

No. 635,720.

Patented Oct. 24, 1899.

E. GILBERT & C. W. WIDERSTROM.

SHUTTLE.

(Application filed Feb. 13, 1896. Renewed Apr. 19, 1899.)

(No Model.)

Fig. 1.

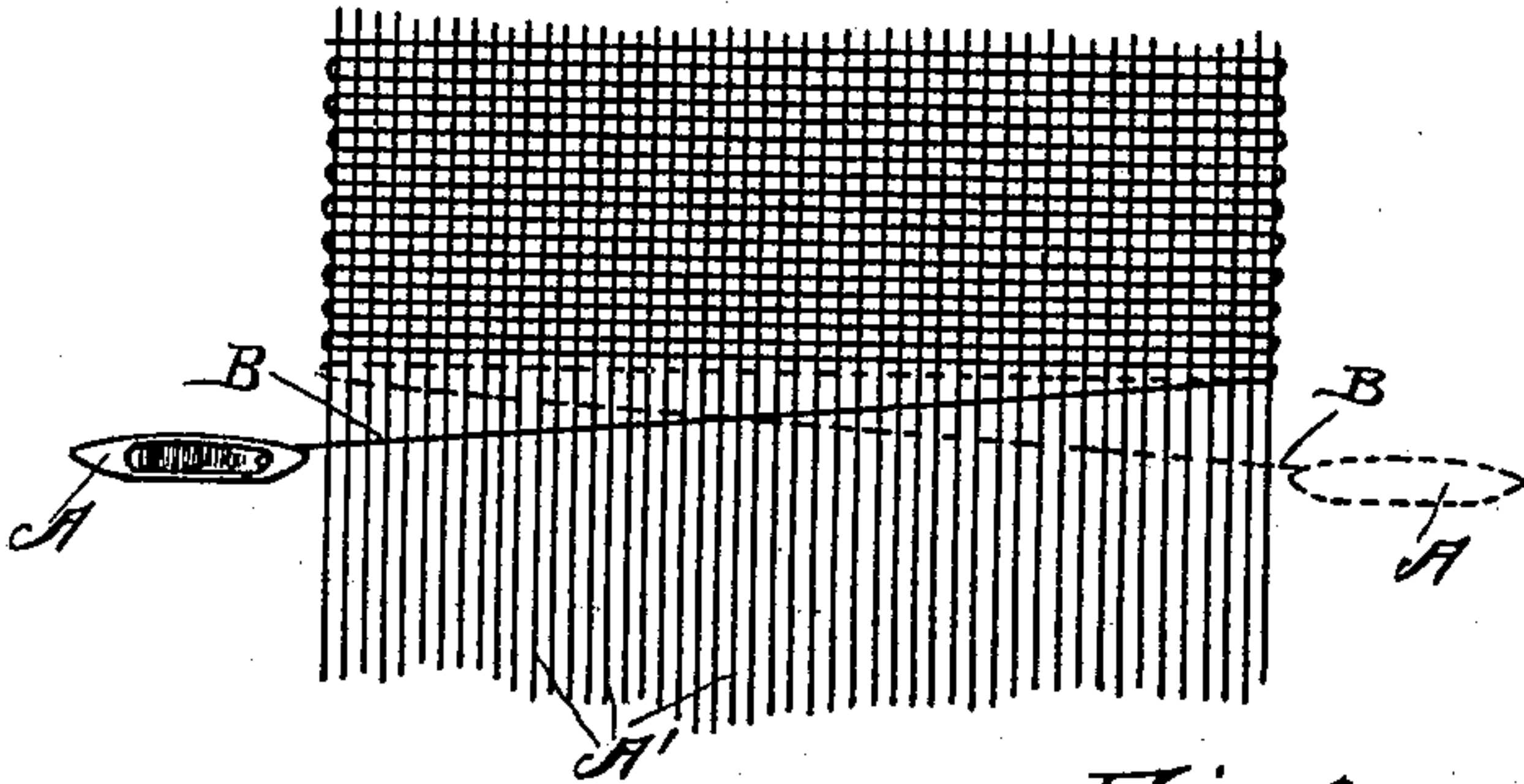


Fig. 3.

