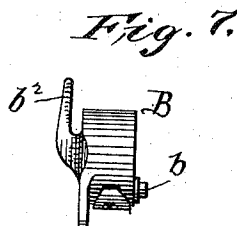
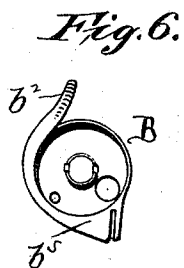
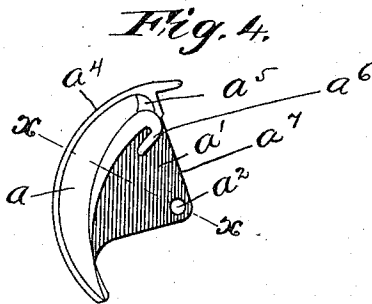
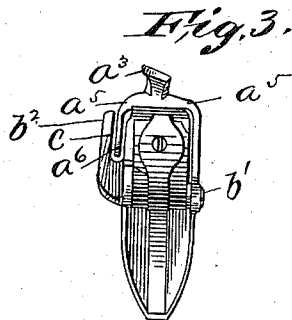
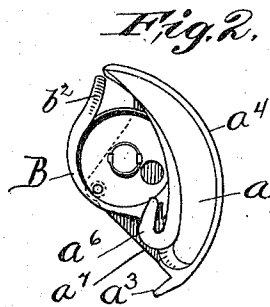
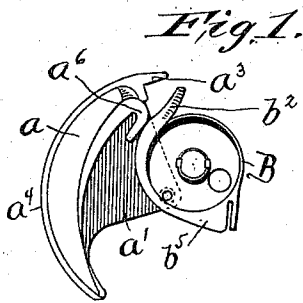


(No Model.)

E. B. ALLEN.
SHUTTLE FOR SEWING MACHINES.

No. 580,356.

Patented Apr. 13, 1897.



WITNESS:

C. W. Benjamin
C. M. Sweeney

INVENTOR:

Edward B. Allen
BY Henry Calver
ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWARD B. ALLEN, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE
SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 580,356, dated April 13, 1897.

Application filed April 7, 1896. Renewed February 27, 1897. Serial No. 626,396. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. ALLEN, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Shuttles, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to shuttles for that class of sewing-machines in which, to avoid moving more weight than necessary with the rotating or oscillating shuttles, the bobbin or cop cases are held stationary while the shuttles move about them in expanding and carrying the loops of needle-thread around the lower or locking thread. These stationary bobbin or cop cases are of circular form, corresponding to the circular paths in which the shuttles move, and they have heretofore been supported by the shuttles concentric to the axes of the movements of the latter. I have discovered, however, that a bobbin-case may be supported by a rotating or oscillating shuttle on a pivot which is concentric with the axis of movement of the latter, but which is eccentric to the body of the bobbin-case, and, by so doing, a smaller loop of needle-thread than was heretofore required may be passed around a bobbin-case of a given size, and this may be done by a smaller movement of the shuttle than was heretofore necessary, thereby effecting such a very considerable saving in the movements of other parts of the machine as enables me to increase the speed of oscillating-shuttle lock-stitch machines by about one-third, as fully set forth in my application Serial No. 586,543, filed simultaneously herewith.

In the accompanying drawings, Figure 1 is a front side view of my improved shuttle, with its eccentrically-attached bobbin-case, the shuttle being in its extreme backward operative position relative to the bobbin-case. Fig. 2 is a similar view with the shuttle in a position far enough forward to have carried a loop of needle-thread past the center of the bobbin-case. Fig. 3 is a front end view of the shuttle, showing also the bobbin-case. Fig. 4 is a side view of the shuttle, with the bobbin-case detached. Fig. 5 is a section of

the shuttle on line *xx* of Fig. 4, and Figs. 6 and 7 are detail views of the bobbin-case.

