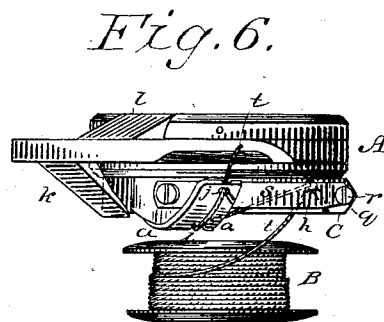
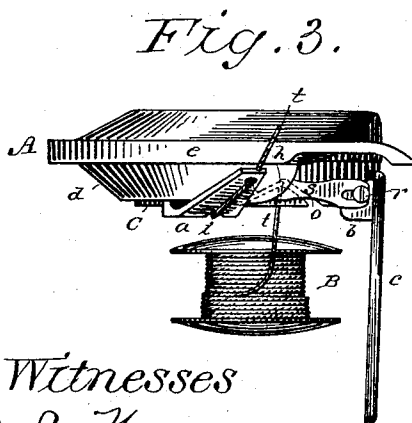
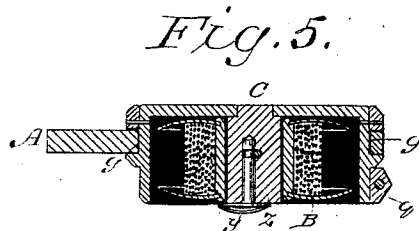
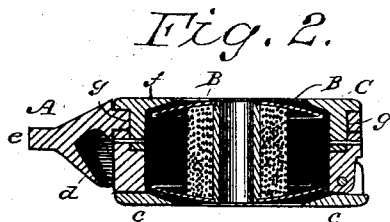
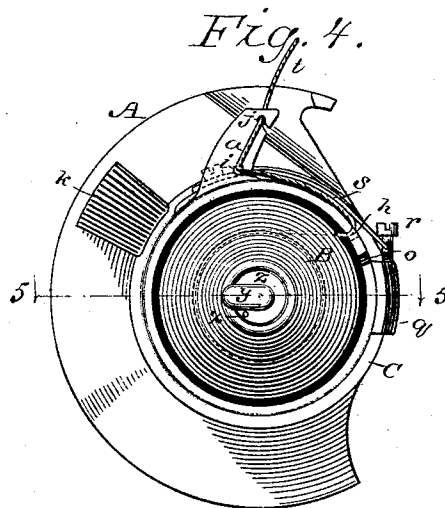
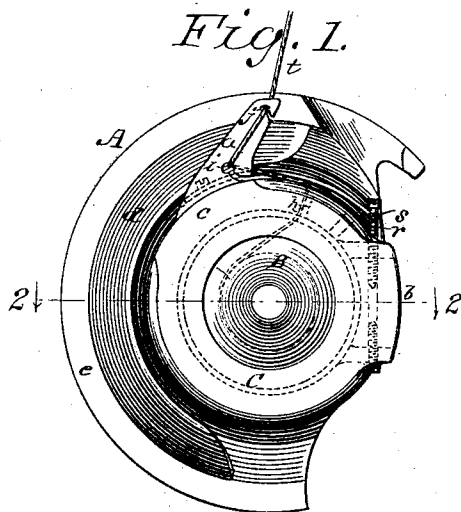


(No Model.)

A. M. LESLIE,
SHUTTLE FOR SEWING MACHINES.

No. 482,850.

Patented Sept. 20, 1892.



Witnesses
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SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 482,850, dated September 20, 1892.

Application filed July 19, 1886. Serial No. 208,486. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR M. LESLIE, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented a new and useful Improvement in Shuttles and Bobbin-Cases, (Case A,) of which the following is a specification.

