No. 721,978. PATENTED MAR. 3, 1903.

J. E. TICHON.

TENSION DEVICE FOR LOOM SHUTTLES.

APPLICATION FILED JAN. 2, 1902.

NO MODEL.

Fig. 1.

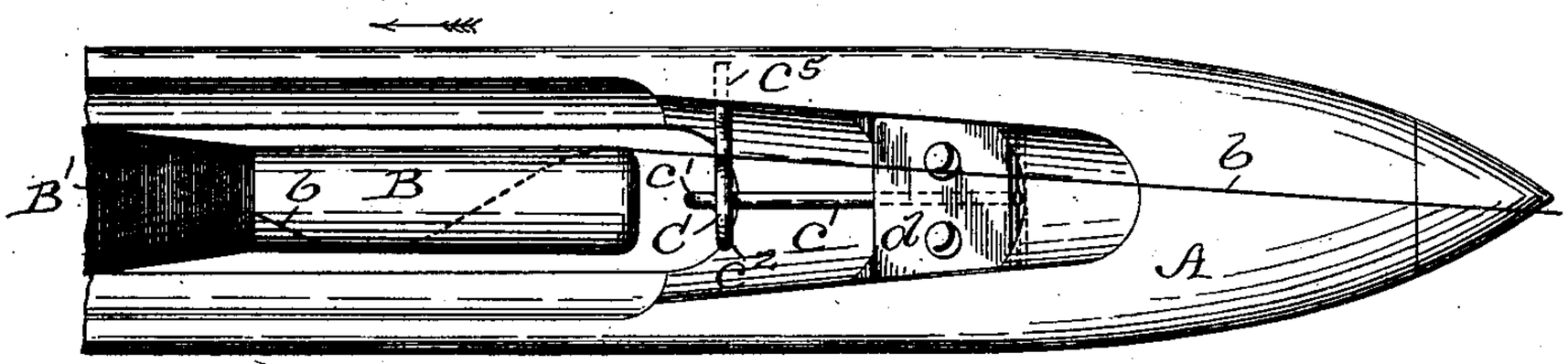


Fig. 2.

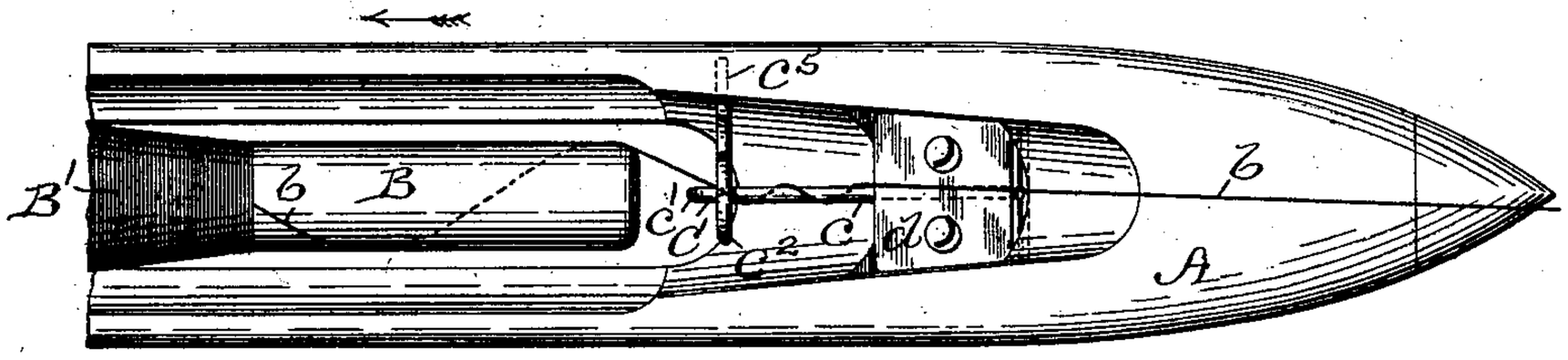


Fig. 3.

