(No Model.)

J. REECE.

CLUTCH FOR BUTTON HOLE STITCHING MACHINES.

No. 459,046. Patented Sept. 8, 1891.

Fig: 1.

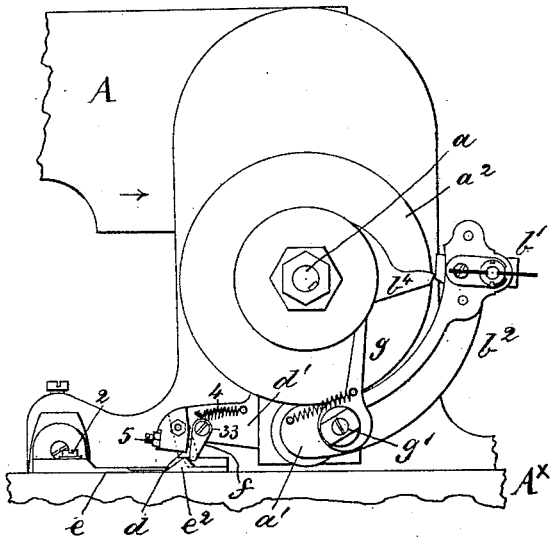


Fig: 2.

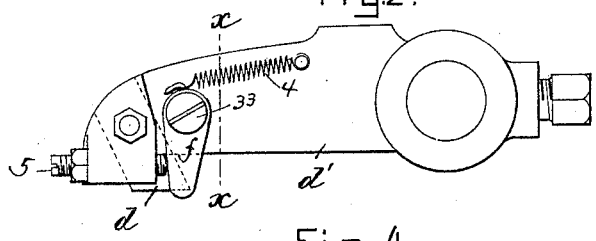


Fig: 3.

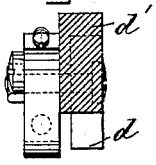


Fig: 4.

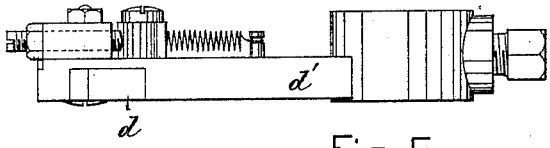


Fig: 5.

Fig: 7.

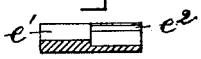
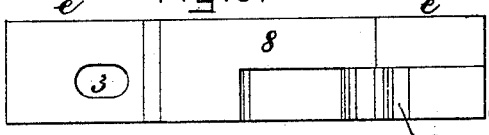


Fig: 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN REECE, OF BOSTON, MASSACHUSETTS.

CLUTCH FOR BUTTON-HOLE-STITCHING MACHINES.

SPECIFICATION forming part of Letters Patent No. 459,046, dated September 8, 1891.

Application filed March 3, 1891. Serial No. 383,590. (No model.)

To all whom it may concern:

Be it known that I, JOHN REECE, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Clutches for Button-Hole-Stitching 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 is an improvement upon that described in United States Letters Patent No. 367,063, granted to me July 26, 1887.

The patent referred to shows a loose band-wheel and a clutch applied to the main shaft of the machine, so that said shaft may be rotated or be left at rest at the desired times, as, for instance, it may be rotated while the stitch-forming mechanism of the sewing-machine is stitching the edges of a button-hole, it permitting the shaft to remain at rest notwithstanding the rotation of the pulley, while the frame carrying the stitching mechanism and the button-hole-cutting mechanism is being moved into proper relation to the usual stationary work-holder to cut a slit in the material to be stitched.

The patent referred to shows a rock-shaft having two arms, one of which co-operates with a clutch-lever, the other arm having a toe which is acted upon during the movements of the frame carrying the stitching mechanism by a controlling-bar having a movable block provided with an inclined end, the said controlling-bar being vibrated automatically during the stitching of each button-hole.

In this invention I have done away with the vibrating controlling-bar and in its place have substituted a stationary controlling-bar having a shelf and a cam, the shelf being adapted to receive upon it the toe of the arm of the clutch-actuating rock-shaft, the said rock-shaft, when the toe referred to rides on the shelf, effecting the release of the clutch-lever to enable the shaft of the machine to be rotated. The arm having the toe referred to has also been provided with a swinging adjustable dog, which, when the frame carrying the stitch-forming mechanism is moving in one direction, by acting upon the cam of the controlling-bar lifts the arm to which it is attached far enough to place the dog referred to upon the shelf referred to, the dog having passed the cam, permitting the toe to descend upon the shelf and ride thereon while the button-hole is being stitched. During this operation the toe rides along the shelf in one direction and then rides back along the shelf in the opposite direction, the toe dropping from the abrupt end of the shelf (the end upon which it was lifted) when the end of the button-hole has been reached and the stitching of the button-hole has been completed. The pivoted dog referred to offers no obstruction to the dropping of the toe from the shelf.

The employment of a stationary controlling-bar and providing the arm referred to with a loosely-mounted adjustable dog adds to the durability and efficiency of the machine.

