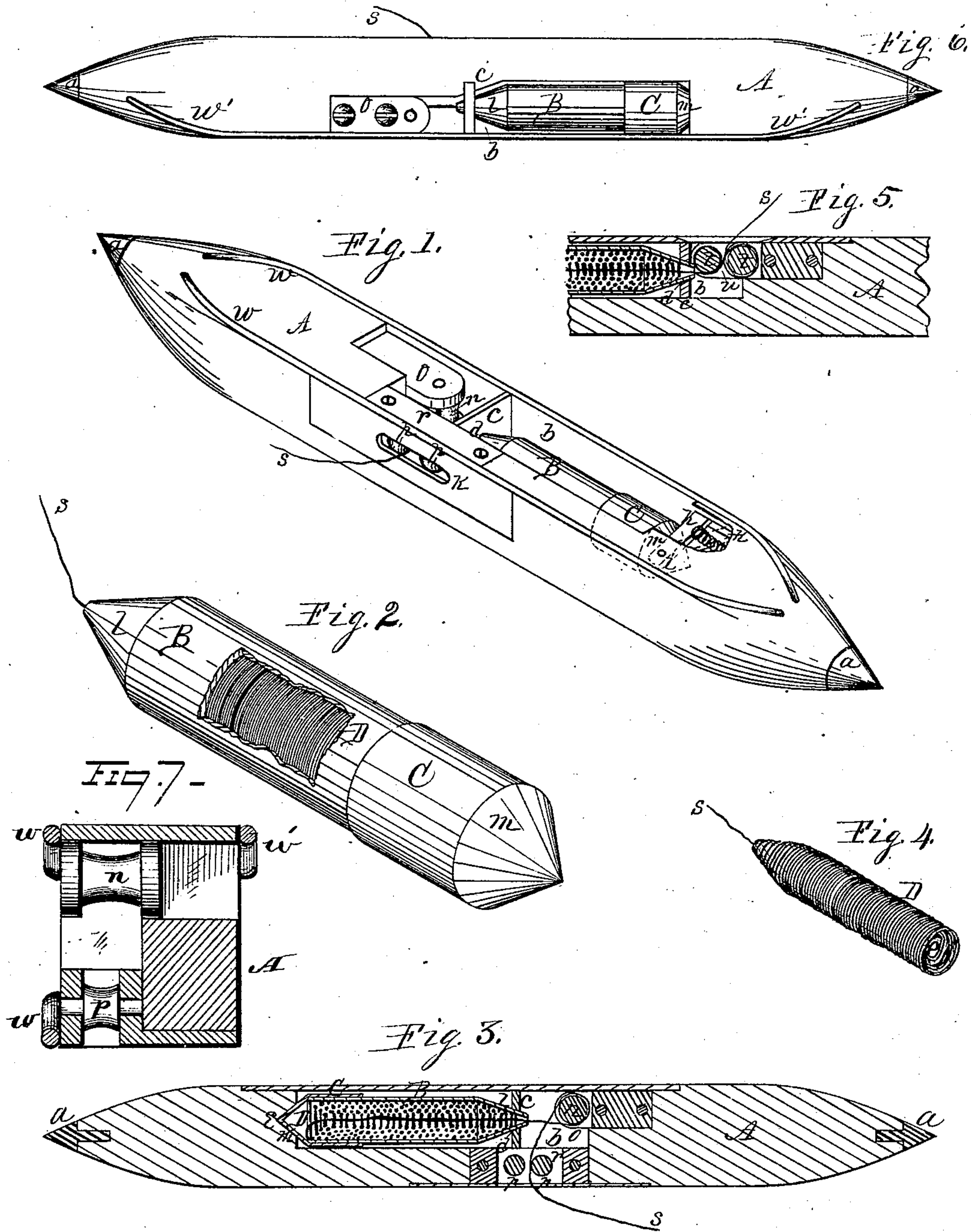


(No Model.)

F. A. LOCKWOOD.
Shuttle.

No. 236,444.

Patented Jan. 11, 1881.



Witnesses.
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UNITED STATES PATENT OFFICE.

FREDRICK A. LOCKWOOD, OF ROCKFORD, ILLINOIS.

SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 236,444, dated January 11, 1881.

Application filed May 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK A. LOCKWOOD, of the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Shuttles, of which the following is a specification.

My invention relates to shuttles for weaving wire webbing; and it consists in certain details of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an isometrical representation of a shuttle embodying my invention. Fig. 2 is an isometrical representation of the cop-case, in which a portion of the case is broken away to reveal the cop incased therein. Fig. 3 is a horizontal lengthwise central section through the shuttle, cop-case, and cop. Fig. 4 is an isometrical representation of a cop prepared to be placed in the case. At Fig. 5 is shown a modification of the method of taking the wire from the cop-case through the shuttle. Fig. 6 is a plan view of the shuttle, illustrating the guard. Fig. 7 is a transverse section of the shuttle, illustrating the relative location of the runners and the guard.