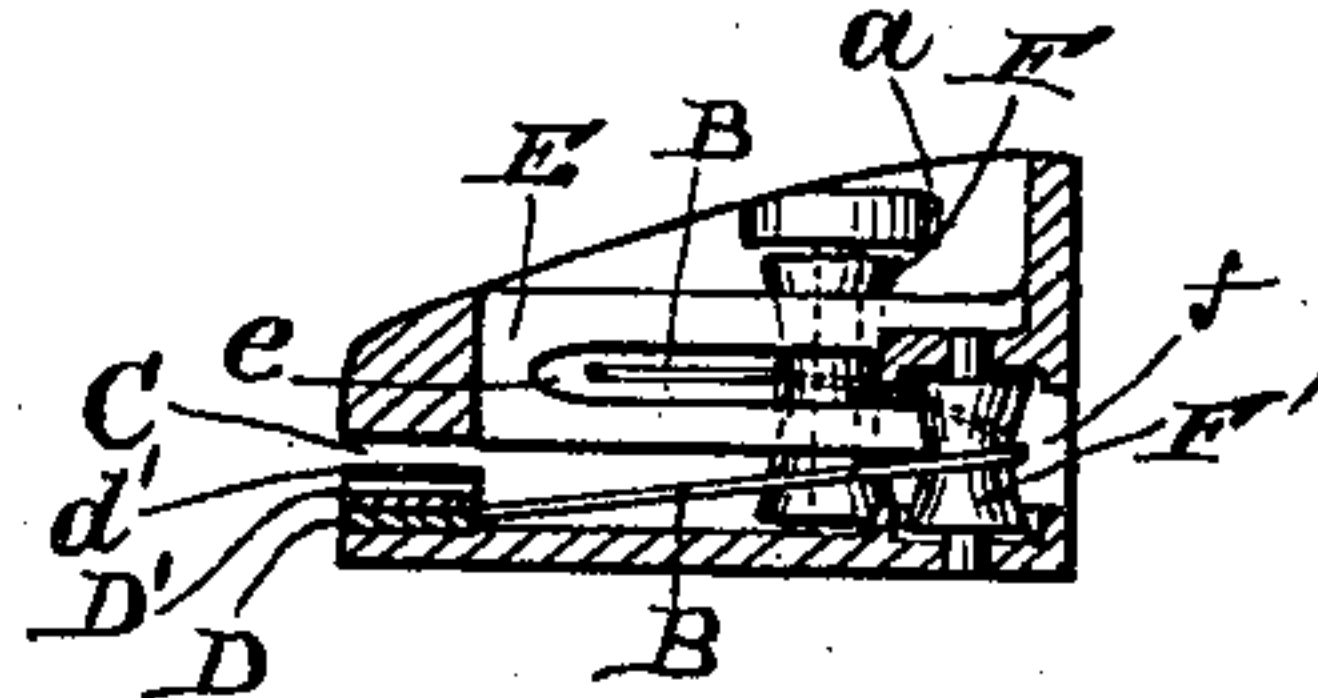


Fig. 2.

