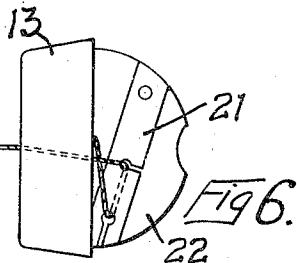
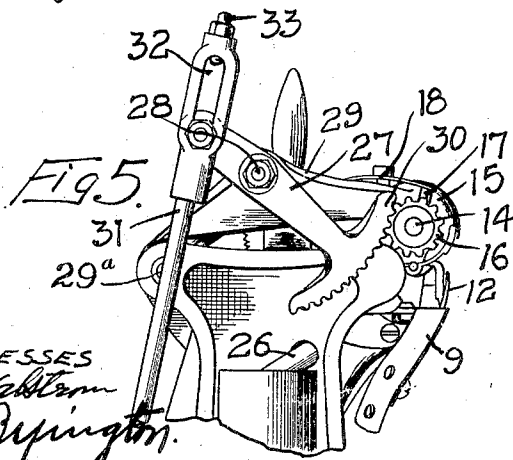
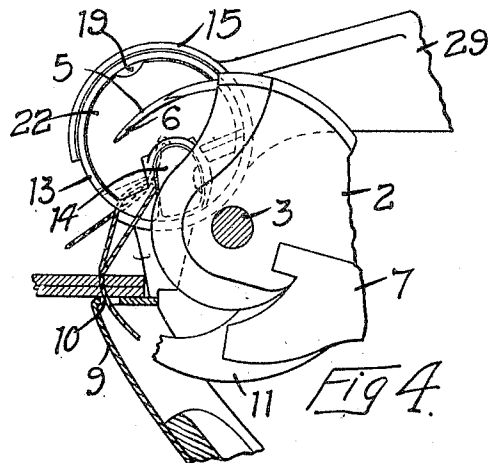
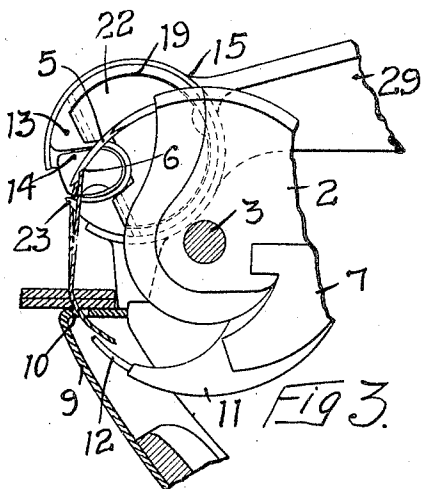
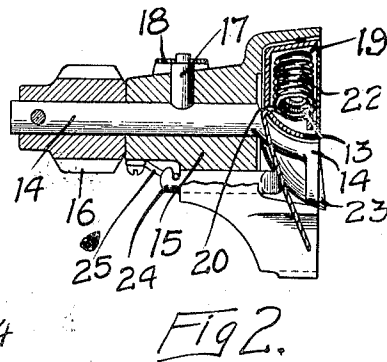
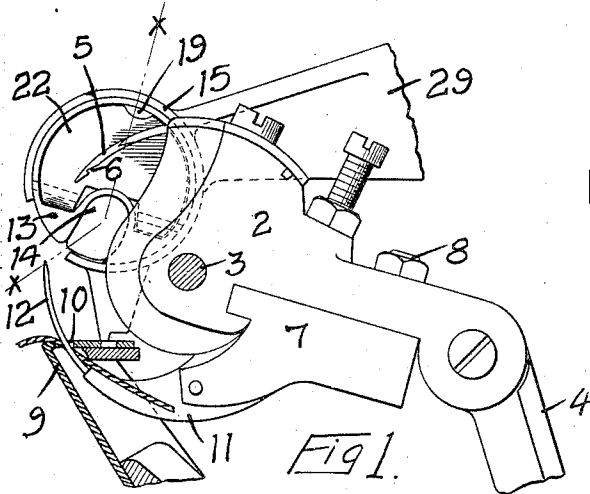


B. H. THEISEN & G. S. KELLER.
SHUTTLE MECHANISM.
APPLICATION FILED MAY 13, 1909.

982,548.

