No. 812,410. PATENTED FEB. 13, 1906.

G. H. DIMOND & W. F. DIAL.

ROTARY LOOP TAKER FOR SEWING MACHINES.

APPLICATION FILED FEB. 6, 1902.

2 SHEETS—SHEET 1.

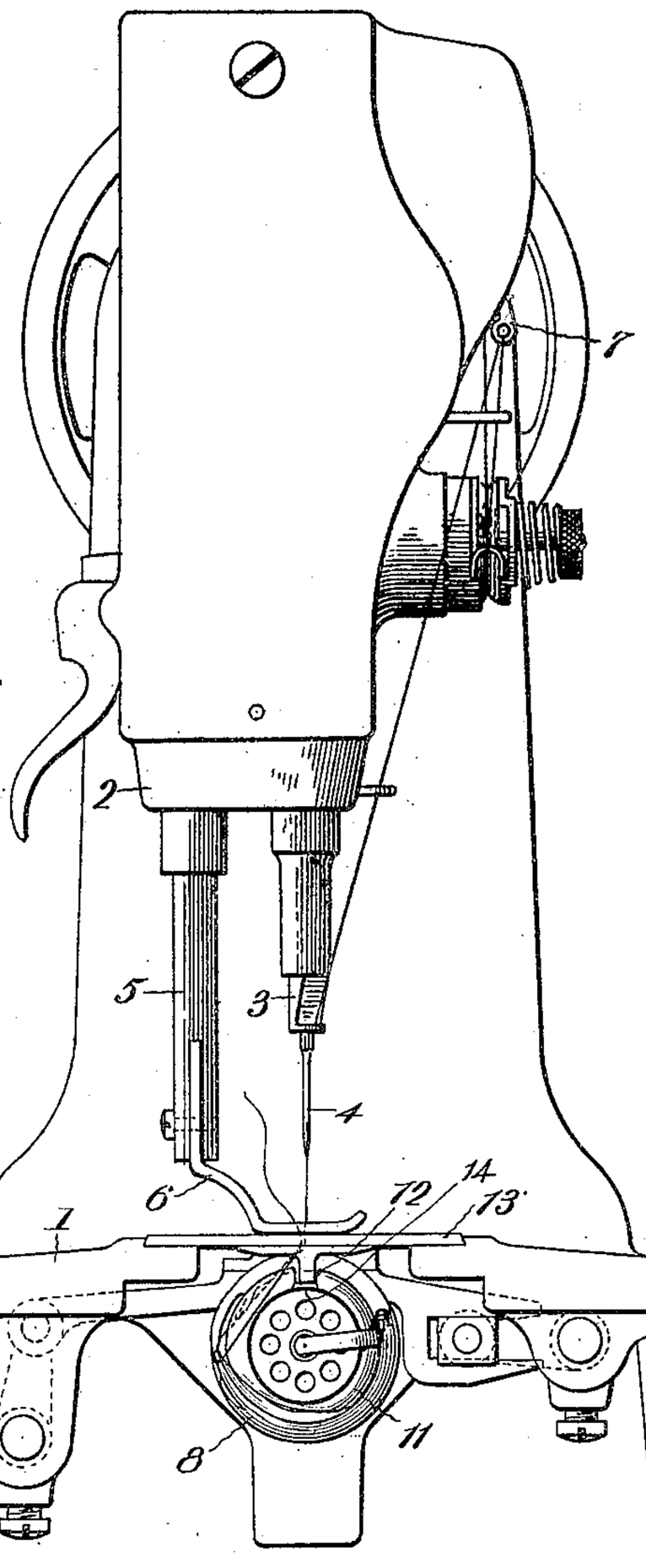


Fig. 1.

Fig. 2.

WITNESSES:

J. F. Fincke.

Adah V. Briggs.

INVENTORS

George H. Dimond

Wilbur F. Dial

BY

Wm. F. Fincke

ATTORNEY

No. 812,410. PATENTED FEB. 13, 1906.

G. H. DIMOND & W. F. DIAL.

ROTARY LOOP TAKER FOR SEWING MACHINES.

APPLICATION FILED FEB. 6, 1902.

2 SHEETS—SHEET 2.

Fig. 3.

