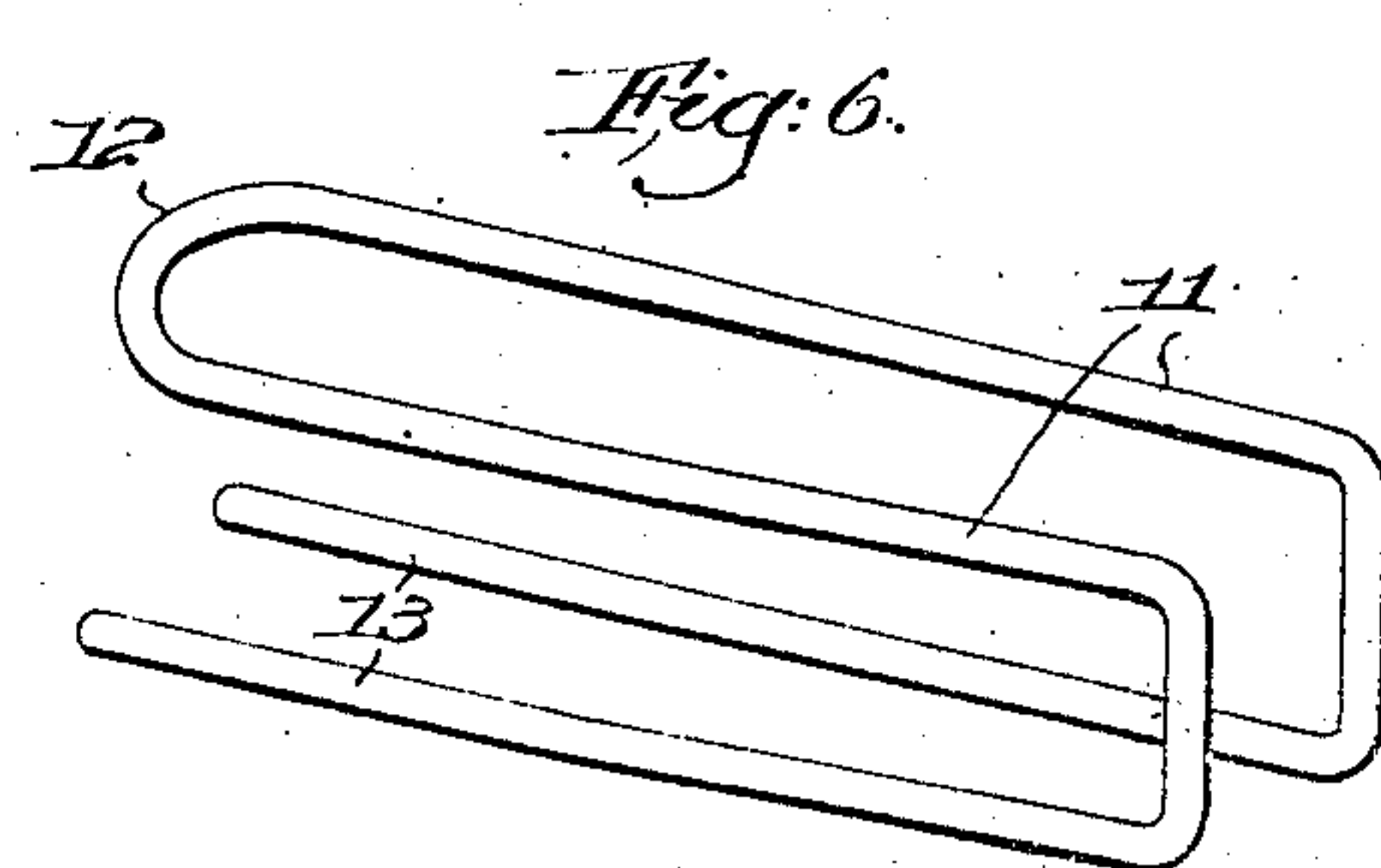
