(No Model.)

H. R. TRACY.

SHUTTLE ACTUATING MECHANISM FOR SEWING MACHINES.

No. 493,131. Patented Mar. 7, 1893.

Fig. 1.

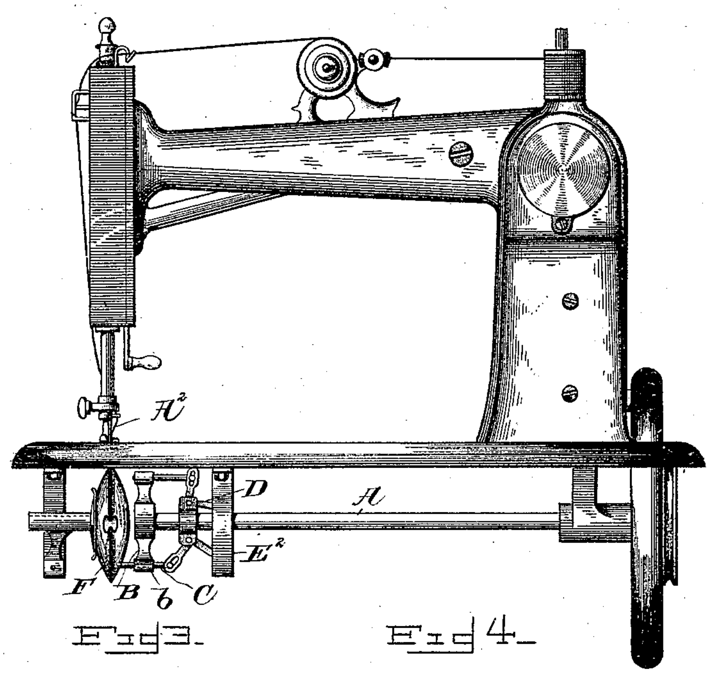


Fig. 3.

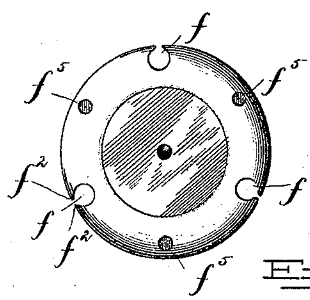


Fig. 4.

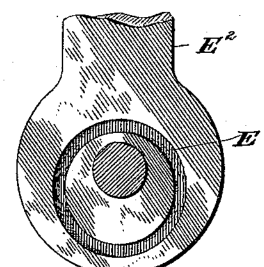
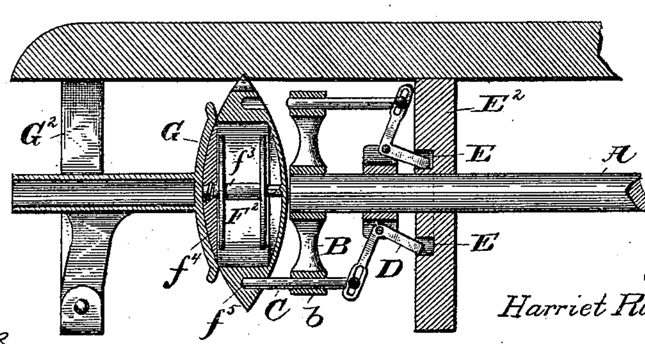


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 493,131, dated March 7, 1893.

Application filed August 5, 1892. Serial No. 442,213. (No model.)

To all whom it may concern:

Be it known that I, HARRIET RUTH TRACY, a citizen of the United States, residing at New Brighton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sewing machines, and it relates particularly to sewing machines of that class in which the needle-thread is engaged by a loop-taker or shuttle and passed entirely around the same to inclose a second or shuttle-thread to aid in forming the lock-stitch.

The particular class of machines to which the present invention relates, is that in which the loop-taker or shuttle is given motion through pins which are caused to enter and are withdrawn from the shuttle or loop-taker for the purpose of driving the same or for permitting the passage around the loop-taker or shuttle of the needle-thread.

The object of the present invention is to produce a sewing-machine of the kind referred to, in which the loop-taker or shuttle shall be driven in a positive and reliable manner to allow the needle-thread to be engaged and carried by it around the loop-taker or shuttle, to engage the thread carried thereby.

