

(No Model.)

P. DIEHL.
SHUTTLE FOR SEWING MACHINES.

No. 530,095.

Patented Dec. 4, 1894.

Fig. 1.

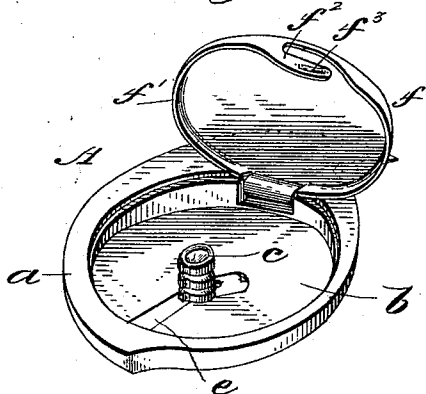


Fig. 2.

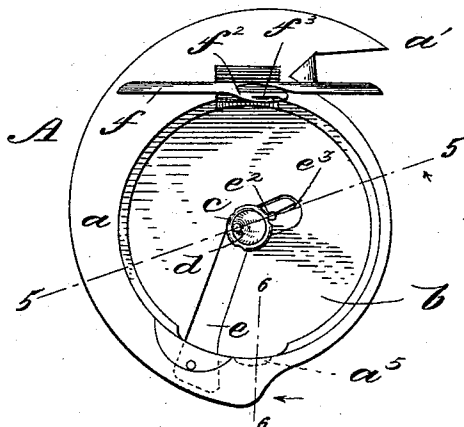


Fig. 3.

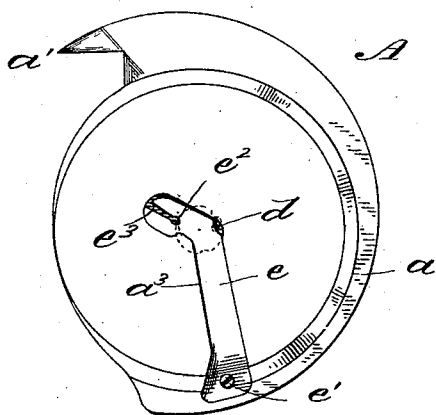


Fig. 4.

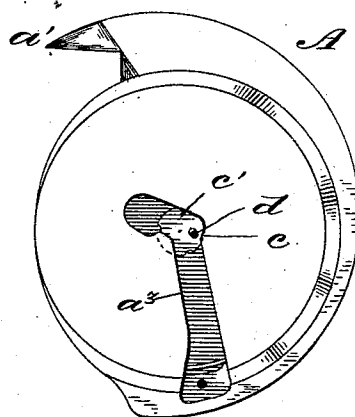


Fig. 5.

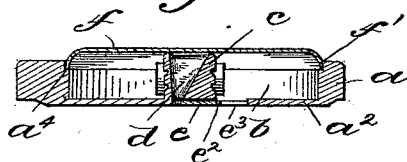
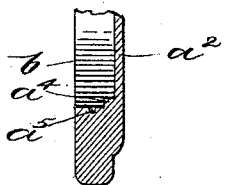


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 530,095, dated December 4, 1894.

Application filed June 9, 1894. Serial No. 514,029. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, 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.

10 My invention relates to that class of shuttles adapted to oscillate in circular shuttle races, and my invention has for its object to provide a thin shuttle more particularly intended for use in multiple sewing machines
15 in which it is desirable to employ a number of closely-placed shuttles.

In order that the shuttles of a multiple sewing machine may be placed near together it is necessary that the same should be made
20 comparatively thin, and to this end it is desirable to supply these thin shuttles with cops of thread, rather than with bobbins. In using cops of thread in shuttles of this class to which my invention relates, more or less difficulty has been experienced in the use of cops
25 from the centers of which the thread is drawn, as when a cop has been nearly used up the shell composed of the last few layers of thread is liable to collapse, and thus the thread may
30 become tangled and broken.