In the figures in the accompanying drawings, A represents a shuttle which, in its main outline, is substantially the same as shuttles heretofore in use for weaving various kinds of webbings for various purposes, and having its ends provided with metallic tips, as represented at *a*. This shuttle is provided with a central opening, *b*, of sufficient size to freely admit the cop-case, and this opening is fitted with a transverse division-bar, *c*, having a central opening, *d*, to receive the open forward end of the cop-case, and the rear end of the opening in the shuttle is fitted with a conic seat, *e*, to receive the rear conic end thereof.

At *h* is represented a spring-actuated latch, pivoted, as at *i*, having its free end capable of a lengthwise swinging movement in the lengthwise slot *k* in the edge of the shuttle, and its spring action tends to carry it toward the transverse division-bar. This transverse division-bar, conic seat, and spring-actuated latch form the seat of the cop-case, and their relative positions are such as to admit the case

to its seat when the spring-actuated latch is in the position represented in the dotted lines, and when the case is in place it will be held in position, having its forward open end in the central opening in the transverse division-bar, its rear end in the conic-formed seat, and the spring-actuated latch overlapping its rear conic end.

The cop-case is cylindrical, composed of any suitable material producing a tubular cylindrical case—in this instance in two parts, the main case B and cap C, of suitable size to receive the open end of the main case. Both portions of this case are fitted with conic ends *l* and *m*. The conic end *l* of the main case is open at its apex to permit the end of the wire to pass outward from the case.

At D is represented a cop of wire wound in a tubular cylindrical form, being formed of conic spiral coils inclined to its axis, succeeding each other in continuous layers wound alternately toward and from the center, producing a conical spiral-wound cop of suitable diameter and of proper length to be freely incased in the cop-case. This cop is removed from the spindle on which it is wound and is inserted point foremost into the main portion of the cop-case. The end of the wire from the square or hollow conic end of the cop is then passed through its tubular center and out of the forward open end of the cop-case. The cap portion C of the case is then put in place on the main portion of the case, which fits the cop for use in the shuttle.

At *n* is represented a roller fitted to revolve on a vertical journal-bearing supported in plates *o*, fixed to the shuttle projecting into the central opening.

At *p* are represented twin rollers, mounted to revolve on vertical journal-bearings supported in plates *r*, fixed to the shuttle near the edge thereof, from which the wire from the cop passes.

In use the wire *s* from the cop is passed round the roller *n*, thence between the twin rollers *p* outward through the edge of the shuttle, to be delivered to the warp in the process of weaving, to produce the webbing as the shuttle is passed through the shed of the warp in either direction. By this arrangement of

the rollers I produce a tension on the wire thread substantially uniform in the passage of the shuttle in either direction. This shuttle is provided with two runners, *w*, respectively located on the edges of its under side. 5 It is also provided with a guard, *w'*, located on one edge of its upper side. The guard and two runners are each shown as being formed of a suitable wire having its extremities secured to the appropriate end portions of the shuttle. 10

In Fig. 5 I have represented a means of passing the wire from the cop outward through the shuttle to the warp, in which I employ but 15 two rollers, *t*, both of which are mounted to revolve on vertical journal-bearings supported in plates *u*, fixed to the shuttle near its edge, from which the wire thread is passed. In this modification I dispense with one roller, and 20 the wire from the cop is passed outward between the rollers and round the roller farthest from the end of the cop-case, thence outward between the rollers, to be delivered to the warp. In this modification the wire from the 25 cop may be passed round the roller nearest the end of the case, and then outward between the rollers, instead of round the roller farthest from the case.

From the foregoing it will be seen that by 30 winding the cops in conic spiral coils, and placing the cop thus wound in a case, and then taking the wire from the square or concave end through its tubular center to deliver

it through the conic point of the cop and case, I completely prevent the running of the wire 35 from the cop, and also the entanglement of the wire; and by means of the system of tension-rollers I maintain a uniform tension in delivering the wire to the warp.

By my improvements I produce a shuttle 40 capable of use in hand or power looms with equally good results.

I claim as my invention—

1. The combination, with a shuttle-body provided with two conical bearings, of a cop-case 45 having a cylindrical body provided with a conical end having an opening in its apex, and a removable cap formed with a conical end, said conical ends being seated in the conical bearings of the shuttle, substantially as set forth. 50

2. The combination, with a shuttle-body provided with a conical recess, *e*, and a transverse plate, *c*, having a conical seat, *d*, formed therein, of a cop-case constructed with a cylindrical 55 body portion and conical end, and a removable cap provided with conical end, substantially as set forth.

3. The combination, with a shuttle-body and cop-case having conical ends, of two tension-rollers located adjacent to the eye of the shuttle, 60 substantially as set forth.

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Witnesses:

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