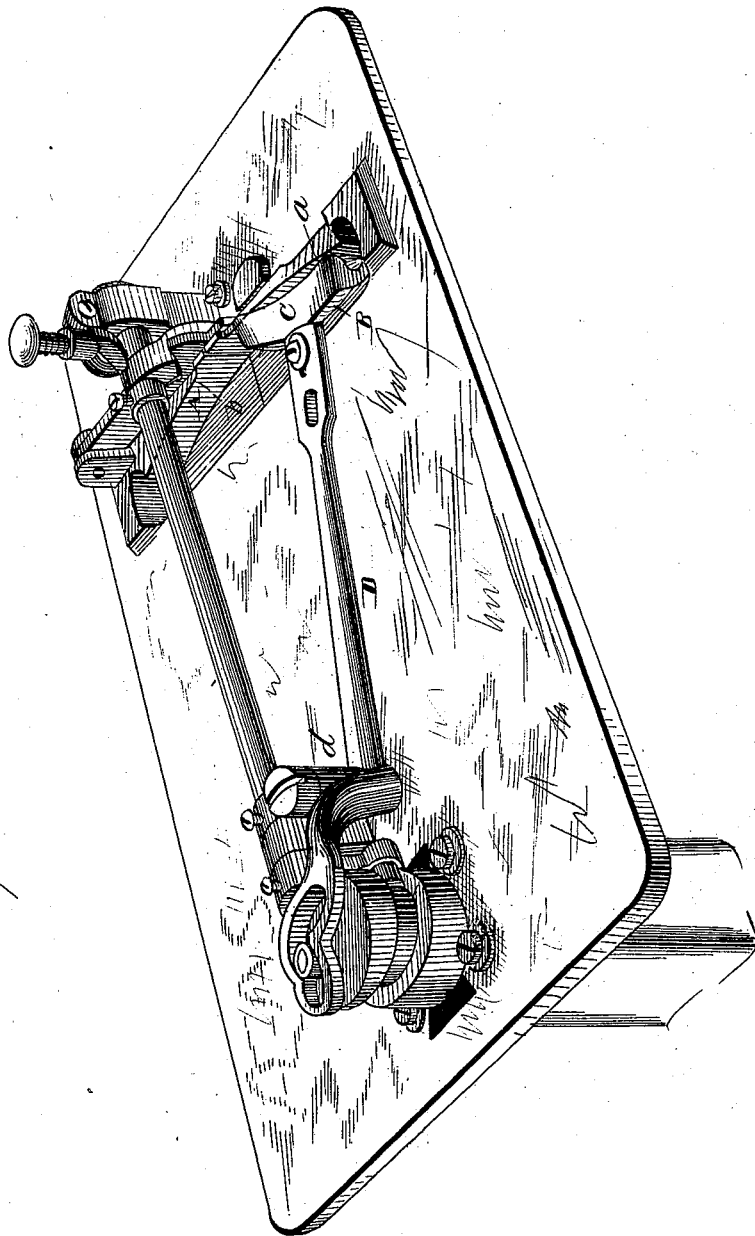


W. W. WELLS.
Sewing-Machine.

No. 209,843.

Patented Nov. 12, 1878.

Fig. 1.



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Fig. 2.

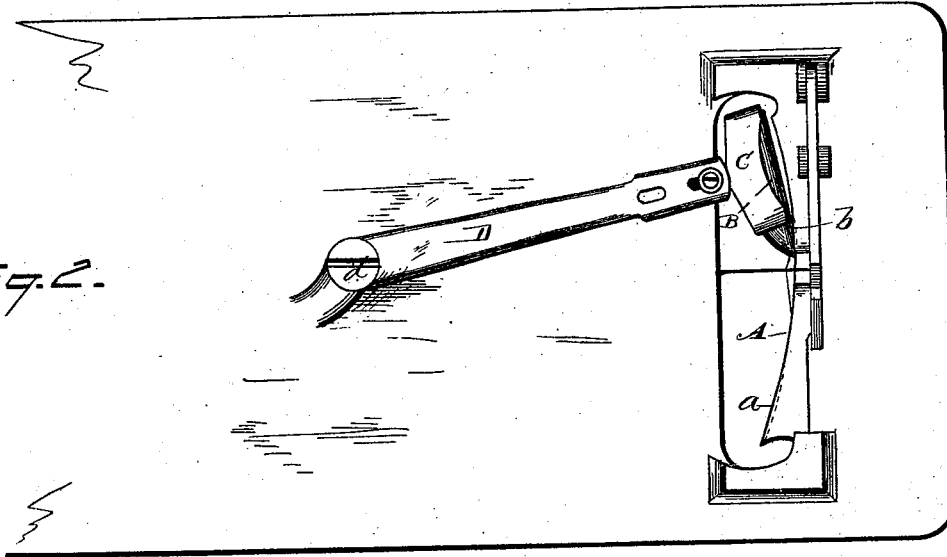


Fig. 3.