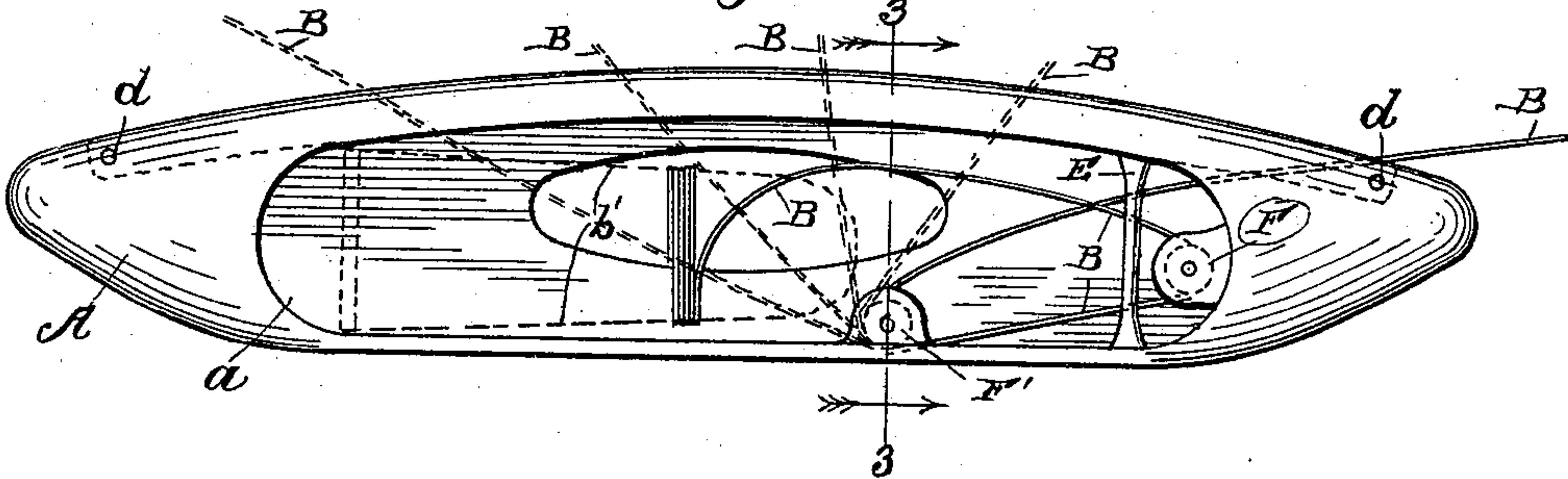


Fig. 4.

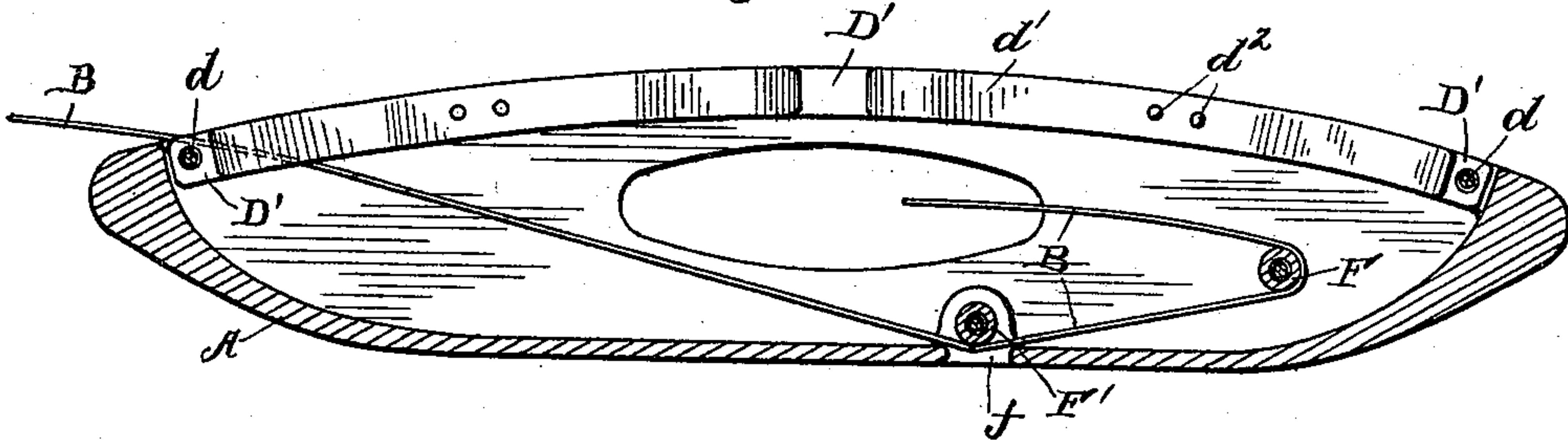


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWIN GILBERT AND CHARLES W. WIDERSTROM, OF GEORGETOWN, CONNECTICUT, ASSIGNORS TO THE GILBERT & BENNETT MANUFACTURING COMPANY, OF SAME PLACE.

SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 635,720, dated October 24, 1899.

Application filed February 13, 1896. Renewed April 19, 1899. Serial No. 713,636. (No model.)

To all whom it may concern

Be it known that we, EDWIN GILBERT and CHARLES W. WIDERSTROM, citizens of the United States, residing at Georgetown, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Shuttles, of which the following is a specification.

This invention relates to improvements in shuttles, and while it is more especially adapted to be used in looms for weaving wire fabric, yet the improvements may, with slight modifications in construction, be applied with benefit to looms employed for weaving other fabrics; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

On account of the torsion or inclination or tendency of the weft thread or filling of wire fabric and fabrics of a like nature, in which weft-threads of more or less stiffness are employed, to twist, curl, or to form in kinks in the paying out or dispensing thereof from the shuttle, great difficulty has been experienced in readily producing perfect pieces of fabric without said kinks, twists, or defects, by reason of the fact that in the movement of the shuttle from one side to the other of the warp threads or strands the weft-thread from the shuttle was allowed to become slack or loose in the portion between the shuttle and the warp-threads to which it was tied or fastened, which portion was of considerable length and allowed the twists, curls, or kinks to form therein, thus causing great annoyance and trouble and rendering it a difficult matter to avoid the said objections.

It is, therefore, the object of our invention to render it impossible for the weft threads or wires to become twisted, curled, or kinked by so constructing our shuttle as to make the length between the portion of the shuttle with which the weft-thread contacts and the warp-threads between which it is fastened so short that a twist, curl, or kink cannot be formed, and for the further reason that the weft-thread is always kept, by means of our shuttle, in a uniform, taut, or tense condition when being paid out or dispensed from the bobbin or spool within the shuttle,

no matter in which part of the lay-race the shuttle may be located.

In order to enable others skilled in the art to which our invention pertains to make and use the same, we will now proceed to describe it, referring to the accompanying drawings, in which we have shown the shuttle only and a portion of the wire fabric in the act of being woven, the construction and operation of the loom being so well understood as to require no illustration herein.

Figure 1 represents a piece of wire fabric in the act of being woven and showing the relative position of our shuttle and the weft threads or wires to the warp threads or strands. Fig. 2 is a plan view of the shuttle, showing the weft thread or wire wound on a spindle and the position which it will occupy when at one end of the lay-race. Fig. 3 is a cross-sectional view taken on line 3 3 of Fig. 2, as indicated by the arrows, and showing the guide-piece and tension-sheaves for the weft thread or wire. Fig. 4 is a horizontal longitudinal sectional view taken on line 4 4 of Fig. 5, showing the weft-thread in contact with the tension-sheaves and held by means of a spring-actuated clamp; and Fig. 5 is an inverted view in elevation of the face or edge of the entire shuttle, showing the weft wire or thread held by the spring-actuated tension-clamp and in the position it will occupy when the shuttle is at one side of the warp threads or strands.

Similar letters refer to like parts throughout the different views of the drawings.

A represents the hollow body or carriage of our shuttle, which may be made of any suitable size, form, and material, but preferably boat-shaped in outline. The upper portion of the body is formed with a longitudinal opening *a* for the insertion of the bobbin, spool, or spindle *b'*, upon which the weft thread or wire *B* is wound, and which bobbin, spool, or spindle may be of the ordinary or any desired construction and suitably secured to or within the body or carriage *A* in the customary or any desired manner, and for this reason we have simply shown by dotted lines in Fig. 2 a spindle located within the hollow of the body or carriage with a piece of the weft wire or thread wound therearound.

