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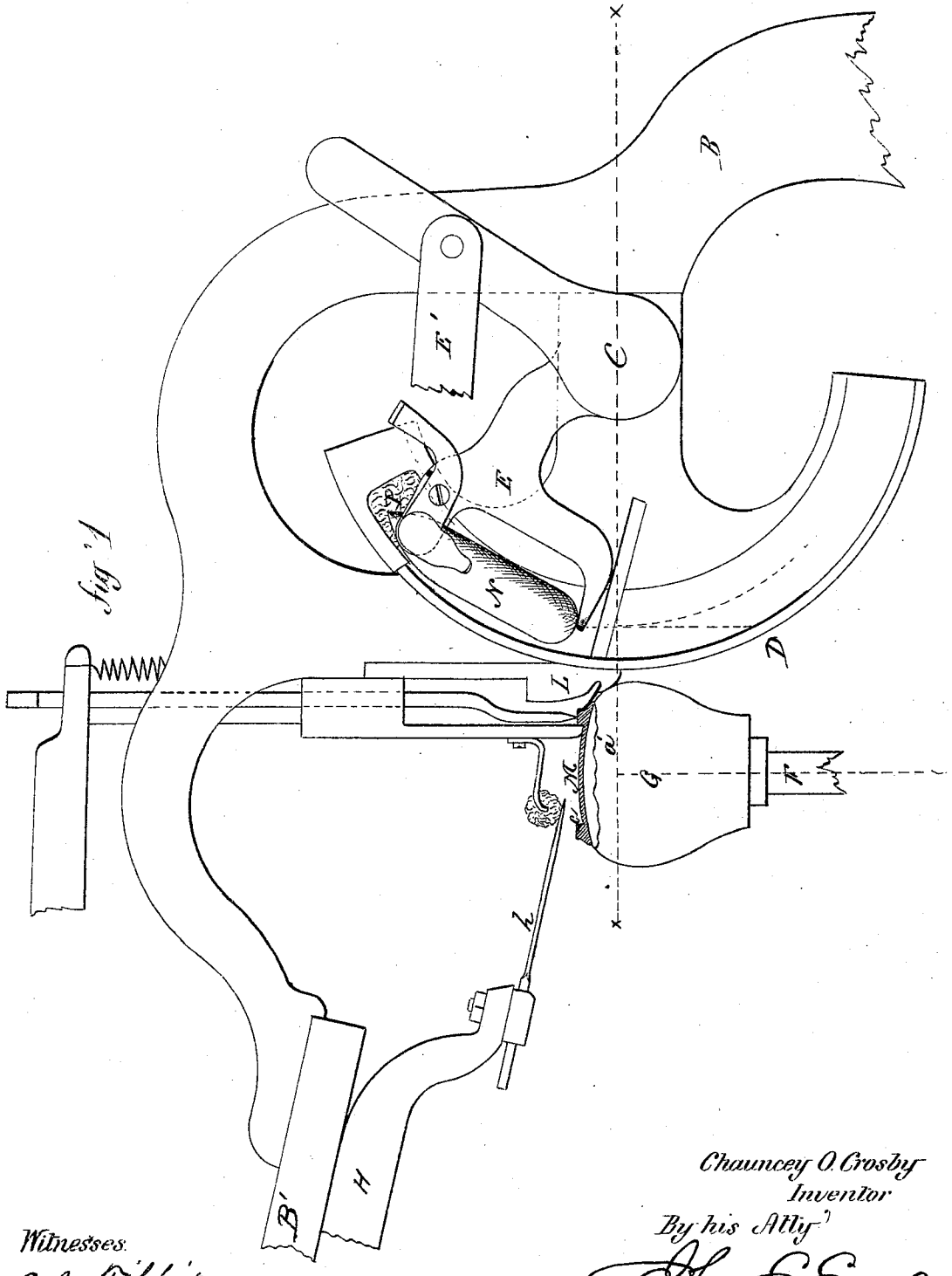
2 Sheets--Sheet 1.

C. O. CROSBY.

Improvement in Machines for Sewing Boots and Shoes.

No. 124,337. Patented March 5, 1872.



