V. J. VAN HORN.

ORNAMENTAL STITCH SEWING MACHINE.

APPLICATION FILED FEB. 13, 1911.

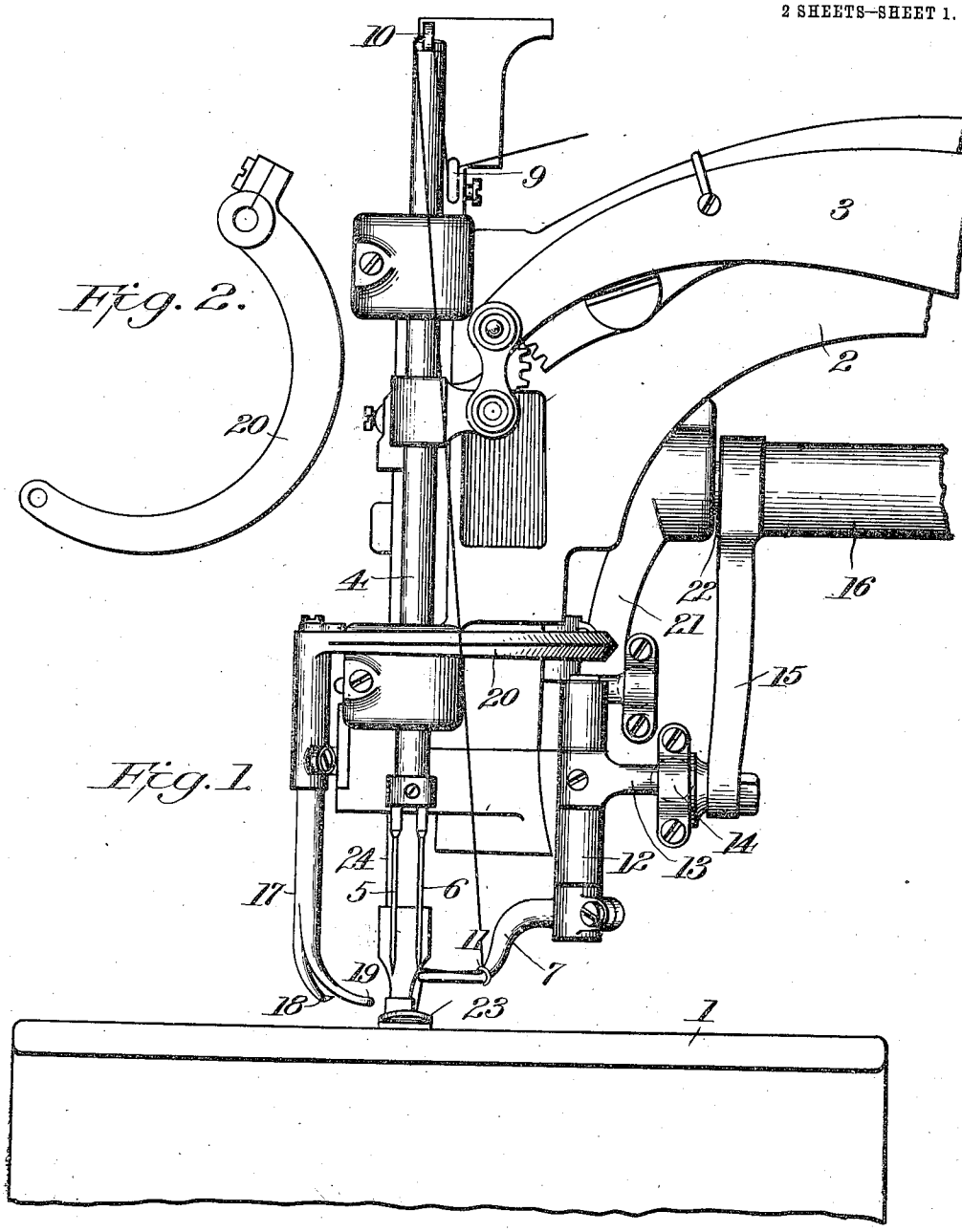
1,046,510.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.

Fig. 2.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 3.

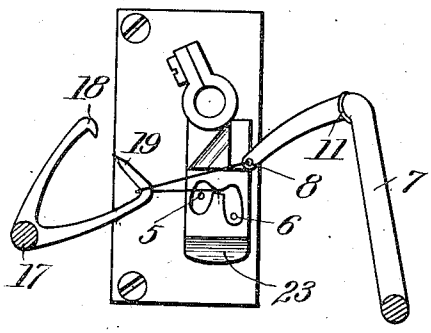


Fig. 5.