This invention relates to the construction of the rotary shuttles and non-rotary bobbin-cases of lock-stitch sewing-machines, in which the shuttle revolves or rotates continuously while the machine is in operation, and to the construction of their tension devices and bobbin-retainers. Its objects are, first, to render the bobbin entirely isolated from the shuttle, so as to be unaffected by the motion of the latter, and at the same time to permanently unite the shuttle and bobbin-case, so that there is only one part to handle in removing and replacing the bobbin; secondly, to utilize the entire thickness of the shuttle in so uniting therewith a permanently-attached bobbin-case; thirdly, to give the arm of the bobbin-case and its tension device a fixed relation to the face of the shuttle, so as to facilitate the threading operation; fourthly, to facilitate delicately regulating the tension; fifthly, to accommodate a bobbin as thick as the body of the combined shuttle and bobbin-case to obviate frequently replenishing the thread, and, sixthly, to accommodate a permanently-attached bobbin-case within a body or shell of dish shape.

The invention consists in novel combinations and arrangements of parts for accomplishing said objects, respectively, as hereinafter set forth.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of the drawings is a face view, Fig. 2 a section on the line 2 2, Fig. 1, and Fig. 3 an edge view with the bobbin detached, showing a shuttle and bobbin-case constructed and furnished with improved tension device and bobbin-retainer according to this invention. Fig. 4 is a face view, Fig. 5 a section on the line 5 5, Fig. 4, and Fig. 6, an edge view with bobbin detached, showing a shuttle and bobbin-case constructed and furnished with tension device according to the same invention in part.

Like letters of reference indicate corresponding parts in the several figures.

In both of the forms represented by the drawings an annular shuttle A is combined with a disk bobbin B and with a bobbin-case C, hereinafter termed the "case," the latter permanently attached to the shuttle, but so that the case may be non-rotary while the shuttle rotates freely around it, and the bobbin is entirely isolated from the shuttle by the case, so as to rotate wholly independently for unwinding the thread *t* as the latter is drawn off. (See Figs. 2 and 5.) In both instances the swivel-joint is by preference formed by making the case C in two parts, which when united form a peripheral groove *g*, within which the inner edge of the annular shuttle revolves, the bore or eye of the shuttle being concentric with reference to its axis of rotation.

The arm *a*, Figs. 1 and 3, 4 and 6, of each of the cases C (by which, in connection with a lug on the shuttle-race or a like stationary stop, it is rendered non-rotary and which serves for guiding the bobbin-thread, as in my previous shuttles) is attached fixedly to the periphery of the case, and the tension-spring *s* is correspondingly applied to the periphery of the case C with its fixed end behind said arm and its other extremity notched and engaged with the head of a regulating-screw *r*, which is vertical in the working position of the parts, so as to be readily adjusted by a screw-driver applied from above through the cloth-plate opening. The thread *t* is drawn from the bobbin B midway between its disks through a radial hole *h* in the case, thence obliquely beneath said spring *s* to a guide-hole *i* near the base of said arm *a*, and thence on the outside of said arm to a last guide-hole *j* near the extremity of the arm. Each of said holes is preferably made "self-threading" by inclined slits out of the lines of strain, that of said hole *h* having its opening *o* in the front or outer edge of the case C, as seen in Figs. 3 and 4. By inserting a loop of the thread *t* into this opening and pulling it the thread is readily drawn into said hole *h* and beneath the spring *s*, after which it is in turn engaged with said guide-holes *i* and *j*, which completes the threading operation.

In that species represented by Figs. 1 to 3 the bobbin B runs upon its flanges instead of upon a central spindle and is retained by a cap *c*, attached to the case at one edge by a hinge *b*, and said regulating-screw *r* serves as a pintle of this hinge, and the offset of said arm *a*, coacting with the edge of the cap, forms a sufficient catch, thus simplifying the construction. With said cap "open," as shown in Fig. 3, the bobbin B is obviously very easily withdrawn or inserted. To accommodate a bobbin as thick as possible, its rear bearing is formed by a beveled inner rim or flange *f*, and said cap *c* is made annular and correspondingly beveled, as shown in Fig. 2, so that the convexities of the bobbin-disks may project through both the case-back and its cap. The shuttle proper A, Figs. 1 to 3, is also distinctively constructed, having a body of dish shape, with its back convex, and the case C swiveled thereto at its rear line. Its peripheral edge *e* is central with reference to the back and front of the combined bobbin and case, as seen in Fig. 2, and extending obliquely inward from this to the front of the cap *c* is a semicircular loop-spreader *d*, which passes the needle-loops over the front of the bobbin-case.

