No. 898,403. PATENTED SEPT. 8, 1908.

D. W. COREY.

NEEDLE GUARD FOR SEWING MACHINES.

APPLICATION FILED NOV. 23, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

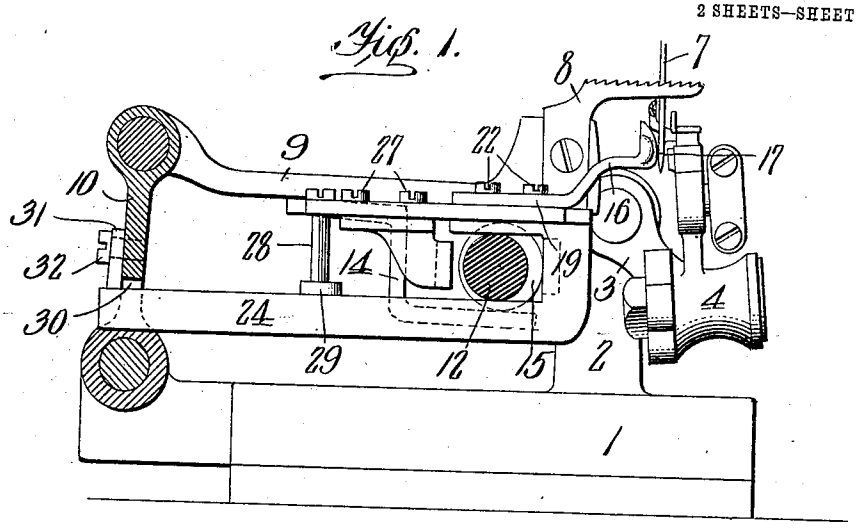
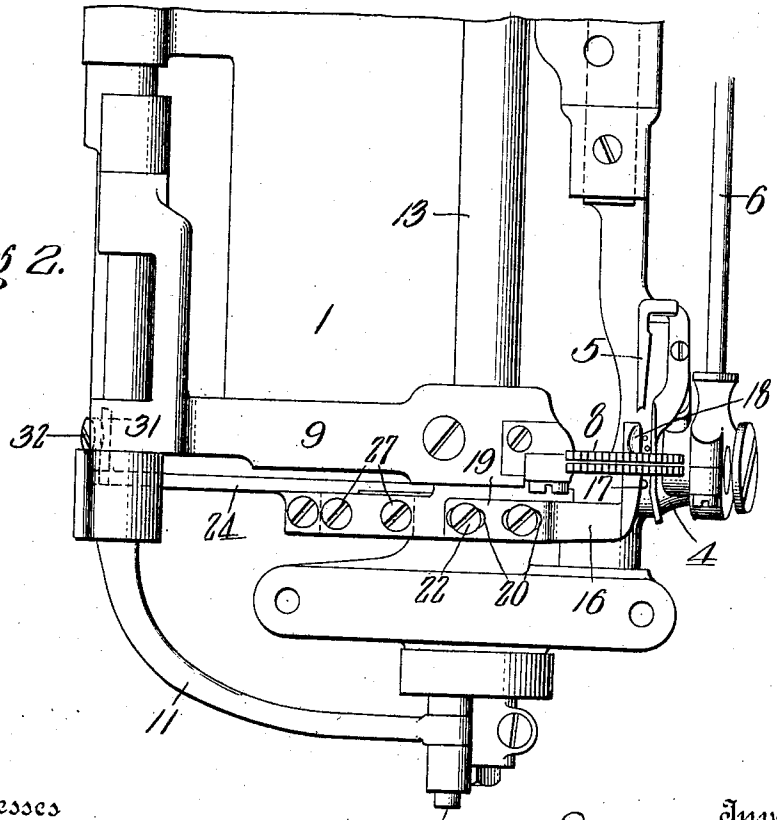



Fig 2.

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2 SHEETS—SHEET 2.

Fig. 3.

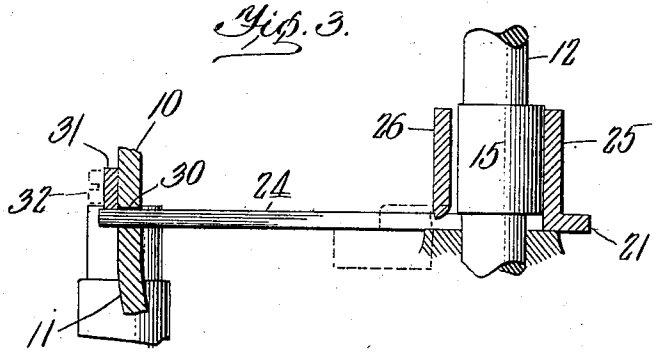



Fig. 4.

