

(No Model.)

H. A. BATES.
SHUTTLE FOR SEWING MACHINES.

No. 569,316.

Patented Oct. 13, 1896.

Fig. 2.

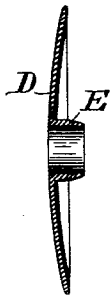


Fig. 1.

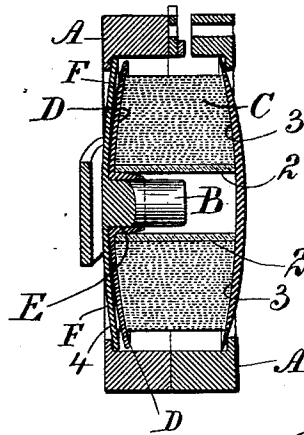
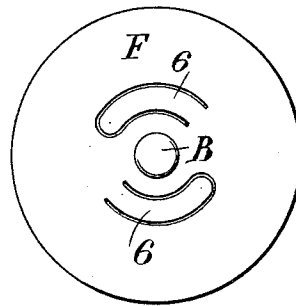
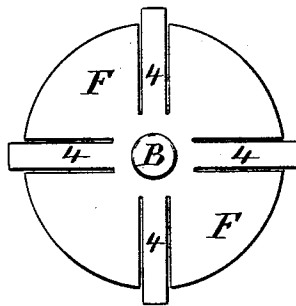


Fig. 4.

Fig. 3.



Witnesses

Chas. H. Smith
J. Staib

Inventor.

Henry A. Bates
per Lemuel W. Merrill
Att'y.

UNITED STATES PATENT OFFICE.

HENRY A. BATES, OF YONKERS, NEW YORK.

SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 569,316, dated October 13, 1896.

Application filed June 27, 1895. Serial No. 554,188. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. BATES, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented an Improvement in Shuttles for Sewing-Machines, of which the following is a specification.

In Letters Patent No. 521,080, granted to me June 5, 1894, a cop of thread is represented, of a generally cylindrical form, wound upon a paper tube and having at one side a disk, of paper, which is caused to adhere to the cop or bobbin. In Letters Patent No. 515,187, granted to me February 20, 1894, a shuttle is represented in which there is a stationary side formed by a thin disk, of metal, inserted into the shuttle and resting against the annular offset or shoulder in such shuttle, and at the other side is a similar disk carrying a pin, and also a spring acting against the thread of the bobbin to press the other side of the thread-bobbin against the stationary interior surface of the shuttle. I have employed the devices of these two patents together, so that the spring around the pin in the Patent No. 515,187 presses against the paper disk at one side of the cylindrical bobbin to force the thread at the other side of the bobbin against the stationary interior surface of the shuttle case or cavity. The present invention is a modification of these devices. Where the bobbin of thread with a paper disk at one side was employed, the special duty of the paper disk was to prevent the thread drawing off at that side of the bobbin and winding around the pin of the shuttle, but at the other side of the thread-bobbin if such thread slipped off it could draw up again without difficulty by passing freely at the end of the pin, but it became necessary in employing these devices together to put upon the thread-bobbin the paper disk, and the operator through carelessness might get the bobbin improperly placed in the shuttle. For this reason it was generally advantageous to employ a paper disk at each side of the thread-bobbin, as shown in the aforesaid Patent No. 521,080.

In the present improvement I avoid the use of the paper disks and obtain the same advantages, so that the operator simply employs the ordinary cylindrical thread bobbin

or cop wound upon the paper tube, and I provide, in connection with the devices represented in my Patents Nos. 515,187, 505,305, or 522,002, a disk, preferably of metal, having a short tube or sleeve fitting the paper tube of the cop sufficiently tightly for the two to adhere together by friction, so that when the cop of thread and the disk are pressed together they can be put into a shuttle and will revolve upon the stationary pin thereof, the parts being put together, so that the disk upon the bobbin is adjacent to the support for the center pin; and in use the disk sets sufficiently close against the thread to prevent the thread drawing off at this side and winding around the center pin, while at the other side of the shuttle, if the thread draws off the edge of the thread-bobbin, it can pass by the end of the pin freely, and I find it advantageous to employ a spring-pressure acting at one side of the thread-bobbin to press the thread itself of the bobbin against the interior surface of the shuttle to simultaneously apply a friction to prevent the thread-bobbin rotating too freely and also lessen the risk of the thread pulling off the edge of the thread-bobbin and passing by the end of the pin upon which the thread-bobbin rotates as the thread is drawn off. By this improvement I am enabled to make use of ordinary bobbins or cylindrical cops of thread as sold upon the market and to lessen the risk of the shuttle-thread becoming entangled, so that the sewing-machine can be run with much more rapidity and regularity and the sewing will be much more perfect than with the devices that have heretofore been employed.

In the drawings, Figure 1 is a section in larger size, representing a sewing-machine shuttle with my improvements applied thereto. Fig. 2 represents the disk and sleeve sectionally and detached, and Fig. 3 is an elevation of a spring-disk which I sometimes employ for supporting the central pin of the shuttle and for pressing on the disk so as to hold the thread of the bobbin against the interior surface of the shuttle, and Fig. 4 shows a modification in the form of the disk.

The shuttle A may be of any desired character, there being a cavity for the reception of the thread-bobbin and a central pin B,

upon which the thread-bobbin is supported. The thread-bobbin C may be of any desired character, and it is usually and advantageously wound cylindrical with the thread traversed backward and forward upon its cylindrical surface to lessen the risk of slipping off at the ends of the cylindrical portions. Thread-bobbins of this character are well known upon the market, the thread being wound upon a tube 2, usually of paper.