My invention has for its object to provide a shuttle, of the class referred to, which will be free from the objections existing in similar shuttles heretofore constructed. To this end
35 my improved shuttle is provided with a thread cavity which is preferably eccentric to the axis of oscillation of the shuttle (to enable the needle loops to be cast off earlier in the movements of the shuttle than would be possible with a shuttle having a thread cavity
40 or chamber concentric with its axis of movement) said thread cavity having at or near its center a stud or post on which a cop of thread, having a central opening, will be held stationary relative to the shuttle, said stud or
45 post preferably having its exterior somewhat roughened to prevent the cop, fitted somewhat tightly thereon, from turning, and said stud or post having through it a thread delivery
50 hole or aperture from which the thread of the

cop, drawn from the exterior of the latter, may be passed.

The rear wall of the shuttle is cut away for the reception of a tension spring which can lie in the recess provided for it so that its
55 outer or rear face will be just flush with the outer or rear face of said wall, the tension spring being provided with an open slot leading into a thread delivery hole or aperture which is nearly concentric with the axis of
60 oscillation of the shuttle, and thus the said shuttle, notwithstanding the fact that the thread cavity may be eccentric to its axis of movement, will have a thread delivery which is near the center of its axis of oscillation. 65

The tension spring is attached to the body of the shuttle near the periphery of the latter, and its free end presses against the rear end of the stud or post on which the cop of thread is held, the outer end of said stud or post being
70 partly cut away for the reception of said spring so that the latter will not project out beyond the outer face of the rear wall of the shuttle.

To provide for a friction surface of suitable extent, to make a smooth and efficient
75 tension pressure on the thread, the hole through said stud or post, through which the thread running from the exterior of the cop is delivered, instead of being made straight
80 through said stud or post is preferably made as an inclined funnel so that the thread delivery end of said hole, at the rear part of said stud or post, will be far enough away from the thread delivery hole in the tension spring
85 to furnish an extended tension bearing for the thread.

The thread cavity of the shuttle is closed by a hinged cover having a peripheral, inturned lip which, when the said cover is closed,
90 fits against an annular shoulder formed on the wall of the thread cavity in the shuttle, said hinged cover having a spring finger provided with a slight projection adapted to snap into a recess in the wall of the said thread
95 cavity to hold the cover closed.

In the accompanying drawings Figure 1 is a perspective view of my improved shuttle, with the cover partly lifted. Fig. 2 is a front view of the same, with the cover raised at 100

right angles to the body of the shuttle. Fig. 3 is a rear view with the tension spring in place, and Fig. 4 is a similar view with the tension spring removed. Fig. 5 is a cross section on line 5—5 of Fig. 2, and Fig. 6 is a detail section on line 6—6 of Fig. 2.

A denotes the shuttle body provided with a peripheral rim portion *a* adapted to fit in the shuttle race and having a loop-seizing point or beak *a'*. The shuttle body A is formed with a thread cavity or chamber *b* which is preferably eccentric to the axis of oscillation of the shuttle, said thread cavity having at or near its center a stud or post through which runs an inclined thread delivery hole *d* made in the form of an inclined funnel. The rear wall *a*² of the shuttle body is provided with a recess *a*³ for the reception of a tension spring *e* which is attached, by a screw *e'*, to the peripheral rim portion of the shuttle; said tension spring being provided at its free end with a thread delivery hole *e*² which is arranged to be nearly concentric with the axis of oscillation of the shuttle, into and which, from the extreme end of said spring, opens a threading slot *e*³. By inclining the tapering thread delivery hole *d* through the post *c*, as more clearly shown in Fig. 5, its thread delivery portion at the rear side of the shuttle will be farther from the thread-delivery hole *e*² in the tension spring than would be the case were said hole *d* made straight through the said stud or post, and this inclined position of the said hole *d* affords a longer bearing surface, at *c'*, on the rear end of the said post, for the pressure of the tension spring against the thread, than would otherwise be provided; so that the friction surface between the rear end of said post and said tension spring will be of sufficient extent to insure a smooth and efficient tension on the thread.

