

(No Model.)

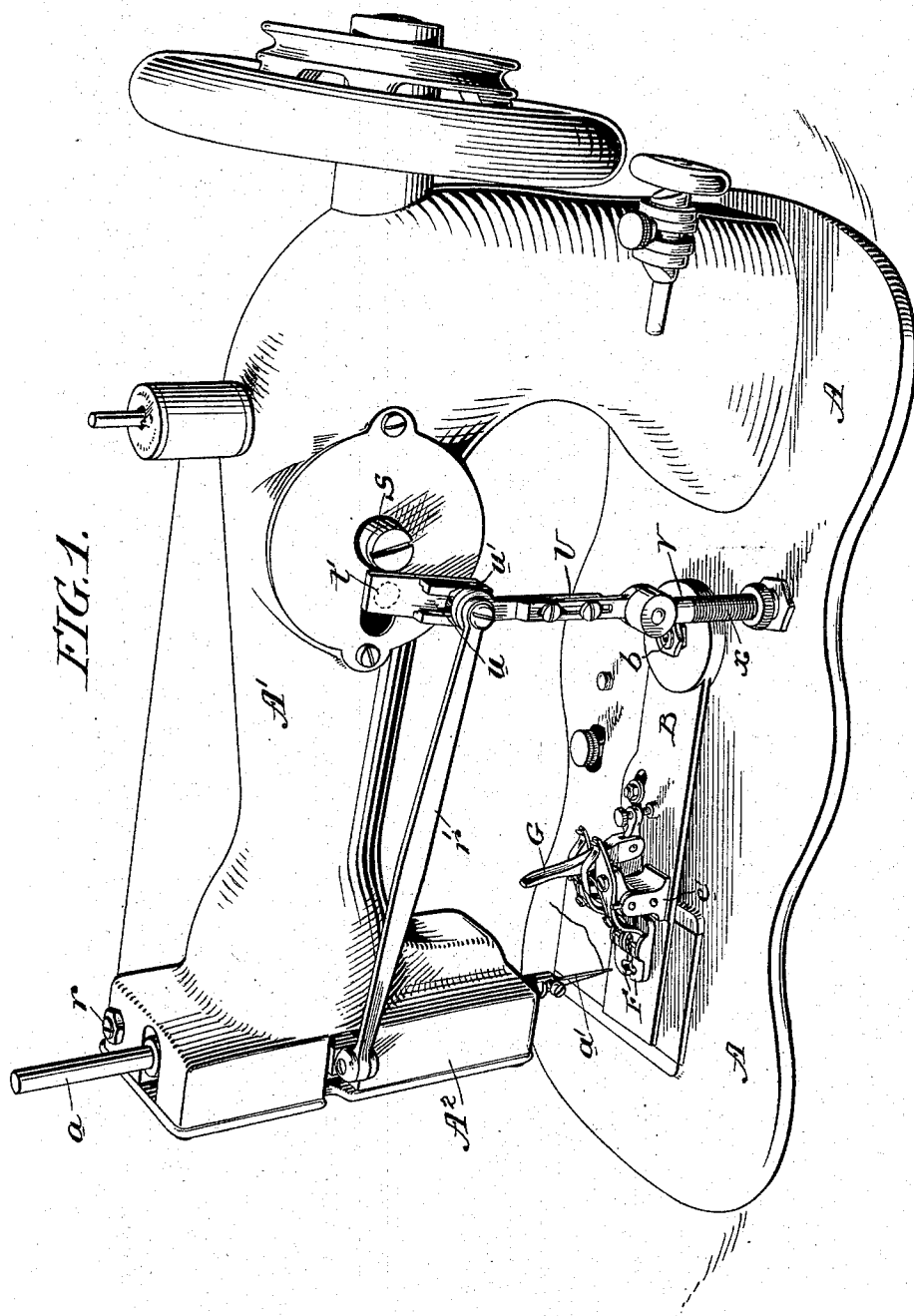
5 Sheets—Sheet 1.

