No. 608,795. Patented Aug. 9, 1898.

H. P. RICHARDS.

THREAD CONTROLLING MEANS FOR SEWING MACHINES.

(Application filed Aug. 15, 1896. Renewed Jan. 12, 1898.)

(No Model.)

Fig. 1.

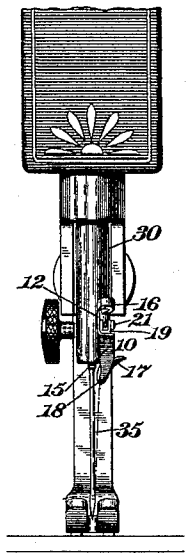


Fig. 2.

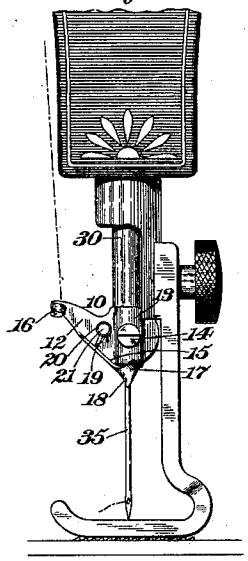


Fig. 3.

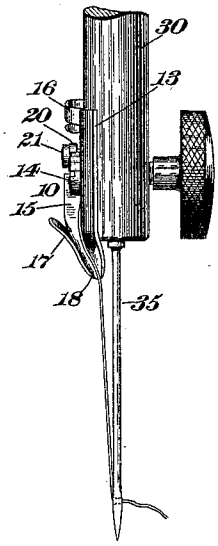


Fig. 4.

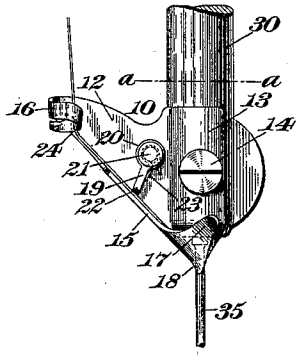


Fig. 5.

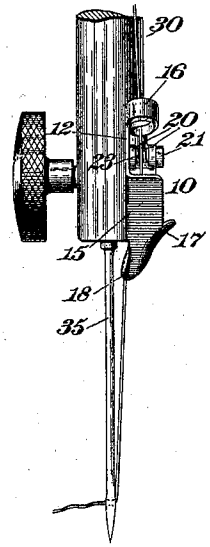


Fig. 6.

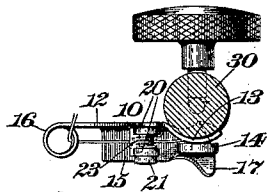


Fig. 7.

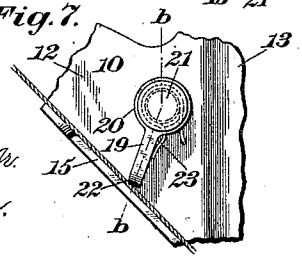
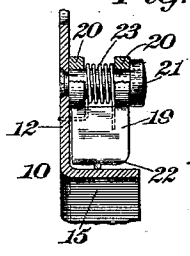


Fig. 8.



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UNITED STATES PATENT OFFICE.

HUBERT P. RICHARDS, OF NEW BRITAIN, CONNECTICUT.

THREAD-CONTROLLING MEANS FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 608,795, dated August 9, 1898.

Application filed August 15, 1896. Renewed January 12, 1898. Serial No. 666,478. (No model.)

To all whom it may concern:

Be it known that I, HUBERT P. RICHARDS, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Thread-Controlling Means, of which the following is a specification.

This invention relates to thread-controlling means, the object thereof being to provide an improved resistance device for controlling the needle-thread adjacent to the needle and by means of which the advance of the thread will be freely permitted, but the premature retraction thereof effectively prevented.

A further object of the invention is to provide a device not only simple in construction, but so constructed that the same can be disposed in position and effectively used in close proximity to the needle, whereby the proper formation of a loop for the reception of the loop of the shuttle can be secured at all times.

In the drawings accompanying and forming part of this specification, Figure 1 is a front view of a part of the machine-head, presser-foot, and needle and shows this improved thread-controlling means secured in position. Fig. 2 is a side view thereof looking toward the left in Fig. 1. Fig. 3 is an enlarged view of a part of the needle-bar and needle and a rear view of the thread-controlling means in position. Fig. 4 is a side view thereof looking toward the right in Fig. 3. Fig. 5 is a front view thereof looking toward the left in Fig. 4. Fig. 6 is a cross-sectional view of the needle-bar, taken in line *a a*, Fig. 4, and a top view of this improved thread-controlling means. Fig. 7 is a view of a part of the supporting means or bracket of this improved device and shows the thread-controller on an enlarged scale; and Fig. 8 is a cross-sectional view taken in line *b b*, Fig. 7, and partly broken away.

