(No Model.)

J. SIGWALT, Jr.

SEWING MACHINE SHUTTLE.

No. 258,949. Patented June 6, 1882.

Fig. 1.

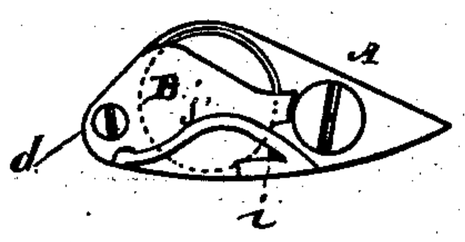


Fig. 2.

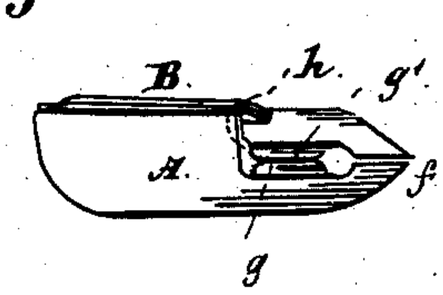


Fig. 3.

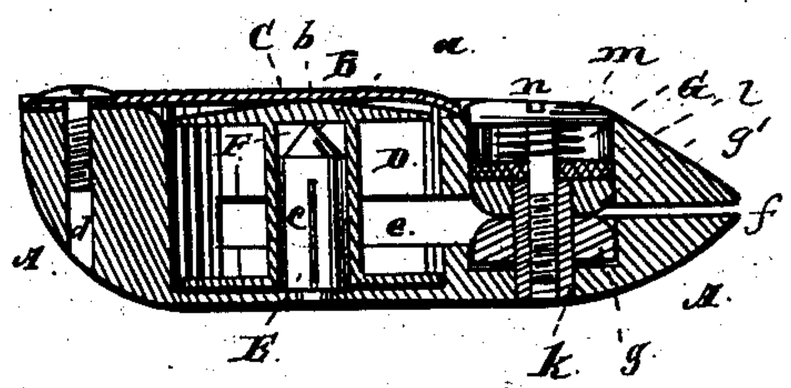


Fig. 4.

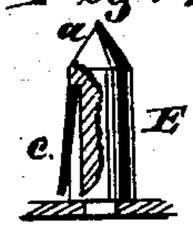
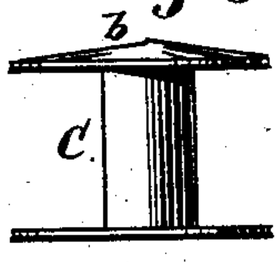


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN SIGWALT, JR., OF CHICAGO, ILLINOIS.

SEWING-MACHINE SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 258,949, dated June 6, 1882.

Application filed August 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN SIGWALT, Jr., residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Shuttles for Sewing-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a side elevation; Fig. 3, a vertical longitudinal section through the shuttle and bobbin; Fig. 4, a detail, being a side elevation of the post or pivot for the bobbin, partly in section, to show the tension-spring; Fig. 5, a side elevation of the spool or bobbin. Figs. 3, 4, and 5 are enlarged in order to more clearly illustrate the device.

This invention relates to shuttles for sewing-machines, and to that class of shuttles in which the spool or bobbin stands vertical in relation to the shuttle; and it has for its objects to give the spool or bobbin but a small amount of frictional contact in revolving, and at the same time have it under sufficient tension to prevent the thread from unwinding or casting off too freely or more rapidly than is required for use and becoming slack, so as to overlie or get on the outside of the flange or end of the spool; to give the bobbin a better support or bearing in the shuttle and allow it to move in either direction vertically and have a bearing, no matter in which direction it may be operated; and to improve generally the construction, arrangement, and location of the bobbin and shuttle in their relation to each other and to the control of the thread.

My invention is embodied in the shuttle illustrated in the accompanying drawings, which I will now proceed to describe, afterward pointing out in the claims my improvements.

