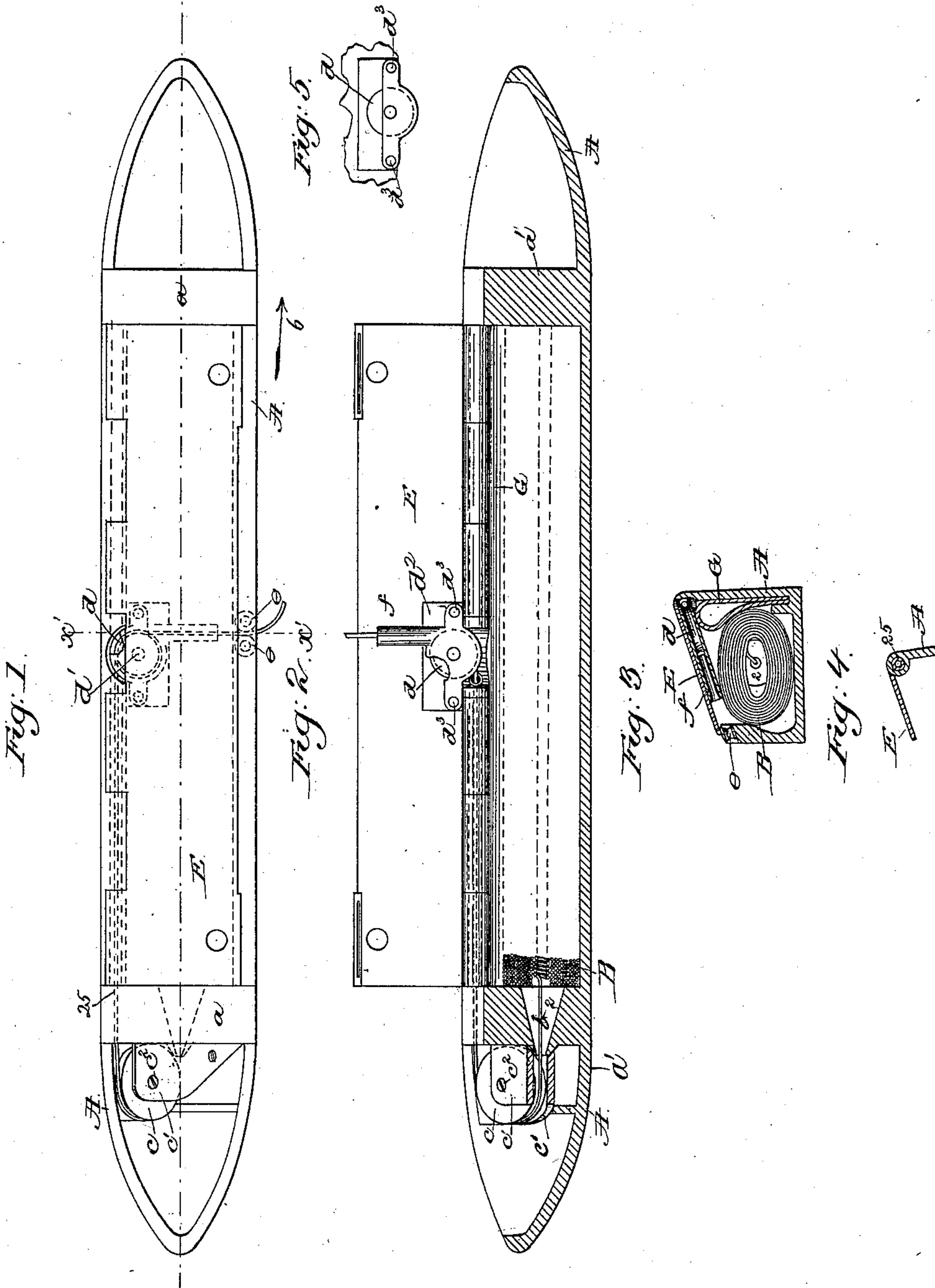


(No Model.)

B. SCARLES.  
LOOM SHUTTLE.

No. 359,545.

Patented Mar. 15, 1887.



Witnesses  
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# UNITED STATES PATENT OFFICE.

BENJAMIN SCARLES, OF CLINTON, MASSACHUSETTS, ASSIGNOR TO THE  
CLINTON WIRE CLOTH COMPANY, OF SAME PLACE.

## LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 359,545, dated March 15, 1887.

Application filed July 21, 1886. Serial No. 208,599. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN SCARLES, a resident of Clinton, county of Worcester, and State of Massachusetts, but a subject of the Queen of Great Britain, have invented an Improvement in Loom-Shuttles, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Heretofore for the weaving of wire-cloth in power-looms the shuttles have been provided with cops or balls, and the wire has been drawn from the center thereof and delivered from the shuttle at a point about midway of its length; but in all such shuttles the cop or ball has not occupied more than about one-half of the chamber in the shuttle, and consequently the cops or balls have contained a comparatively small amount of wire.

The object of this invention is to enable the employment of a larger cop, for it is obvious that the greater the amount of wire that the shuttle can carry the longer it will work without the necessity of stopping the loom.

To enable a larger cop to be carried by the shuttle, and also load the latter more evenly from end to end, thus increasing the precision of its movement in a straight line when struck by the picker, I have so constructed the shuttle, as will be hereinafter described, as to enable it to contain a cop of a size, especially as to length, to entirely fill the shuttle-chamber, and at the same time by directing the wire from one end of the cop and shuttle-chamber, as herein shown, it is possible to deliver the wire, as usual, from the shuttle at or near the center of its length and keep the wire uniform, both as to its tension and as to the abruptness of the bends therein, during the movement of the shuttle in opposite directions. This valuable and important feature is insured by leading the wire from the cop over a sheave or pulley located near one end of the shuttle, then diagonally to the rear wall of the shuttle, and thence about a second sheave or pulley, and across the shuttle-chamber at one side of the cop, and thence outward between the usual delivery-rolls at the front side of the shuttle. The cop is wound in longitudinal layers, substantially as indicated by the sectional end in Figure 2.

