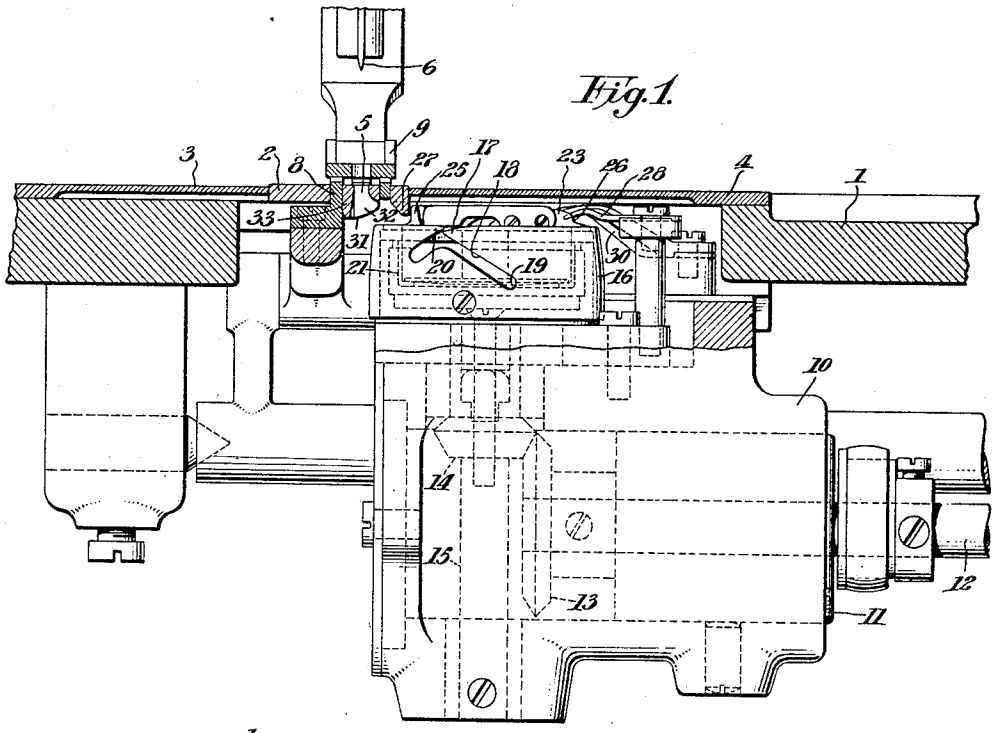
Sept. 16, 1930. W. N. PARKES 1,775,913

NEEDLE THREAD CONTROLLING DEVICE FOR SEWING MACHINES

Filed Jan. 15, 1929

Fig. 1.



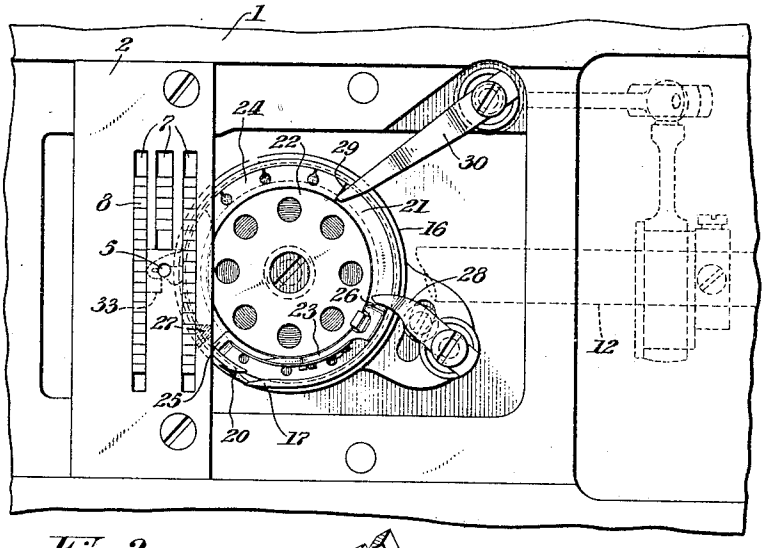


Fig. 2.

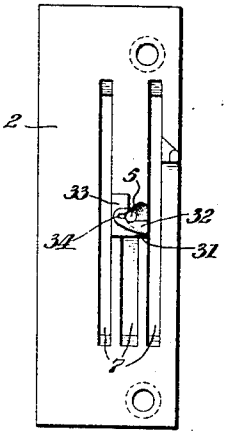


Fig. 3.

