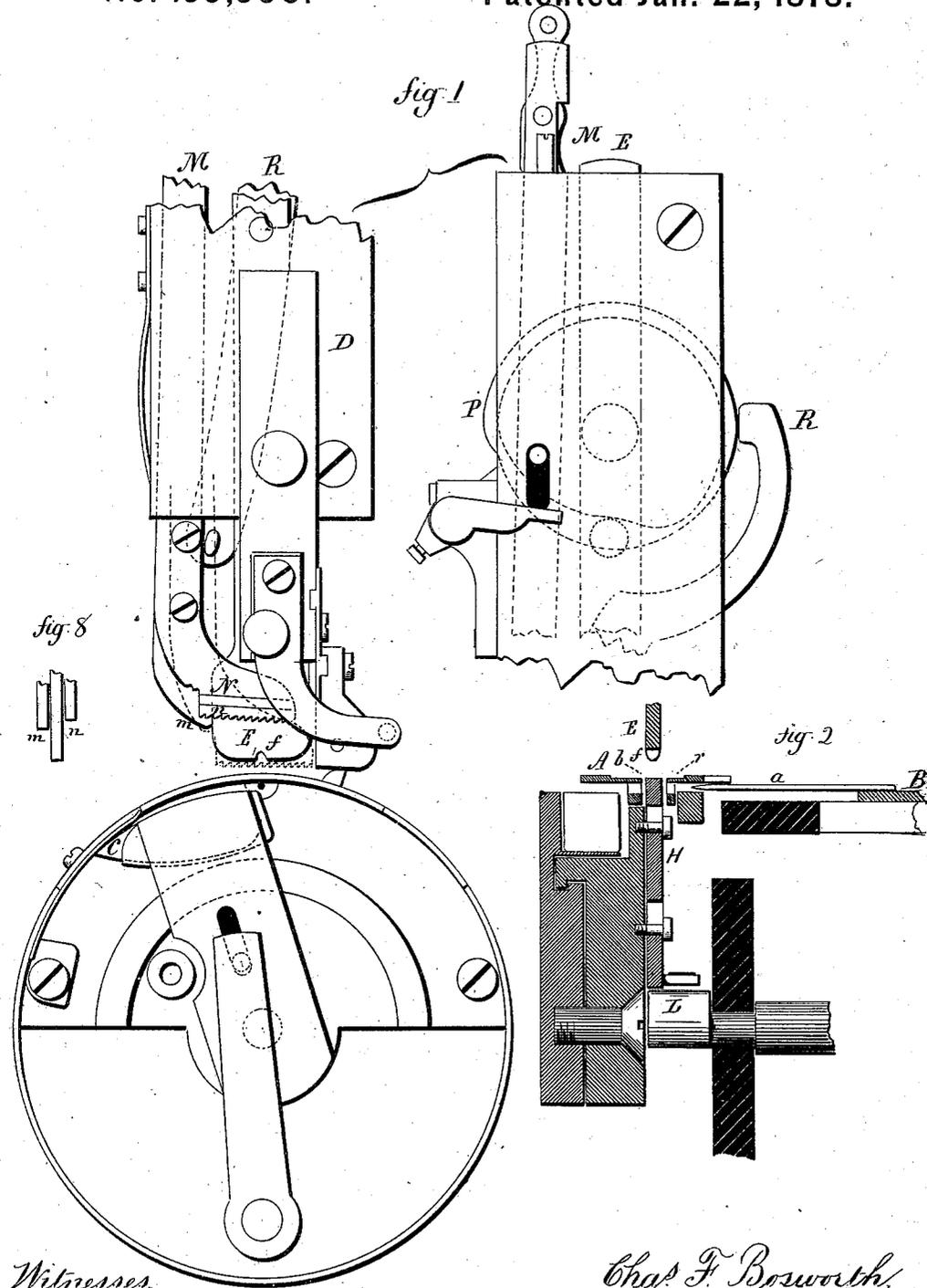


C. F. BOSWORTH.
Machine for Sewing Straw-Braid.

No. 199,500.

Patented Jan. 22, 1878.