Witnesses.
A. J. Tibbits
J. H. Shumway

Chauncey O. Crosby
Inventor
By his Atty
John P. Earle

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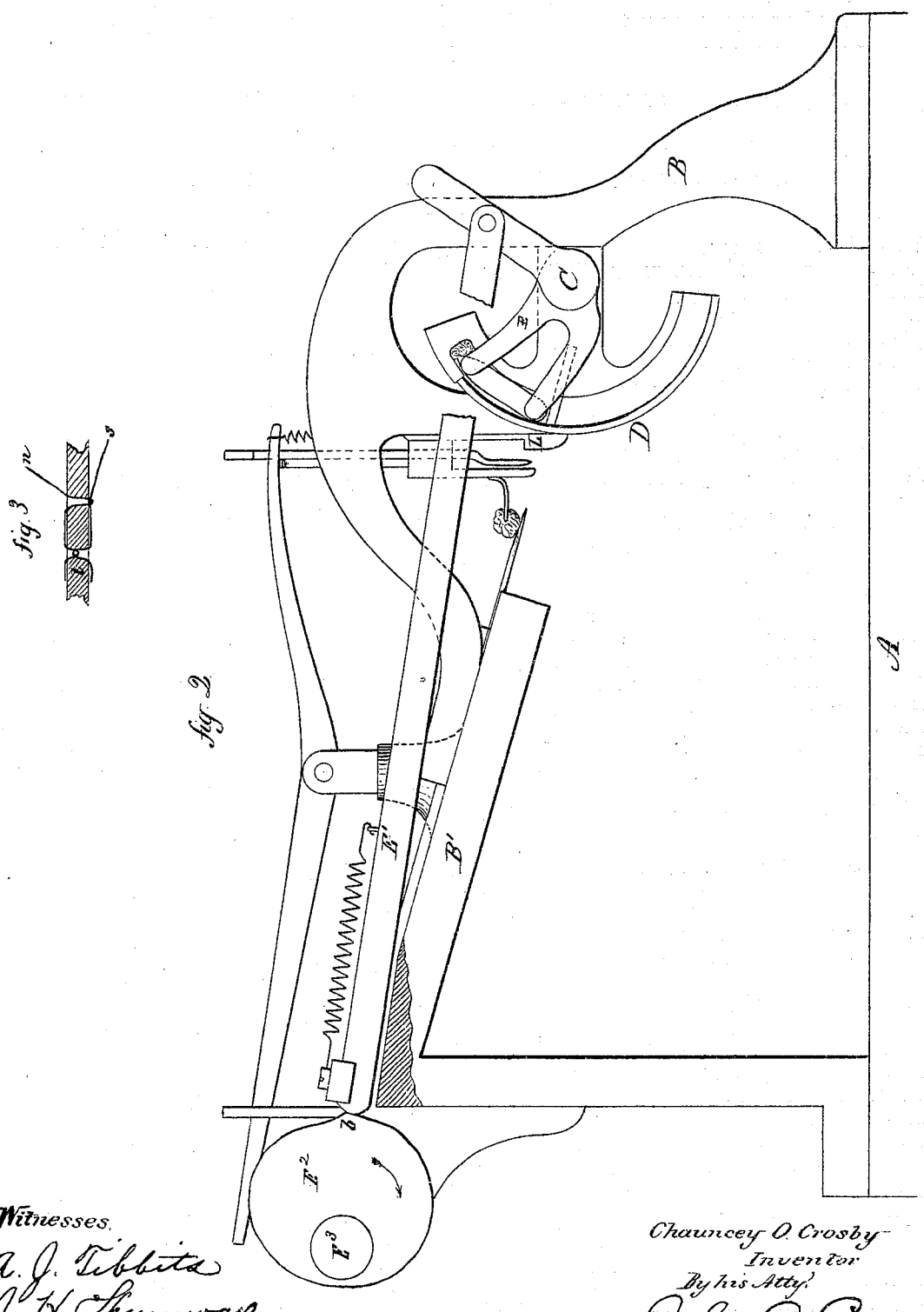

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UNITED STATES PATENT OFFICE.

CHAUNCEY O. CROSBY, OF MILFORD, ASSIGNOR TO THE CROSBY WELTED-AND-TURNED-SOLE SEWING-MACHINE COMPANY, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR SEWING BOOTS AND SHOES.

Specification forming part of Letters Patent No. 124,337, dated March 5, 1872.

To all whom it may concern:

Be it known that I, CHAUNCEY O. CROSBY, of Milford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Sewing Boots and Shoes; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents, in—

Figure 1, a side view of the needle, shuttle-race, and mechanism in immediate connection therewith, full size; and in Fig. 2, a side view of the machine on a reduced scale.

This invention relates to an improvement in machine for sewing boots and shoes, for turned work, or to secure the welt and upper to the sole for welted work, the object being to perform this work with what is known as the lock-stitch, to overcome the difficulties which exist in the use of the chain-stitch, it being well known that the elasticity which is unavoidable in the chain-stitch prevents that close or firm work which is desirable in boots and shoes, and which is attained by hand-stitching, which latter or non-elastic stitch the shuttle-stitch more nearly approaches.

This invention is an improvement upon and embodying some of the elements in the machine for which Letters Patent were granted to me May 23, 1869.

In sewing turned work, also in stitching the welt and upper to the insole, the point of the needle must enter a channel in one side of the sole and leave the sole at the same side, but near the edge of the sole; it therefore reciprocates in a path inclined to the path or plane occupied by the surface of the sole; and the object of my invention is to adapt a needle operating in this manner to operate with a shuttle to form a lock-stitch; and the first part of my invention consists in a shuttle-race arranged at the sole of the shoe, and in such a position that the needle passes through the race at an angle or diagonal to the path traversed by the shuttle, rather than at right angles to such path, as common in other sewing-machines. In order to insure the lock of the two threads being drawn into the work, the second part of the invention consists in imparting to the shuttle a retreating movement after the two threads have been drawn taut, and just as the needle is reaching its extreme back movement, and to such an extent that while the two threads are held taut the needle in the last part of its movement will draw the shuttle-thread into the work, causing the lock to lie within it. The third part of this invention, having for its object to prevent the wax from the thread adhering to the shuttle, consists in the arrangement of a lubricating device in connection with the shuttle-race, so that the point of the shuttle will receive a slight amount of lubrication at each throw, which lubrication is carried over the shuttle by the needle-thread as it passes from the point to the heel of the shuttle.