In the face side or edge of the body or car-

riage A is formed a longitudinal slot C, which extends almost the entire length of the body and is for the passage and operation of the wire or thread B in the movement of the shuttle to and fro across and between the warp threads or strands A' of the fabric. Within this slot and coextensive therewith and conforming to the shape of the lower portion of the body or carriage is placed and secured a protecting-plate D, usually of steel, but which may sometimes be dispensed with; but in order to prevent wear of the body by the continuous passage of the weft-wire B we prefer to use it. Lying on top of the plate D is a movable plate or strip D', which is held in position in the body by means of bolts or rivets d , near each end of the slot C, and is normally kept in contact with the plate D by means of one or more springs d' , which are shown as bow-springs and as being secured to the plate D' by means of rivets d^2 , having their free ends resting against the upper surface of the slot C; but other forms of springs may be employed to press the plates together, as is apparent.

Near one end of the body or carriage A and extending crosswise of the hollow therein is a guide-piece E, having a slot e for the passage of the wire or thread B from the bobbin or spindle, and between said guide-piece and the adjacent end of the body or carriage is vertically journaled a tension-sheave F for the operation of the wire or thread B, as will be presently explained. Near the rear side of the body or carriage and within the hollow thereof is journaled another tension-sheave F', upon which the weft-thread also acts. Near the sheave F' the rear side of the body is usually formed with an opening f for the convenience of placing the wire around the last-named sheave. As shown in Fig. 2 of the drawings, the wire or thread B passes from the spindle, bobbin, or spool in front of the sheave F, thence around the same and thence to the rear of the sheave F' and under the bobbin or spindle, and then between the plates D and D', by which it is pinched or clamped in such a manner as to retain a taut condition of the wire or thread as it is being paid out from the bobbin or equivalent device, yet will permit of the movement of the wire between said plates in the progress of the shuttle, some of which positions are indicated by dotted lines in Fig. 2 of the drawings, but will always clamp it with a sufficient degree of retentiveness or tenacity to prevent any looseness or laxity of the wire or thread between the said plates and spindle or bobbin.

By forming the slot C of almost the entire length of the body it is evident that the wire B will have more "play" and that the portion thereof between the end of the slot and the warp, when the shuttle is on either side of the fabric, will be so short and taut that it cannot twist. It is also apparent that as the

wire B passes first in front of the sheave F and then around the same and to the rear of the sheave F' it will clear the end of the bobbin on which it is wound by reason of the position of the first-named sheave.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A shuttle comprising a hollow body or carriage provided in one of its sides with a longitudinal slot, and a spring-actuated clamp located in said slot and coextensive therewith, substantially as described.

2. A shuttle comprising a hollow body or carriage, provided in one of its sides with a longitudinal slot, and a spring-actuated plate D', located in said slot, to hold the weft wire or thread between it and the edge of the body, substantially as described.

3. A shuttle comprising a hollow body or carriage, provided in one of its sides with a longitudinal slot, the plate D, secured to one edge of the body in said slot, and the spring-actuated plate D', located in the slot, said plates forming a clamp to hold the weft wire or thread, substantially as described.

4. The combination in a shuttle of the hollow body provided with a longitudinal slot, with a clamp located in said slot, and one or more sheaves on the body, substantially as described.

5. The combination in a shuttle, of the hollow body provided with a longitudinal slot, with a spring-actuated clamp located in said slot, a sheave near one end of the body and another sheave near its middle, substantially as described.

6. The combination in a shuttle, of the hollow body provided with a longitudinal slot, with a spring-actuated clamp located therein, a guide-piece for the wire or thread near one end of the body, a sheave between said piece and the adjacent end of the body, and another sheave near the middle of the body, substantially as described.

7. A shuttle, comprising a hollow body or carriage provided with a longitudinal slot in its side, and a clamp located in said slot to control the passage of the weft thread or wire, substantially as described.

8. The combination with the hollow body A, formed with the longitudinal slot C, in its side, the movable plate D', and the bow-springs d' , located in said slot, substantially as described.

9. The combination with the hollow body A, provided with the longitudinal slot C, in its side, of the fixed plate D, movable plate D', and bow-springs d' , located in said slot, substantially as described.

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