E. H. HARRIS.

SEWING MACHINE FOR BARRING BUTTONHOLES.

No. 528,225.

Patented Oct. 30, 1894.



WITNESSES:

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INVENTOR:

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(No Model.)

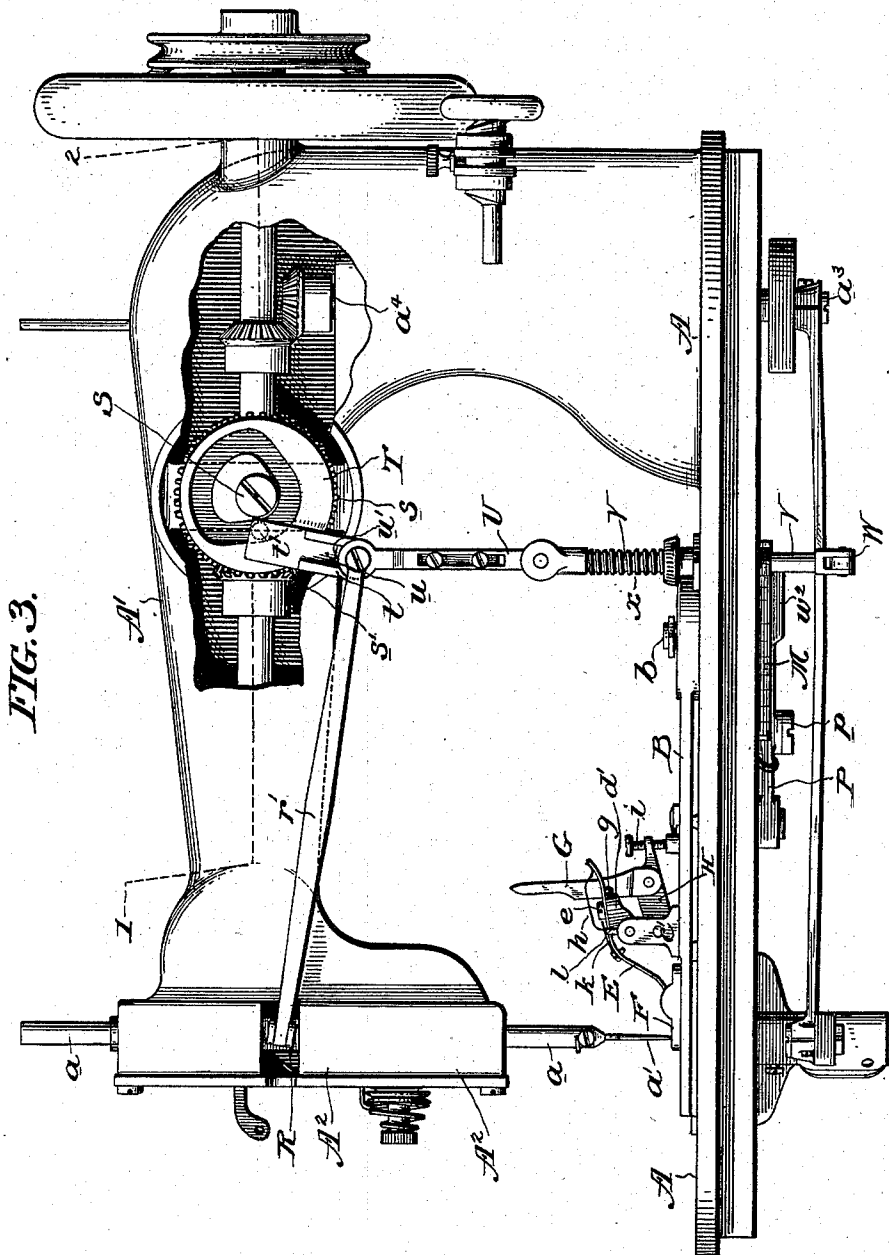
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Patented Oct. 30, 1894.



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(No Model.)