A represents the bed of the machine; B, the frame, upon which, at C, the shuttle-carrier is hung, this forming the center of the segmental shuttle-race, the shuttle-carrier E being operated by a connecting-rod, E^1, from a cam, E^2, on the driving-shaft E^3, as seen in Fig. 2. F, Fig. 1, is the support upon which the shoe G is placed, this support having universal movement, substantially such as shown in the patent before referred to. The vertical axis of this support is in a line at right angles to a central radial line, X X, through the center of the shuttle-race, as denoted in Fig. 1, thus practically making the path of the shuttle parallel to the axis of the support for the work. On the part B′ of the frame the needle-bar H is arranged in suitable guides, and operated substantially as in my patent before referred to, the said needle-bar carrying the needle *h*, the path of the said needle being in a line diagonally across the shuttle-race or central line X X, before referred to. L is a plate or bearing upon the outside of the shuttle-race, between that and the needle, and forms what may be termed the work-plate, against which the side of the shoe bears. The shoe is placed in position relatively to the needle, substantially as in my patent before refeired to, and as seen in Fig. 1, having the sole M temporarily attached to the upper, and a channel, *a*, formed around its edge, so that the needle may

strike upon the inside of the channel, pass through the ridge on the sole formed by the channel, thence through the upper and welt, if in welted work, thence into the shuttle-race, where the thread which the needle carries is engaged by the shuttle N in the usual manner of common shuttle-sewing machines. As it is necessary that the needle, in order to pass through the ridge of the sole, as before described, should run in a path diagonal to the shoe, because of the curvature of the sole, it follows that the path of the needle must be diagonal to the path of the shuttle, which latter is practically parallel, as before described, with the work, and this is necessitated because the body and peculiar shape of the shoe prevents the construction of the shuttle-race so as to be at right angles to the path of the needle, and always maintain the same relative position to the edge of the sole.

I have represented the shuttle-race as of segmental form, and this construction I prefer for its convenience; it may, however, be straight, but in such case the needle moves diagonally to the path traveled by the needle.

In order to slacken the shuttle-thread and insure a proper drawing up of the stitch, which constitutes the second part of my invention, I construct the cam F^2 so that the extreme throw *b* occurs immediately before the full return of the needle—that is, so that the shuttle-thread is drawn taut, as denoted in Fig. 3, (*s* denoting the shuttle-thread,) the needle-thread *n* extending entirely through the work, and if the shuttle were there to remain the shuttle-thread would lie straight upon that side of the work, but in order that the shuttle-thread may be drawn into the work and positively always to the same point, I so construct the cam F^2 that it allows the shuttle to retreat a little just before the needle completes its throw, slackening the shuttle-thread slightly, but only so fast as the needle recedes, so that (both threads being held at their greatest tension) the needle-thread draws the shuttle-thread into the work as at *t*, Fig. 3, thus positively insuring the perfect drawing up of the stitch and the same relative position regardless of the nature of the leather, whether it be hard or soft, and giving to the stitch upon both sides precisely the appearance of hand-work.

One of the greatest difficulties in the use of shuttle-machines for sewing with waxed thread arises from the gumming of the shuttle by the wax of the thread, but as the wax will not adhere to a greasy surface, I provide against this difficulty in the third part of my invention. To do this I arrange in the shuttle-race a lubricating material, P, as seen in Fig. 1, into which the point of the shuttle strikes at each operation, this lubricating material being something of a greasy nature, so that the shuttle receives therefrom upon its point a slight amount of oil which is carried over the body of the shuttle by the thread, thus keeping the surface of the shuttle constantly greased. I prefer, for this purpose, felt or other fibrous material saturated with oil, but other lubricators may be applied, it only being essential that the point of the shuttle should receive the lubrication.

It will be understood that this device is for preventing the wax from adhering to the shuttle, and not a device for clearing the wax from the shuttle after it has adhered thereto, this last device having been heretofore used; hence the necessity of the arrangement of the lubricator in the manner described, so that the point will receive the lubricating material before it comes in contact with the thread, and be by the thread carried over the surface of the shuttle.

I claim as my invention—

1. In a sewing-mechanism, the combination of a needle carrying one thread, a race, and a shuttle carrying a second thread, when so arranged that the shuttle moves in a path diagonal to the path of the needle, substantially as herein described.

2. In combination with a needle, race, and shuttle, arranged and operating as above described, I claim the cam F^2, or its equivalent, for operating the said shuttle, substantially as and for the purpose described.

3. The arrangement of a lubricating device, in connection with the shuttle-race, so that the point of the shuttle will receive the lubrication, substantially as and for the purpose set forth.

C. O. CROSBY.

Witnesses:
A. J. TIBBITS,
JOHN E. EARLE.