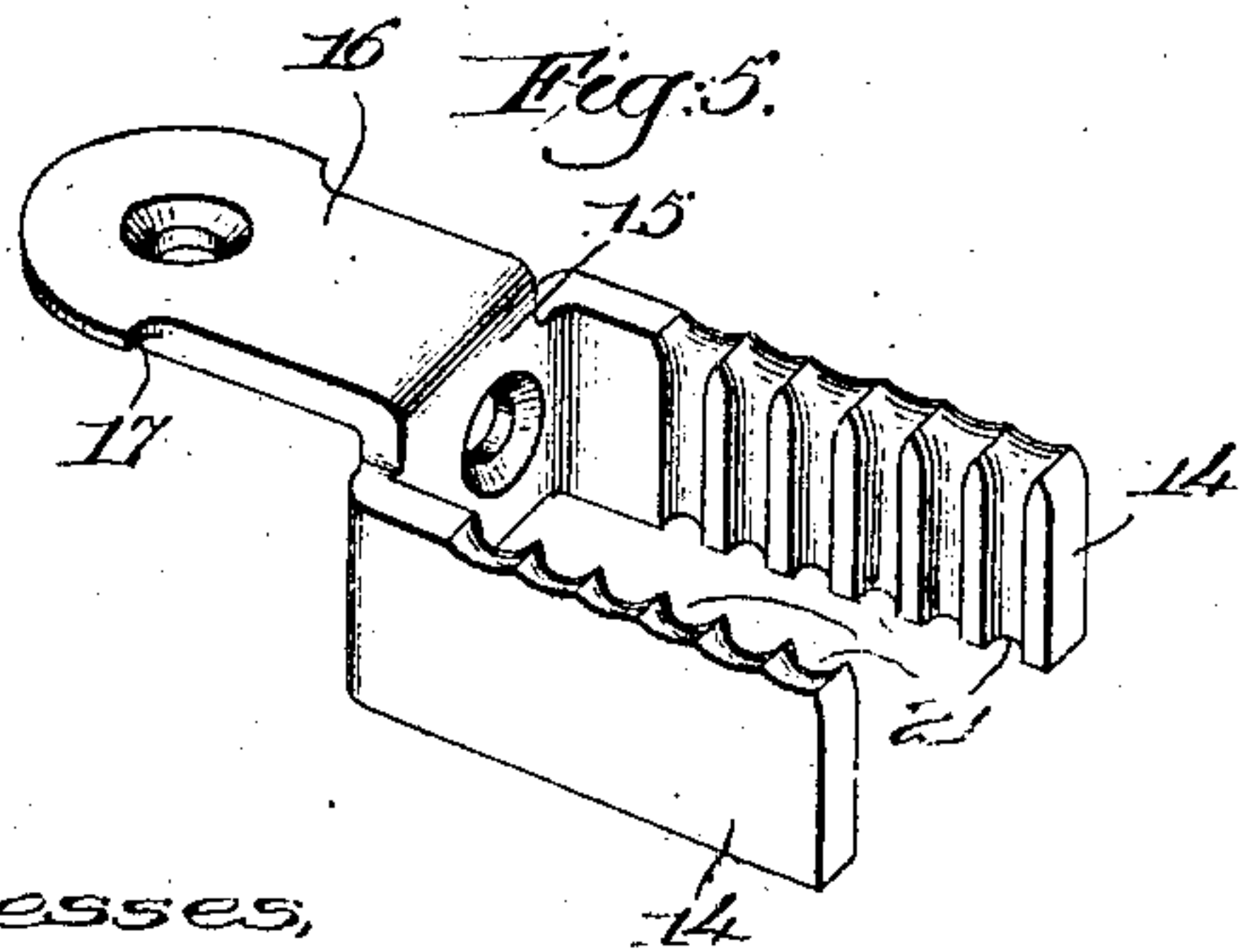