5 Sheets—Sheet 4.

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FIG. 4.

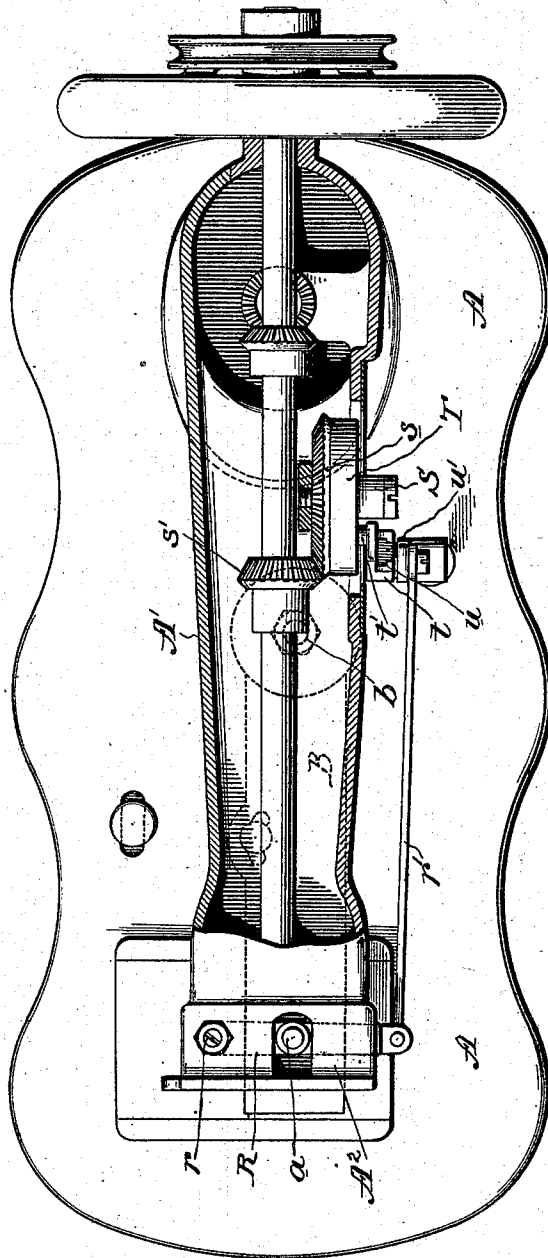


FIG. 7.

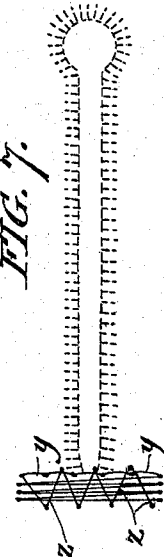
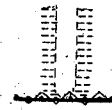


FIG. 8.



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5 Sheets—Sheet 5.

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FIG. 6.

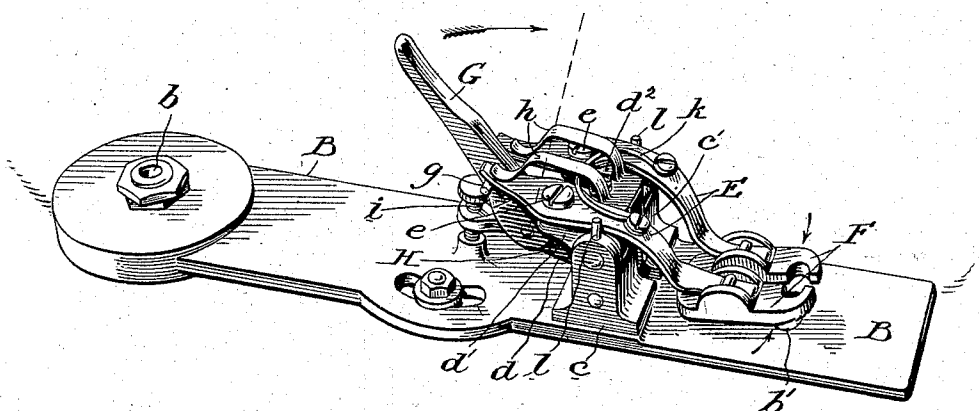
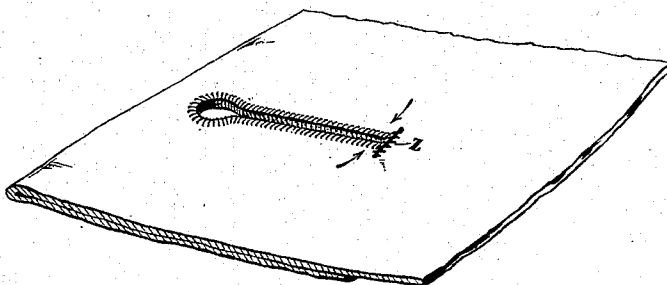