The distinguishing features of the shuttle proper A, Figs. 4 to 6, with its loop-spreaders *kl*, form no part of the present invention and need not, therefore, be particularly set forth. They are described in another specification of even date herewith, application filed July 31, 1886, Serial No. 209,655. Its bobbin B is mounted on a spindle-stud *z* within its case C, and said stud is provided at its front end with a button *y*, which in effective position, as represented in Figs. 4 and 5, retains the bobbin. Reversed, by turning it on its swiveled pivot it releases the bobbin by falling within the circle of the spindle. It may be arrested in effective position by a stop *x*, Fig. 4, or may be arranged to gravitate into effective position, or any other suitable form of bobbin-retainer may be used instead thereof. A drilled and tapped lug *q* on the case C coacts with the tension-regulating screw *r*, and may be of any preferred shape adapted for the revolution of the front loop-spreader *k* in front of it.

Having thus described my said improvement in shuttles and bobbin-cases, (Case A,) I claim as my invention and desire to be patented under this specification—

1. In combination with a disk bobbin, a rotary shuttle having an inner edge concentric with its center of rotation, and a non-rotary bobbin-case in two parts united to form a peripheral groove, within which said inner edge of the shuttle revolves, such case hav-

ing a bobbin-entrance and a suitable bobbin-retainer at its outer face, whereby the bobbin-case is permanently attached to the shuttle by a swivel-joint, the bobbin is completely isolated from the shuttle, and removing and replacing the bobbin alone are provided for, substantially as hereinbefore specified.

2. The combination, substantially as herein specified, of an annular rotary shuttle having its bore concentric with its axis of motion and a bobbin-case permanently attached within said bore by a swivel-joint and having an entrance for the bobbin at its face, for the purpose set forth.

3. In combination with a rotary shuttle and a disk bobbin, a non-rotary bobbin-case within said shuttle permanently attached thereto by a swivel-joint, having an arm and a tension device attached to its periphery and provided with self-threading thread-guides, including a radial hole opposite the space between the bobbin-disks, and a slit extending to said hole from an opening in the outer edge of the bobbin-case, substantially as herein specified.

4. In combination with a rotary shuttle and a disk bobbin, a cylindrical non-rotary bobbin-case having a radial threading-hole and a peripheral arm furnished with thread-guides, a tension-spring attached at one end to the periphery of the case, and a regulating-screw which is vertical in the working position of the parts, engaging said spring, substantially as herein specified.

5. In combination with an annular rotary shuttle and a disk bobbin, a non-rotary bobbin-case within said shuttle permanently attached thereto by a swivel-joint and having an annular back-bearing for the bobbin in the form of a beveled inner flange, and an annular bobbin-retaining cap attached to the outer edge of said case by a hinge and correspondingly beveled, substantially as herein specified.

6. In combination with a non-rotary bobbin-case, a rotary shuttle having a body of dish shape, with its convex back permanently united by a swivel-joint with said case at the back of the latter, its peripheral edge central with reference to the face and back of the combined shuttle and case, and its concave face provided with an inclined loop-spreader extending from said peripheral edge to the face of the case for passing the needle-loops over the latter, substantially as herein specified.

Signed at Chicago this 17th day of July, 1886.

ARTHUR M. LESLIE.

Witnesses:

JAS. L. EWING,
WOLFRED N. LOW.