

No. 772,423.

PATENTED OCT. 18, 1904.

W. A. MACK.

THREAD RETAINER FOR SEWING MACHINES.

APPLICATION FILED FEB. 5, 1891.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

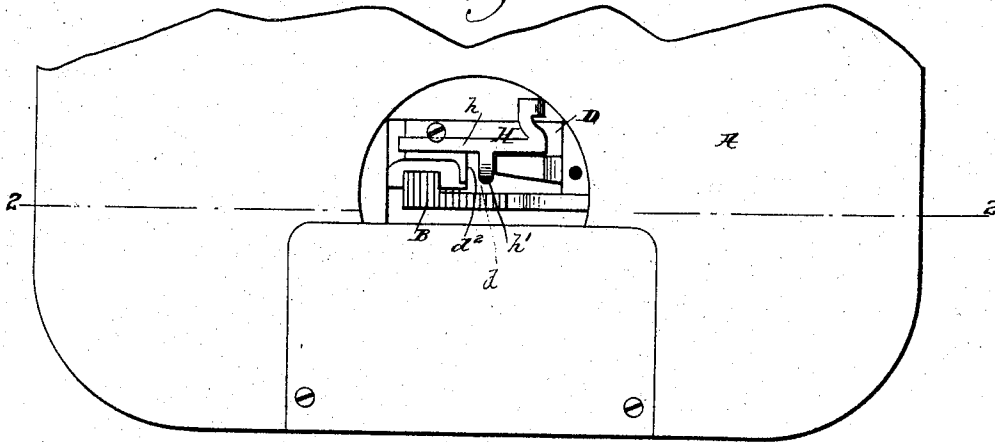


Fig. 2.

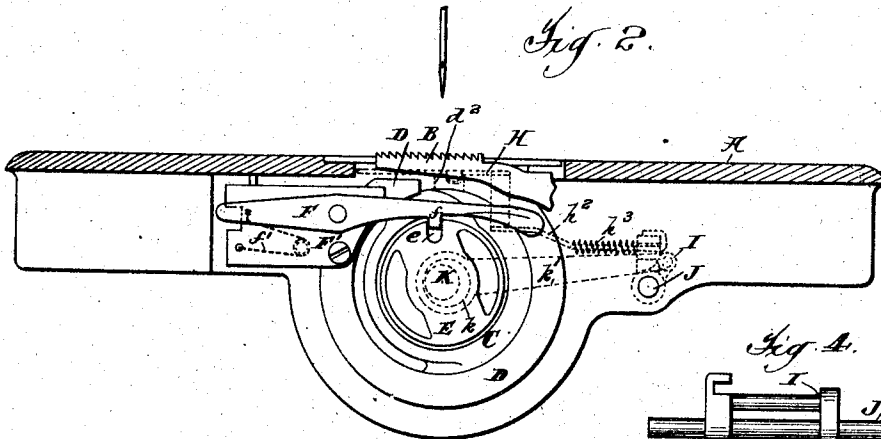


Fig. 4.

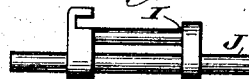
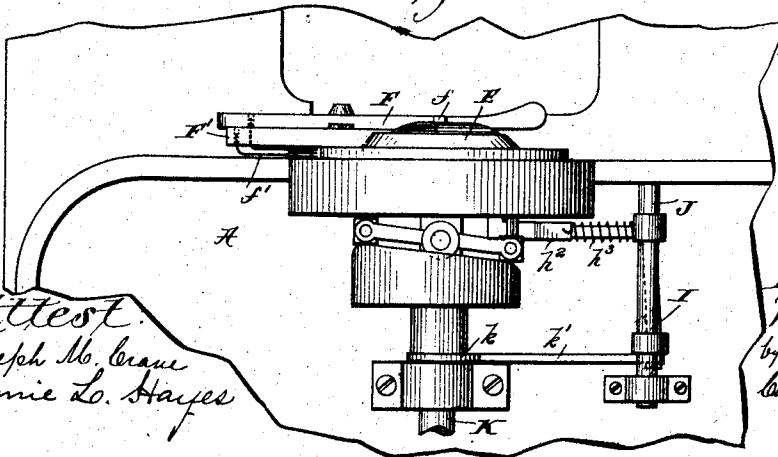


Fig. 3.