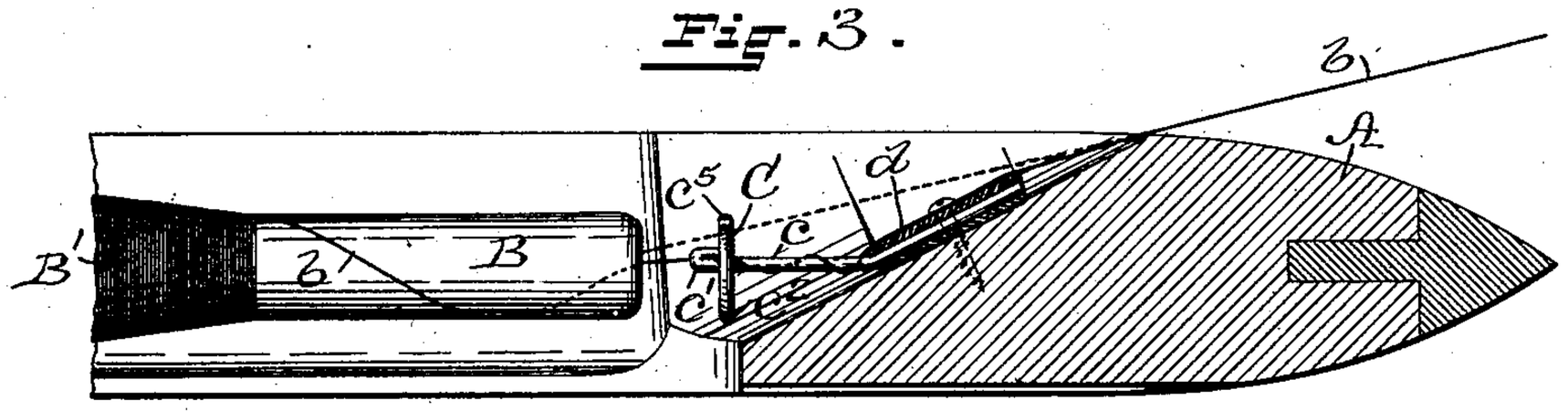


Fig. 4.

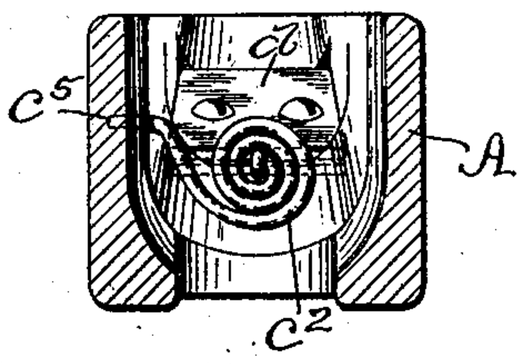
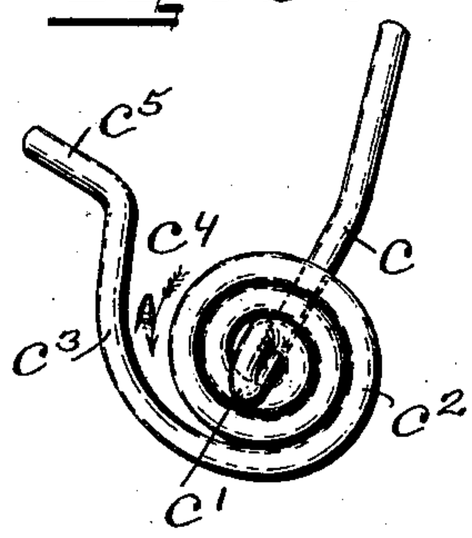


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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TENSION DEVICE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 721,978, dated March 3, 1903.

Application filed January 2, 1902. Serial No. 88,154. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. TICHON, a citizen of the United States, residing at New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Tension Devices for Loom-Shuttles, of which the following is a specification.

In weaving cloth it is essential that the weft or filling threads be laid straight across the warp-shed. To secure this, sufficient frictional resistance to the delivery of the filling-thread from the shuttle is required. In the older forms of shuttles this frictional resistance was secured by the passage of the filling-thread through the shuttle-eye. Such frictional resistance does not control the drawing off of the filling from the cop or bobbin in the shuttle and allows of the ballooning of the thread, which is liable to cause kinking and breaking of the weft-thread. In self-threading shuttles, particularly when used in magazine-looms, the delivery of the thread is not controlled by frictional resistance on the first throw of the shuttle. The improved tension device when applied to the class of self-threading shuttles shown and described in United States Patent to James H. Northrop, No. 568,207, of September 22, 1896, for improvement in self-threading loom-shuttles, will control the frictional tension of the filling-thread at every throw of the shuttle.