Figure 1 in side elevation represents a sufficient portion of a button-hole-stitching machine to enable my invention to be understood. Fig. 2, on an enlarged scale, shows the toe-carrying arm detached; Fig. 3, a section of Fig. 2 in the line x, looking to the left; Fig. 4, an under side view of the arm shown in Fig. 2; and Figs. 5, 6, and 7 are respectively an edge, a plan view, and a section of the controlling-bar, the section being in the line x, Fig. 5.

The frame-work A, made longitudinally movable upon the base $A^{\times}$, has a shaft a, provided with a loose belt-wheel a^2 and a clutch-lever b^4.

The clutch-lever has co-operating with it a stud b', carried by an arm b^2 of a rock-shaft a', located below and substantially parallel with the shaft a, the said rock-shaft having a second arm d', provided with a toe d. The arm b^2 carries a pawl g.

In practice the frame A carries stitch-forming mechanism and cutting mechanism, substantially such as represented in my United States Patent No. 349,359, dated September 21, 1886.

Herein, as in the Patent No. 367,063, it is desired to actuate the rock-shaft a' at a certain time during the movement of the frame A to start the stitch-forming mechanism in operation and to continue the said stitch-forming mechanism in action while the two

straight sides and the eye or round end of a button-hole is stitched and to stop the action of the stitch-forming mechanism as soon as the end of the second straight side of the button-hole is reached; but the arm carrying the stitching mechanism continues to move for a distance sufficient to bring the cutting mechanism, such as referred to in Patent No. 349,359, in position to cut the next button-hole to be stitched, and to then move the cutting mechanism away from the work-clamp, so that the stitching may be again commenced.

Instead of the controlling-bar represented in Patent No. 367,063, I have provided the stationary frame $A^{\times}$ of the machine with a controlling-bar *e*, (shown enlarged and detached in Figs. 5, 6, and 7,) the said controlling-bar being confined in position by a suitable set-screw 2 in a slot 3 of the controlling-bar. This controlling-bar has a shelf *e'*, the inner end of which is made abrupt by undercutting the same, as best represented by dotted lines in Fig. 5, and at one side of the front end of this shelf is a cam e^2.

The arm *d'* has pivoted to it at 33 a dog *f*, normally held by a spring 4 against an adjustable stop 5, (shown as a set-screw.) The central part of the controlling-bar is cut away at the left of the shelf and the cam e^2. Whenever the toe *d* travels on the low part 8 of the controlling-bar, the rod or stud *b'* of the arm b^2 rests under the clutch-lever b^4, freeing it and the shaft *a* from the belt-pulley a^2. Let it be assumed, viewing Fig. 1, that the frame A is being moved in usual manner, as provided for in the Patent No. 349,359, toward the right, and that in so doing the pivoted dog *f* has acted upon the cam e^2 of the controlling-bar, and that the said dog has ridden up over the said cam, as shown in said figure. As the dog rode up the cam the arm *d'* was lifted, turning the rock-shaft *a'* and causing the stud *b'* of the arm b^2 to release the clutch, so that thereafter in the further rotation of the pulley a^2 the shaft *a* was taken up and rotated to start the stitch-forming mechanism. As the dog rode up the cam referred to, it lifted the toe *d* above the abrupt inner end of the shelf *e'*, and just as the dog starts down the right side of the cam, Fig. 1, it lets the toe down upon the shelf. As soon as the rotation of the shaft *a* was started the stitch-forming mechanism commenced to operate, and during the further movement of the frame A to the right the toe referred to rides on the shelf *e'*, and the toe continues to ride on the shelf to the right until one side of the button-hole is stitched, it remaining there while the eye end of the button-hole is stitched, when the frame, as provided for in Patent No. 349,359, is again moved toward the left to enable the second side of the button-hole to be stitched. The toe *d* during the stitching of the second side of the button-hole rides on the shelf; but as soon as the stitching arrives at the end of the second side of the button-hole the toe immediately drops off the abrupt end of the shelf, letting the stud carried by the arm b^2 come into position to arrest the clutch and stop the rotation of the shaft *a* and the action of the stitch-forming mechanism; but the motion of the frame A toward the left continues, the toe *d'* riding upon the lower part 8 of the controlling-bar until the cutting mechanism referred to is put into position and actuated, when the movement of the frame A to the right is again commenced. It will be noticed that the pivoted dog affords no obstruction to the descent of the toe from the shelf. By turning the adjusting device or stop 5 the normal position of the pivoted dog *f* from the vertical may be readily changed, so as to lift the arm *d'* and the toe for a greater or less distance, so as to come unerringly upon the shelf.

Preferably the shelf will be composed of an independent hardened steel plate attached to the controlling-bar by suitable screws.

I claim—

1. The clutch-controlling rock-shaft having arms b^2 and *d'*, and a toe and a pivoted dog, combined with a controlling-bar having a shelf and a cam, to operate substantially as described.

2. The clutch-controlling rock-shaft having arms b^2 and *d'*, and a toe and a pivoted dog, combined with a controlling-bar having a shelf and a cam, and with an adjusting device for the said pivoted dog, substantially as described.

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

JOHN REECE.

Witnesses:
GEO. W. GREGORY,
A. S. WIEGAND.