G. V. SHEFFIELD. 2 Sheets--Sheet 1.

Improvement in Sewing Machines for Leather.

No. 124,293. Patented March 5, 1872.

Fig. 1.

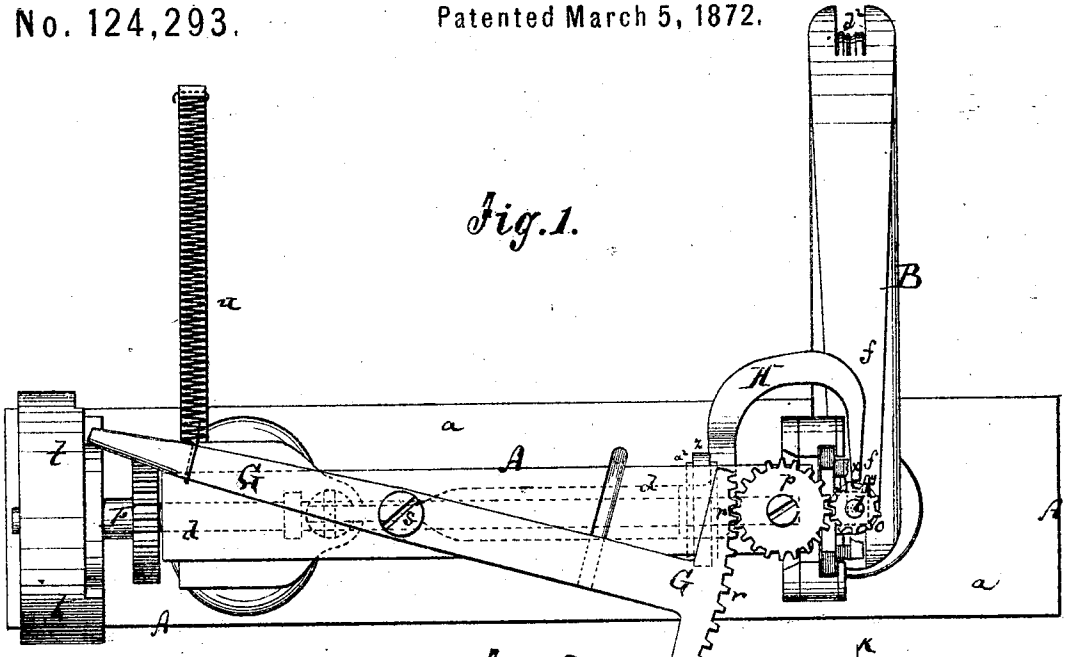
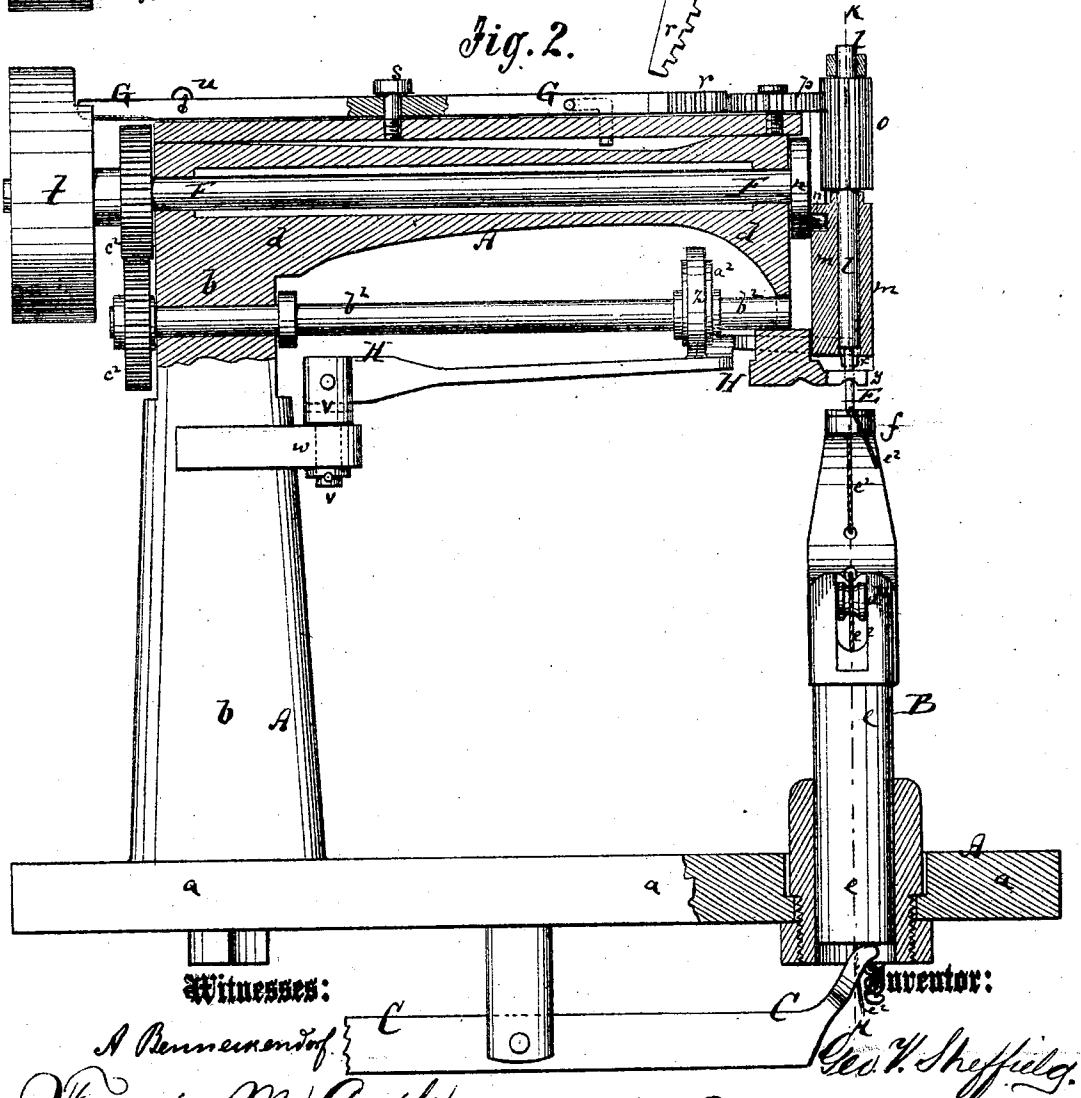