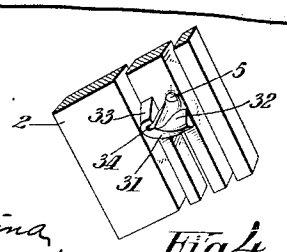


Fig. 4.

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1,775,913

UNITED STATES PATENT OFFICE

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NEEDLE-THREAD-CONTROLLING DEVICE FOR SEWING MACHINES

Application filed January 15, 1929. Serial No. 332,613.

This invention relates to improvements in sewing machines having rotary loop-takers of more particularly the vertical-axis lock-stitch type.

When employing loop-takers containing a relatively large mass of lower thread, a desideratum to permit high speed of operation is to rapidly spread the needle-thread loop seized by the loop-taker beak, thereby facilitating the casting of the needle-thread loop about the lower-thread mass. It is the object of this invention to provide needle-thread loop-controlling means insuring the rapid spreading of the loops in the preliminary stages of casting said loops about the lower-thread mass.

To the attainment of the object of the invention, the throat-plate of the machine is provided on its underside with a depending lug positioned to overlie the beak of the loop-taker as said beak enters the needle-thread loop. This lug presents an abutment face for the needle-thread loop seized by the loop-taker whereby, in the continued rotation of the loop-taker, said thread-loop is forced rapidly along the inclined side or sides of the beak toward the throat thereof.

To accommodate the upward movement of the limb of the seized thread-loop which is cast across the upper rim of the thread-mass carrier, the abutment face of the lug is inclined downwardly toward the rear edge of the lower corner thereof nearest to the loop-taker axis and the lower edge of the lug is inclined upwardly towards that corner. The throat-plate lug is furthermore provided with a vertically directed groove adjacent the throat-plate needle-aperture upon the side of the needle opposite to the loop-taker side thereof for the purpose of receiving a limb of the needle-thread loop during the formation thereof, thereby directionally controlling the position of the other limb for entrance by the loop-taker beak. To this end, the lug has a portion extending substantially at a right angle to the abutment face of the lug, in which lug portion the thread-guiding groove referred to is provided.

In the accompanying drawings, Fig. 1 is a front elevation, partly in section, of the loop-taker end of a sewing machine containing the present improvement. Fig. 2 is a top plan view of the cloth-plate of the machine, with the usual slide-plate omitted to expose the loop-taker mechanism. Fig. 3 is a bottom plan view of the throat-plate of the sewing machine. Fig. 4 is a perspective view of the portion of the throat-plate having the needle-thread loop controlling lug. Certain features of this loop-taker mechanism are shown more in detail in an application filed Jan. 15, 1929, with Serial No. 332,610.

Referring to the drawings, the present improvement is shown as embodied in a sewing machine having a cloth-plate 1, upon which is suitably secured a throat-plate 2 and the slide-plates 3 and 4, disposed at opposite sides of the throat-plate. The throat-plate 2 is provided with the usual aperture 5 for a vertically reciprocatory needle 6, and with parallel slots, as 7, in which operates a feed-dog 8 which may be actuated in any well-known manner to advance the work. Opposed to the feed-dog is the usual presser-foot 9.

Suitably secured to the underside of the cloth-plate is a loop-taker bracket 10 in which is fixed a bushing 11 constituting the journal for the forward end of a horizontally disposed actuating shaft 12, which rotates once only for each complete needle-reciprocation. Secured upon the end of the shaft 12 is a bevel-gear 13 in mesh with a similar gear 14 upon the vertically disposed loop-taker shaft 15 journaled in the bracket 10. The gears 13 and 14 are proportioned to impart two rotations to the shaft 15 for each rotation of the actuating shaft 12.

Detachably secured to the upper end of the shaft 15 is a loop-taker 16 provided with a loop-seizing beak 17 of which one side 18 is inclined downwardly from the point of the beak toward the throat 19 thereof, i. e., inclined downwardly toward the bottom of the loop-taker. The loop-taker 16 is also provided with a loop-discharging spur 20 directed oppositely to the beak 17 and upon which

spur the needle-thread loop passes when it is drawn off said beak 17.

Journaled within the loop-taker 16 is a bobbin-carrier 21 within which is disposed a thread-carrying bobbin 22. The bobbin-carrier is provided with flanges 23 and 24, extending above the orbit of the loop-taker beak. The flange 23 is disposed at the loop cast-off side of the loop-taker and terminates at its opposite ends in stop-shoulders 25 and 26, the stop-shoulder 25 being positioned to engage a stop-lug 27 depending from the throat-plate, whereby the bobbin-carrier is restrained against rotation with the loop-taker. The stop-shoulder 26 is adapted to engage a fixed stop-finger 28 to limit the rotation of the bobbin-carrier in a direction opposite to the direction of rotation of the loop-taker. The other flange 24 of the bobbin-carrier is disposed at the loop cast-on side of the loop-taker and terminates in a stop-shoulder 29 which is intermittently engaged by an opener-finger 30 suitably actuated to oscillate the bobbin-carrier in a direction to provide a thread-loop passage past the stop-lug 27. By referring to Fig. 2 of the drawings, it will be observed that the loop-taker axis is disposed in a vertical plane extending through the throat-plate needle-aperture in a direction substantially transverse to the direction of feed.

