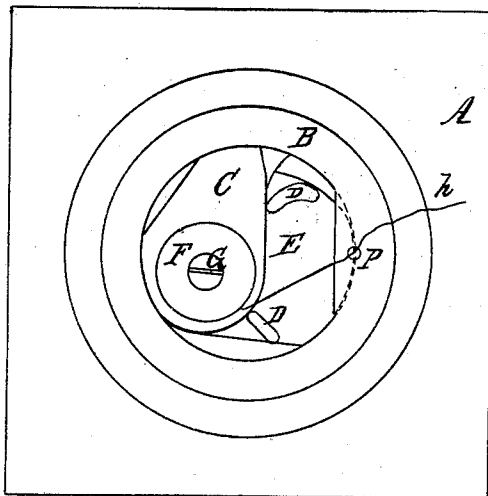


G. H. LENHER.  
SEWING MACHINE SHUTTLE.

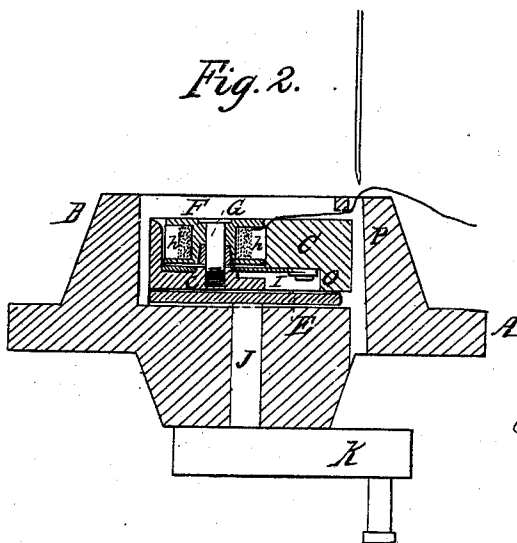
No. 60,021.

Patented Nov. 27, 1866.

*Fig. 1.*



*Fig. 2.*



Witnesses  
Wm. Truitt.  
Jm. E. Lynn

Inventor.  
G. H. Lenher  
By *[Signature]*  
Attorneys

# United States Patent Office.

## IMPROVEMENT IN SEWING-MACHINE SHUTTLES.

GEORGE H. LENHER, OF RICHMOND, VIRGINIA.

*Letters Patent No. 60,021, dated November 27, 1866.*

### SPECIFICATION.

#### TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE H. LENHER, of Richmond, in the county of Henrico, and State of Virginia, have invented a new and useful Improvement in Shuttles for Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a top view of a shuttle made according to my invention.

Figure 2 is a cross-section taken lengthwise through the shuttle, and exposing the axis of its bobbin.

One of the objects of this invention is to prevent the twisting of the thread of a rotating shuttle, and in order to prevent such twisting, I place the bobbin at one side of the centre of motion of the shuttle, and make it free to be revolved on its own axis by the pull on its thread in the operations of sewing; another object is to provide an adjustable tension upon the bobbin thread, and this is brought about by the pressure of a spring whose free end bears against the inner side of the bobbin.

A is a block which supports the rotating shuttle, C; one side of this block has a circular depression, B, in which the shuttle and its appurtenances are placed. Upon the bottom of this depression is placed a circular plate or disk, E, which is attached at its centre on its inner side to a shaft, J, that is driven by means of a crank, K. The shuttle, C, is held in place in the depression, B, so that the path pursued by the nose of the shuttle shall always be close to the sides of the depression, by two horns, D D, rising from the plate, E, at the same side of the line of its greatest width. The bobbin, F, is sunk in a cavity in the upper side of the shuttle, and is fitted to revolve upon a collar, h, extending from the bottom of the cavity, the centre of the bobbin setting over the collar, and the bobbin itself being held in place in the shuttle by a screw, G, which screws into the said collar. The under side of the shuttle has a recess, O, which is sunk a little beyond the plane of the bottom of the cavity in which the bobbin rotates. To the bottom of the cavity, O, by means of a set-screw, I fix a flat spring, I, whose free end extends along the inner side of the bobbin, and nearly across its diameter, the spring, I, having a hole made through it, so that it can set over the collar, h. This spring is slightly deflected from a plane surface, so that it may bear with an elastic pressure against the side of the bobbin, producing tension on the bobbin thread by forcing the bobbin against the head of the screw-pin, G. The thread proceeds from beneath the outer flange of the bobbin, over the side of the shuttle, to the needle hole, P, through which it passes in an upward direction. The thread is wound on the bobbin in a direction contrary to the direction of motion of the shuttle, and it therefore results that the slack thread will be always taken up during and by means of the rotation of the shuttle, so long as the bobbin itself is held stationary by the spring, I. When the pull on the thread is sufficient to overcome the force of this spring, the bobbin will be rotated, and so furnish just enough thread for a new stitch, and when the feed becomes stationary, the rotation of the bobbin and the delivery of the thread cease. Therefore no excess of slack is made in the shuttle thread by reason of the free rotation of the bobbin. The tension on the shuttle thread can be increased and decreased at pleasure and with facility by screwing the bobbin closer upon the spring, I. A lubricated packing may be placed between the bobbin and the spring to prevent too much wear of the parts. This manner of constructing and arranging the bobbin and shuttle, moreover, prevents the shuttle thread from being alternately twisted and untwisted during the rotation of the shuttle, as is commonly done in the ordinary rotary shuttles, and which action forms a serious objection to rotary shuttles for sewing-machines. In my shuttle and bobbin, the twist which would be put on the thread by the rotary motion of the shuttle is prevented by placing the bobbin eccentrically in the shuttle, and by the manner and direction of winding its thread. When the bobbin is carried to the side furthest from the needle hole, P, its thread is wound off, because the bobbin is then proceeding away from the place where the thread is held fast, and since the thread in winding off turns the bobbin in a direction contrary to the direction of motion of the shuttle, the twist which would be made in the thread by the rotation of the shuttle is compensated. When the bobbin has passed the point of greatest distance from the needle hole, P, the slack thread is taken up by being wound around the bobbin, which becomes stationary on its axis so soon as it has passed the point of its greatest throw, and so permits the rotation of the shuttle to bring the thread around it again, thereby preventing the slack thread from becoming untwisted.

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

1. In rotating shuttles for sewing-machines, winding and unwinding the shuttle thread so as to prevent it

from being twisted and untwisted during the revolutions of the shuttle, by arranging the bobbin eccentrically to the centre of motion of the shuttle, substantially as shown.

2. The arrangement of the spring I, collar *h*, bobbin F, screw G, shuttle C, and plate E, constructed and operating in the manner and for the purpose herein specified.

Witnesses:

GEO. H. LENHER.

A. McCURDEY,

GEO. W. SIZER.