FIG. 5.

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UNITED STATES PATENT OFFICE.

EDMUND H. HARRIS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE NATIONAL MACHINE COMPANY, OF NEW YORK.

SEWING-MACHINE FOR BARRING BUTTONHOLES.

SPECIFICATION forming part of Letters Patent No. 528,225, dated October 30, 1894.

Application filed September 21, 1892. Serial No. 446,440. (No model.)

To all whom it may concern:

Be it known that I, EDMUND H. HARRIS, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Sewing-Machines for Barring Buttonholes, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to that class of sewing machines employed for "barring" the ends of button holes and it consists of certain improvements in the construction and operation of the machine more especially with a view to rapid and effective work and to produce a series of crossed and interlocked stitches across the end of the button hole.

In the accompanying drawings:—Figure 1. is a perspective view of a "barring" machine constructed in accordance with my invention. Fig. 2. is an inverted view of the base of the machine. Fig. 3. is a side elevation, partly in section. Fig. 4. is a sectional plan view on the line 1—2 Fig. 3. Fig. 5. is a perspective view of the cloth clamps. Fig. 6. is a perspective view of a piece of fabric showing the position of the barring threads, and Fig. 7. is a diagram illustrating the manner of laying the stitches. Fig. 8 represents the barred end of the button hole completed.

Referring to the drawings, A represents the base of a sewing machine, provided as usual with the arm A' and head A² and having any ordinary stitch forming mechanism, this latter, in the present instance comprising a vertically reciprocating needle bar a, a needle a', and a horizontal shuttle a², vibrated from a crank a³ on the vertical shaft a⁴.

Pivoted at b to the base of the machine is the lower clamp plate B, the outer end of which projects somewhat beyond the path of the needle and is provided with a suitable slot b' through which the needle may pass to the shuttle or looper. Mounted upon this clamp plate B are two blocks c, c', between which is pivoted a block d, having two inwardly extending arms d', d², and to each of these arms is pivoted at e, a lever E, the forward ends of which are curved downward and carry at their extreme ends shoes F which

form the upper clamp. The lower faces of these shoes F are preferably roughened or serrated so as to engage with the cloth and at a point immediately above the slot b', they are cut away to permit the passage of the needle.

The rear ends of the levers E project into the path of pins g, extending from either side of a handled lever G and the adjoining faces of the levers are inclined so that when the lever G, is raised, the levers E will receive two movements, one to depress the shoes F and a second the forcing of the shoes toward each other to center the fabric, the first movement being caused by the contact of the pins g, with the under side of the levers E, and the raising of that end of the levers against the action of depressing springs h, and the second movement being the result of spreading the rear ends of the levers E by forcing the lever G between them.

The lever G is fulcrumed to a lever H pivoted at one end between the blocks c, c', and having its opposite end under the control of an adjusting screw i, so that the lever G may be made to act at any desired time and with any desired degree of pressure upon the levers E. Normally the forward ends of the levers E are held apart by a spring k, secured at its opposite ends to the levers, any excessive movement being prevented by stop pins l.