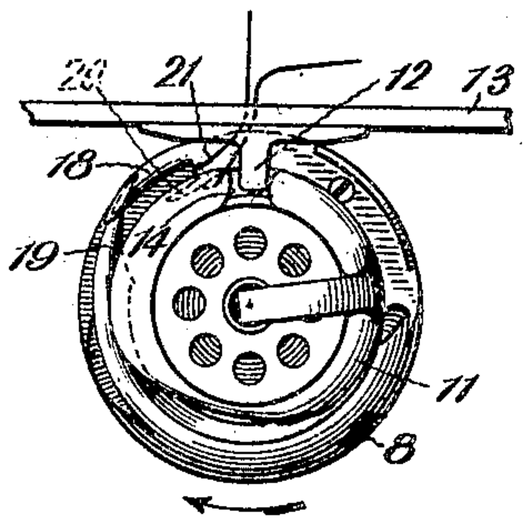


Fig. 4.

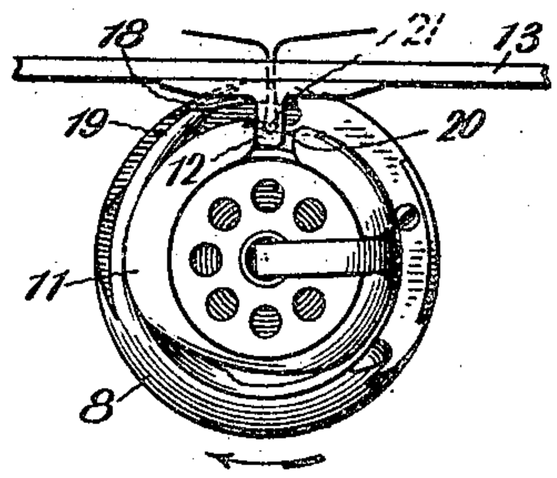


Fig. 5.

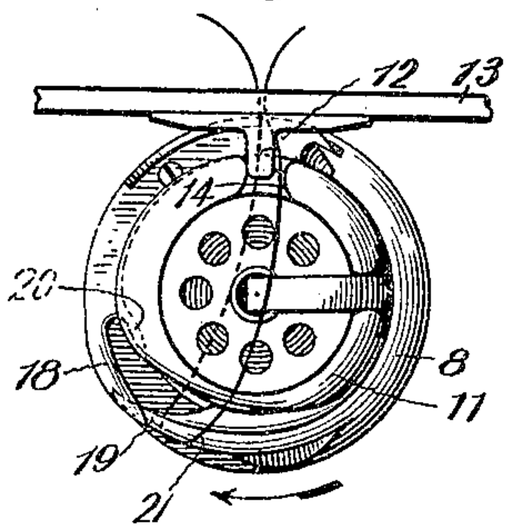


Fig. 6.

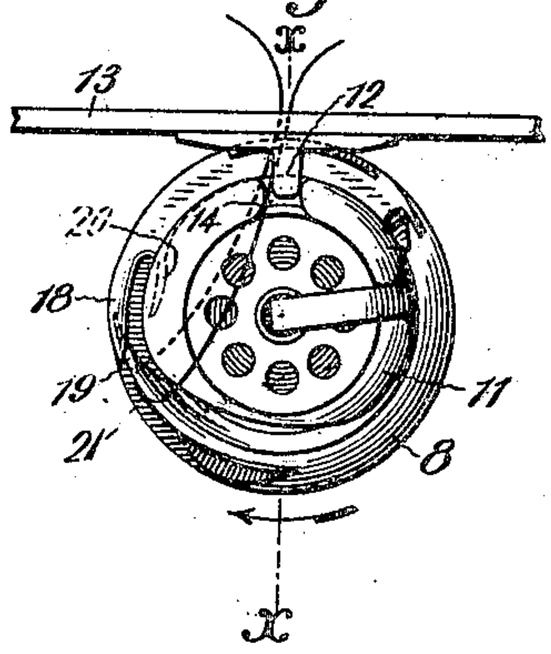


Fig. 7.

