

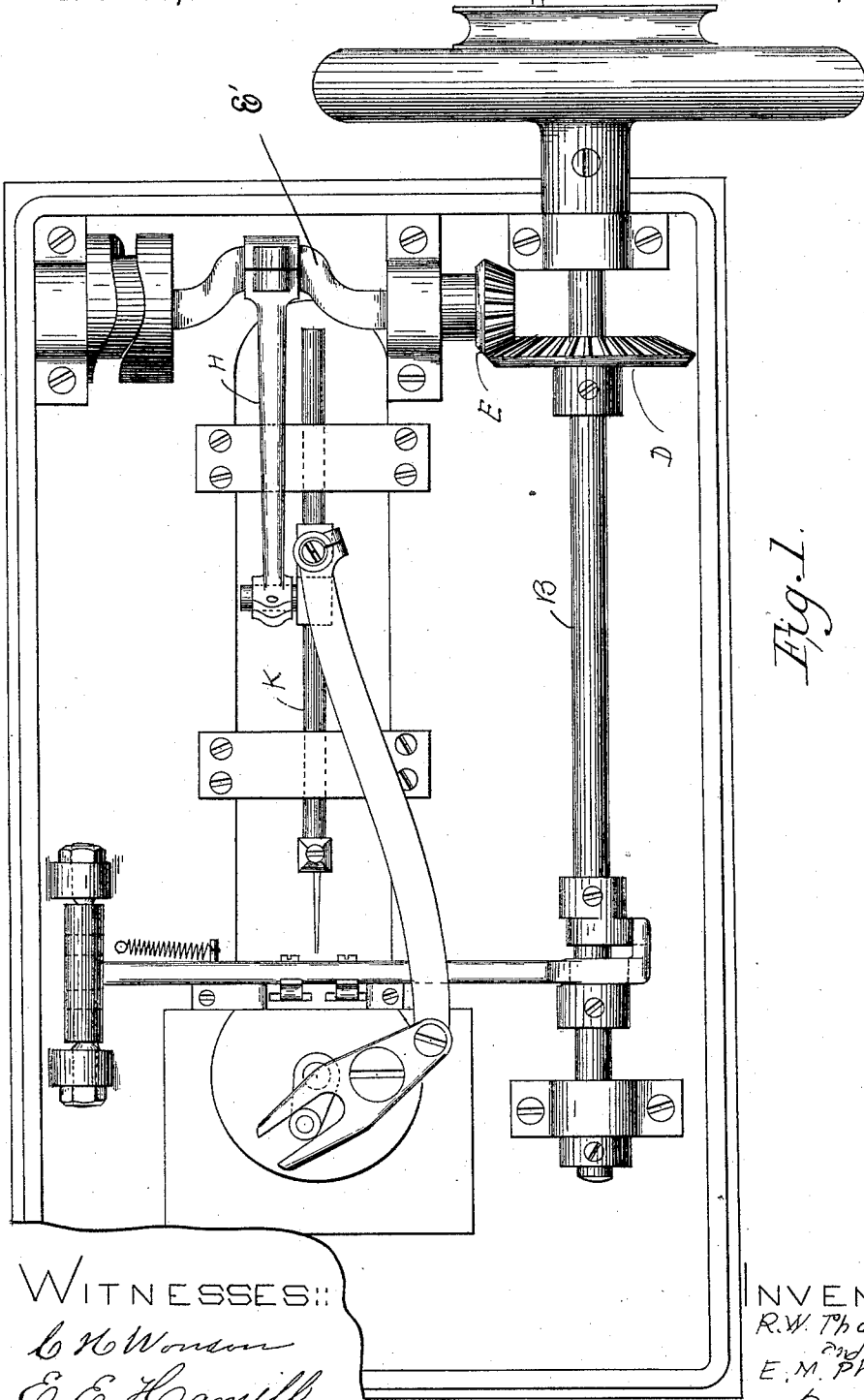
(No Model.)