Similar characters designate like parts in all the figures of the drawings.

While this improved thread-controlling means can be used in connection with various sewing-machines, it is, however, more especially adapted for that class of sewing-machines in which it is necessary for the needle to throw out a loop when beneath the fabric for the shuttle or looper to engage, this loop being formed by the friction of the thread with the fabric or material on the inauguration of the upward stroke of the needle. This thread-controller or resistance device, which is preferably connected to the needle-bar at the lower end thereof, is adapted for holding the upper thread against premature retractive movement during the first part of the upward stroke of the needle-bar and at a point below the eye of the needle and to prevent drawing up of the loop before the same is engaged by the hook of the loop-taker or equivalent device, which drawing up of the loop might be occasioned by the extreme tautness of the upper thread, which is almost always more or less elastic, this elasticity of the needle-thread having a tendency to retract or draw back the slack carried by the descent of the needle in forming the loop to be engaged by a hook of the loop-taker or shuttle and to cause the thread to slip through the needle-eye and draw up the loop, so that it will not be engaged by said hook.

This improved thread-controlling means comprises in a general way a supporting means or bracket having a thread guide or guides and a thread-controller disposed in position to permit the free advance of the thread, but prevent the premature backward movement thereof, such controlling means being disposed so that it will be in a position at a comparatively short distance above the fabric when the needle commences its upward movement, and in the preferred form thereof herein shown and described this improved thread-controlling means comprises supporting means, preferably in the nature of a bracket 10, comprising a side wall 12, having a concaved or curved end 13, adapted for attachment to the lower end of the needle-bar 30 adjacent to the shank of the needle 35 and which may be secured thereto by any suitable fastening device, such as a set-screw 14. This bracket is provided with an inclined thread-guide face or bed 15, extending upwardly from the lower end of the needle-bar 30 and preferably cut away adjacent to the upper end of the side wall 12 to reduce the friction on the thread. This bracket is provided at one end, adjacent to the outer end

of the side wall, with a thread-guide, (herein shown in the nature of a spiral or curl 16,) preferably formed integral with the bracket and through which the thread passes on its way to the needle-eye. The lower end of this bracket is bent or curved inwardly and is provided with an upwardly-bent flange or projection 17, whereby it forms a second thread-guide 18, having its outer or lower end terminating adjacent to the needle and below the lower end of the needle-bar, whereby the thread will be led close to the needle. This lower guide is preferably so shaped by the inclination of its walls that the distance between said walls is somewhat less at that part thereof slightly above the thread than at the bottom of said guide, whereby any tendency of the thread to move upward is overcome by the inclination of such walls.

Secured to the bracket by any suitable means is a thread-controller adapted to permit the forward passage of the thread at all times, but absolutely prevent the premature backward movement or retraction thereof before or on the inauguration of the upward movement of the needle, and which thread-controller may comprise any suitable device or means adapted for the purpose; but in the preferred form shown the same is in the nature of a detent or clamp, preferably comprising a relatively wide plate 19, having a pair of collars or sleeves 20, by means of which it is pivotally secured in position by a suitable pivot device, such as a headed stud or pin 21, either removably or fixedly secured in the side wall 12 of the bracket, the head of said pivot device preventing lateral movement of said plate. This plate has its lower under edge, as 22, which engages the thread, curved, whereby when in clamping engagement with said thread it will not fray the same during its passage beneath the controller.

In order to hold the controller in engagement with the thread at all times and permit the forward passage thereof, but prevent the premature retraction of the same, a spring is preferably used to secure this result and is herein shown as a coiled spring 23, one end of which is secured to the wall of the bracket, while the other end engages the plate 19, whereby the thread can actuate or swing the clamping-plate in the direction of its movement and against the tension of the spring to thereby permit the passage of such thread, but will be held firmly against retraction by said controller clamping the thread when the forward movement thereof has ceased, in a manner that will be readily understood without further description.

In the use of this improved thread-controlling means the thread is led from the usual thread take-up to and through the upper thread-guide 16 of the bracket, which is provided with a rounded surface 24 to reduce, as far as possible, the friction on the thread, and thence down the inclined face or bed of said bracket under the controller and through the second thread-guide 18 in close proximity to the needle, and thence to the eye thereof, whereby owing to the particular position of said controlling means it will be at a comparatively short distance above the fabric when the needle has passed therethrough, so that on the inauguration of the upward movement of said needle the controller will prevent the loop as it is being made from being drawn through the needle-eye by the tension of the thread, and hence will cause at all times the formation of a proper loop for engagement with the hook of the shuttle.

