

(No Model.)

2 Sheets—Sheet 1.

W. A. MACK.

THREAD GRIPPING MECHANISM FOR SEWING MACHINES.

No. 519,539.

Patented May 8, 1894.

Fig. 1.

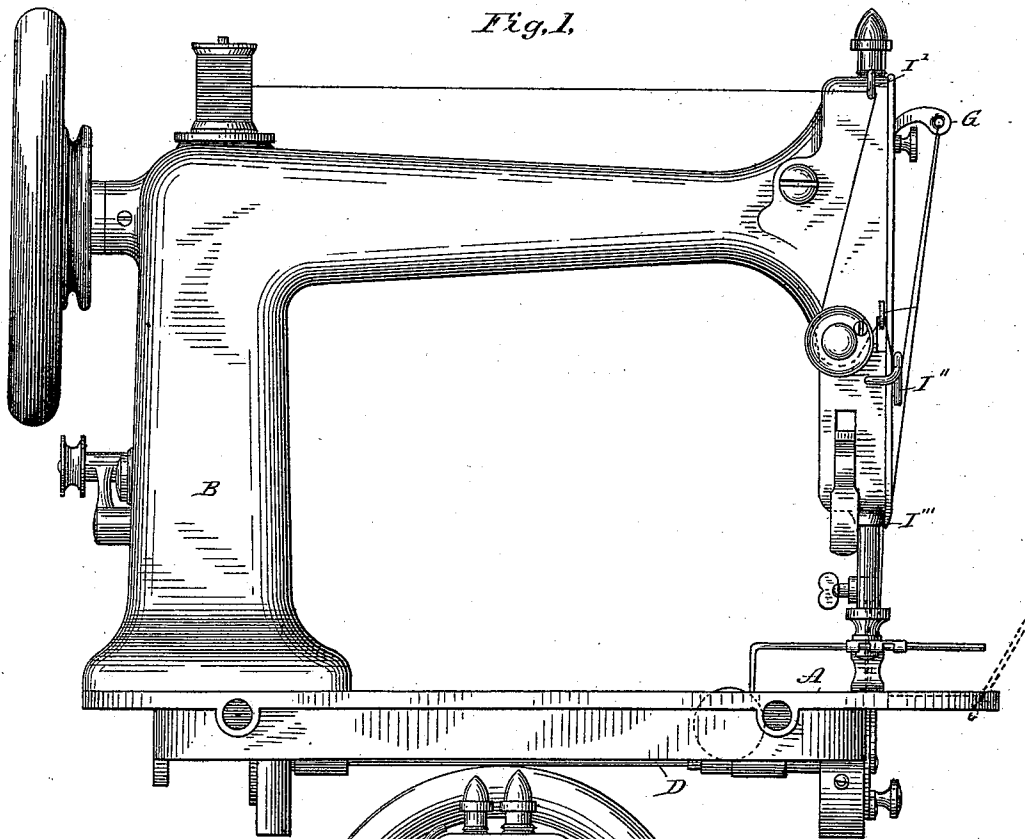
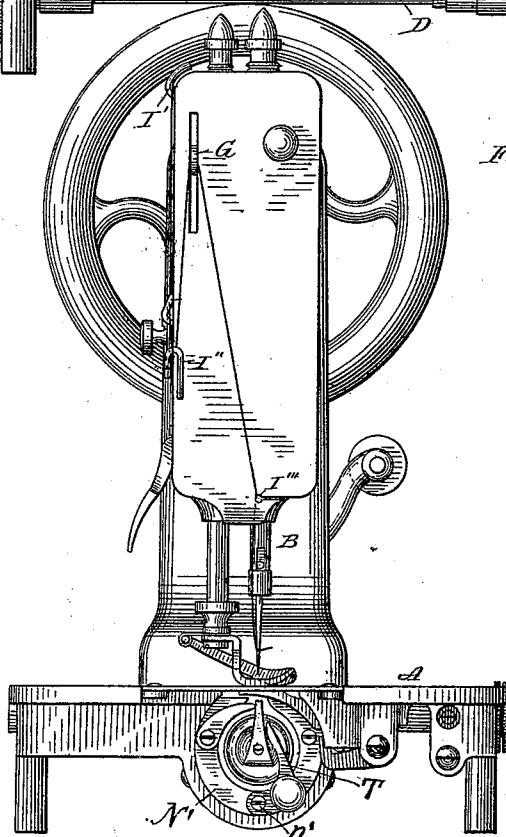


Fig. 2.