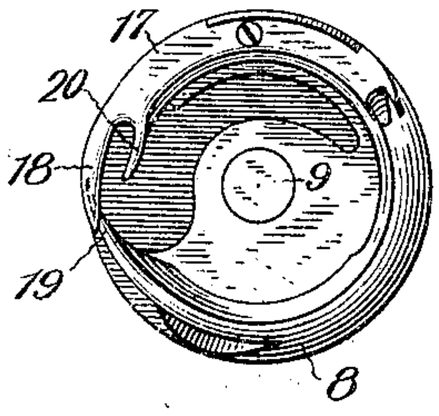
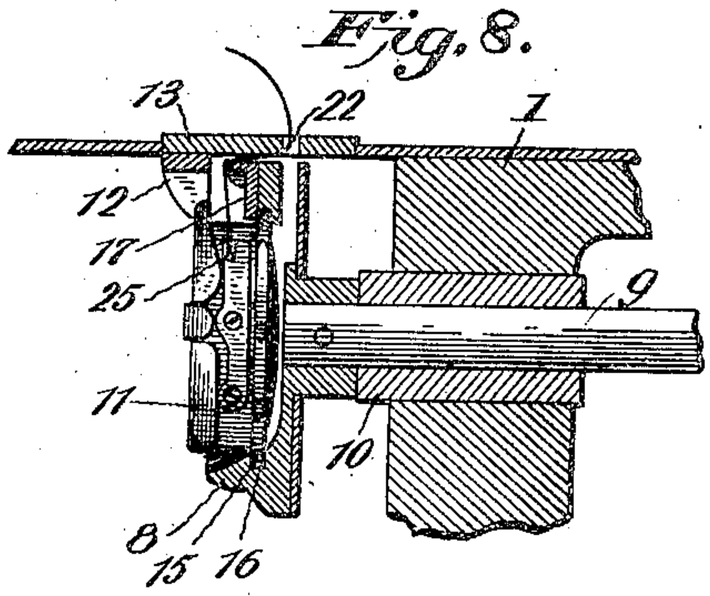


Fig. 8.



WITNESSES:

J. F. Finch.

Adah Bugge.

INVENTORS

George H. Dimond

Wilbur F. Dial

BY

Wm. F. Finnell

ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE H. DIMOND AND WILBUR F. DIAL, OF BRIDGEPORT, CONNECTICUT, ASSIGNORS TO WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ROTARY LOOP-TAKER FOR SEWING-MACHINES.

No. 812,410. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed February 6, 1902. Serial No. 92,866.

To all whom it may concern:

Be it known that we, GEORGE H. DIMOND and WILBUR F. DIAL, citizens of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Improvement in Rotary Loop-Takers for Sewing-Machines, of which the following is a full, clear, and exact description.

Our invention relates to sewing-machines of the lock-stitch variety which employ a rotary loop-taker or hook, and has for its object to provide means for controlling and taking care of the loop of thread after it has been passed around the bobbin-case and cast off of the loop-seizing point of the loop-taker, during which operation the take-up is withdrawing the thread loop to complete the stitch, thereby taking care of the thread loop by positive means until the stitch is nearly completed, so that twisting or snarling of the thread loop after passing over the bobbin is effectually prevented.

The loop-taker has a projection or hook (which we will hereinafter refer to as a "loop-controller") located in such relation to the loop-seizing point of the loop-taker that the thread loop in drawing off of said loop-seizing point by the action of the take-up will be cast over or around such controller and be thereby guided and controlled on its way to the needle-aperture in the throat-plate.

In the accompanying drawings, illustrating our invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation of a Wheeler & Wilson high-speed sewing-machine equipped with our improved loop-taker. Fig. 2 is a perspective view of our loop-taker and a portion of its shaft detached. Figs. 3, 4, 5, and 6 are end elevations of the loop-taker and throat-plate, illustrating various positions of the loop-taker in the formation of the stitch. Fig. 7 is an end elevation of the loop-taker with the bobbin-case removed. Fig. 8 is a sectional elevation taken in the plane of the line *x x*, Fig. 6.

In describing our improvement only such limited reference will be made to the well-known parts of a sewing-machine as is deemed necessary for a proper understanding of our invention.

1 is the machine bed-plate surmounted by the overhanging arm 2, 3 is the needle-bar, 4 is the needle, 5 is the presser-bar, 6 is the presser-foot, and 7 is the take-up, all of which parts are or may be constructed and operated in the usual or any approved manner.

8 is the loop-taker of this invention, secured on the end of a horizontal shaft 9, which is journaled in suitable bearings 10 beneath the bed-plate 1 and actuated in the usual or any approved manner.

11 is the bobbin-case, journaled circumferentially within the loop-taker 8 in a manner similar to that shown and described in United States patent of W. F. Dial, No. 480,181, dated August 2, 1892. The bobbin-case 11 is restrained against turning by a lug 12, depending from the under side of the throat-plate 13 within a notch 14, formed in the bobbin-case.