The shuttle consists of a segmental shell comprising the inclined wings *a*, the rear one of which has a vertical sector or continuation *a'*, provided at the center of motion of the shuttle with an opening *a²* for the reception of a small stud or boss *b*, formed on the rear wall of the bobbin-case B, said stud or boss being preferably tapped for the reception of a screw *b'*, which serves to connect said bobbin-case with the shuttle, said opening thus serving as a pivoted support for said bobbin-case, and said boss and screw as a pivotal connection of the said bobbin-case and shuttle. The beak *a³* of the shuttle is formed at the forward end of the peripheral flange *a⁴*, which is preferably grooved for the reception of a flange formed on the shuttle-race. The pivotal connection of the bobbin-case and shuttle is at a point which, as above stated, coincides with axis of movement of the shuttle, but which is eccentric to the bobbin-case, which latter is, in operation, held stationary by means of a prong *b²*, which engages some fixed part of the machine.

The shuttle is formed at its forward end rearward of its beak with somewhat broad and blunt shoulders at *a⁵* to accommodate the bobbin-case, which is approached by the periphery of the shuttle as the latter moves forward; and to prevent the bobbin-thread from catching on the outer of said shoulders when the shuttle moves forward the outer wing *a* is provided with a hook *a⁶*, which, on the backward movement of the shuttle, engages said bobbin-thread and draws it back slightly, and thereby prevents it from getting in front of said shoulder, said hook moving in an opening *c* between the prong *b²* and the bobbin-case.

The bobbin-case B is provided at its lower part with a flange *b³*, the inclined lower wall of which serves as a cast-over guide, cooperating with the inclined forward edge *a⁷* of the sector *a'*, to direct the loops of needle-thread over or past the center of the bobbin-case when they are carried forward by the shuttle.

By pivotally supporting the bobbin-case with its inclosed bobbin on the shuttle at a point coincident with the center on which the

latter is to rotate or oscillate, but which pivotal point is eccentric to the bobbin-case, it follows that as the shuttle moves forward in passing into a loop of needle-thread and in carrying the same around the bobbin-case and bobbin the latter are more and more closely approached by the shuttle until the cast-over position shown in Fig. 2 is reached, when the bobbin-case is comparatively close up to the periphery of the shuttle, so that it can be encircled by a much smaller loop of needle-thread than would encompass it were it mounted concentrically with the axis of movement of the shuttle, this difference in the size of the needle-loop being about half an inch less for the eccentrically-mounted bobbin-case as compared with a concentrically-mounted bobbin-case of the same size and thread capacity.

20 The curved periphery of the shuttle corresponds to the arc of a circle concentric with the center of movement of said shuttle when the latter is in operation, and is at all points equidistant from the center of the pivotal connection of the bobbin-case and bobbin, which pivotal connection coincides with the said center of movement of the shuttle.

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

1. The combination with a segmental shuttle, of a bobbin or thread case having a pivotal connection therewith at a point which is

concentric with the curved periphery of said shuttle, but which is eccentric to the said bobbin-case.

2. The combination with a segmental shuttle, provided with inclined wings *a*, the rear one of which has a sector or continuation *a'* in which, at the center of motion of the shuttle, or concentric with the curved periphery of the latter, is an opening *a*², of a bobbin-case having an eccentric boss or stud *b* journaled in said opening and thus forming an eccentric pivotal connection of said bobbin-case with the center of movement of the shuttle.

3. The combination with a segmental shuttle provided on its front side with a hook, as *a*⁶, of a bobbin-case having a pivotal connection with said shuttle at a point which is concentric with the curved periphery of said shuttle, but which is eccentric to said bobbin-case, the latter being provided on its forward side with a prong, as *b*², between which and said bobbin-case there is an opening, as *c*, in which said hook moves to draw the bobbin-thread back and prevent it from getting in front of the forward shoulders of the shuttle.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD B. ALLEN.

Witnesses:

HENRY CALVER,
JOSEPH F. JAQUITH.