Patented Jan. 24, 1911



WITNESSES
W. H. Watson
J. H. Bepington

INVENTORS
BRUNO H. THEISEN
GEORGE S. KELLER
BY *Paul & Paul*
ATTORNEYS

UNITED STATES PATENT OFFICE.

BRUNO H. THEISEN AND GEORGE S. KELLER, OF MINNEAPOLIS, MINNESOTA.

SHUTTLE MECHANISM.

982,548.

Specification of Letters Patent.

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Application filed May 13, 1909. Serial No. 495,742.

To all whom it may concern:

Be it known that we, BRUNO H. THEISEN and GEORGE S. KELLER, both of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Shuttle Mechanism, of which the following is a specification.

The object of this invention is to provide an improved shuttle device for use in connection with a stitching machine and particularly one that is adapted for a leather stitching machine, in which oscillating jaws are provided, one carrying an awl and the other a needle, the awl being first forced through the material in one direction and the needle passed through the hole in the other direction to engage and draw the thread through the material.

Our invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a detail view of a portion of a work plate and the oscillating needle and awl jaws of a machine embodying our invention; Fig. 2 is a sectional view on the line X—X of Fig. 1, Fig. 3 is a detail view, illustrating the needle drawing the thread through the material, Fig. 4 is a similar view, illustrating the position of the parts when the shuttle has detached the thread from the needle, Fig. 5 is a view, illustrating the mechanism for operating the shuttle, Fig. 6 is an edge view of a shuttle with the cover open and showing the upper thread tension.

In the drawing, 2 represents a jaw, loosely mounted on the shaft 3 and oscillated thereon by a rod 4, carrying a needle 5 provided with a notch 6. 7 is a secondary jaw secured to the jaw 2 by a bolt 8 and capable of oscillating on said bolt as a pivot to and from the jaw 2 for the purpose of feeding the material.

9 is a work plate having an opening 10 therein and 11 is a horn mounted on the jaw 7 and provided with an awl 12. This awl is adapted to pass up through the work plate and punch a hole through the material thereon during the downward oscillation of the jaw 2, and on the up-stroke of the jaw, the awl is withdrawn and the needle passed down through the hole in the material to engage the lower thread and pull it up to the position illustrated in Fig. 3.

The upper thread of the machine is carried by a shuttle and the threads are interlocked and the stitch completed in the manner, which we will now proceed to describe in detail.

13 is a shuttle having a stud 14 mounted in bearings 15 and carrying a pinion 16 (see Fig. 2). A plug 17 is held in engagement with the stud 14 by a spring 18 for the purpose of preventing too free movement of the shuttle. A pocket 19 is provided in the shuttle, wherein a coil of the upper thread is placed and led out therefrom through a hole 20, its feed being regulated by a tension device 21 on the cover 22 leading to the pocket. The cover 22 is of the usual construction, and is hinged at one side to a pivot pin shown in dotted lines in the drawings. Said cover fits closely within the shuttle casing and is held therein by friction. The cut away portion or notch in the outer edge of the cover serves as a means for forcing the cover from the shuttle casing to open position, as shown in Fig. 6. The free end of the thread is carried around the edge of the shuttle. The shuttle is provided with a horn 23 that is adapted to pass through a loop formed in the lower thread when the needle draws it up through the hole in the material that is being stitched and the revolution of the shuttle by the mechanism described, will lift the thread off the needle and carry it around the shuttle and over the upper thread, that is, the movement of the shuttle will cause the upper thread to be passed through the loop formed in the lower thread, so that when the stitch is drawn up, loops will be formed in both threads and they will be interlocked at a point about midway of the hole in the material. It is not necessary to use a bobbin in connection with this shuttle, as the waxed thread will maintain its spiral form, as indicated at Fig. 2, without becoming twisted or snarled, and will be fed out of the pocket of the shuttle as it is revolved.

It will be noted in Fig. 2, that the point of the horn 23 projects slightly beyond the face of the shuttle to insure its engagement with the thread and the interlocking of one thread with the other. The shuttle is pressed or held outwardly and the horn moves to a point where it will gather up the thread and detach it from the needle by means of a sliding pin 24 that is kept in contact with the shuttle by a spring 25.