In order to journal the bobbin-case circumferentially within the loop-taker, as described in the patent previously referred to, a portion of the periphery of the loop-taker is made separable from the body part, so as to permit the circular rib 15, (see Fig. 8,) formed on the bobbin-case, to be introduced within the circular groove 16, formed in the internal wall of said loop-taker. This separable portion 17 is herein referred to as a "gib." The free end of the gib 17 terminates in a finger 18, which extends in front of the loop-seizing point 19 of the hook and somewhat overlaps the same and serves as a guard for said point. The function of the hook-point guard 18 is to prevent the hook from seizing the bobbin-thread and also to insure the previously-formed and nearly-drawn-up needle-thread loop against being again caught by the hook-point.

20 is the loop-controller, preferably formed integral with the gib 17. Said loop-controller comprises a finger located near the loop-seizing point 19 of the loop-taker and pointed in a direction approximately opposite to that of the latter and opposite the direction of rotation. The position of said loop-controller 20 is such that as the thread loop 21 draws off of the point 19 of the loop-taker after being passed around the bobbin-case 11, as shown in Figs. 1 and 6, said thread loop will be caught by the loop-controller 20, as shown in Fig. 3.

The rotation of the loop-taker is of course

in the direction indicated by the arrow, and the operation of passing the thread loop around the bobbin is similar to that shown and described in the previously-mentioned patent to W. F. Dial.

The speed of the rotating loop-taker and the speed of the loop in withdrawing through the needle-aperture 22 in the throat-plate 13 by the action of the take-up 7 are practically synchronous, so that said loop will be delivered by said controller as fast as the take-up requires without causing any strain on the thread, thus insuring proper control of the loop. When the loop-taker arrives at a position with the loop-controller 20 opposite the needle-aperture 22, as shown in Fig. 4, said controller will simply draw out of and away from what little remains of the loop and permit the take-up 7 to finish the stitch.

The operation of my improved construction is as follows: The loop-seizing point 19 of the hook enters the thread loop 21, and the further rotation of the hook carries the thread loop around the bobbin-case in a manner common to the formation of lock-stitches by the employment of an under bobbin-thread and rotary loop-taker. As that portion of the needle-thread which passes over the front side of the bobbin is cast over the bobbin and off from the hook-point it is cast over the top of the loop-controller 20, so that the take-up in its movements to finish the stitch will draw the thread loop around the loop-controller 20, effecting a control of the loop until the controller in its rotation has passed out of the thread loop, leaving the loop free to be drawn up into the material by the action of the take-up.

From the foregoing it will be understood that at one rotation of the loop-taker the hook-point seizes the thread loop, and the hook in its rotation casts such thread loop over and around the bobbin, off the hook-point, and around the controller 20 and that the further rotation of the hook carries the controller 20 out of the thread loop, freeing the latter from control by the hook and leaving it free to be drawn up through the needle-hole in the throat-plate of the sewing-machine. The withdrawal of the controller from the thread loop occurs when the loop-taker in its alternate rotation is in substantially the same position as when the hook-point seizes the thread.

The needle-actuating mechanism, take-up, and loop-taker are all timed and driven primarily from a common driving or main shaft in the usual or any approved manner.

We have shown and described our invention in connection with a loop-taker adapted to rotate in a vertical plane; but we do not wish to be limited in this respect, since our improvements are also applicable to other varieties of rotating loop-takers. Also while we have illustrated our loop-controller as formed with the removable gib on the loop-taker it is obvious that said loop-controller may be made a part adjacent to and rotating synchronously with the loop-taker, the removable gib merely serving as a convenience in this respect.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a lock-stitch sewing-machine having a bed-plate, the combination of an independent take-up, a reciprocating eye-pointed needle arranged above the bed-plate, a bobbin, a bobbin-case, a rotary loop-taker arranged below the bed-plate and containing the bobbin-case, a needle loop-seizing point on said loop-taker, an adjacent guard extending in front of said point and overlapping it and adapted to prevent fouling of the needle and bobbin threads and loop-taker, and a needle loop-controller finger projecting rearwardly toward the said point to catch the loop of needle-thread as it draws off the point and carry it into the line of descent of the needle whence it slips off and is drawn up by the take-up to finish the stitch.

In testimony whereof we have hereunto set our hands this 28th day of January, A. D. 1902.

GEORGE H. DIMOND.
WILBUR F. DIAL.

Witnesses:
G. I. Van Horn,
C. N. Worthen.