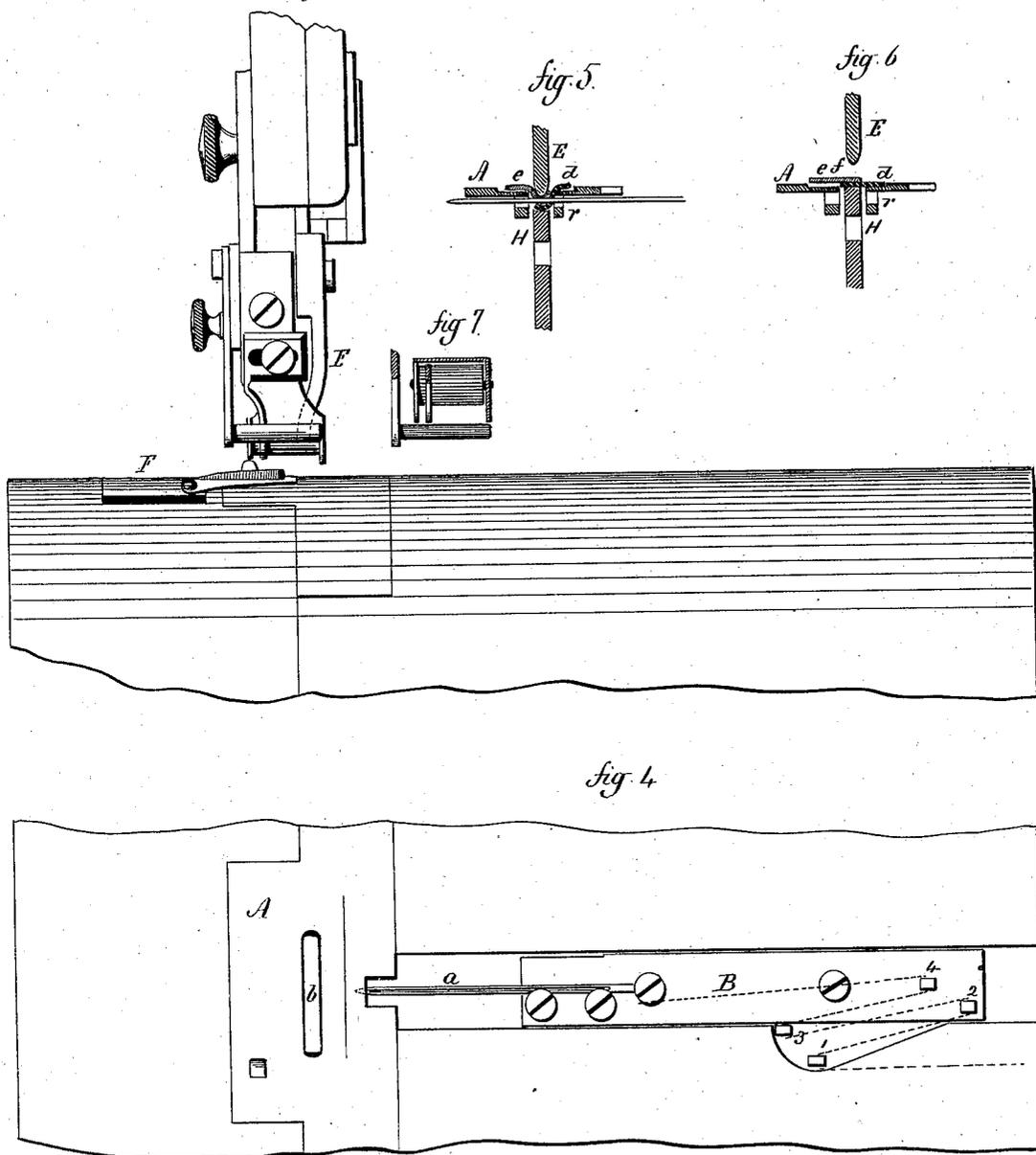
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UNITED STATES PATENT OFFICE.

CHARLES F. BOSWORTH, OF MILFORD, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR SEWING STRAW BRAID.

Specification forming part of Letters Patent No. **199,500**, dated January 22, 1878; application filed July 18, 1877.

To all whom it may concern:

Be it known that I, CHAS. F. BOSWORTH, of Milford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Machines for Sewing Straw Braid; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, front end view; Fig. 2, longitudinal section on the line of the needle; Fig. 3, side view; Fig. 4, plan looking down upon the needle-bar and work-plate; Figs. 5, 6, 7, and 8, detached views.

This invention relates to an improvement in machines especially adapted to sewing straw braid or other narrow strips, as for the manufacture of hats, &c., and particularly to that class in which successive braids or runs of braid are stitched to the next preceding braid by bending the two, so that the needle with its thread, entering the braid near the bend, passes through one braid, into and out of the other, and then out of the first on the same side at which it entered, and so that the thread will appear little, if at all, on the surface of the second braid, opposite that which the needle entered.

In the class of machines to make this peculiar stitch the bend is made transversely or across the braid, and the path of the needle is substantially parallel to the edge of the braids being sewed; but a serious difficulty is experienced in making this transverse bend, from the fact that after one braid has been stitched to its next preceding braid, (referring to the manufacture of hats,) the next time round, the bend of the preceding braid, to receive the next run, can be made only upon the edge being sewed, the opposite edge being held up by the preceding braid. Hence a strain must necessarily be made in the edge of that particular braid at each bend, which more or less distorts the work. Again, the stitch is necessarily long, and the length of the stitch in the two braids different. Hence it is very difficult to make a stitch so tight that there will not

be considerable play to the braid transversely, and the work unavoidably loose.

The object of this invention is to overcome this difficulty, consisting, essentially, in the combination, with a sewing mechanism, of a mechanism operating at the overlapping edge of the two strips to be sewed, to bend the two strips at the edge longitudinally, and so that the needle and its thread will pass transversely through the said longitudinal bend to secure the two braids together, as more fully herein-after described.

A is the work-plate, here represented as of a cylindrical form; but the shape of the surface is not essential, the cylindrical form, however, being preferred.