Fig. 2.



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G. V. SHEFFIELD. 2 Sheets--Sheet 2.

Improvement in Sewing Machines for Leather.

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Fig. 3.

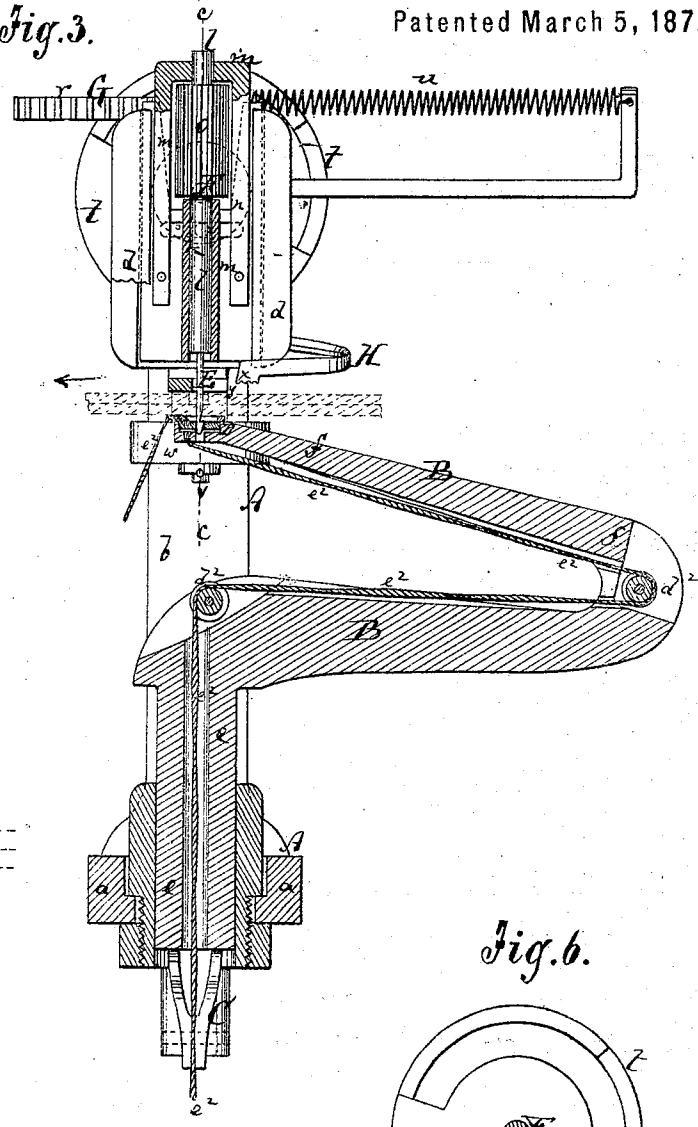


Fig. 5.

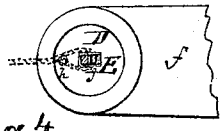


Fig. 4.

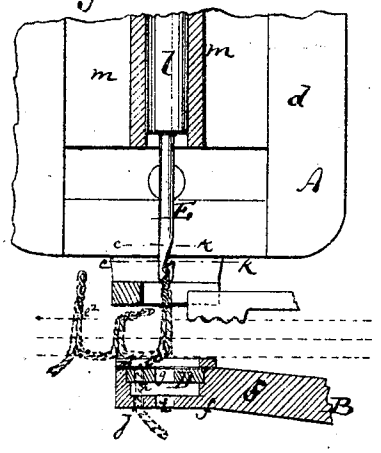


Fig. 6.

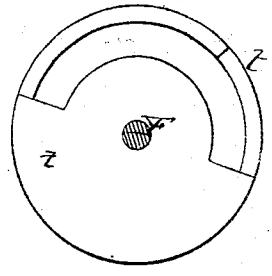
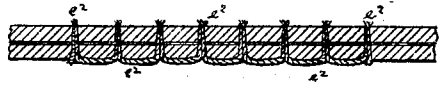


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE V. SHEFFIELD, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND GODFREY K. MELLOR, OF WOONSOCKET, RHODE ISLAND.

IMPROVEMENT IN SEWING-MACHINES FOR LEATHER.

Specification forming part of Letters Patent No. 124,293, dated March 5, 1872.

Specification describing a new and Improved Leather-Sewing Machine, invented by GEORGE V. SHEFFIELD, of the city of New York, in the county and State of New York.

Figure 1 represents a plan or top view of my improved leather-sewing machine. Fig. 2 is a vertical longitudinal section of the same taken on the plane of the line *c c*, Fig. 3. Fig. 3 is a vertical transverse section of the same taken on the plane of the line *k k*, Fig. 2. Fig. 4 is a portion of the same view as Fig. 3, but showing the parts in a different position and on an enlarged scale. Fig. 5 is a horizontal section on the line *c k*, Fig. 4. Fig. 6 is a detail face view of the operating-cam. Fig. 7 is a longitudinal section of some leather, showing the wedge-stitch made by my machine.

Similar letters of reference indicate corresponding parts.

My invention is an improvement in the class of sewing-machines designed especially for sewing leather or other thick and tough material; and consists mainly in the employment of a "whirl" or thread-carrying plate and a reciprocating rotating needle, whose conjoint operation produces the desired loops and twists in the thread.

