D. H. CAMPBELL.

Sewing Machine.

No. 241,609. Patented May 17, 1881.

Fig. 1.

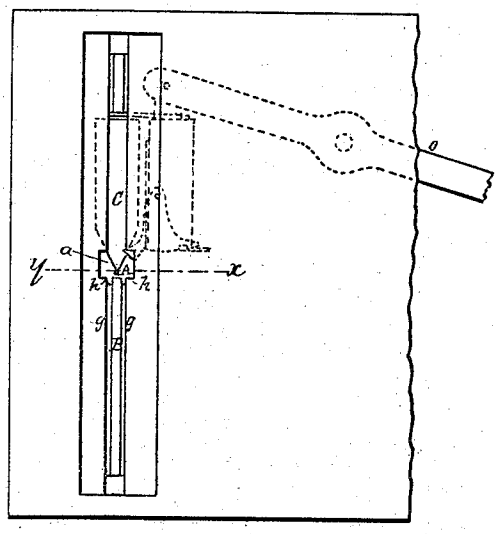


Fig. 2.

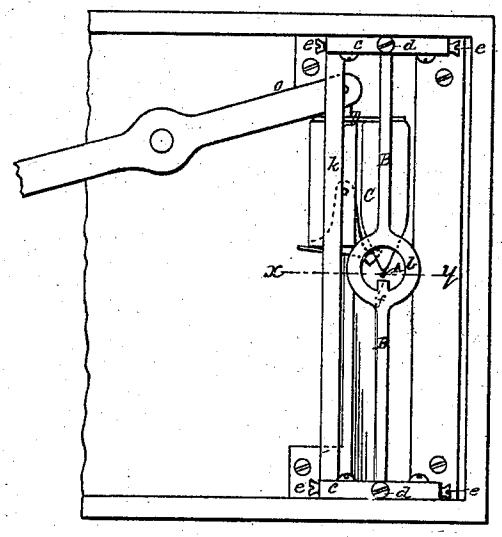


Fig. 3.

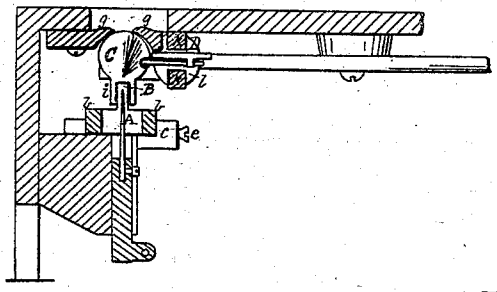


Fig. 4.

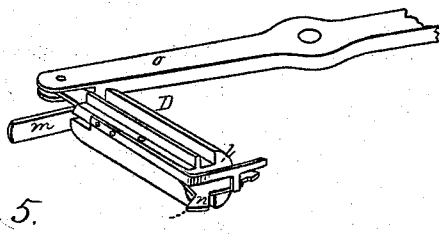
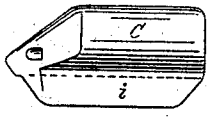


Fig. 5.



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UNITED STATES PATENT OFFICE.

DUNCAN H. CAMPBELL, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR OF THREE-FOURTHS TO HENRY B. METCALF, FRANK E. COMEY, AND DANIEL McNIVEN, ALL OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 241,609, dated May 17, 1881.

Application filed May 14, 1879.

To all whom it may concern:

Be it known that I, DUNCAN H. CAMPBELL, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

My said improvements are particularly applicable to wax-thread machines, in which a hook-needle and a centrally-pointed shuttle are employed. The shuttle is termed by me "centrally-pointed," because its point and its axis occupy the same vertical plane as the path of the needle; and my invention partially consists in the combination, with a centrally-pointed shuttle having a longitudinally-recessed web on its under side, of a shuttle-supporting rail which is fitted to occupy the recess in the web of the shuttle, and is broken away centrally to afford a path for the needle, and top guides which, by contact with the top of the shuttle, serve to prevent it from rising thereon. In this combination the portion of the shuttle-rail adjacent to the path of the needle serves as a lower stop to prevent the loop from being carried forward during the passage of the shuttle, as set forth in connection with a rail of different construction described in another application for Letters Patent filed by me May 13, 1879, (Case A,) and I secure in this present case a more perfect control of the loop in the respect stated by providing the upper guides with recesses (adjacent to the path of the needle) which afford abutting-surfaces for the front side of the loop to engage with; and the combination of the shuttle, its rail, and the guides recessed near the path of the needle for engaging with the loop during the forward movement of the shuttle constitutes another portion of my invention.