Referring now to Fig. 2., M represents a cam, on the periphery of which are three, or more, projections m, m, and a series of steps n, at gradually increasing distances from the center of rotation of the cam. This cam is slowly rotated from the vertical shaft a⁴, through the medium of gears O, O', and pinions o, o', and as it rotates acts upon one end of a lever P, pivoted at p to the frame and held against the cam by a spring p'. The opposite end of this lever is connected by a bar p², to a stud adjustably secured in a slot in the lower clamp plate B, and the connection between the lever P and the bar p², is likewise capable of adjustment so that the extent of movement imparted to the clamp plate B, may be regulated to a nicety. By this means the clamp plate may be oscillated on its pivot b, and moved to any desired extent to make the long stitches across the end of the button hole.

The needle bar *a*, is guided in suitable bearings in a frame R, pivoted at *r*, to one side of the head and adapted to swing on its pivot point to move the needle transversely when stitching down the long barring threads, and to effect this movement of the needle bar I connect one side of the frame R, by a connecting rod *r'*, to suitable reciprocating mechanism.

Mounted in the upper arm A' is a transverse shaft S on which is a bevel gear *s*, meshing with a bevel pinion S' on the main shaft, and also carried by the shaft S is a grooved cam T. Immediately below the cam is pivoted to the frame, a lever *t*, the upper end of which is provided with an antifriction roller or pin *t'* adapted to the cam groove and constantly moved to and fro on its pivot point, by the rotation of the cam. On the face of the lever *t*, is a guideway *u*, extending from its pivot point to a short distance along the length of the lever and adapted to this guideway is a block *u'* which forms a point of attachment for one end of the connecting rod *r'*. To the same pivot point on the block *u'*, is also connected one end of a two part adjustable link U, the lower end of which is pivoted to a vertically movable post V, extending through and guided by the base of the machine and connected at its lower end to one end of a transverse lever W, the opposite end of which is pivoted at *w*, to the frame. At a suitable point on the lever W is mounted a roller *w'* adapted to be acted upon by a fall cam *w²*, on the main cam M, and being held in contact with the cam by a coiled spring *x*, surrounding the post V.

The operation of the device is as follows:—The cloth is first placed on the clamp plate B with the portion to be barred immediately over the slot *b'*. The handle lever G, is then pushed in the direction of the arrow Fig. 5, until the shoes F are moved down upon the cloth and moved toward each other to center the fabric. The stitching operation may now be started the parts being in the position shown in Fig. 1 with the pivot block *u'*, coincident with the pivot point of the lever *t*. The first movement will occur when the first of the cams *m* starts to act on the end of the lever P, which movement is transmitted to the lower clamp plate B and the clamp plate moved so that the first stitch will extend nearly the full length of the slot *b'*. Then on the descent of the lever P to the main body of the cam, the lever P will be moved back by the spring *p'*, and the movement of the cloth clamp reversed; this movement continuing with all three cams *m*, until six long stitches have been laid, and the machine in Fig. 2. is shown as having completed these stitches. As shown in Fig. 7 these long stitches are shown separated from each other, but in actual practice they are bunched upon each other as seen in Fig. 8. It will be noted also in referring to this figure that the cam *w²*, is still under the roller *w'*, and that the post V re-

mains in its lowest position. Continuing the rotary movement of the cam M, the stepped portions *n*, come in succession toward and act upon the lever P and produce one after the other six short stitches *y*, running in a line parallel to the six long stitches previously laid. Then having reached the highest point, the cam *w²*, passes from the roller *w'*, and the spring *x* raises the post V causing the vertical movement of the pivot block *u'*, to a point above the pivot point of the lever *t*, and from that time to the remainder of the stitching operation permitting the vibrations of the lever *t*, to be transmitted to the rocking frame R, and move the needle bar *a*, to and fro during the movement of the needle. As the cam M, continues to rotate the stepped portions *n*, from the highest point then pass in succession in front of the lever P, permitting the spring *p'*, to move the lever in toward the center of the cam and move the clamp plate, step by step, back to the starting point, and as it moves the needle bar vibrates and the result is a series of cross stitches *z*, as shown in Fig. 7.