Attest.
Joseph M. Crane
Annie L. Hayes

Inventor
William A. Mack
by
Chas. F. Dane
his Atty.

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2 SHEETS—SHEET 2.

Fig. 5.

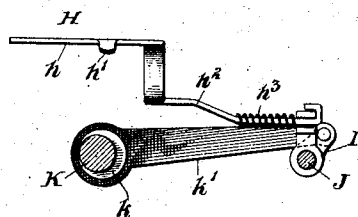


Fig. 6.

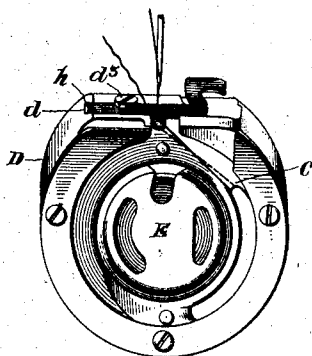


Fig. 7.

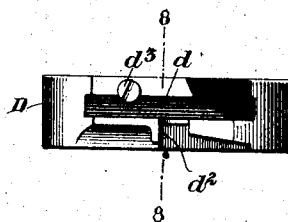


Fig. 8.



Witnesses:
Geo. W. Maylor
M. L. Forest

Inventor
William A. Mack
By his Attorney
Chas. F. Davis

UNITED STATES PATENT OFFICE.

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

THREAD-RETAINER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 772,423, dated October 18, 1904.

Application filed February 5, 1891. Serial No. 380,304. (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 certain new and useful Improvements in Thread-Retainers for Sewing-Machines, of which the following is a specification.

In the operation of that class of sewing-machines employing a rotary or oscillating shuttle in which a relatively large loop of needle-thread is drawn below the work-plate by the shuttle during the stitch-forming operation it frequently happens at the commencement of the sewing operation that the loose end of the needle-thread is drawn below the work-plate by the shuttle as the latter expands the first loop thrown out by the needle, in which event the formation of a stitch is of course prevented. To avoid this, it is the usual practice for the operator to either hold the loose end of the thread during the formation of the first stitch and until it has become secured in the work or else place the same beneath the presser-foot to be held thereby. Both of these methods have been found to be undesirable, however, and it has been the object of my present invention to provide an improved automatic thread-retainer that will operate to hold the loose end of the thread while the shuttle is expanding or passing through the loop, whereby the thread will be caused to draw through the eye of the needle and thereafter release the thread prior to the operation of the feed and take-up. This object I attain by means of the novel features of construction and combinations of parts, as hereinafter set forth in detail, and pointed out in the claims.

Referring to the accompanying drawings, forming part of this specification, in which I have illustrated only so much of a sewing-machine as is necessary to illustrate my invention, Figure 1 is a plan view with the needle-plate removed of a part of a sewing-machine having my invention applied thereto. Fig. 2 is a front end elevation of the same with the bed-plate in section through line 2 2 of Fig. 1. Fig. 3 is an under side view of the same.

Fig. 4 is a detail of one of the thread-retainer-actuating devices. Fig. 5 is a sectional elevation of the thread-retainer and its actuating devices. Fig. 6 is a perspective view of the shuttle-race frame with the thread-retainer in operative position thereon and illustrates the said retainer holding the loose end of the needle-thread. Fig. 7 is a top plan view of the shuttle-race frame with the thread-retainer removed therefrom; and Fig. 8 is a sectional detail of the shuttle-race frame through line 8 8 of Fig. 7, showing the relative position to a bearing-surface thereon assumed by the inner side of the needle-thread loop upon the descent of the needle.

Similar reference characters designate like parts in the several figures of the drawings.

My invention is herein shown as applied to a "Standard" sewing-machine, and the several parts illustrated other than those embodying my invention are the same in construction and operation as the corresponding parts found in said machine, these parts comprising the work-plate A, the feed B, the shuttle C, the shuttle-race frame D, and the shuttle-driving shaft K.