4 Sheets—Sheet 1.

R. W. THOMSON & E. M. PHELPS.  
SEWING MACHINE.

No. 469,610.

Patented Feb. 23, 1892.



*Fig. 1.*

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*ATTY*

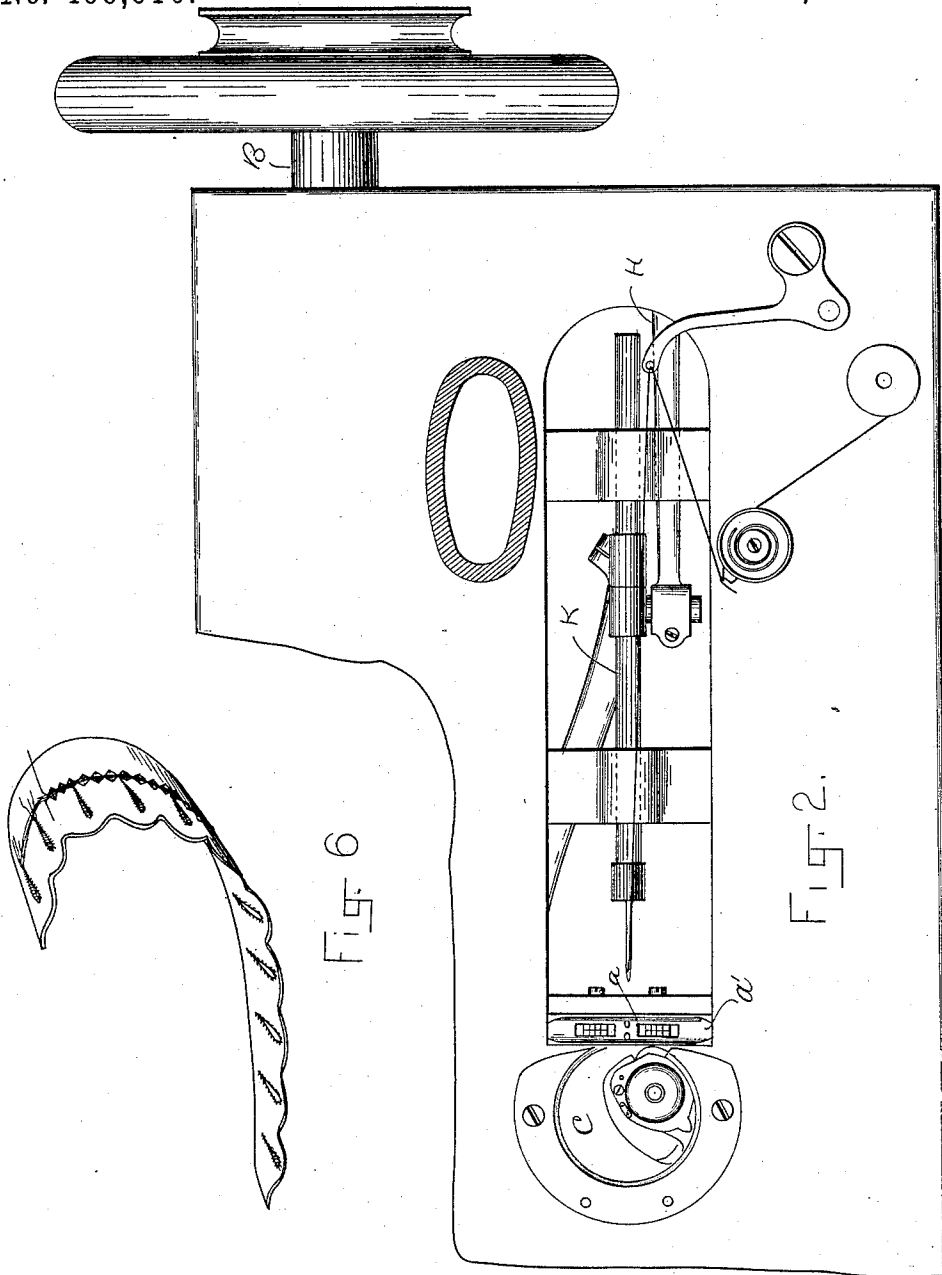
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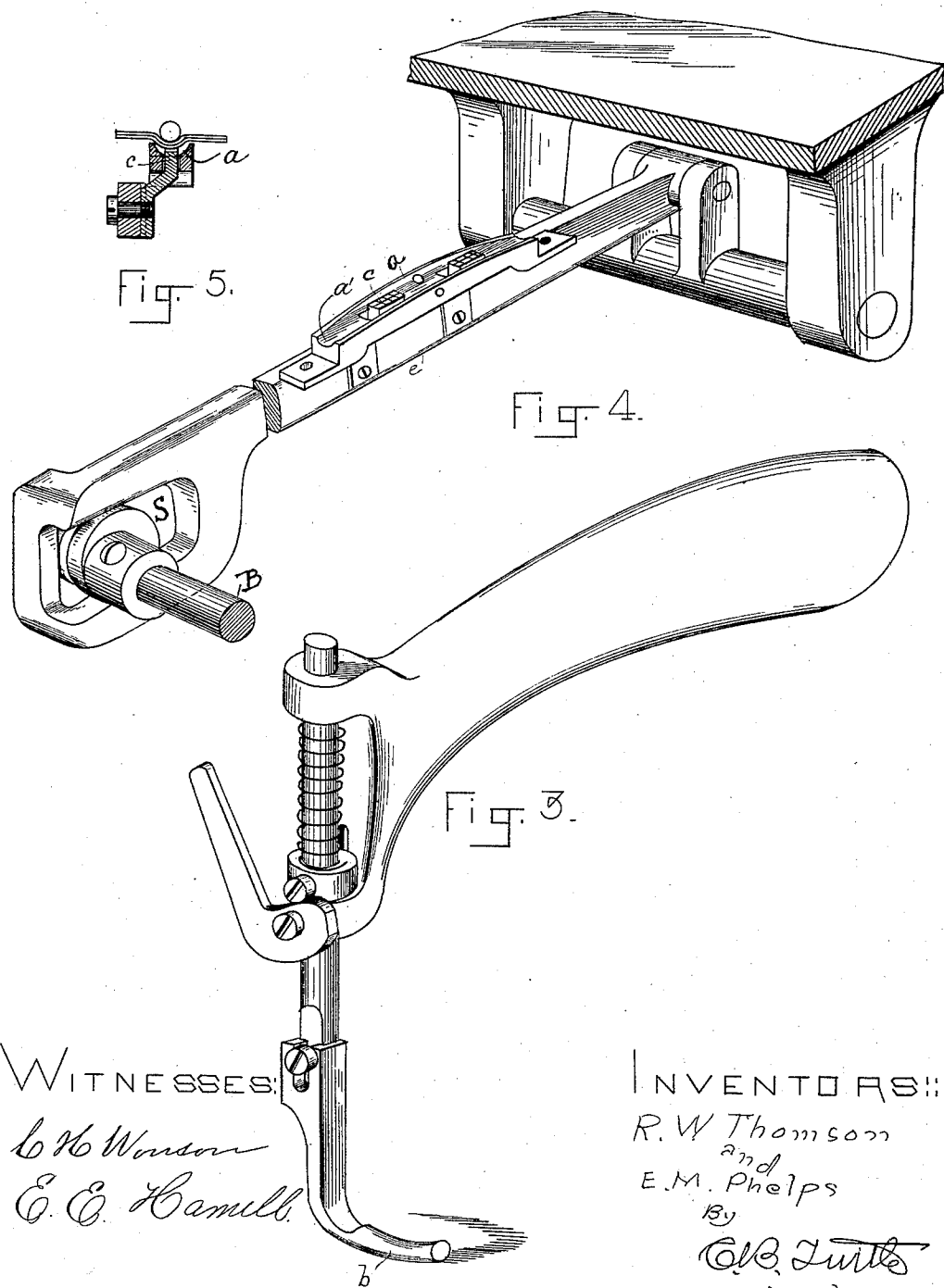
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4 Sheets—Sheet 3.