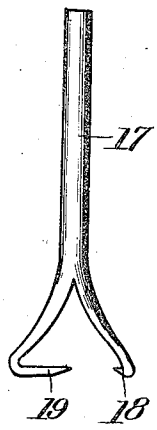


Fig. 4.

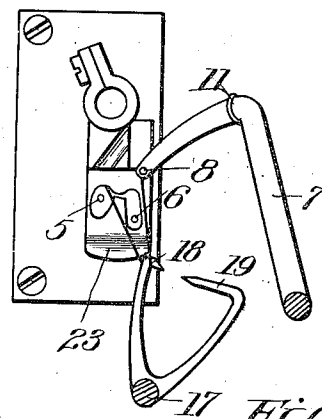


Fig. 8.

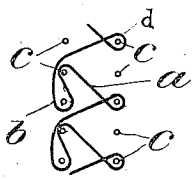


Fig. 6.

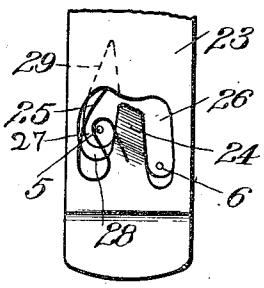
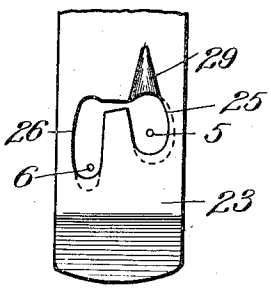


Fig. 7.



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UNITED STATES PATENT OFFICE.

VANDIVER J. VAN HORN, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ORNAMENTAL-STITCH SEWING-MACHINE.

1,046,510. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed February 13, 1911. Serial No. 608,375.

To all whom it may concern:

Be it known that I, VANDIVER J. VAN HORN, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Ornamental-Stitch Sewing-Machines, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

The invention relates to new and useful improvements in ornamental stitch sewing machines of the type shown in my co-pending application, Serial No. 373,069, filed May 11th, 1907.

An object of the invention is to provide a sewing machine having a plurality of needles with thread-manipulating devices for guiding an ornamental thread and forming therein loops, together with a presser foot, which is constructed so as to give sufficient room for the manipulation of the loop, and to aid in guiding said loop so that the same is entered by one of the needles.

In the drawings which show by way of illustration one embodiment of the invention,—Figure 1 is a front view of a portion of the head of a sewing machine having my improvements applied thereto; Fig. 2 is a plan view of the arm for supporting the thread-manipulating hooks; Fig. 3 is a plan view in detail, showing the presser foot, the position of the needles, and one position of the thread-manipulating devices; Fig. 4 is a view similar to Fig. 3, with the thread-manipulating devices in another position; Fig. 5 is a detail view of the thread-manipulating hooks; Fig. 6 is an enlarged top plan view of a portion of the presser foot; Fig. 7 is an enlarged view of the under side of a portion of the presser foot; Fig. 8 is a diagrammatic view of one form of stitching which can be made by my improved mechanism.

The work support 1, the overhanging arm 2, the needle lever 3 and the needle bar 4, are of the usual construction. The needles 5 and 6 are carried by the lower end of the needle bar. Any suitable stitch-forming mechanism may be provided for coöperating with said needles. The thread arm 7 is provided with a thread-guiding eye 8 at its forward end, through which passes an ornamental thread. Said thread is led from the source of supply through a suitable tension and thread guides to a stationary thread guide 9, at the head of the machine, and from this stationary thread guide 9 said thread passes through a thread guide 10 on the upper end of the needle bar, and is thence led to a thread-guiding wire 11 on the arm 7, and from the thread-guiding wire to the thread-guiding eye 8. Said thread-guiding arm 7 is so disposed as to reciprocate in the path between the needles 5 and 6, and from a position in front of said needles to a position in rear thereof. As herein shown, said thread arm 7 is carried by a short shaft mounted in a bracket 12. Said shaft is oscillated by means of an arm 13, which is connected through the link 14 to an arm 15, rigid on a sleeve 16. Said sleeve 16 may be oscillated by any suitable mechanism.

Coöperating with the thread-guiding arm 7 is a thread-manipulating device 17, which, as herein shown, is forked at its lower end, and provided with thread-engaging hooks 18 and 19. Said thread-manipulating device 17 is carried by an arm 20, shown in plan view in Fig. 2. Said arm 20 is pivoted at the rear of the machine, and is oscillated by an arm 21 carried by a shaft 22, which supports the sleeve 16. Said shaft 22 may be oscillated by any suitable mechanism.

The operating mechanisms for the arm 7 and the thread-manipulating device 17, are preferably so timed that the thread-manipulating device 17 is reciprocated once to every two reciprocations of the thread arm 7, and also of the needle bar 4.