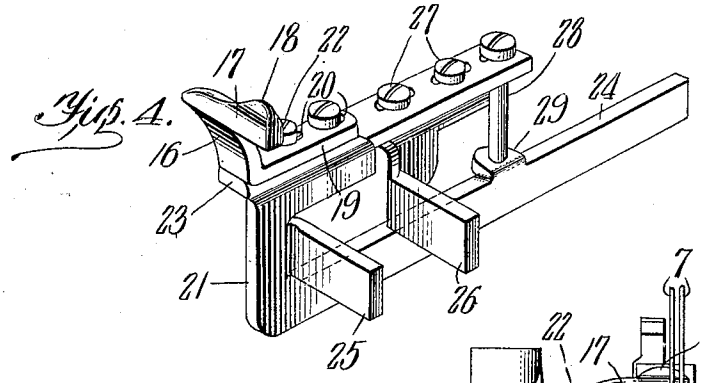



Fig. 5.

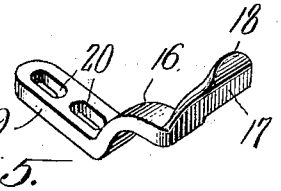
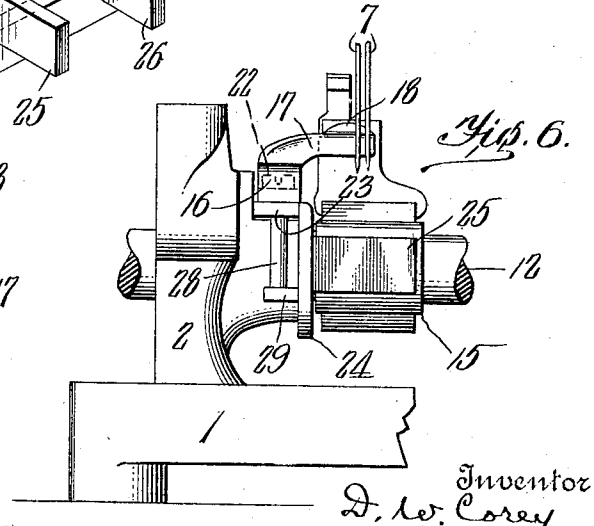



Fig. 6.

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# UNITED STATES PATENT OFFICE.

DANIEL W. COREY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## NEEDLE-GUARD FOR SEWING-MACHINES.

No. 898,403. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed November 23, 1906. Serial No. 344,755.

*To all whom it may concern:*

Be it known that I, DANIEL W. COREY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Needle-Guards for 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.

My invention relates to improvements in needle guards for sewing machines and the means for operating the same, and more particularly to that class of needle guards which coöperate with the needle after the same has passed through the work plate and holds said needle so that the same will not be struck by the looper.

An object of my invention is to provide a needle guard that is movable into and out of operative relation with the needle or needles of the sewing machine; furthermore to make the operating mechanism for said needle guard adjustable so that a proper timing and positioning of the parts may be secured.

My invention consists in the novel parts improvements and arrangements hereinafter shown and described.

In the accompanying drawings which form a part of this specification:—Figure 1 is an end view of the lower portion of a sewing machine embodying my improvements, certain of the parts being shown in section. Fig. 2 is a top plan view of the parts as shown in Fig. 1. Fig. 3 is a sectional detail view showing the eccentric and the manner of operating the needle guard thereby. Fig. 4 is a detail perspective view of the needle guard and its supporting means. Fig. 5 is a detail perspective view of my improved needle guard. Fig. 6 is a front elevation of the needle guard and the means for operating the same, also showing the relation of the needle guard to the needles.