My invention further consists in the combination, with the shuttle-supporting rail broken away to afford a path for a needle, the shuttle provided with a longitudinally-recessed web on its under side fitted to the rail, and upper guides for contact with the top of the shuttle, of a suitable shuttle-driver. I am aware that a shuttle-driver suited for use in this combination may be variously constructed, but I have employed therein a novel shuttle-driver, which in itself constitutes a feature of invention, which is made the subject, in part, of a separate application for Letters Patent filed May 13, 1879, (Case No. 1;) and my present invention further consists in the combination, with a shuttle-rail broken away to afford a path for a needle, a centrally-pointed longitudinally-recessed shuttle mounted thereon, top guides for contact with the top of the shuttle, and a sliding shuttle-driver mounted in a slide independent of the rail, and provided with a finger which engages with the heel of the shuttle, and a neck-finger which engages with the shuttle at one side of its neck.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents, in plan view, the front portion of the bed of a machine with the head and race-plates removed. Fig. 2 represents the same viewed from below. Fig. 3 represents the same, in vertical section, on line *x y*, Figs. 1 and 2. Fig. 4 represents the shuttle-driver, detached. Fig. 5 represents the shuttle in side view.

The hook-needle A, as heretofore, is moved in a vertical path rising from below and carrying down its loop.

The shuttle-rail B is rectangular in cross-section, stands edgewise, and is broken away centrally at *a*, for affording a path for the needle. A ring, *b*, solid with the rail, surrounds the needle-path, and unites the portions of the rail on each side thereof, so that it may be secured at each end to the frame of the machine. It being important that the rail be accurately adjusted with reference to the path of the needle, it is mounted at each end within a frame, *c*, provided with a vertical adjusting-screw, *d*, and lateral adjusting-screws *e*. This mode of mounting the rail constitutes a feature of invention in another application for Letters Patent filed by me May 13, 1879. (Case A.) In front of the needle, within the ring *b*, is a portion of the rail, which extends inward, as at *f*, which serves

as a stop for preventing a loop from being carried forward by the shuttle. A shuttle-rail in this its simplest form has no control over the shuttle with reference to a vertical movement, although it affords a good support and confines the shuttle laterally, while free to move longitudinally thereon. For perfecting the control of the shuttle on its rail I provide the two upper or top guides, *g*, which are secured to the under side of the bed-plate, and in their simplest form consist of plates parallel with the line of the rail, and concaved adjacent to their inner edges to correspond with the exterior sectional contour of the shuttle. These top guides adjacent to the path of the needle are recessed, so as to afford abutting-surfaces *h*, for engagement with a loop and preventing its forward movement during the passage of a shuttle.

The shuttle C is substantially as heretofore made by me; but so far as my knowledge extends the longitudinally-recessed web *i* was never, prior to my recent invention, made to serve as a medium of connection with a rail on which the shuttle could be driven to and fro, said web being also capable of operating, as heretofore, as a cast-off for a hook-needle. The combination of a shuttle of this character with a rail broken away centrally to afford a path for the needle constitutes the subject of a claim in a separate application for patent filed May 13, 1879. (Case A.)

The shuttle-driver D is also substantially like others heretofore devised and employed by me, and is in itself the subject, in part, of another application for Letters Patent filed May 13, 1879, (Case No. 1,) and it is therefore only necessary herein to state that it is mounted on separate guides *k*, is composed of a slide, *l*, heel-finger *m*, and neck-finger *n*, (which project laterally above the shuttle-rail,) and is operated by a vibrating lever, *o*. The shuttle may be removed through a hole in the frame at one end of the rail.

It will be seen that with the parts constructed and arranged as shown the shuttle may be operated with but little friction, and that the loop is well controlled against all undue forward movement of the shuttle.

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

1. The combination, with a centrally-pointed shuttle having a longitudinally-recessed web on its under side, of a shuttle-supporting rail, which is fitted to occupy the recess in the web of the shuttle and is broken away centrally to afford a path for a needle, and top guides which by contact with the top of the shuttle confine it to its supporting-rail, substantially as described.

2. The combination of the shuttle, its rail, and the top guides recessed near the path of the needle for affording a surface with which a loop may engage during the forward movement of the shuttle, substantially as described.

3. The combination, with the shuttle-rail broken away to afford a path for a needle, the centrally-pointed shuttle provided with a longitudinally-recessed web on its under side fitted to the rail, and the upper guides for confining the shuttle to its rail, of a shuttle-driver, substantially as described.

4. The combination, with a shuttle-rail broken away to afford a path for a needle, a centrally-pointed longitudinally-recessed shuttle mounted thereon, and the top guides, of a shuttle-driver mounted in a slide independent of the rail, and provided with a finger which engages with the heel of the shuttle, and a finger which engages with the shuttle at one side of its neck, substantially as described.

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