In the operation of my device, the thread-guiding arm 7 moves to a position in front of the needles, and the ornamental thread carried thereby is engaged by the hook 19, and a loop formed therein, as shown in Fig. 3. The movement of the hook 19 is preferably such that both strands of the loop in the ornamental thread are carried by the hook 19 to a point in rear of the path of the needle 5. When the thread-manipulating device 17 moves to the position shown in Fig. 4, the hook 18 engages the ornamental thread, and forms a loop therein, which is so positioned that the needle 6 will enter between the strands of said loop. The presser foot 23 is carried by the usual presser bar 24, and is provided with an opening to receive the needles. Said presser foot has a rearwardly projecting tongue 24, which

tapers downwardly toward the lower surface of the presser foot. Said projecting tongue 24 divides the opening in the presser foot, forming needle slots 25 and 26. The needle slot 25 is cut away, so as to give considerable clearance on the outside of the needle 5. Said needle slot 25 is also slightly cut away in front of the needle, and tapered downward as at 28, to a point near the bottom of the foot. The object of this construction of the needle slot 25 is to assist in positioning and guiding the loop in the ornamental thread formed by the hook 19. Inasmuch as the hook 19 carries both strands of the loop formed thereby, to the rear of the needle 5, when said hook is retracted, said loop is carried around the outside of said needle, which is at this time entering the fabric. The cut away portion 27 in the presser foot allows the loop in the ornamental thread plenty of room, whereby it may be swung around to the outside of the needle without placing the needle under any strain. The long hook 19 serves also to retain the loop until it has been brought around in front of the needle, and when said loop is dropped from the hook 19, the curved, tapered, cut-away portion 28 will engage the neck of the loop and guide the same, so that the needle in its next descent will penetrate said loop, as shown in Fig. 8. In order to assist in the manipulation of the loop in the ornamental thread, I have also cut away or grooved the presser foot on its under side in the rear of the needle opening 25, as shown at 29, Fig. 7, and also as shown in dotted lines in Fig. 6. This cut away portion of the under side of the foot, gives sufficient space for the ornamental thread, so that as it is carried underneath the foot by the feed of the fabric, said loop will not be distorted or displaced by the presser foot.

In Fig. 8, I have shown diagrammatically, a seam which may be made by my improved device. In this figure, two needle punctures *c*, *c*, are made by one descent of the needles 5 and 6. The ornamental thread is indicated by *a*, and the loop formed by the long hook 19 is indicated by *b*, while the loop formed by the hook 18 is indicated by *d*. It will be seen that both strands of the loop *b* are carried back of one needle puncture, in one line of stitching and the loop is so laid that the next needle puncture in said line of stitching will enter said loop and secure the same to the fabric.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A sewing machine including in combination a plurality of needles, thread-manipulating devices for guiding and forming a loop in an ornamental thread, said thread-manipulating devices operating to position both strands of said loop in the rear of the path of one of the needles, and a presser foot having a portion cut away at the side of said needle to allow free positioning of said loop for the entrance of said needle on the next reciprocation thereof.

2. A sewing machine including in combination, a plurality of needles, thread-manipulating devices for guiding and forming a loop in an ornamental thread, said thread-manipulating devices operating to position both strands of said loop in the rear of the path of one of the needles, and a presser foot having needle openings, a projecting member located between the needles and separating said needle openings, said presser foot having a downwardly tapering curved portion in front of said needle for guiding the loop in the ornamental thread, and a cut away portion at one side of the needle to allow free manipulation of said loop.

3. A sewing machine including in combination, a plurality of needles, thread-manipulating devices for guiding and forming a loop in an ornamental thread, said thread-manipulating devices operating to position both strands of said loop in the rear of the path of one of the needles, and a presser foot having needle openings, said presser foot having a groove in its under face extending from the rear side of the needle opening toward the rear portion of said foot.

4. A sewing machine including in combination, a plurality of needles, thread-manipulating devices for guiding and forming a loop in an ornamental thread, said thread-manipulating devices operating to position both strands of said loop in the rear of the path of one of the needles, and a presser foot having needle openings, a projecting member located between the needles and separating said needle openings, said presser foot having a downwardly tapering portion in front of one of said needles for guiding the loop in the ornamental thread, a cut away portion at one side of said needle to allow free manipulation of said loop, and a groove in the under face of said presser foot extending from the rear of said needle openings toward the rear of said presser foot.

In testimony whereof I affix my signature, in presence of two witnesses.

VANDIVER J. VAN HORN.

Witnesses:
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EARL O. QUIMEL.