Referring to the drawings which show one embodiment of my invention, the bed plate 1 has rising therefrom a bracket 2 in which is mounted a looper support 3, having pivoted thereto a looper carrier 4. Said looper carrier 4 is provided with a looper 5 which receives its oscillating movement to engage the needle loop from a link 6 in the usual manner. The needles 7, 7 are of the usual construction and are indicated in the drawing merely for the purpose of showing the location of the other parts of my mechanism. The feed dog 8 is carried by the feed bar 9 which is pivoted to a rocking frame 10, at its rear end. Said rocking frame receives its backward and forward movement from a link 11 connected to a crank 12 carried by the main shaft 13 of the machine. Said feed bar 9 has a depending and forwardly projecting bracket 14, between which and said feed bar operates an eccentric 15. Said eccentric as the shaft 13 rotates, gives the rising and falling movement to the feed bar, while the link 11, through the rocking frame, gives the feeding movements to the feed dog.

My improved needle guard 16, comprises a flat needle engaging face 17, having a beveled lip 18 at its upper edge. The shank 19 of said needle guard is provided with slots 20, by means of which said needle guard is adjustably secured to the needle guard carrier 21, by means of screws 22, 22. Said needle guard carrier 21, as illustrated in the present embodiment of my invention, is formed from a flat bar 23, to which the needle guard is directly connected and said bar 23 has a downwardly and rearwardly extending member 24, which has formed therein and extending at right angles thereto a lug 25. Said bar 23 is also provided with a lug 26 which is adjustably connected thereto by screws 27, 27. Passing through the rear end of the bar 23, is a bolt 28 which is threaded into a lip 29, formed integral with the member 24. Said bolt 28 serves to steady the free end of the bar 23.

When my needle guard carrier is assembled in the machine, the rear end of the member 24 extends through a recess 30 in the frame 10 of the feeding mechanism. A plate 31, secured by a screw 32 of said frame, extends over the member 24, as shown in Figs. 1 and 2. The object of this plate is to maintain the part 24 in position on the seat formed in the rocking frame 10. The lugs 25 and 26 extending at an angle to the carrier, are located in front of and in rear respectively, of the eccentric 15, which gives the rising and falling movement to the feed dog. The needle guard extends into a position directly in rear of the needles and slightly below the path of movement of the looper, as clearly shown in Fig. 1.

In the operation of my machine, the needles descend, and rising slightly throw out the usual loop for the looper. As the looper

moves forward to enter the needle loops, the needle guard is moved forward by the eccentric 15 into a position to rest against the rear side of the needles and hold said needles out of the path of the looper, and if deflected out of their true path to force them back into correct position. The needle in passing through such material as leather has a tendency to deflect its point backward in line with the feed and the needle guard is timed to act to force the needle back in proper position before the point of the advancing looper reaches a position in line with the needle, thereby preventing a collision between looper and needle, causing it to break off and at the same time enabling the point of the looper to enter the loop of thread thrown out by the needle.

It will be noted that the lugs 25 and 26, which are engaged by the eccentric 15 to move the needle guard, are spaced a greater distance than the diameter of said eccentric. The result of this spacing of the parts, is a lost motion, so that the needle guard will remain in its forward position until the eccentric has covered the space between the lugs 25 and 26, and engages the rear lug 26 to move said needle guard backward. The space between the lugs 25 and 26 may be adjusted by loosening the screws 27, 27, and by this adjustment, the timing of the movement of the needle guard may be changed. When the lugs are brought closer together, the time which the needle guard remains in contact with the needles, is shortened, and on the other hand when the lugs are moved farther apart, the time of contact of the needle guard with the needles is increased. By loosening the screws 22, 22, the position of the needle guard relative to its carrier, may be adjusted, and consequently the forward position of said needle guard relative to the needles, changed, which is desirable for different sizes of needles, or those of different diameters.

In the operation of the machine, the shaft as viewed in Fig. 1, moves in a counter clockwise direction, and it will be noted that the needle guard is moved forward into contact with the needles prior to the movement of the feed dog into engagement with the fabric, and that said needle guard remains substantially at rest until the feed dog has practically completed its feeding movement.

While I have used the term "looper" throughout the description and claims, I would have it understood that where this term is referred to broadly, said term is intended to cover any form of loop-taker which would coöperate with the needle to form stitches.

It is obvious that minor changes in the construction shown and described, may be made without departing from the spirit of my invention.

I claim:—

1. In a sewing machine, the combination with stitch-forming mechanism including a needle and a looper, of a needle guard, and means for operating said needle guard to move it into and out of contact with the needle including devices which may be adjusted so that the timing of the movement of said needle guard may be changed; substantially as described.