The disk D is advantageously of thin sheet metal, and it is provided with a central tube or short sleeve E, which is of an interior diameter to freely turn upon the pin B and of an external diameter to fit the interior of the tube 2, and it is advantageous to make the exterior surface of this sleeve tapering, so that it will pass into the tube 2 freely, and by slight pressure the surface of the thread will be brought into intimate contact with the surface of the disk D, and the disk D and bobbin will be held together with sufficient force by the friction of the tube 2 upon the sleeve E. The parts are now in a condition to be inserted into the shuttle upon the central pin B, care being taken to pass the disk and sleeve over the pin, so that the unprotected side of the thread of the bobbin will be adjacent to the outer end of the central pin B, so as to come against the free smooth surface 3 of the interior of the shuttle, and when the devices thus far described only are made use of the disk D prevents or lessens the risk of the thread drawing off at that side of the bobbin, and the risk of the thread winding around the center pin is reduced to a minimum, but the thread may draw off at the other side of the thread-bobbin without being obstructed by the center pin. I, however, prefer to make use of a spring-pressure for forcing the thread of the bobbin against the free smooth surface 3 of the shuttle to produce the desired pressure and friction to apply the proper tension to the shuttle-thread. A spring of any suitable character may be employed for this purpose, the same acting against the disk D, and I have used such a spring as that shown in my Patent No. 515,187 or No. 522,002.

I have shown in Fig. 3 the central pin B as supported by a spring-disk F, the ends of the springs resting against the annular shoulders that are usually found in sewing-machine shuttles, and hence the spring-arms of the disk F will cause the central portion of the spring-disk to bear against the side of the disk D at or near the end of the sleeve E, and thereby the thread of the bobbin will be pressed against the smooth surface 3 of the shuttle, but in cases where a disk is provided with a thin spring edge to hold firmly into the cavity of the shuttle, as in my Patent No. 505,305, the pin B is rigidly supported, and the springs that act to press the thread-bobbin against the smooth side 3 of the shuttle may be formed out of the metal of such

disk, as represented at 6, Fig. 4, such springs being cut in any desired shape. I have, however, represented them in the form of segmental spring-tongues that are to be bent inwardly to press against the disk D.

In the preparation of thread-bobbins for the market it sometimes happens that through carelessness the bobbin of thread is not properly pressed or consolidated, and hence it is too large for the shuttle. In such cases the disk D can be temporarily omitted, so that the thread-bobbin can be put into the shuttle for use, thus saving the loss of imperfect thread-bobbins. In this case, however, there is a risk of the thread drawing off at the side of the bobbin that is next to the spring-disk and winding around the central pin.

Shuttles of the general character before referred to herein are usually sold with the machines and contain removable metal spools, upon which the thread can be wound from time to time. In the present invention the removable appliances can be placed in the shuttle without any change to the shuttle itself, so as to adapt the shuttle especially for manufacturing purposes, and so that the operator can use bobbins of thread that are wound upon paper tubes and sold in the market; and by combining with the pin and removable disk shown in my Patent No. 515,187 a disk having a sleeve to fit tightly within the paper tube the thread is held closely against this disk and cannot become entangled around the sleeve or the pin that supports the thread-bobbin. Hence the risk of the thread becoming entangled is reduced to a minimum, because the thread at the other side is held against the inner surface of the shuttle, and should the thread slip off at this side there is nothing to prevent the same drawing up freely as the sewing progresses. The appliances herein set forth are of but little expense and can be supplied with the thread-bobbins so as to be used in the sewing-machine shuttles without such shuttles being changed in any respect.

I claim as my invention—

1. The combination with the shuttle having a cavity and a removable disk held firmly into such cavity by friction on its edges, of a removable disk fitting loosely into such cavity and having a central projecting sleeve with a tapering exterior surface adapted to receive and firmly hold by friction the paper tube of the thread-bobbin and to revolve with the same as the thread is drawn off, and a spring to press the exposed side of the thread-bobbin against the stationary disk within the shuttle, substantially as set forth.

2. The combination with a shuttle having a cavity with a stationary side against which the thread of the bobbin is adapted to rest, of a disk embracing one side of said bobbin and having a tubular sleeve which tightly holds by friction the tube of the thread-bobbin, and a pin in the shuttle for receiving

loosely the disk and sleeve so that the latter are rotated together with the bobbin as the thread is drawn off, substantially as set forth.

3. The combination with a shuttle having a
5 cavity, of two removable disks held firmly in position by the friction of the edges, a concave disk having a central tapering projection adapted to receive and hold firmly the paper tube of a thread-bobbin, and a spring
10 acting to press the thread of the bobbin against the internal surface of one of the removable disks, substantially as set forth.

4. The combination with the shuttle having a cavity with a stationary side against which
15 the thread of the bobbin rests, of a removable disk having a centrally-projecting sleeve with a tapering exterior surface adapted to receive and hold firmly by friction the paper tube of the thread-bobbin and to be inserted with
20 the bobbin into the cavity of the shuttle, and

a spring acting upon the disk to press the thread of the bobbin against the interior of the shuttle to apply tension to the thread as the bobbin and disk are revolved, substantially as set forth.

5. The combination with a shuttle having a cavity for a thread-bobbin, and an annular shoulder around the opening, of a removable disk adapted to be received into the cavity and rest at its edges against the shoulder, and
30 having a spring formed of the metal of the disk acting to press one side of the thread-bobbin against the interior of the shuttle at the opposite side to the spring-disk, substantially as set forth.

Signed by me this 25th day of June, 1895.

II. A. BATES.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.