In the drawings, A represents the shuttle; B, the cover; C, the spool or bobbin; D, the opening in the shuttle A for the spool or bobbin; E, the post or pivot on which the spool or bobbin is mounted; F, the opening in the spool or bobbin for the post or pivot E; G, the opening in the forward end of the shuttle for the tension-disks; *a*, the conical end of the post or pivot E; *b*, the conical exterior face of the upper flange or end of the spool or bobbin; *c*, the tension-spring; *d*, the pivot for the cover; *e*, the longitudinal slot for the thread in the shuttle; *f*, a longitudinal slit in the forward end of the shuttle for the passage of the thread to the tension-disks; *g g'*, the tension-disks; *h*, the vertical slit or opening for the passage of the thread beneath the cover; *i*, the opening for the passage of the thread on top of the cover and beneath the controlling-spring; *j*, the controlling-spring for the thread; *k*, the sleeve or socket on which the tension-disks are located; *l*, the friction-pad for keeping the friction of the tension-disks more uniform and even; *m*, the spring for varying the tension on the thread from the tension-disks; *n*, the set-screw for regulating the tension.

The shuttle A may be made of steel or other suitable material which can be formed into the shape shown or other similar shape, and may be cast or otherwise formed to be finished up, and when finished have a central opening or cavity, D, for the spool or bobbin, and an opening or cavity, G, in its forward end for the tension-disk, with a longitudinal opening, *e*, on one side, into the rear end of which a vertical slit opens from the upper face of the shuttle for the passage of the thread to the outside of the shuttle, and a longitudinal slit, *f*, in its forward end, communicating with the side opening, *e*, for the passage of the thread to the tension-disks, and a vertical opening at the rear of the disks, leading to the top of the shuttle, for the passage of the thread beneath the cover.

The cover B is also made of steel or other suitable material, and is pivoted at its rear end by a pivot or screw, *d*, so as to swing horizontally to open or close to allow the spool or bobbin to be removed from the shuttle or to be held in position therein. This cover, at its forward end, is turned down slightly to form a lock to hold the cover when closed by engaging with a suitable notch or catch, which will be located on the top of the shuttle, and its forward end is provided with an opening, *i*, through which the thread can pass and come beneath the controlling-spring *j*, which spring is formed with the shuttle, and its rear end enters an opening in the rear end of the shut-

tle, so as to hold the spring down and cause it to act with the required amount of force to control the thread.

The spool or bobbin C may be made of steel or other suitable material which can be cast or otherwise formed into shape to have a socket or body, on each end of which is a flange, between which flanges, and on the body, the thread is wound, as usual. The upper flange or end of this spool has its exterior face formed conical, so as to leave a bearing-point, *b*, in line with the center, and the body of the spool or bobbin is provided with an opening, F, which opening extends through the lower flange or end of the spool or bobbin, and is closed at the upper end. This opening F receives the post E, which post is located at the center of the opening or cavity D, and is formed with or suitably secured to the bottom of the shuttle at that point. The upper end of this post is conical shaped, so as to form a bearing-point, *a*, which comes in contact with the closed end of the opening F, so as to support the spool or bobbin when mounted on the post E, and to the body of the post, on one side, is attached a straight spring, *c*, the free end of which comes in contact with the face of the opening F and acts against such face, the spring extending longitudinally with the post, and being located in a slot or opening formed in the face of the post, and being secured at one end in any suitable manner to the post in such slot or opening, and having an outward curve or bend, so as to throw its free end outside the face of the post, as shown in Fig. 4.

The friction-disks *g g'* are located in the opening or cavity G in the forward end of the shuttle, and are so arranged that their adjacent faces will be in contact, so as to clamp the thread between them, the exterior edges of the adjacent faces being rounded off, so as to form a groove to guide the thread between the disks. These disks are mounted on a stud or sleeve, *k*, which sleeve may be formed with the shuttle at the center of the opening G, or may be an independent piece suitably secured to the shuttle at that point. This stud or sleeve has a central screw-threaded opening to receive the shank of a set-screw, *n*, and between the head of this set-screw and the face or end of the sleeve, around the shank of the set-screw, is located a bearing-pad, *l*, which rests on the face of the upper tension-disk, *g'*, and a coil-spring, one end of which is in contact with the pad *l* and the other with the under face of the head of the set-screw, which spring and pad are for the purpose of giving the required amount of pressure to the disks to keep the tension on the thread and have such tension uniform and even under all circumstances.