2. In a sewing machine, the combination with stitch-forming mechanism including a needle and a looper, of a needle guard, a carrier therefor, and means for operating said carrier to move the needle guard into and out of contact with the needle, including devices which may be adjusted so that the timing of the movement of the carrier may be changed; substantially as described.

3. In a sewing machine, the combination with stitch-forming mechanism including a needle and a looper, of a needle guard, a carrier therefor, means for adjustably securing the needle guard to its carrier, and means for operating said carrier to move the needle guard into and out of contact with the needle; substantially as described.

4. In a sewing machine, the combination of a work support with stitch-forming mechanism including a needle and a looper, of a needle guard located beneath the work support, a carrier therefor, means for adjustably securing the needle guard to its carrier, and means for operating said carrier, including a device which may be adjusted so that the timing of the movement of the carrier may be changed.

5. In a sewing machine, the combination with stitch-forming mechanism including a needle, and a looper, a needle guard, a carrier therefor, said needle guard having a slotted shank whereby the same is adjustably secured to said carrier, and means for operating said carrier to move the needle guard into and out of contact with the needle; substantially as described.

6. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a needle guard, a carrier therefor, said needle guard having a slotted shank whereby the same is adjustably secured to said carrier and means for operating said carrier, including devices which may be adjusted so that the timing of the movement of the carrier may be changed; substantially as described.

7. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a feed bar, means for giving said feed bar its backward and forward movement, and an eccentric for giving the feed bar its rising and falling movement, of a needle guard, a carrier therefor independent of the feed bar, spaced lugs carried by said needle guard carrier and coöperating

with said eccentric for operating said carrier, and means whereby the distance between said lugs may be adjusted; substantially as described.

8. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a feed bar, means for giving said feed bar its backward and forward movement, and an eccentric for giving the feed bar its rising and falling movement, of a needle guard, a carrier therefor independent of the feed bar, means for adjustably connecting the needle guard to its carrier, and means carried by the needle guard carrier and coöperating with said eccentric for operating said carrier; substantially as described.

9. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a feed bar, means for giving said feed bar its backward and forward movement, and an eccentric for giving the feed bar its rising and falling movement, of a needle guard, a carrier therefor independent of the feed bar, means for adjustably connecting the needle guard to its carrier, and spaced lugs carried by said needle guard carrier and coöperating with said eccentric for operating said carrier; substantially as described.

10. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a feed bar, means for giving said feed bar its backward and forward movement, and an eccentric for giving the feed bar its rising and falling movement, a needle guard, a carrier therefor independent of the feed bar, means for adjustably connecting the needle guard to its carrier, spaced lugs carried by said needle guard carrier and coöperating with said eccentric for operating said carrier, and means whereby the distance between said lugs may be adjusted; substantially as described.

11. In a sewing machine the combination with stitch-forming mechanism including a needle and a looper, a needle guard, a bar on which said needle guard is supported, a depending member carried by said bar, laterally extending lugs, projecting from said depending member, and an eccentric coöperating with said lugs whereby said carrier is operated; substantially as described.

12. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a needle guard, a bar on which said needle guard is supported, a depending member carried by said bar, laterally extending lugs projecting from said depending member, an eccentric coöperating with said lugs whereby said carrier is operated, and means whereby the distance between said lugs may be adjusted; substantially as described.

13. In a sewing machine the combination with stitch forming mechanism including a needle and a looper, a needle guard, a bar on which said needle guard is adjustably supported, a depending member carried by said bar, laterally extending lugs projecting from said depending member, and an eccentric coöperating with said lugs whereby said carrier is operated; substantially as described.

14. In a sewing machine the combination with stitch forming mechanism including a needle, a looper, a needle guard, a bar on which said needle guard is supported, a depending and rearwardly extending member carried by said bar, a headed bolt extending through said bar and engaging said rearwardly extending member, laterally projecting lugs extending from said depending member and an eccentric coöperating with said lugs, whereby said carrier is operated; substantially as described.

15. In a sewing machine, the combination with a needle and a loop-taker, of a movable needle guard, provided with means whereby its time of contact with the needle may be adjusted; substantially as described.

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

DANIEL W. COREY.

Witnesses:
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R. B. WANDAS.