The object of the invention is to provide an automatic threading tension device for loom-shuttles; and to this end the invention consists in the peculiar and novel construction of the device more fully described hereinafter.

Figure 1 is a top view of part of a loom-shuttle and part of a bobbin, showing the weft-thread entering the improved tension device as the shuttle is thrown in the direction indicated by the arrow. Fig. 2 is the same view of part of the shuttle and part of the bobbin as Fig. 1, but shows the weft-thread in its passage around the stem of the tension device. Fig. 3 is a longitudinal sectional view of part of the shuttle, showing the weft-thread extending from the bobbin through the tension device in solid lines and indicating in broken lines the position of the weft-thread as it enters the spiral of the tension device. Fig. 4 is a transverse sectional view of the shuttle, showing the spiral guide of the tension device. Fig. 5 is a perspective view of the tension device.

Similar marks of reference indicate corresponding parts in all the figures.

In the drawings, A indicates the delivery end of the shuttle; B, the quill end of the bobbin; B′, the weft-thread carried on the bobbin, and *b* the weft or filling thread delivered from the bobbin.

The tension device C consists of the wire rod *c*, the forward end *c′* of which is bent and doubled on itself. The wire is now wound to form the spiral c^2, the plane of which is at right angles to the axis of the rod *c*. The spiral is sufficiently open to allow the passage of the weft-thread. After bending the wire to form two turns the wire is bent into the larger curve c^3, forming the guide to the entrance c^4, and then the wire is bent sharply to form the end c^5, which is secured in the side of the shuttle. I have shown the wire rod *c* secured to the head of the shuttle by means of the clamp-plates *d*, but do not wish to confine myself to the use of these clamp-plates.

In illustrating my invention I have not shown the usual thread-eye on the delivery end of the shuttle or other means for guiding the weft-thread, as is usual, to one side of the shuttle. My frictional tension device may be used in connection with any form of guide-eye or any form of self-threading device now used. In the preferred form, as shown in the drawings, I locate the end *c′* of the tension device on a line with the axis of the bobbin, forward of but near the end of the bobbin, so that the weft-thread as it is drawn from the end of the bobbin passes in the shape of a cone to the opening in the spiral, the said opening forming the apex of a cone, of which the end of the bobbin forms the base. By this arrangement the weft-thread is drawn against the bobbin and around the end of the bobbin in frictional contact with the thread on the full fresh bobbin, and when part of the thread

has been delivered the weft-thread is delivered while in frictional contact with the exposed end of the bobbin, as shown in the drawings. Ballooning of the weft-thread, which is the main cause of the kinking of the weft so very objectionable in the finer qualities of cloth, is prevented by my tension device. The frictional contact of the weft-thread with the bobbin secures an amount of frictional resistance and tension on the weft as it is delivered not possible with the frictional devices heretofore used on loom-shuttles. A loom-shuttle provided with my tension device will on the first throw cause the weft-thread to pass around the end of the shuttle and guide the weft into the entrance c^4 and around the two turns of the spiral c^2, at the same time winding the weft-thread spirally around the wire rod c. The delivery of the weft is at the first throw of the shuttle and all subsequent throws controlled by the frictional resistance of the thread on the bobbin and on the wire rod c of the tension device.

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

1. The combination with the head of the shuttle and the bobbin in the same, of the rod c, the end c' of the same, the spiral c^2, wound to form the entrance c^4 and at right angles to the plane of the rod c and means for securing the tension device C in the shuttle, as described.

2. A tension device for loom-shuttles, consisting of a wire rod the forward end of which is bent and doubled on itself and then wound to form a spiral, the plane of which is at right angles to the axis of the rod, as described.

3. The combination with the head of a shuttle and the bobbin in the same, of a tension device consisting of a wire rod c the forward end c' of which is bent and doubled on itself and then wound to form the spiral c^2, the plane of which is at right angles to the axis of the rod c, then bent to form the larger curve as at c^3 and the end c^5, and means for securing the same, as described.

4. A tension device for loom-shuttles, consisting of a rod the forward end of which is wound at right angles to the plane of the rod to form a spiral with an enlarged entrance, and means for securing the rod in the shuttle, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH E. TICHON.

Witnesses:
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ADA E. HAGERTY.