In accordance with my present invention a thread-retainer (indicated generally by H) is slidably supported upon the upper surface of the frame D within a grooved guideway *d* thereon and is provided with a laterally-projecting arm *h'* for coöperating at stated intervals with a stationary bearing-surface *d'* to grip and hold the inner side of the needle-thread loop in a manner to be hereinafter referred to, the said bearing-surface *d'* being formed in the present case by one of the walls of the needle-opening in the said frame D. At one end thereof the retainer H is formed with an extension *h''*, having a hook-shaped end loosely connected with a vibrating member I, pivotally mounted upon a shaft J at the under side of the work-plate, the said vibrating member being actuated from a cam or eccentric *k* on the rotating driving-shaft K through the medium of a connecting pitman-rod *l*. In coöperating with the stationary bearing-surface *d'* it is desirable that the

retainer should engage the thread with a yielding or spring pressure. In order to provide for this, a spring h^3 is located upon the retainer extension h^2 between a shoulder thereon and the vibrating member I, as most clearly shown in Fig. 3, which serves as a cushion between said parts to permit an independent movement of the vibrating member relative to the retainer and cause the latter to grip and hold the thread with a spring-pressure. As a means to hold the thread-retainer in its position in the guideway d on the shuttle-race frame a screw d^3 is connected with the latter in a position with its head overlapping the said retainer, as shown.

The operation of my invention is as follows: When the machine is set in operation, the needle descends and throws out a loop of thread to be entered by the shuttle in the usual manner. The inner side of the thread-loop thus formed projects into a position opposite the adjacent bearing-surface d^2 , as shown in Fig. 5. At this time and before the loop is expanded by the shuttle the retainer H is operated to slide longitudinally upon the frame D into a position to cooperate with the surface d^2 to grip the interposed thread and hold the same with a spring-pressure while the shuttle continues to pass through and expand the loop, as shown in Fig. 6, the thread for said loop being drawn through the eye of the needle. Thereafter and prior to the action of the feed and take-up the retainer will be operated to release the thread, such alternate thread-gripping and thread-releasing action of the retainer taking place at such stated intervals as not to interfere with the proper formation of the stitches.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a sewing-machine, the combination, with the reciprocating needle, of a shuttle-race frame provided with a bearing-surface adjacent to the path of said needle, and a reciprocating thread-retainer supported to slide longitudinally upon the upper surface of the frame and cooperate with said bearing-surface at stated intervals to grip the interposed needle-thread, the said frame being provided on its upper wall with guiding means for said thread-retainer.

2. In a sewing-machine, the combination, with the reciprocating needle, of a shuttle-race frame provided with a bearing-surface adjacent to the path of said needle, and a reciprocating thread-retainer supported to slide longitudinally upon the upper surface of the frame and cooperate with said bearing-surface

at stated intervals to grip the interposed needle-thread, the said frame being provided on its upper wall with a grooved guideway for said sliding thread-retainer.

3. In a sewing-machine, the combination, with the reciprocating needle, of a shuttle-race frame provided with a bearing-surface adjacent to the path of said needle, and a reciprocating thread-retainer supported to slide longitudinally upon the upper surface of the frame and cooperate with said bearing-surface at stated intervals to grip the interposed needle-thread, the said frame being provided with a guideway for said thread-retainer and with means for overlapping and retaining the latter slidingly therein.

4. In a sewing-machine, the combination, with the reciprocating needle, of a shuttle-race frame provided with a bearing-surface adjacent to the path of said needle, a reciprocating thread-retainer supported to slide upon the upper surface of the frame and cooperate with said bearing-surface at stated intervals, a vibrating member having a loose connection with said thread-retainer and communicating a reciprocating movement thereto, and means for permitting an independent movement of the vibrating member relative to the thread-retainer, for the purpose set forth.

5. In a sewing-machine, the combination, with the reciprocating needle, of a shuttle-race frame provided with a bearing-surface adjacent to the path of said needle, a reciprocating thread-retainer arranged to cooperate with said bearing-surface at stated intervals, a positively-acting vibrating member having a loose connection with said thread-retainer and communicating a reciprocating movement thereto, and a spring carried by the thread-retainer and forming a cushion between the same and the vibrating member, for the purpose set forth.

6. In a sewing-machine, the combination, with the reciprocating needle, of a bearing-surface located adjacent to the path of said needle, a reciprocating thread-retainer arranged to cooperate with said bearing-surface at stated intervals, a vibrating member having a loose connection with said thread-retainer and communicating a reciprocating movement thereto, and means for permitting an independent movement of the vibrating member relative to the thread-retainer, for the purpose set forth.

WILLIAM A. MACK.

Witnesses:

EDWARD L. DAY,
GEO. P. SMITH.