R. W. THOMSON & E. M. PHELPS.  
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Patented Feb. 23, 1892.



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(No Model.)

4 Sheets—Sheet 4.

R. W. THOMSON & E. M. PHELPS.  
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Patented Feb. 23, 1892.

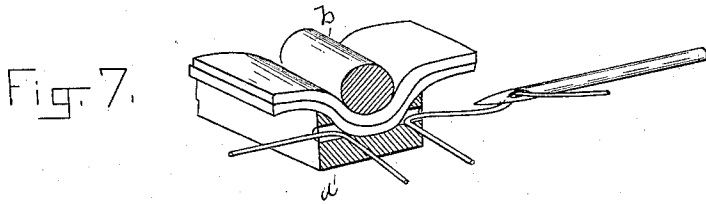


Fig. 7.

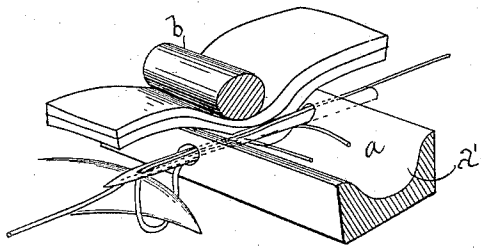


Fig. 8.

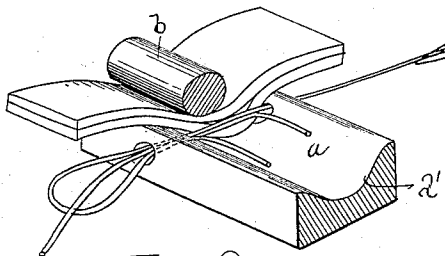


Fig. 9.

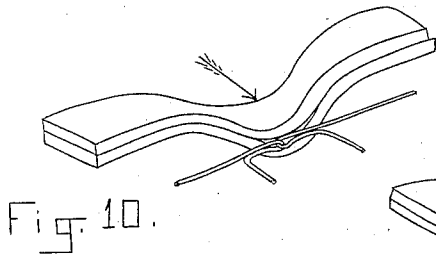


Fig. 10.

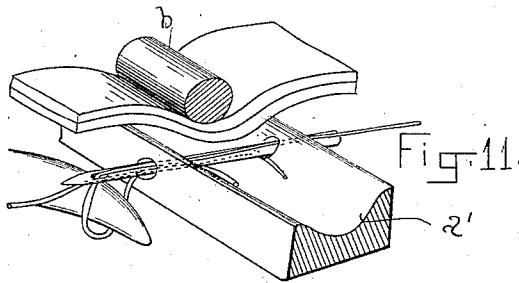


Fig. 11.

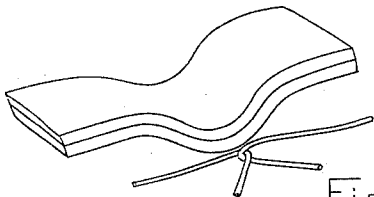


Fig. 12.

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# UNITED STATES PATENT OFFICE.

ROBERT W. THOMSON AND EUGENE M. PHELPS, OF LYNN, MASSACHUSETTS,  
ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE HAND METHOD FINISHING  
MACHINE COMPANY, OF NASHUA, NEW HAMPSHIRE.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 469,610, dated February 23, 1892.

Application filed August 25, 1887. Serial No. 247,819. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT W. THOMSON and EUGENE M. PHELPS, both of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Machines for Finishing and Staying Button-Holes, of which the following, taken in connection with the accompanying drawings, is a specification.