With these objects in view, the invention resides in a sewing machine, comprising a revoluble loop-taker, a driving-shaft, a frame mounted upon the driving-shaft, pins sliding in the frame, a stationary cam arranged adjacent to the shaft, a hub mounted on the shaft and turning therewith, and bell crank-levers, each pivoted at its angle to the hub, each bell-crank-lever bearing at one end, against the cam and having a sliding connection at its other end, with a sliding-pin, whereby a free movement of the sliding pin is secured.

The invention is illustrated in the accompanying drawings, in which

Figure 1—is a side elevation of a sewing-machine embodying my invention. Fig. 2—is a sectional view of the loop-taker or shuttle and its actuating mechanism. Fig. 3—is a face view of the shuttle or loop-taker; and Fig. 4—is a face view of a depending projection from the frame of the machine, carrying the cam by which the actuating-pins are operated.

In the drawings, A represents the main driving-shaft of a sewing machine, to which may be attached, in any suitable way, the means for imparting a reciprocating movement to the needle A^2. The end of the shaft A projects beneath the work-plate of the machine and is provided with a frame B, preferably attached to the shaft by set-screws, or, if desired, it may be permanently attached to or formed with the shaft. The frame B is provided with radial arms *b* which may be of any desired number. In the outer ends of these arms are horizontal openings in which are permitted to slide pins C.

Mounted upon or adjacent to the frame B, and in such manner as to revolve with the shaft A, are bell-crank-levers D, the number corresponding to the number of arms *b*, and arranged in line with such arms. Each bell-crank-lever D is pivotally connected with a pin C at one end in a slot therein while the other end of each lever projects into and is governed by the cam groove E, formed in a portion E^2 depending from the frame of the machine. The depending portion E^2 has an opening forming a bearing for the shaft A, and the cam-groove E is of such form that as, in the rotation of the shaft, each bell-crank-lever comes to a position above the shaft, the end of the lever in the groove is drawn toward the shaft, thus moving the pins C inward, and, as the levers move from the upper position, they are each projected through the openings in the arms *b* and outward therefrom.

F represents the shuttle or loop-taker which is preferably of the form herein shown, though any desired or advantageous form of shuttle or loop-taker may be employed. It is provided, in its periphery, with three indentations *f* forming hooks f^2 for engaging and retaining the needle-thread, and it is also provided with a cavity F^2 in which is arranged a spindle f^3 screw-threaded at its outer end. The spindle serves as a shaft to retain a spool-

bobbin, or the like, containing thread, and also as a means for holding in place a plate f^4 which entirely closes the opening in the shuttle or loop-taker, except for a circular passage between the plate and the loop-taker or shuttle, through which the thread contained in the loop-taker or shuttle is permitted to pass freely, as the loop-taker or shuttle rotates. The loop-taker is provided with a series of openings f^5 arranged near its periphery and of a number corresponding to the number of pins C opposite to which the openings are placed.

The loop-taker or shuttle is retained in proper operative position relative to its driving-mechanism by a plate G mounted upon an arm pivoted and supported upon a depending portion G^2 of the frame of the machine. The face of the plate G which comes in contact with the shuttle or loop-taker, is smooth, and its edges are rounded, in order to offer no obstruction to the passage between it and the shuttle or loop-taker, of the needle-thread.

In the operation of the device, motion being imparted through the shaft A and intermediate mechanism to the reciprocating needle, the needle is brought beneath the work-plate and a loop engaged by one of the hooks of the loop-taker or shuttle, which receives motion through the pins C which enter openings f^5 in the shuttle or loop-taker. After the loop of the needle-thread has been engaged, it is carried around the same and spread over the face of the shuttle or loop-taker to form a loop, and as it passes between the shuttle or loop-taker and its driving-mechanism, no obstruction is offered as the driving-pins are withdrawn in succession, leaving a free passage for the loop of the thread.

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

A sewing machine, comprising a revoluble loop-taker, a driving-shaft, a frame mounted on the driving-shaft, pins sliding in the frame, a stationary cam adjacent to the shaft, a hub mounted on the shaft and turning therewith, and bell-crank levers each pivoted at its angle to the hub, each bell-crank lever bearing, at one end, against the cam and having a sliding connection, at its other end, with a sliding pin, whereby free movement of the sliding pins is secured, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HARRIET RUTH TRACY.

Witnesses:
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