A in the drawing represents the frame of my improved sewing-machine. It consists of a base, *a*, post *b*, and upper arm *d*, as shown in Fig. 2. In the front end of the base *a* is swiveled the stem *e* of the V-shaped work-holder B, upon whose upper arm *f* the boot or shoe or thing to be sewed is slipped or held. A treadle or lever, C, is arranged under the base *a*, to be used for elevating or lowering the work-holder in desired manner. In the uppermost end of the work-holder B is secured the "whirl" or thread-guide D. This is a circular plate fitted horizontally to a circular recess, so that it can revolve, but not move up and down therein. In the center of this plate D is a rectangular hole, *g*, and near one edge a hole, *h*. The arm *f*, under the plate D, has a hole, *i*, under *g*, and another hole, *j*, about the same distance from *i* as *h* is from *g*. (See Fig. 4.) E is the needle. It is held in the arm *d*, directly above the center of the plate D. The needle is secured to the lower end of a vertical spindle, *l*, hanging in a sliding frame, *m*, which is alternately raised and lowered by a cam, *n*. This cam is mounted upon the front end of the driving-shaft F, which has its bearings in and extends all along the arm *d*, and to which rotary motion is imparted by suitable mechanism. To the upper end of the spindle *l* is secured a pinion, *o*, of such length that it will constantly remain in gear with a toothed wheel, *p*, though moved up and down with the slide *m*. The wheel *p* is hung to the upper face of the arm *d*, and serves to transmit motion to the pinion *o* from a segment, *r*, that is affixed to the front end of a lever, G. This lever is at *s* pivoted to the top of arm *d*, and extends back in contact with the cam-face of the driving pulley or disk *t*, a spring, *u*, holding it in an oblique position, as shown in Fig. 1. The lower end of the needle E has a hook, and is squared or flattened in cross-section, as is clearly indicated in Fig. 5. H is the feed-lever. It is at its rear end pivoted to a vertical pin, *v*, that is swiveled in an ear, *u*, projecting from the post *b*. The feed-lever is thus double-jointed, and can swing up and down as well as sidewise. Its front end hooks around the enlarged front end of the arm *d*, in which the needle-slide *m* works, and brings the serrated feed portion *x* close to the side of a sort of presser-foot, *y*, that is secured to the lower front part of the arm *d*, and horseshoe-shaped, to embrace the needle. By an annular strap, *z*, or equivalent means, the lever H is suspended from an eccentric, a^2, which is mounted upon a horizontal shaft, b^2, hanging in the lower part of the arm *d*, and driven by gearing c^2 or other means from the driving-shaft F. By the rotation of the eccentric a^2 the lever H is swung up and down and to the sides. This arrangement of the feed-lever possesses advantages in respect to simplicity, ease of operation, and economy of space, as compared with others for an analogous purpose.

The machine operates as follows: The thread e^2 is drawn from a spool from below through the hollow stem of the work-holder, then passed over friction-rollers d^2 d^2 that hang in the work-holder, and finally fitted through the holes *j* and *h*, projecting thus upwardly through the whirl. The shoe or boot to be sewed is slipped over the arm *f*, or, if plain leather or other fabric be sewed, it is placed upon the upper end of the arm *f*, as indicated by dotted lines in

Fig. 3. By means of the lever C, the work-holder is next raised against the foot *y*, and held in contact therewith during operation. The needle descends by the action of the cam *n*, pierces the leather, and enters the square aperture *g* of the whirl. The cam *t* at this time causes the lever G to swing and impart one full rotation to the spindle *l* and needle.

Being with its flat end in the hole *g*, the rotation of the needle produces a similar movement of the whirl, causing the thread on top of the latter to be wound around the needle above the hook of the same. The needle is next raised with the loop it holds on its hook, and drags it through the leather. When it arrives on top the needle is quickly turned back to its normal position by the cam *t* clearing the lever G, and the spring *u* acting on the same. By this returning of the needle it becomes disengaged from the loop, allowing the feed to shift the leather in the direction of the arrow 1, Fig. 3.

After the feed has done its work, the needle again descends, turns the whirl, and forms a new loop, which it draws up with it, and so forth. The loops deposited on top of the fabric, as in Fig. 4, are subsequently cut off, leaving the sewed fabric substantially as shown in Fig. 7—that is to say, with double stitches drawn through it and connected with each other by pairs under the leather. They hold the leather in the same manner as, if not better than, pegs.

In order to secure a still firmer hold by this mode of sewing, I propose to use thread of successive double conical sections, as indicated in Fig. 3, they being so spaced that the needle will always take hold at the thin portions, and thereby draw two conical pieces alongside of each other up, such pieces entering the leather like wedges, and holding it very secure.

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

1. The whirl D, fitted in a holder, B, and provided with an aperture to adapt it to be rotated by a needle having a corresponding form in cross-section, substantially as and for the purpose hereinbefore specified.

2. The combination of the needles flattened at the lower end and hook-shaped with the whirl D, as specified.

3. The combination of the thread-carrying whirl D, provided with a square aperture, the needle E, the toothed spindle *l o*, vibrating lever G, carrying-segment *r*, the cam *t*, and spring *u*, all arranged and operating as specified.

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