In operation the spool or bobbin, with the thread thereon, is placed in the opening D on the post E, the post entering the opening F, and the thread from the spool is drawn through the vertical slit at the rear end of the shuttle into the longitudinal opening *e*, thence passing through the slit *f* between the friction-disks *g g'*, thence up through the vertical slit *h* at the rear of the disk beneath the cover, thence through the opening *i'* in the cover beneath the controlling-spring *j*, from which it passes to the throat-plate, as usual.

In use the spool or bobbin, as the thread is unwound therefrom, will be carried either up or down, accordingly as the thread is being unwound from above or below the center. When being unwound from below the center the action of the thread will draw the spool or bobbin down, and it will have its bearing on the upper end of the post or pivot E, which end, being conical shaped, presents only a small bearing-surface on the point *a*, allowing the bobbin to revolve freely and easily and without any excess of friction, the post being of the requisite length to keep the lower flange or end of the spool or bobbin clear of the bottom of the shuttle or opening D, and when the thread is being drawn from above the center of the spool or bobbin the tendency of the thread in being unwound is to throw the bobbin up, at which time the bearing-point will be against the cover B, and the exterior surface of the upper flange or end of the spool or bobbin being of a conical shape also, the bearing-point in this direction will be the center *b* of the cone, and this bearing-point will be very slight, allowing the spool or bobbin to ride or revolve freely and easily, the same as when riding on the point *a*, the conical shape of this upper flange or end preventing its entire surface from coming in contact with the cover.

By means of the post or pivot E having a conical end the spool or bobbin, when mounted thereon, will be supported at the end of the cone, producing a bearing-surface which allows the spool or bobbin to revolve free and clear, and by means of the conical exterior face of the upper flange or end of the spool or bobbin it will be seen that the surface in contact with the cover is limited to the center of the cone, reducing the frictional contact at that point to the bearing-point *b*, which also allows the spool or bobbin to ride free and clear when bearing on this point *b*. The spring *c* has sufficient force to bear against the face of the socket-opening and prevent the rotation of the spool too rapidly, and at the same time allow it to revolve with perfect freedom and ease to unwind the thread therefrom, by which arrangement the thread cannot cast off or become unwound, so as to become slack and pass over the end or flange of the spool or bobbin, and at the same time the thread between the spool and bobbin and the friction-disks will be kept taut or under strain, so as not to kink or knot up and interfere with its passage between the tension-disks in use. By thus mounting a spool or bobbin on a post or pivot having a conical end, and by making the exterior face of its upper flange or end also conical shaped, the spool or bobbin is perfectly free in its movements in throwing off the thread, and by forming the spring *c* to act on the spool

or bobbin such movements are kept in proper bounds and under control under all circumstances.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a sewing-machine shuttle, a spool or bobbin having its upper flange or end provided with an exterior face of a conical shape to form a bearing-point, *b*, for reducing the frictional contact between the surfaces of the flange or end and the cover and giving the spool or bobbin a freer movement, substantially as specified.

2. In a sewing-machine shuttle, a post or pivot, E, having a conical-shaped bearing-point, *a*, in combination with a spool or bobbin, C, having a conical-shaped flange or end to form a bearing-point, *b*, and a corresponding bearing-surface for giving the spool or bobbin a small bearing in either direction, substantially as and for the purposes specified.

3. The shuttle A, provided with a post or pivot, E, having a conical-shaped bearing-point, *a*, in combination with a cover, B, and spool or bobbin C, having its flange or end of a conical exterior shape to form a bearing-point in holding the spool or bobbin in position and giving it perfect freedom of movement in revolving, substantially as and for the purposes specified.

4. The cover B, the post or pivot E, having a conical-shaped bearing-point, *a*, and spring *c*, in combination with a spool or bobbin, C, having a bearing-point, *b*, on its flange or end for keeping the thread under proper tension and preventing it from casting off too rapidly or becoming slack, substantially as specified.

5. The cover B, the post or pivot having a conical-shaped bearing-point, *a*, and spool or bobbin C, having a bearing-point, *b*, on its flange or end, and spring *c*, in combination with the shuttle A, tension-disks *g g'*, and devices for controlling the tension-disks, substantially as and for the purposes specified.

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