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

1. The combination in a barring machine of a cloth clamp comprising a lower movable clamp plate, levers having inclined rear ends pivoted on said plate, clamping shoes carried by the forward ends of said levers, a spring to normally separate the clamping shoes, and an operating lever acting between the inclined rear ends of said pivoted levers to force the clamping shoes toward each other substantially as described.

2. In a cloth clamp, a lower movable clamp plate, levers pivoted thereon to have both vertical and horizontal movement, clamping shoes carried by the forward ends of said levers, springs to impart vertical and horizontal movement to the clamping shoes in one direction, and an operating lever acting on said pivoted levers to impart vertical and horizontal movement thereto in a direction opposite to that imparted by said springs, substantially as described.

3. The combination in a barring machine, of a cloth clamp, comprising a lower movable clamp plate, bearings *c*, carried thereby, levers E, pivoted in said bearing and having their rear ends inclined from each other, clamping shoes carried by said levers E, an operating lever G, extending between the rear ends of the lever E pins *g*, thereon, engaging the under sides of the levers E and devices for vertically adjusting said operating lever, substantially as specified.

4. The combination in a barring machine of a cloth clamp, comprising a lower movable clamp plate, bearings *c*, carried thereby, levers E, pivoted in said bearings and having their rear ends inclined from each other, springs acting to depress the rear ends of said levers, clamping shoes carried by said levers,

an operating lever G extending between the rear ends of the levers E, pins g, thereon, engaging the under sides of the levers E a lever to which said operating lever is fulcrumed, and an adjusting screw for said lever, substantially as specified.

5. The combination in a barring machine of a cloth clamp, devices for operating the same, a looping device, a needle, a needle bar, a movable frame carrying the needle bar, a pivoted lever *t* provided with a guideway, means to vibrate said lever, a block in said guideway normally coincident with the pivotal point of the lever *t* whereby it is not affected by the vibration of said lever, a connection between the block and needle bar frame, and suitable automatic devices to move said block in the guideway above the pivotal point of said lever, substantially as and for the purpose described.

6. The combination in a barring machine of a cloth clamp, devices for operating the same, a looping device, a needle, a needle bar, a movable frame carrying the needle bar, a pivoted lever *t* provided with a guideway, means to vibrate said lever, a block in said guideway, a connection between the block and said movable frame, a post connected to said block and controlled by the clamp-operating devices to hold said block coincidently with the pivotal point of the lever *t*, and a spring to move said post and block vertically when the post is released by the clamp-operating devices, substantially as described.

7. The combination in a barring machine of a cloth clamp, a looper, a needle, a needle bar, a movable frame carrying said needle

bar, a pivoted lever *t*, a cam acting thereon, a guideway on said lever, a pivot block on said guideway, a bar connecting the needle bar carrying frame to said pivot block, a vertical post also connected to said pivot block and a cam acting on said vertical post, substantially as specified.

8. The combination in a barring machine of a cloth clamp, a looper, a needle, a needle bar, a movable frame carrying said needle bar, a pivoted lever *t*, a cam acting thereon, a guideway on said lever, a pivot block on said guideway, a bar connecting the needle bar to said pivot block, a vertical link also connected to said pivot block, a post V carrying said vertical link a pivoted lever W, connected to said post V and a cam *w*², adapted to act upon said lever W, substantially as specified.

9. The combination with a movable cloth clamp, and a longitudinally reciprocating and laterally movable needle bar, of a cam to move the cloth clamp, a cam normally inoperative to move the needle bar laterally, a fall cam carried by the clamp operating cam, and suitable devices interposed between the fall cam and the needle bar cam to render the latter operative to intermittently move the needle bar laterally, substantially as described.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDMUND H. HARRIS.

Witnesses:

GEO. W. REED,
CHAS. C. COLLIER.