The needle segment 2 moves across the shuttle race and the shuttle will be pressed outward by the spring 25 against the needle segment. Inasmuch as the needle segment 5 always overlaps the shuttle race to a certain extent, said segment will serve as a bearing for the shuttle and prevent its dropping out or being forced out of the shuttle race.

To prevent the upper thread from becoming stiff and inflexible, in a low temperature, we provide a torch device, having a wick 26 beneath the shuttle, in position to keep the walls of the pocket warm.

To operate the shuttle, we provide a lever 15 27, pivoted at 28 on an arm 29 and having a curved rack bar 30 at one end adapted to engage the teeth of the pinion 16 (see Fig. 5). The arm 29 is pivoted at 29^a to the frame of the machine, and is adapted to be raised 20 to permit access to or the removal of the shuttle. The opposite end of the lever 27 has a sliding connection with a pitman rod 31 by means of a slot 32 therein. An adjustable screw device 33 is provided for the 25 purpose of regulating the travel of the end of the lever in the slot and consequently timing the movement of the shuttle. The pitman rod is operated by a cam mechanism, which we have not thought necessary to 30 illustrate in this application.

We claim as our invention:—

1. A stitching machine including in combination, a supporting member having a shuttle race formed therein, a needle segment 35 located in front of said shuttle race and moving in a plane substantially parallel with the front face of said shuttle race, a needle carried by said segment, a shuttle located in said shuttle race, and having a 40 loop engaging horn, and means for forcing said shuttle and horn outwardly toward said needle segment.

2. A stitching machine including in combination, a supporting member, a shuttle 45 race formed in said supporting member, a needle segment located in front of said shuttle race, and moving in a plane substantially parallel with the front face of the shuttle race, a needle carried thereby, a shuttle 50 located in said shuttle race, and having an outwardly turned loop engaging horn, and means for yieldingly forcing said loop engaging horn beyond the face of the shuttle race, and into the path of the loop carried 55 by the needle.

3. A stitching machine including in combination, an arm, a shuttle race formed in

said arm, a shuttle mounted in said race, a driving stud for said shuttle rotatably 60 mounted in said arm, a pinion secured on said stud, means for engaging said pinion for rotating the same, a needle segment located in front of the shuttle race, and moving in a plane parallel with the face of the shuttle race, a needle carried thereby, and 65 means for pivotally supporting said arm whereby the same may be swung about its pivot for positioning the shuttle race for the removal of the shuttle.

4. A stitching machine including in combination, an arm, a shuttle race formed in 70 said arm, a shuttle mounted in said race, a shuttle operating stud rotatably mounted in said arm, a pinion secured on said stud, a lever pivotally carried by said arm and having a rack bar engaging said pinion, means 75 for oscillating said lever to rotate said pinion and shuttle, a needle segment located in front of the shuttle race, and moving in a plane substantially parallel with the face of the shuttle race, a needle carried thereby, 80 and means for pivotally supporting said arm whereby the same may be swung about its pivot to position the shuttle race for the removal of the shuttle.

5. A stitching machine including in combination, a supporting member, a shuttle race formed therein, a shuttle mounted in 85 said shuttle race, a shuttle operating stud rotatably mounted in said member, a pinion mounted on said stud, an oscillating lever having a rack bar engaging said pinion, an 90 operating rod adjustably connected with said lever, a needle segment located in front of said shuttle race, and moving in a plane substantially parallel with the face of the shuttle, and a needle carried thereby. 95

6. A stitching machine including in combination, a supporting member, a shuttle race formed therein, a shuttle mounted in 100 said race, means for operating said shuttle, including a pinion, an oscillating lever having a rack bar engaging said pinion, a stud carried by said lever, a rod having a loose 105 slotted connection with said stud, and means for adjusting the length of said slot for regulating the stroke of the rack bar.

In witness whereof, we have hereunto set our hands this 24th day of April, 1909.

BRUNO H. THEISEN.
GEORGE S. KELLER.

Witnesses:

JESSIE M. SULLIVAN,
J. A. BYINGTON.