B is the needle-bar, arranged horizontally, or so as to work parallel with the surface of the work-plate, and carries the needle *a*, the path of which is close under the work-plate A, as seen in Fig. 2. The usual reciprocating movement is imparted to the needle, and there is combined with it a mechanism for engaging the needle-loop to form the stitch, here represented as a shuttle, *c*, working in a circular path concentric with the circle of the work-plate; but other stitch-forming mechanism may be employed.

Through the work-plate a slot, *b*, is formed, as seen in Fig. 4, at right angles to the path of the needle. Directly over this and supported in a head, D, is a vertical slide or bender, E, to which a vertical reciprocating movement is imparted from a cam on the driving-shaft, as indicated in broken lines, Fig. 1. The position of this bender E is directly over the slot *b* in the work-plate, and its extent of movement is from a point above the work-plate more than the thickness of the braid, as seen in Fig. 6, to such a point through the slot *b* and below the surface of the work-plate A as to carry the two braids down into the path of the needle, as seen in Fig. 5, *d* representing the preceding braid, and *e* the incoming run of braid. A notch, *f*, is made in the bender E, which will allow the bender, each side the notch, to pass below the path of the needle, the needle passing through the notch *f*.

The two strips to be sewed are presented with the edge of one braid overlapping the

corresponding edge of the other braid, as seen in Fig. 6, the incoming braid being first introduced through an adjustable guide, as seen in Fig. 7—the guide adjustable as to width and as to the relative position of the bender E—the other braid or part to which the incoming braid is to be stitched running against a guide, F, also made adjustable, so as to present that part in its proper relative position.

The edge of the under braid extends over the slot *d* in the work-plate, as seen in Fig. 6, and the corresponding edge of the upper braid also extends over the slot, so that the edges to be stitched will extend across the path of the bender E, and so that when the bender E descends it will strike longitudinally upon the upper braid near the edge, and force the two braids near their edges to bend longitudinally down through the slot *b* in the work-plate, as seen in Fig. 5.

When the two braids are thus longitudinally bent, as seen in Fig. 5, the needle and its thread pass transversely through the bent portion of both, the needle-loop being engaged so as to form the stitch, and the needle withdrawn.

The work is fed for another stitch, but before the feed, and in order to insure the return of the bend, a follower, H, is arranged below the work-plate, and corresponding to the bender E, and to which a reciprocating movement is imparted by a cam, L, on a shaft below the work-plate, as seen in Fig. 2. After the needle has been withdrawn the follower H rises, as seen in Fig. 6, and throws the bend up flush with the upper surface of the work-plate, descending again before the next bend is made, the feed occurring after the braid has been thus raised and before the follower descends.

The feed, as here represented, is an upper feed, N, attached to a feed-bar, M, operated by a cam, P, on the shaft through a lever, R, the feed being shown in Fig. 1 as raised, and as down in broken lines. The feed acts substantially in the usual manner of upper feeds in sewing-machines; but it is, however, made with two feeding-surfaces, *n* and *m*, between which the bender operates, as seen in Fig. 8, the two differing in their plane according to the thickness of the braid, so that the one feed, *n*, will take the incoming or upper run of braid, while the other, *m*, will take the preceding or lower run.

In order to prevent the needle glancing from the bent braid, a guide, *r*, is arranged in its

path and in close proximity to the bent braid, as seen in Fig. 5, through which the needle passes before it enters the braid, and so as to hold the needle up to and prevent its glancing from the braid.

The take-up for the needle-thread consists of stationary loops 1 and 3 and loops 2 and 4 on the needle-bar B, (see Fig. 4,) the thread running first through loop 1, and successively through loops 2, 3, and 4 to the needle, as indicated in broken lines.

The longitudinal bend of the braid, as described, and transverse punctures of the needle, allow short stitches to be made, and, because both braids are punctured in the same line transversely, a very much firmer stitch is made than by the old method of transverse bending, and the distortion of the braid occasioned by the transverse bending, as before used, is entirely avoided.

Having described my invention, I claim—

1. The herein-described method of sewing straw-braid edge to edge, consisting in bending longitudinally one edge of each of the two braids to be stitched together, and then, while their edges are lapped and folded, passing a needle with its thread transversely through the folded portion of the braids to secure the braids together in a flat state, substantially as and for the purpose set forth.

2. The combination, with sewing mechanism, of mechanism adapted to guide straw or other plaited braids, and present the two runs of braid to be stitched together in a longitudinally bent or folded condition to the needle, substantially as described.

3. In combination, the slotted work-plate, a reciprocating needle moving in a path transverse to the said slot, a reciprocating bender working into or through said slot, and a feed mechanism working at right angles to the path of the needle, substantially as described.

4. In combination, the slotted work-plate, a reciprocating needle moving in a path transverse to the said slot, a reciprocating bender working into or through said slot, a feed mechanism working at right angles to the path of the needle, and a reciprocating follower corresponding to the bender, and working from the opposite or under side of the work-plate, substantially as described.

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Witnesses:

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