needle-thread, I connect the cam-lever by a link k or its eqiuvalent to an arm on a rock-shaft d', to which a tension-releaser d is secured, whereby when the work-clamping presser is depressed upon the work, as in Fig. 4, the tension-releaser d is then removed from the tension-disks c c', and when the work-presser is elevated, as in Figs. 1, 2 and 3, the tension-releaser then spreads the tension-disks apart.

I use the combined lifting-lever I and cam-lever J to elevate and support the presser, as above specified, and I connect the cam-lever by any suitable connector with the two movable jaws mounted upon the presser-support, so that the movement of the cam-lever to lift and hold up the presser by said lifting-lever will simultaneously open and hold open the two jaws. I also connect said cam-lever with the releases of the tension device as above specified, so that the movement of the cam-lever to elevate and hold up the presser and open its jaws shall release the thread-tension.

To produce an excellent presser in a work-clamp of a button-sewing machine, I form the presser with two opposite jaws L L', suited to hold a button between them and bear upon a fabric in the clamp and secured to two parallel slides L^2 L^3, fitting and held to slide to and fro in or on a suitable guide-stock, as M, secured to or a part of a supporting-shank, as F, of the presser, and I positively gear or connect the two slides by means of a yoke-lever N, having in or on said guide-stock a fulcrum-pivot n and connected at opposite sides of and apart from that pivot to the two slides, as by means of pins l l' on the slides, and fitting in radial slots n' n^2 in the yoke-lever or by equivalent means, so that by sliding one jaw toward and from the other the two jaws will be simultaneously slid toward and from each other, or so that by turning the yoke-lever, as by its arm n^3, in one direction the two jaws will be moved toward each other and by turning the yoke-lever in the opposite direction the two jaws will be moved from each other.

I generally have the jaws L L' normally pressed toward each other to grasp and hold a button, as by a spiral spring O, connecting the arm n^3 of the yoke-lever with a bracket m on the stock M, or by a spiral spring connecting a pin, as at l^2, Fig. 2, on the slide L^2, and a pin, as at l^3, on the slide L^3.

Figs. 1 and 2 show the cam-lever J connected to the yoke-lever N by a chain P, attached to an arm j^4 on the cam-lever and to the arm n^3 on the yoke-lever, so that when the presser is depressed with a button in its jaws upon the fabric, as in Fig. 4, and the cam-lever is in its position shown by dotted or broken lines J' in Fig. 1 the chain P will then be slack and will freely permit the usual horizontal movements of the work-clamp in sewing on buttons. By next turning the cam-lever into its position in full lines in Fig. 1 the presser will be elevated and supported by the lifting-lever I, the jaws L L' will be opened to release the button by reason of the chain connection P between the cam-lever and the connected jaws, and the thread-tension will be released by reason of the connector k between the cam-lever and the releaser d. Upon then inserting a button in the open elevated jaws and turning the cam-lever from its position in full lines to its place in dotted lines at J' in Fig. 1 the jaws will be released by the slackening of the chain connector P, and will then be pressed toward each other to securely hold the button by the action of the spring O and will be depressed upon a fabric in the clamp, as in Fig. 4, by the action of the spring G, and the tension-releaser d will be withdrawn by the connector k from the tension device.

I claim as my invention and desire to secure by Letters Patent—

1. In a button-sewing machine, a work-clamp having its presser normally depressed and formed with two movable jaws positively connected to move simultaneously either toward or from each other, and means whereby said jaws are normally pressed toward each other to hold a button, combined with a lifting lever, a cam-lever to move the lifting lever and thereby elevate said presser and hold it elevated, and a connector between said cam lever and said connected jaws whereby the latter are moved apart from each other by the movement of the cam-lever, substantially as set forth.

2. In a button-sewing machine, its horizontally moving work-clamp having its presser normally spring-depressed, and formed with two movable jaws positively geared or connected together to simultaneously move either toward, or from, each other, and normally pressed toward each other as by a spring to hold a button, combined with a lifting lever, a cam-lever to move the lifting lever and thereby elevate the presser and hold it elevated, and a flexible connection between the cam-lever and the positively connected jaws, whereby the latter are operated by the move-

ment of the cam-lever, substantially as specified.

3. In a button-sewing machine, its tension device, tension releaser, work-clamp having its presser normally depressed, and formed with two movable jaws positively connected or geared together and normally pressed toward each other as by a spring, combined with a lifting lever, a cam-lever to move the lifting lever and thereby lift and hold up said presser, a connection between the cam-lever and said connected jaws, and a connector between the cam-lever and the tension releaser, to operate said tension releaser and jaws by said cam-lever, substantially as described.

4. In a button-sewing machine, a button holder having two opposite jaws on two parallel slides mounted in a guide-stock, and a yoke-lever pivoted to said guide-stock and connected to said two slides, to simultaneously move the two jaws either toward or from each other to hold and release a button, substantially as set forth.

5. In a button-sewing machine, a work presser having a button-holder comprising two opposite jaws on two parallel slides mounted in a guide stock, a yoke-lever pivoted to the guide stock and positively connected to the two slides, and a spring connection to normally press the two positively-connected jaws toward each other, substantially as described.

In testimony whereof I hereunto set my hand, in the presence of two subscribing witnesses, this 25th day of November, 1892.

HERBERT L. PHELPS.

Witnesses:
JAMES O. BROWDER,
M. DEAN BROWDER.