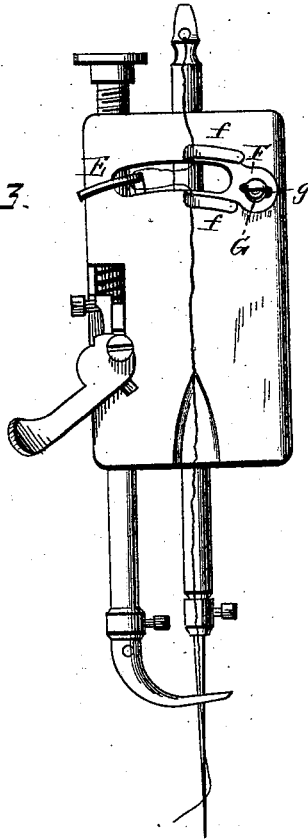
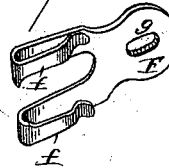


Fig. 4.



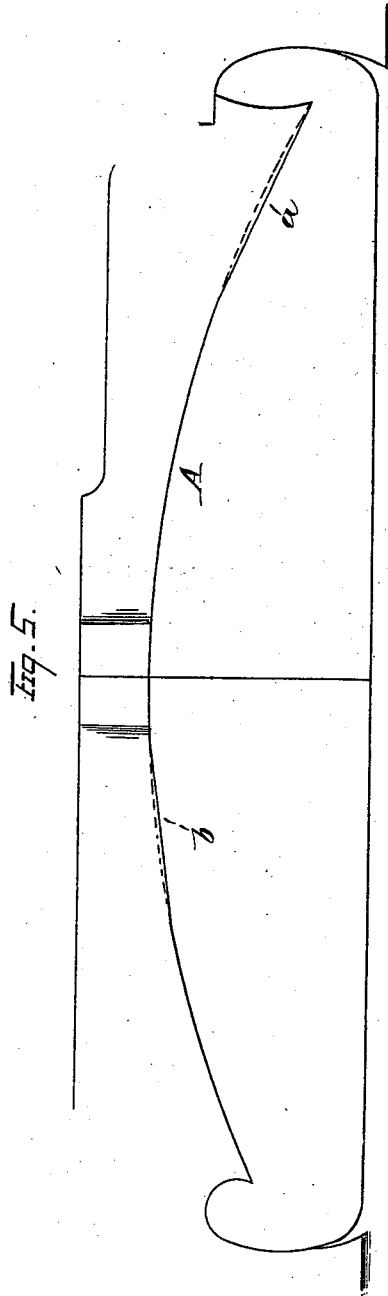
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UNITED STATES PATENT OFFICE.

WILLIAM W. WELLS, OF NORWALK, OHIO, ASSIGNOR TO THE DAUNTLESS MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **209,843**, dated November 12, 1878; application filed July 17, 1878.

To all whom it may concern:

Be it known that I, WILLIAM W. WELLS, of Norwalk, in the county of Huron and State of Ohio, 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to certain improvements in sewing-machines; and it consists, first, in the combination, with a shuttle fitting loosely in its carrier, of a shuttle-race formed with an inclined abutment at the end of the shuttle-stroke, which projects inwardly, and is adapted by the lateral bearing of the shuttle against the same to cause the latter to fit closely within its carrier. This inclined abutment, when formed on the forward end of the shuttle-race, accomplishes a threefold result: first, it causes the machine to make each stitch complete, at whatever rate of speed it may be operated; secondly, it prevents all irregularity of stitch, otherwise caused by the varying momentum of a shuttle fitting loosely in its carrier and moving at different rates of speed; thirdly, it obviates any noise otherwise occurring as the carrier is reversed in its movement, and which is caused by reason of the shuttle sliding loosely in its carrier. When this inclined abutment is formed on that part of the shuttle-race which corresponds to the end of the return-stroke of the carrier its service is simply to prevent the noise which is caused by the shifting of the shuttle from one end of its carrier to the opposite end under the action of the reverse movement of the latter, whether the same be the reversal of the forward or return stroke of the carrier and its shuttle.

The invention consists, secondly, in the combination, with a take-up, of a spring-metal staple, having parallel horizontal arms made in a single piece therewith, and formed as loop-guides, said staple being adjustable to and from the take-up, and its arms being respectively adapted to permit the thread to be

inclosed in the loops, by being laterally passed between the free extremity of the curved portion and the main body of each arm. This construction permits the staple to be varied in its position, in order to cause it to conform to slight variations in the structure of machines, and also permits it to be fastened at that point on the same machine which shall enable it to best serve its purpose. This point of position may vary from the thirty-second to the one-hundredth of an inch; and the staple must be adjusted accurately to the same, in order that the thread may be properly taken from the shuttle and the slack duly held. This is apparent, since the function of the staple is to assist the take-up in taking the thread from the heel of the shuttle exactly at the right time, so that a loose stitch may not result from its being detained too long, and so that the thread may be drawn from the spool only at the completion of the stitch. This construction also permits the thread to be readily inclosed within the loop portions of the arms of the staple, without passing it endwise through an eye or eyes, as in the process usually termed "threading."