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(No Model.)

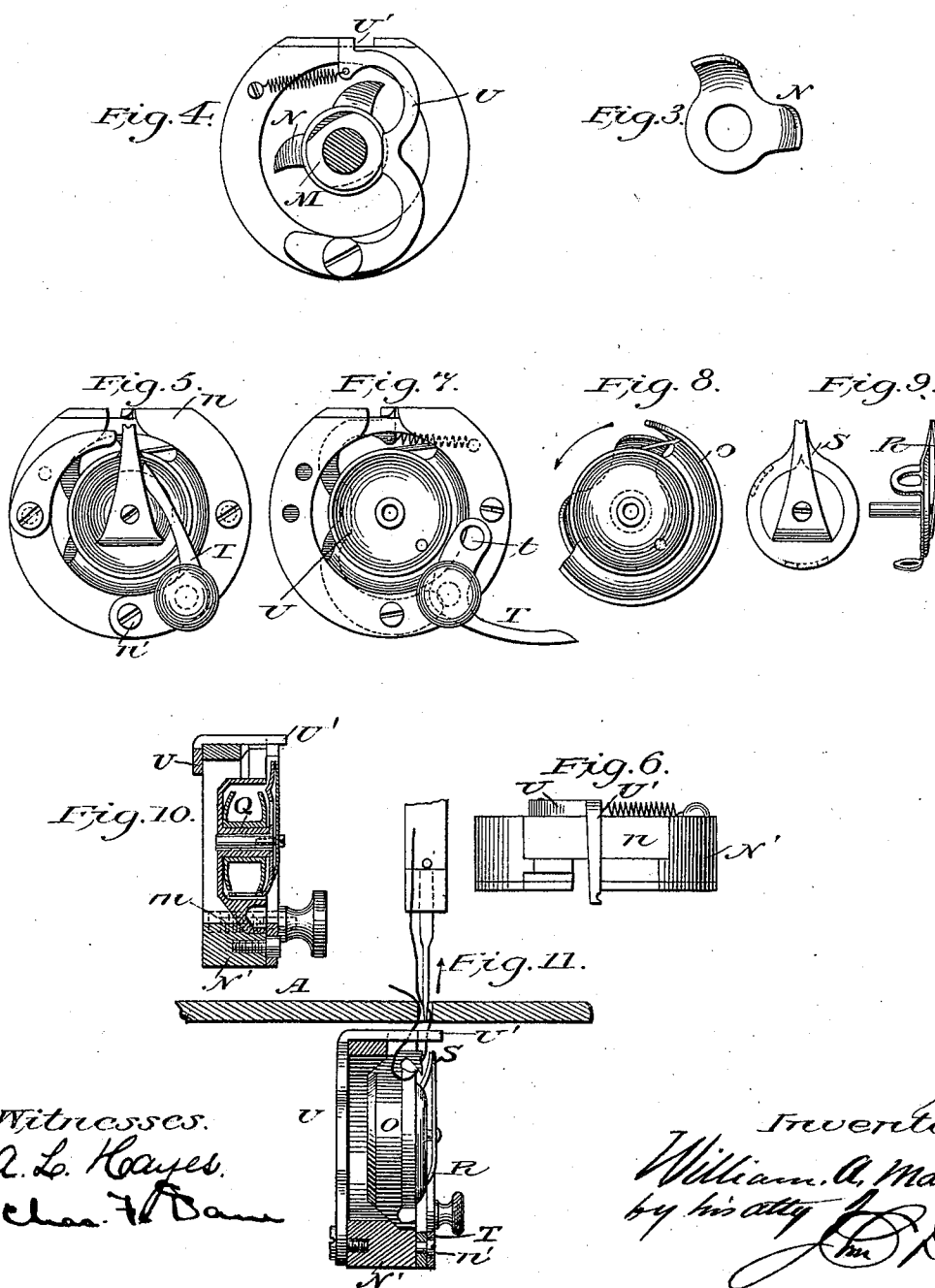
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THREAD GRIPPING MECHANISM FOR SEWING MACHINES.