10 This invention relates to machines for finishing and staying the bar-cord and thrum ends of button-holes, and has for its object to provide a machine for overlaying said thrum ends and bar-cord and tying them down to the button-hole piece without stitching through to the face side of the material operated on.

The nature of this invention will be fully described hereinafter, and then specifically pointed out in the claims.

20 Referring to the drawings, Figure 1 represents the bottom face of a machine embodying our invention and is a plan view thereof. Fig. 2 is a similar view looking down on the top of the machine with the presser-foot and its supporting-arm removed. Figs. 3, 4, and 5 are views of details to be referred to hereinafter. Fig. 6 is a perspective view representing a button-hole piece as it appears when finished by this machine. Figs. 7, 8, 9, 10, 11, and 12 are perspective views illustrating the process of stitching through the button-hole piece and overlaying the bar-cord and thrum ends, and are made on a scale somewhat enlarged for the purposes of illustration.

35 The driving-wheel A is constructed and adapted to receive the driving-belt, as in ordinary machines. It is fixed upon and operates to revolve the shaft B, which is journaled in hangers attached to the machine-plate, as shown in Fig. 1. On shaft B is a bevel-gear D, that meshes with a smaller bevel-gear E, fast on the crank-shaft E', which carries a pitman H, that connects with and vibrates the needle-bar K. The bar K is also supported in hangers attached to the machine-plate, and vibrates in a plane parallel with the surface of the machine-plate. In connection with the needle we employ the shuttle mechanism, preferably such as is commonly termed a

“rotary oscillating shuttle,” as at C. The construction and arrangement of such shuttles and their connecting mechanisms are well known; but for example thereof reference may be had to the sewing-machines now being placed on the market by the Singer Manufacturing Company.

The cloth-plate *a* is provided with a concave recess *a'*, and above the same is a folder presser-foot *b*, constructed and supported in the usual manner, except that its bottom face is rounded in cross-sectional area, so as to substantially correspond and fill into the curved recess of the cloth-plate.

In operation the folder presser-foot bears in the usual manner upon the top side of the material and depresses it into the recess of the cloth-plate. The bottom face of the cloth, when depressed, will bear upon and conform substantially to the curved surface of the cloth-plate. A slight curvature will thus be formed in the material, and the needle, entering one side of this curvature, will come out upon the opposite side thereof, interlock the shuttle-thread, and draw back to place in the usual manner, and if the face side of the material were not depressed below the needle-plane the needle would not penetrate to, and the stitching would not appear on, the face side of the material. At this point in the operation of the machine the material is lifted by an upward movement of the feed-foot *c* and the needle next passes under the material outside of the bar-cord and thrum ends of the button-hole and again engages the shuttle-thread and returns to place. The material is then moved one step forward and depressed, and the operation of the needle is repeated until the bar-cord and thrum ends are overlaid and bound down to the material.

90 The form of the feed-foot employed in this machine is fully represented in Fig. 4, in which is shown a feed-bar *e* carrying the feed-foot proper, as indicated at *c*, two of these being shown projecting laterally from the bar *e* and passing through openings in the cloth-plate on each side of the line of movement of the needle. The feed-bar is given the usual

movement by means of a cam S on the shaft B, the said cam engaging the looped end of the feed-bar. The cam S is so formed as to lift the material and hold it so lifted during every alternate reciprocation of the needle, the needle thus engaging the material on one reciprocation, and on the next reciprocation the material is lifted out of the line of its movement.

Fig. 5 represents a sectional view of the feed-bar, cloth-plate, and the feed-foot, with the material lifted above the bottom of the said cloth-plate.

Parts of the machine not specifically described herein may be constructed and operated in the usual manner of constructing and arranging such parts.

We claim as our invention—

1. In a machine for finishing the stay-cord and thrum ends of button-hole pieces, stitch-forming devices, a cloth-plate having a concave face and an opening through the same, a folder presser-foot in line with said concave face with means for operating said folder, and a feed mechanism arranged beneath the cloth-plate and adapted to operate on the under face of the material through the opening in the concave face of the cloth-plate, substantially as described.