Referring to the drawings, Figure 1 is a reverse view of the bed-plate of a machine, representing the first part of my invention. Fig. 2 is a detail view, representing only the shuttle-race, the shuttle, and shuttle-carrier. Fig. 3 is a front-end view of the head of the machine, exhibiting the second part of my invention. Fig. 4 is a detail perspective view of the adjustable staple formed with its spring-loops. Fig. 5 is a view representing in detail a shuttle-race having the two inclined surfaces, and made on a larger scale than the previous figures, for the purpose of clearly showing the principle of this part of the invention. The dotted lines represent the form of the ordinary curved shuttle-race at the points where said inclined surfaces are made according to my improvement.

The shuttle-race A is formed with the two inclined abutments *a* and *b*, the former being in that part of the race which corresponds to the forward end of the shuttle-stroke, while the latter is in that part of the race which cor-

responds to the end of the return-stroke of the shuttle. These inclined abutments project inwardly or toward the shuttle, and are adapted to cause the shuttle B, which fits loosely within its carrier C, to bear closely against the same as it comes into engagement with either of said inclined planes.

The shuttle-race shown in the drawings is formed curved in the arc of a circle whose center is the pivot *d*, upon which the carrier-lever D is secured, excepting the said two inclined abutments, which project inwardly from the line of curve formed on the main body of the shuttle-race.

In the instance of a straight shuttle-race these inclined abutments *a* and *b* would be formed on the same at the proper points, and to the same effect as in the case of the curved shuttle-race.

The shuttle fits loosely enough in its carrier to permit of the passage of the thread between the two, and is adapted to take its thread in the usual manner. Immediately upon the release of the thread-loop therefrom the shuttle comes into lateral engagement with the inclined abutment *a* at the forward end of the shuttle-race, and by its bearing against the same the shuttle is forced to fit closely in its carrier.

Whatever may be the momentum caused by varying speeds at which the machine may be run, the shuttle is not affected in the distance or length of its forward stroke, and hence each stitch is made complete and regular with the other stitches, though the operation of the machine varies in speed. The shuttle is also by this means prevented from being suddenly thrown from the rear to the forward end of its carrier, as the latter is reversed in its movement from a forward to a return stroke, and hence the noise occurring by reason of such shifting of the shuttle within its carrier is obviated.

When the shuttle-carrier changes at the opposite end of its stroke from a backward to a forward movement, the inclined abutment *b*, by reason of the bearing of the shuttle against the same, causes the shuttle and carrier to be fitted closely together, and thus all noise apt to occur by reason of the free shifting of the shuttle from the forward to the rear end of the shuttle-carrier is prevented.

The take-up E is of any suitable character,

and operates in connection with the staple F, which latter is formed of spring metal, having parallel upper and lower horizontal arms, *f*, made in single piece therewith, and located in the same vertical plane, said arms being respectively formed as loop-guides, and adapted to permit the thread to be inclosed within the latter by being laterally passed between the free extremity of the curved portion and the main body of each arm.

A slot, *g*, is made in the stem of this staple, which is adapted to allow a screw, G, or other suitable fastening to secure said staple in adjustment to or from the take-up. The thread is slipped beneath both the arms of the spring-loop, and hence all necessity of threading through eyes is obviated. By reason of this adjustment of the staple the spring-loops are brought into accurate operative position under all circumstances, so that the thread may be taken from the heel of the shuttle at the exact instant required, in order to prevent any loose stitch, and also so that the slack is properly regulated.

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

1. In a sewing-machine, the combination, with a shuttle, a shuttle-lever, and shuttle-carrier, rigidly secured thereto, of a shuttle-race, the inner surface or track of which is provided with an inclined abutment, projecting within the same at a point corresponding to the extreme throw or travel of the nose of the shuttle, whereby the nose of the shuttle will be forced snugly against the shuttle-carrier at the end of every stroke of the shuttle-lever, substantially as set forth.

2. The combination, with the take-up of a sewing-machine, of a sheet-metal staple provided with an elongated slot in one end, and its opposite end bifurcated and bent back into loops, the extreme ends of which are resilient, to allow of the introduction and retention of the thread within said sheet-metal looped guides, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 11th day of July, 1878.

WILLIAM WASHINGTON WELLS.

Witnesses:

C. A. PRESTON,
J. R. PERKINS.