No. 519,539.

Patented May 8, 1894.



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UNITED STATES PATENT OFFICE.

WILLIAM A. MACK, OF NORWALK, OHIO, ASSIGNOR TO THE STANDARD SEWING MACHINE COMPANY, OF OHIO.

THREAD-GRIPPING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 519,539, dated May 8, 1894.

Application filed April 25, 1885. Serial No. 163,395. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MACK, a citizen of the United States, and a resident of Norwalk, county of Huron, and State of Ohio, have invented new and useful Improvements in Sewing-Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My invention relates to sewing machines of the rotary and oscillating class, and consists in the construction and combination of parts forming a device or mechanism for operating upon the upper or needle thread in a manner and for the purpose as hereinafter set forth in detail and pointed out in the claims.

Referring to the drawings:—Figure 1, represents a side elevation of my improved rotary shuttle sewing machine. Fig. 2, represents an end view of the same; Fig. 3, an end or face view of the shuttle driver detached from the driving shaft; Fig. 4, a rear view of the adjustable shuttle casement, detached from its position on the machine, showing the thread grip in position thereon; Fig. 5, a face view of the adjustable shuttle casement containing shuttle, locking devices, &c., in position; Fig. 6, a top view of the same, showing the thread grip in position and its relation to its connecting parts; Fig. 7, a face view of the same, with the bobbin removed; Fig. 8, the shuttle; Fig. 9, a front and edge view of the bobbin case; Fig. 10, a view of adjustable shuttle casement and inner parts, in vertical section through the center; Fig. 11, a detailed view, in section, of the shuttle race, shuttle, and gripping device, showing the thread held by the gripping device, and the position of the needle.

In the drawings,—A represents the cloth-plate of the sewing machine; B, the arm for supporting the upper driving shaft, needle and presser-bars and other connecting details, D, the lower driving shaft for operating shuttle and feed, G, the take-up, I', I'', I''', thread-guides, N, a crab secured on the driving-shaft adapted for driving the shuttle, N', the adjustable shuttle-casement, which contains and supports the shuttle-race, shuttle and bobbin, O, the shuttle, S and R, parts forming the casing which supports and holds

the bobbin; Q, the bobbin, and T, the locking device for holding the bobbin in position. The mode of attaching or supporting said adjustable-shuttle casement in its position beneath the bed-plate of the machine and the construction of the bobbin-casement and the bobbin locking device or latch T are not of my present invention, but form the subject-matter of another application of mine now pending, bearing Serial No. 446,268.

The shuttle-casement N', which consists of an open cylindrical shell, is provided with a flattened surface, represented at *n*, on its upper side, adapted for location near the cloth-plate, and is provided with a recess or opening in its forward edge as more clearly shown in Fig. 6, adapted for the passage of the needle.

The thread-gripping device, forming the subject-matter of my present invention, consists of a device or lever, represented at U, pivoted upon the rear side of the shuttle-casement N', as more clearly shown in Fig. 4, and having its gripping end U' extend at right angles or nearly so therefrom across the flattened upper surface of the casement N' in about line with the needle and between the walls forming the opposite sides of the said needle opening therein as more clearly shown in Fig. 6. The gripping end U' of the device or lever U forms a movable jaw which is operated in one direction to engage with one of the adjacent walls of the said needle-opening (which said wall forms a stationary jaw) and elastically impinge the needle-thread in a manner as will be hereinafter described, by means of a connecting coiled spring as more clearly shown in Figs. 4 and 6; and the movable jaw U' is moved positively in the opposite direction or away from contact with the said stationary jaw at the proper time to release the thread, by means of a cam or eccentric M which engages the device or lever U at or near its center as shown in Fig. 4, and which in the particular instance shown, is formed upon the hub of the shuttle-driver, (see Fig. 4) although it is obvious that a cam, formed and secured in position separate from the shuttle driver, would serve the same purpose and produce the same result; the form and object of this cam being to cause the