2. In a machine for finishing the stay-cords and thrum ends of button-hole pieces, stitch-forming devices, a cloth-plate having a curved bearing-face, a corresponding folder-presser with means for operating it, whereby the work is held in a ridged form, and a lifter for the work independent of the cloth-plate, with means for operating same intermittently, substantially as described.

3. In a machine for finishing button-hole pieces, stitch-forming devices, a concave cloth-plate having its bearing-face located a distance below the needle-path less than the thickness of the material operated upon, whereby the needle will pass through the bend without passing through to the opposite side of the material, a folder-presser with means for operating the same to press the material into the concavity of the cloth-plate, and a feeding mechanism with means for operating the same to lift the material from the face of the cloth-plate above the needle-plane and to hold it so lifted during every alternate reciprocation of the needle, substantially as described.

4. In combination with stitch-forming devices, a concave work-support, a feeding device passing through openings therein, a feed-bar for supporting said feeding devices, and a cam S for operating said bar, said cam being formed with an enlargement which lifts the feeding devices and retains them in an elevated position during every alternate reciprocation of the needle, substantially as described.

5. In a machine for finishing button-hole pieces, stitch-forming devices, a cloth-plate having a grooved face with a passage through

its walls for the needle, a folder-presser and means for operating it, and a feed mechanism operating on each side of the needle-path with means for giving it movement independent of the cloth-plate, substantially as described.

6. In a sewing-machine for stitching thrum ends, a feeding device to engage the material, an eye-pointed needle and complementary stitch-forming devices, and devices to actuate the said feeding and stitch-forming devices to form an overseaming or zigzag stitch, combined with a work-holder movable longitudinally in a plane at right angles to the plane of reciprocation of the needle and having a narrow or thin acting edge and with a guide-block having a longitudinal groove or recess within the path of the needle and at right angles to the plane in which the needle reciprocates, the said work-holder bending the material into the groove or recess of the said guide-block, thus enabling the needle at one thrust to enter and pass out from the material at the same side and between the right face of the material and the stay-cord and thrum ends, the needle at another thrust or descent passing the material outside and making a stitch to cross and hold the stay-cord and thrum ends in place.

7. In a sewing-machine, the throat-plate and the grooved guide-block and the presser or holder between which the material is bent, and the horizontally-reciprocating needle-bar and needle and the shuttle and means to operate them, combined with a feed-bar and means to move it horizontally to feed the material and vertically with relation to the said guide-block to lift the material at every alternate stroke of the needle-bar out of the path of the needle to cause the needle to pass under and not penetrate the material.

8. In a sewing-machine for finishing button-holes in button-pieces, the following instrumentalities in combination, viz: an eye-pointed thread-carrying needle and complementary stitch-forming devices, devices to actuate the same, and work-bending devices, including a work support or block and a work-holder, the latter movable longitudinally in a plane at right angles to the plane of reciprocation of the needle to enable the needle at one thrust to enter and pass out from the material disposed between said support and holder at the same side and between the right face of the material and the stay-cord and thrum ends, the needle at another thrust passing the material outside the stay-cord and thrum ends and making a stitch to cross and hold the stay-cord and thrum ends in place.

9. In a sewing-machine for stitching thrum ends, stitch-forming devices, and devices to actuate the stitch-forming devices to form an overseaming-stitch, combined with work-bending devices, including a work support or block and a work holder or bender, the latter movable longitudinally in a plane at right angles

to the plane of movement of the needle and  
bending the material on the co-operating  
work support or block, and feed devices co-  
operating with said block and holder to feed  
5 the material and to enable the needle at one  
thrust to enter and pass out from the mate-  
rial disposed between the said block and  
holder at the same side and between the  
right face of the material and the stay-cord  
10 and thrum ends, the needle at another thrust

passing the material outside the stay-cord  
and thrum ends and making a stitch to cross  
and hold the stay-cord and thrum ends in  
place.

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