The stud or post *c* is intended to tightly fit a central opening in a cop of thread, so that the said cop will be held stationary on the said stud or post; and to more securely hold the cop of thread stationary on the said stud or post the surface of the latter is preferably corrugated or otherwise roughened or notched so that it will have a suitable frictional hold on the cop of thread placed thereon, and from the periphery of which cop the thread will run through the hole *d* in the said stud or post as it is delivered.

The thread chamber of the shuttle is closed by a hinged cover *f*, preferably provided with an annular, inturned lip *f'* to fit closely against an annular shoulder *a*⁴ formed for its reception on the wall of the said thread chamber, said cover having also a spring finger *f*² which will preferably be provided with a slight projection *f*³ adapted to spring into a slight recess *a*⁵ formed for its reception in the wall of the thread chamber, to hold the cover closed.

With my improved shuttle constructed as above described I am enabled to secure a

proper tension on the thread in a shuttle having a thread cavity which is eccentric to the axis of oscillation of the said shuttle, this eccentric arrangement of said thread cavity being desirable for the reason that a shuttle thus constructed can cast off the loops of needle thread earlier in its oscillating movements in the machine than is possible with a similar shuttle having a thread cavity which is concentric with its axis of oscillation. Furthermore, my improved shuttle is specially adapted to carry a cop of thread held therein in such a manner that the thread may be entirely used up without danger of breaking the thread by any tangling of the same incidental to the collapsing of a nearly used-up cop; while the cover of the shuttle, having the inturned lip fitting against a shoulder around the wall of the thread chamber, provides means for securely closing the shuttle and thereby inclosing the cop of thread without leaving any inwardly projecting part against which the thread could, by any possibility, come in contact. In other words, the inturned annular lip on the cover fitting against a shoulder formed for its reception on the wall of the thread cavity of the shuttle provides a smooth inclosed chamber in which the cop of thread is held, and avoids any catching of the thread on any projection within said thread chamber.

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

1. A sewing machine shuttle having a thread cavity which is provided with a stud or post having a thread delivery hole through it from front to rear, combined with a tension spring recessed into the rear wall of the said shuttle and arranged to press on the rear end of the said stud or post, said spring having a thread delivery opening which is out of register with the outer end of said thread delivery hole of the said stud or post, to afford a proper friction surface between the rear end of said stud or post and the inner face of said spring.

2. A sewing machine shuttle having a thread cavity which is provided with a stud or post having a thread delivery hole through it from front to rear, combined with a tension spring recessed into the rear wall of said shuttle and arranged to press on the rear end of the said stud or post, said tension spring having a thread delivery aperture, the said thread delivery hole through the said stud or post being inclined so as to bring its delivery end at the rear side of said shuttle as far as possible from the said thread delivery aperture of said tension spring.

3. A sewing machine shuttle having a thread cavity which is provided with a stud or post having a thread delivery hole through it from front to rear, combined with a tension spring recessed into the rear wall of the said shuttle, and arranged to press on the rear end of the said stud or post, and the latter having a roughened surface to afford a strong frictional

tional hold on a cop of thread to be placed thereon.

4. A sewing machine shuttle provided with a thread cavity which is recessed to form an annular shoulder around the same, inside of the outer face of the body thereof, combined with a cover hinged to the body of the said shuttle and provided with an annular, inturned lip to fit against the said annular shoulder, said lip being of a thickness which is substantially equal to the width of said shoulder so that the inner face of said lip is flush with the wall of the thread cavity, thus forming a smooth, inclosed chamber within said shuttle.
5. A sewing machine shuttle provided with a thread cavity which is recessed to form an annular shoulder around the same, inside of the outer face of the body thereof, combined with a cover hinged to the body of the said

shuttle and provided with an annular, inturned lip adapted to fit against the said annular shoulder, said lip being of a thickness which is substantially equal to the width of said shoulder so that the inner face of said lip is flush with the wall of the thread cavity, thus forming a smooth, inclosed chamber within said shuttle, said cover also having a spring finger, extending from said lip, and the wall of the said cavity being provided with a recess to be engaged by the said spring finger to hold the said cover closed.

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

PHILIP DIEHL.

Witnesses:

HENRY CALVER,
B. H. MARSH.