Fig. 1 is a top or plan view of a shuttle embodying my improvements; Fig. 2, a longitudinal section thereof, with the cover of the shuttle-chamber lifted, the cop being shown by full and dotted lines. Fig. 3 is a cross-section in the line  $x' x'$ , Fig. 1, the cop being somewhat flattened down from its round form by being crowded into the shuttle-chamber; Fig. 4, a detail to be referred to; and Fig. 5 shows part of the cover with the guiding sheave or pulley, the guide  $f$  being omitted, the said guide being convenient for use, but in no sense absolutely necessary.

The shuttle body or shell A, of usual shape and preferably of metal, has a long central chamber between its two partitions,  $a a'$ , for the reception of the cop B of wire, the cop being wound of sufficient size to substantially fill the said chamber from end to end. The partition  $a$  is provided with a conical or tapering passage, 2, for the wire  $b$ , which is drawn from the center of the cop at one end.

The wire  $b$  is passed over a sheave,  $c$ , placed between plates  $c' c'$ , located between one of the said partitions and the point or end of the shuttle-body, the said sheave being free to turn on a pivot,  $c^2$ , placed in the said shuttle at an angle of about forty-five degrees to the bottom of the shuttle or to that part of the race-way of the usual lay on which the shuttle is made to travel. This diagonal position of the pivot  $c^2$  with relation to the bottom of the shuttle permits the wire to be delivered from the sheave at the rear wall of the shuttle, and at such distance from the longitudinal center of the cop B as to enable the wire to be carried backward toward the center of the shuttle along its rear wall, and thence partially around a second sheave,  $d$ , mounted loosely on a pivot,  $d'$ , connected with a block,  $d^2$ , attached by screws  $d^3$ , or otherwise, to the shuttle lid or cover E, and thence across the center of the cop to the outside of the shuttle, passing between the usual delivery-rolls,  $e e$ , located in the front wall of the shuttle at or near the middle of its length.

The lid or cover E is herein shown as connected with the upper side of the rear wall of the shuttle by ears on each, bent or coiled as is customary in the formation of hinges made from wrought metal, the ears between the



sheaves *c d* receiving a pin or bolt, 25, (shown in Fig. 4,) which is hollow or tubular, to constitute a guide for the wire, as represented in the drawings, and from the sheave *d* the wire *b* will preferably be led across the cop, and, if desired, through a guide, *f*; but, as shown in Fig. 5, the said guide may be omitted.

If the wire *b* should be carried from the sheave *c* to the front wall of the shuttle and thence between the rolls *e e*, it will be obvious, during the movement of the shuttle in the directions of the arrow 6, Fig. 1, that the bends in the wire at the rolls *e* for a part of the movement of the shuttle would be very much sharper than when the shuttle was being moved in the opposite direction; but by leading the wire to the rear wall of the shuttle and inclining the pivot *c'* so as to enable the wire to be carried a sufficient distance from the center of the cop, so as to be led from the rear to the front wall of the shuttle across the cop, the bends in the wire are always the same, whatever may be the direction of movement of the shuttle. This uniformity of bend in the wire insures a better and more uniform delivery, and the production of better wire-cloth, and enables the shuttle to be moved more rapidly than in the old plans.

For holding the cop externally in proper manner, to enable the wire to be delivered from its center up to and including the last coil, and thus prevent waste, the shuttle may be provided at its interior with a spring, *G*, herein shown as composed of a strip of india-rubber bent longitudinally upon itself, the edges of the said strip being suitably confined, as herein shown, in a groove made in the shuttle-wall, the short wall at one side of the said groove being struck or hammered to pinch the said spring.

The spring *G* adapts itself to the contour of the cop, and yields to any inequality of surface.

Herein I have shown a guide, *f*, between the sheave *d* and the rolls *e e*; but the said guide may be omitted, if desired; yet I prefer to retain it.

I claim—

1. The shuttle-body having the long cop-chamber and the freely-rotating sheave *c*, placed in the said shuttle-body in an inclined or diagonal position with relation to the bottom of the shuttle-body, combined with the sheave *d*, located at the rear side of the cop-chamber at or about the middle of its length, and the rolls *e e* at the opposite side of the cop-chamber, whereby the wire is drawn from the end of the cop at the end of the cop-chamber at a point near the end of the shuttle-body, and is then led backward toward the center of the length of the cop and the cop-chamber, and is then led across the cop-chamber and cop between its ends, substantially as described.

2. The shuttle-body provided with the end partitions, *a a'*, and the intermediate long cop-chamber, the sheave *c*, arranged upon a diagonal pivot, *c'*, at the wire-passage 2 in one of the partitions, combined with the sheave *d* at the rear side of the cop-chamber, about midway of its length, and the rolls *e e* opposite the last-named sheave, and a guide between said sheave and rolls to conduct the wire from the former to the latter, substantially as described.

3. The shuttle-body, the partition *a* across one end, provided with the wire-passage 2, the sheave *c*, and its diagonally-arranged pivot *c'*, combined with the sheave *d* at the rear side of the cop-chamber and the delivery-rolls *e e* at the front of the shuttle-body, substantially opposite the sheave *d*, substantially as described.

4. The shuttle-body, combined with the hinged lid or cover *E*, jointed together, substantially as described, to form a guide for the passage of the wire at the center of the axis of motion of the said lid or cover, substantially as set forth.

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

BENJAMIN SCARLES.

Witnesses:

G. W. GREGORY,  
C. M. CONE.