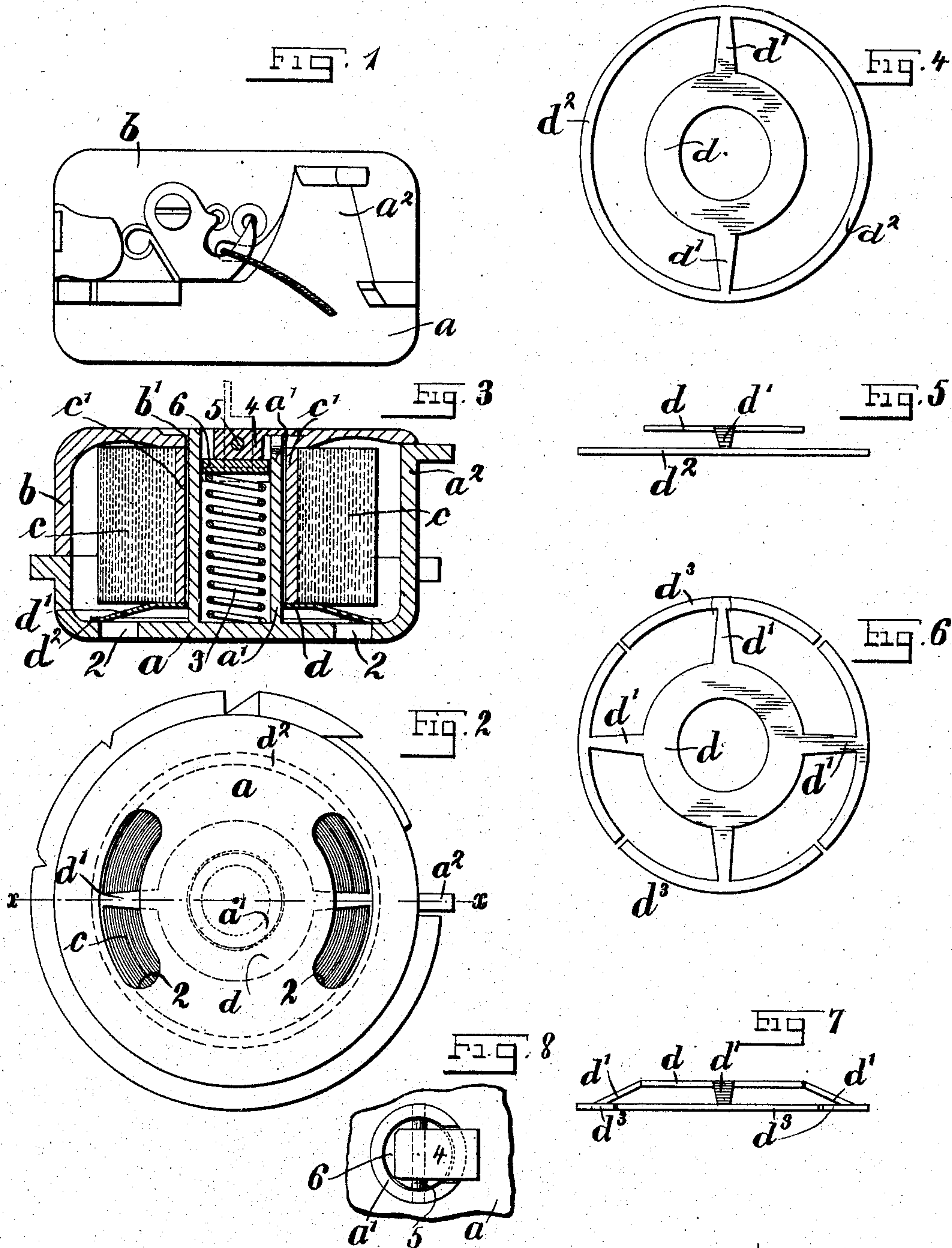


H. A. BATES.
SHUTTLE FOR SEWING MACHINES.

APPLICATION FILED JULY 7, 1904.



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SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 791,127, dated May 30, 1905.

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To all whom it may concern:

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

Heretofore shuttles for sewing-machines have usually been made with the base and bobbin-case imperforate, with the disadvantage that lint was retained within the case and it was difficult for oil to pass out, and the shuttles retained the heat frictionally produced. At present it is becoming the practice to provide holes in the base or bobbin-case to permit the lint and oil to pass out and to keep the parts cool by the movements of air permitted through the holes.

My invention relates to a shuttle of the latter form and the same is an improvement upon the device shown and described in Letters Patent granted to me June 5, 1900, No. 651,155, and it relates particularly to the friction-spring employed in the shuttle in connection with the cop to prevent the cop revolving faster than the thread is unwound.

In carrying out my invention I dispense with the outturned fingers of the spring, which bear frictionally upon the tubular axis of the device of my aforesaid patent, and provide the free ends of the arms with a rim or parts of circular form at the maximum diameter of the spring, which rim or parts rest upon the inner surface of the perforated shuttle-base. In other words, the spring comprises connected parts in parallel planes adapted to bear respectively upon the end of the cop and inner surface of the shuttle-base to apply friction to the cop within the bobbin-case. This rim of the spring also acts to prevent the thread passing through the openings in the shuttle-base, at the same time increasing the regularity of the movement of the spring and facilitating the bearing thereof upon the cop.

In the drawings, Figure 1 is an elevation representing the shuttle of my improvement. Fig. 2 is an inverted plan of the same. Fig. 3 is a vertical section at the line xx of Fig. 2. Fig. 4 is a plan and Fig. 5 an edge view of the preferred form of spring. Fig. 6 is a

plan and Fig. 7 an edge view of a modified form of spring, and Fig. 8 is a plan of the latch holding the parts of the shuttle. The figures are of large size for clearness.