gripping device or jaw to grip and release the needle-thread at the proper time, alternately.

The operation of my thread gripping or retaining device is as follows:—At the downward stroke of the needle, the inner side of the loop thrown out by the latter extends in a position across or in front of that wall of the needle opening forming the stationary jaw, and as the point of the hook or shuttle passes through the loop, the movable gripping jaw is moved into contact with the stationary jaw to engage or impinge the thread extending between the parts and securely hold it with an elastic pressure during such time as the hook or shuttle draws the thread while passing through the loop. After the shuttle has passed partially through the loop and at the time the take-up and feed begin to act, the gripping jaw is moved in a direction to release the thread and allow proper operation of the parts.

It will be obvious from the foregoing description that the gripping device performs one of its functions at the beginning of the sewing by gripping and holding the loose or short end of the needle thread before it is secured in the material, so that the first stitch is drawn with the same, or, nearly the same degree of firmness, as those at a distance from the end, or, place of beginning of the stitches. Furthermore, the means described and their operations prevent undue strain upon that part of the goods already seamed, or, upon the stitch already formed and drawn by gripping that side of the loop of the thread which lies between the seam and the shuttle; besides, it renders the thread less liable to undue twisting and kinking, whereby the shuttle is prevented skipping stitches.

I claim—

1. The combination in a sewing machine provided with a vertically arranged reciprocating needle, a circular race-way, and a vertical wall forming a fixed jaw, adjacent to, and in line of the needle, of a movable gripping jaw and means for operating the said movable jaw in conjunction with said fixed jaw to grasp and hold the needle thread during the formation of a thread loop and the passage of the shuttle through it, substantially as and for the purpose set forth.

2. In a sewing machine, the combination with the vertically reciprocating needle, and a circular shuttle-race frame or support, of a thread gripping or retaining device secured

to or supported by said frame, consisting of a stationary jaw and a movable jaw located adjacent to the path of the needle in position to receive between the same one side of the thread loop thrown out by the needle, and means for operating the movable jaw to impinge and release the interposed thread, substantially as and for the purpose set forth.

3. In a sewing machine, the combination with the vertically reciprocating needle and circular-shuttle-race frame or support, of a thread gripping or retaining device secured to or supported by said frame, consisting of a stationary jaw and a movable jaw located adjacent to the path of the needle in position to receive between the same one side of the thread loop thrown out by the needle, and means for operating the movable jaw elastically in one direction to impinge the thread and positively in the opposite direction to release the same, substantially as described and for the purpose set forth.

4. In a sewing machine, the combination with the vertically reciprocating needle and circular shuttle-race frame or support, of a thread gripping or retaining device secured to or supported by said frame in position adjacent to the path of the needle, consisting of a stationary jaw and a pivoted lever carrying a movable jaw to operate in combination with said stationary jaw to impinge and release the needle-thread alternately, and means for operating the lever carrying said movable jaw, substantially as described and for the purpose set forth.

5. In a sewing machine, the combination with the vertically reciprocating needle and circular shuttle-race frame or support, of a thread gripping or retaining device secured to or supported by said frame, consisting of a stationary jaw located adjacent to the path of the needle and a lever pivotally secured to said frame at the rear side thereof provided with an arm for engaging with the said stationary jaw, a spring for operating said lever elastically in one direction, and a cam or eccentric located on the lower driving shaft for engaging with said lever to operate the same positively in the opposite direction, substantially as described and for the purpose set forth.

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Witnesses:

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