Depending from the under side of the throat-plate 2 is a needle-thread loop controlling lug 31 in position to overlie the loop-taker beak as it is entering the needle-thread loop. This lug 31 has a front loop-abutment face 32 extending generally transversely of the length of the feed-slots 7 and disposed directly rearward of the needle-aperture 5, said abutment face being inclined downwardly in a direction toward the lower rear edge of the lug and also inclined laterally toward the rear corner of the edge nearest the loop-taker axis. Furthermore, the lower edge of the lug is inclined upwardly from the needle-aperture toward the lug-edge nearest to the bobbin-carrier.

As the loop-taker beak 17 enters the loop of thread presented by the needle, it carries the loop against the abutment-face 32 of the lug. The loop being thus held against freely following the point of the beak 17, said loop is forced toward the throat 19 of the beak and is therefore rapidly spread to facilitate the casting of the loop about the bobbin-carrier. The described inclines of the abutment-face are designed to accommodate the separation of the loop-limbs during the loop-spreading operation and particularly the upward movement of the loop-limb cast across the upper side of the bobbin.

Upon the side of the needle-aperture 5 directly opposite to the loop-taker side thereof, the lug 31 is provided with a lug-extension 33 disposed substantially at right angles to the abutment-face 32. Formed in this lug-extension on the side thereof next to the throat-plate needle-aperture is a vertically disposed groove 34 adapted to receive a limb of the needle-thread loop and thereby directionally present the other limb for entrance by the loop-taker beak.

Having thus set forth the nature of the invention what I claim herein is:

1. In a sewing machine having a throat-plate provided with a needle-aperture, a thread-carrying needle reciprocating through said aperture, a vertical-axis rotary loop-taker below the throat-plate having a loop-seizing beak of which one side is inclined downwardly from its point toward the throat thereof, a bobbin-carrier journaled in said loop-taker, and a thread-loop controlling lug depending from the throat-plate in position to overlie the loop-taker beak as it enters the needle-thread loop, a face of said lug constituting an abutment which in the continued rotation of the loop-taker forces a limb of the needle-thread loop toward the throat of the beak to thereby assist in rapidly spreading said needle-thread loop, the abutment face of said lug being inclined downwardly toward the opposite face of the lug and the lower edge of said face being inclined upwardly toward the bobbin-carrier to provide for the upward movement of the limb of the needle-thread loop cast across the upper side of the bobbin-carrier.

2. In a sewing machine having a throat-plate provided with a needle-aperture, a thread-carrying needle reciprocating through said aperture, a vertical-axis rotary loop-taker below the throat-plate, provided with a loop-seizing beak, a bobbin-carrier journaled in said loop-taker extending above the orbit of the loop-taker beak, and a thread-loop controlling lug depending from the throat-plate in position to overlie the loop-taker beak as it enters the needle-thread loop, said lug having a needle-thread loop abutment face extending generally transversely of the throat-plate directly rearward of said needle-aperture and said abutment face being inclined in substantially transverse directions toward the lower rear corner of the lug nearest the loop-taker axis to provide for the upward movement of the limb of the needle-thread loop cast across the upper side of the bobbin-carrier.

3. In a sewing machine having a throat-plate provided with a needle-aperture, a thread-carrying needle reciprocating through said aperture, a vertical-axis rotary loop-taker below the throat-plate having a loop-seizing beak of which one side is inclined downwardly from the point toward the throat thereof, a bobbin-carrier journaled in said loop-taker, and a thread-loop controlling lug depending from the throat-plate in position to overlie the loop-taker beak as it enters the needle-thread loop, a face of said lug con-

stituting an abutment which in the continued rotation of the loop-taker forces a limb of the needle-thread loop toward the throat of the beak to thereby assist in rapidly spreading said needle-thread loop, said lug having a vertically directed groove upon the side of the needle opposite to the loop-taker side thereof to receive a limb of the needle-thread loop during the formation thereof to directionally control the position of the other limb for entrance by the loop-taker beak.

In testimony whereof, I have signed my name to this specification.

WILLIAM NELSON PARKES.