It will be understood that the lower guide 18 could be so formed or extended that it will be immediately above the fabric when the needle is about to throw out a loop, if desired, and thus bring the thread-controller closer to the fabric, or said thread-controller might be disposed even closer to the lower guide 18, if desired, than is herein shown; but the best results have hitherto been obtained from the disposition of the parts as herein shown.

Having described my invention, I claim—

1. A thread-controller for a sewing-machine, consisting of a bracket formed of an integral plate and provided with a thread-guide at each end thereof, said bracket being shaped at its forward end to fit the contour of a needle-bar and being perforated to receive an attaching-screw; an inclined cut-away flange constituting a part of the bracket and serving as a seat for the thread; and a swinging spring-actuated thread-controller provided with a rounded end which bears upon the thread between the thread-guides and serves to prevent retractive movement of the same.

2. Thread-controlling means consisting of a bracket having an inclined face or bed, said bed being provided with a thread-guide adjacent to each end thereof, the lower thread-guide embodying a projecting flange having its lower end terminating adjacent to the lower end of the needle-bar, and said guide having inclined walls so that the distance between said walls is less at its upper portion than at the bottom of the guide.

3. Thread-controlling means comprising a bracket secured to the needle-bar and provided with an upright wall and with an inclined thread-guide disposed at an angle thereto; a querl with a rounded inner surface at the upper end of said thread-guide; and an inclined flange or projection at the lower end of said bracket, said flange or projection being located at a point adjacent to the needle so that the thread is guided in a line substantially parallel thereto.

4. The combination, with a needle-bar, of a thread-guide secured to the lower end thereof and embodying a right-angular plate provided with a querl at its upper end and with an inclined thread-guide at its lower end, located adjacent to the needle and below the surface of the needle-bar; and a pivoted spring-con-

trolled thread-controller having a rounded bearing-surface disposed on the thread-guide, for the purpose specified.

5. The combination with a sewing-machine needle-bar carrying a needle, of thread-controlling means comprising a bracket secured to the lower end of said needle-bar and having an inclined face or bed for the thread and provided at each end thereof with a thread-guide, the lower thread-guide being bent inwardly beneath the lower end of the needle-bar, whereby its lower end will be adjacent to the needle; and a thread-controller intermediate said thread-guides and adapted to engage the thread on its passage over said face or bed to prevent the premature retraction thereof.

6. The combination with a sewing-machine needle-bar carrying a needle, of thread-controlling means comprising a bracket having a side wall having one end curved to fit the lower end of said needle-bar and having an inclined face or bed for the thread and provided with a thread-guide at its upper end and with an inwardly-bent thread-guide at its lower end and embodying an upwardly-bent flange or projection, the free end of said lower thread-guide terminating adjacent to the under side of the needle-bar and in close proximity to the needle; and a thread-controller secured in position intermediate said thread-guides and adapted to prevent the premature retraction of the thread, and spring-actuated in one direction.

7. The combination with a sewing-machine needle-bar carrying a needle, of thread-controlling means secured to the lower end of said needle-bar and comprising a bracket having a side wall and an inclined face or bed for the thread and provided with a spiral thread-guide at its upper end, and with an inwardly-bent thread-guide at its lower end, the side walls of which guides are contracted above the normal path of the thread to form inclined faces to thereby prevent the displacement of said thread, and said lower thread-guide being bent inwardly whereby its lower end terminates adjacent to the under side of the needle-bar and in close proximity to the needle; a thread-controller comprising a swinging clamp-plate adapted to engage the thread to prevent the premature retraction thereof; and a spring for actuating said controller in one direction.

8. The combination with a sewing-machine needle-bar carrying a needle, of thread-controlling means secured to the lower end of said needle-bar and comprising a bracket having a side wall and an inclined face or bed for the thread and provided with a spiral thread-guide at its upper end and with an inwardly-bent thread-guide at its lower end embodying an upwardly-bent flange or projection, and the side walls of which guide are contracted above the normal path of the thread to form inclined faces whereby the displacement of said thread is prevented and said lower thread-guide is bent inwardly whereby its lower end terminates adjacent to the under side of the needle-bar and in close proximity to the needle; a headed stud carried by the side wall of the bracket; a clamp-plate journaled thereon and adapted to engage the thread to prevent the premature retraction thereof; and a spiral spring carried by said stud and having one end fixedly secured to the bracket and its other end engaging said clamp-plate.

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