The shuttle-base and the bobbin-case may be of any general desired character, the same forming no part of my present invention.

a represents the shuttle-base, provided, as shown, with a tubular part or pin a' and with perforations 2. Within the tubular part or pin there is a helical spring 3, a latch 4, connected by the pivot-pin 5 within and at the upper end of the tubular part or pin, and between the upper end of the helical spring 3 and the under surface of the latch 4 there is an intervening disk 6.

The shuttle-base is provided with a tongue a^2 , and the bobbin-case b is notched at one side to pass over this tongue a^2 , and it is provided with a central perforation b' to fit over the upper edge of the tubular part or pin a' . To separate the bobbin-case from the shuttle-base, the latch 4 is turned into the vertical position shown by dotted lines in Fig. 3, when the bobbin-case can be lifted off and the same separated from the shuttle-base. These parts are also brought together with the latch in the same position, after which the latch is turned down, as shown in full lines, Fig. 3, so that the free edge thereof passes beyond the boundary of the tubular part or pin and extends over upon the upper recessed surface of the bobbin-case against the bobbin-case to hold the same down, the latch 4 in either position being held by the tension of the spring 3 and its action against the disk 6.

c is the cop of thread, formed, as usual, around a tube c' of paper, the said cop fitting around the tubular part or pin a' and between the shuttle-base and the bobbin-case.

The spring comprises a central disk, radial arms, and a rim. In Figs. 4 and 5, d represents the central disk, having an aperture sufficient to freely pass the same over the tubular part or pin a' . The disk is provided with integral radial arms d' at opposite points and two in number, and a rim d^2 , formed integral with the disks and the arms, the parts being bent, so that the disk and the rim are in parallel planes. The rim d^2 rests upon the inner

surface of the shuttle-base, and it is in diameter slightly greater than the diameter of the base across the openings. Consequently any loose thread within the shuttle cannot get underneath the edge of the rim to pass out through the perforations 2. While the rim lies upon the inner surface of the shuttle-base the disk in a parallel and higher plane comes against one end of the cop and presses the same against the inner surface of the bobbin-case with sufficient friction to prevent the cop revolving faster than the thread is unwound.

In the modified form of spring shown in Figs. 6 and 7 the disk d corresponds in all particulars with the same part in Figs. 4 and 5, and it is provided with radial arms d' , four in number, and integral with these radial arms are rim-segments d^s —that is, instead of an integral unbroken rim the rim is divided into four parts separated at points intermediate to the arms, but with the rim-segments in a plane parallel to the central disk and the spring performing all the functions of the preferred form of spring, as shown in Figs. 4 and 5, the essential functional difference of the two springs residing in the fact that the spring shown in Figs. 4 and 5 is preferred for a smaller shuttle and cop where the work is lighter than would be the case with a large shuttle and large cop, for which latter the form of spring shown in Figs. 6 and 7 is especially adapted.

I claim as my invention—

1. In a sewing-machine shuttle, the combination with a bobbin-case and cop, and a shuttle-base with a central part or pin receiving the same, of a spring comprising connected parts having extended bearing-surfaces in parallel planes adapted to bear respectively upon one end of the cop and the inner surface of the shuttle-base to apply friction to the cop.

2. In a sewing-machine shuttle, the combination with a bobbin-case and cop, and a shuttle-base having perforations with a tubular part or pin receiving the same, of a spring comprising connected parts having extended bearing-surfaces in parallel planes adapted to bear respectively upon one end of the cop and the inner surface of the shuttle-base to apply friction to the cop.

3. In a sewing-machine shuttle, the combination with a bobbin-case and cop, and a shuttle-base with a central part or pin receiving

the same, of a spring comprising an apertured central disk, radial arms and rim, the central disk and rim being in parallel planes adapted to bear respectively upon one end of the cop and the inner surface of the shuttle-base to apply friction to the cop.

4. In a sewing-machine shuttle, the combination with a bobbin-case and cop, and a shuttle-base having perforations with a tubular part or pin receiving the same, of a spring comprising an apertured central disk adapted to fit about the axis of the shuttle-base, integral radial arms and a rim integral therewith, the central disk and the rim being in parallel planes adapted to bear respectively upon one end of the cop and upon the inner surface of the shuttle-base to apply friction to the cop.

5. In a sewing-machine shuttle, the combination with a bobbin-case and cop, and a shuttle-base having perforations with a tubular part or pin receiving the same, of a spring comprising an apertured central disk adapted to fit about the axis of the shuttle-base, integral radial arms and a rim integral therewith, the central disk and the rim being in parallel planes adapted to bear respectively upon one end of the cop and upon the inner surface of the shuttle-base to apply friction to the cop, the rim of the spring being in maximum diameter greater than the diameter across the perforations in the shuttle-base so as to insure the thread remaining within the shuttle.

6. In a sewing-machine shuttle, the combination with a bobbin-case and cop, and a shuttle-base with a central part or pin receiving the same, of a spring comprising connected parts in parallel planes adapted to bear respectively upon one end of the cop and the inner surface of the shuttle-base to apply friction to the cop, said connected parts consisting of an apertured central disk adapted to surround the axis of the shuttle-base, a multiplicity of integral radial arms, and rim-segments formed integral with said arms, the separations of the segments being intermediate of the arms.

Signed by me this 5th day of July, 1904.

HENRY A. BATES.

Witnesses:

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S. T. HAVILAND.