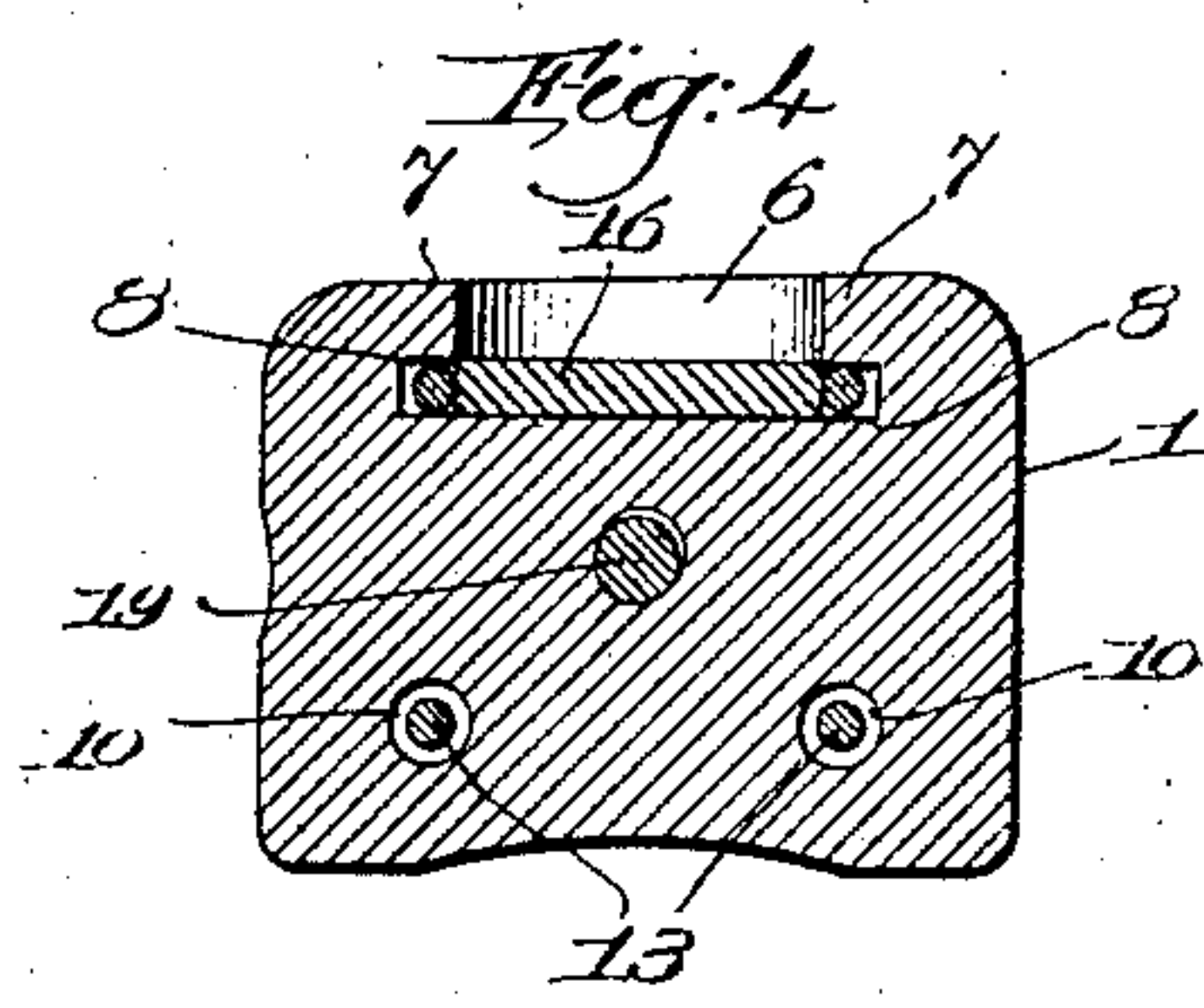
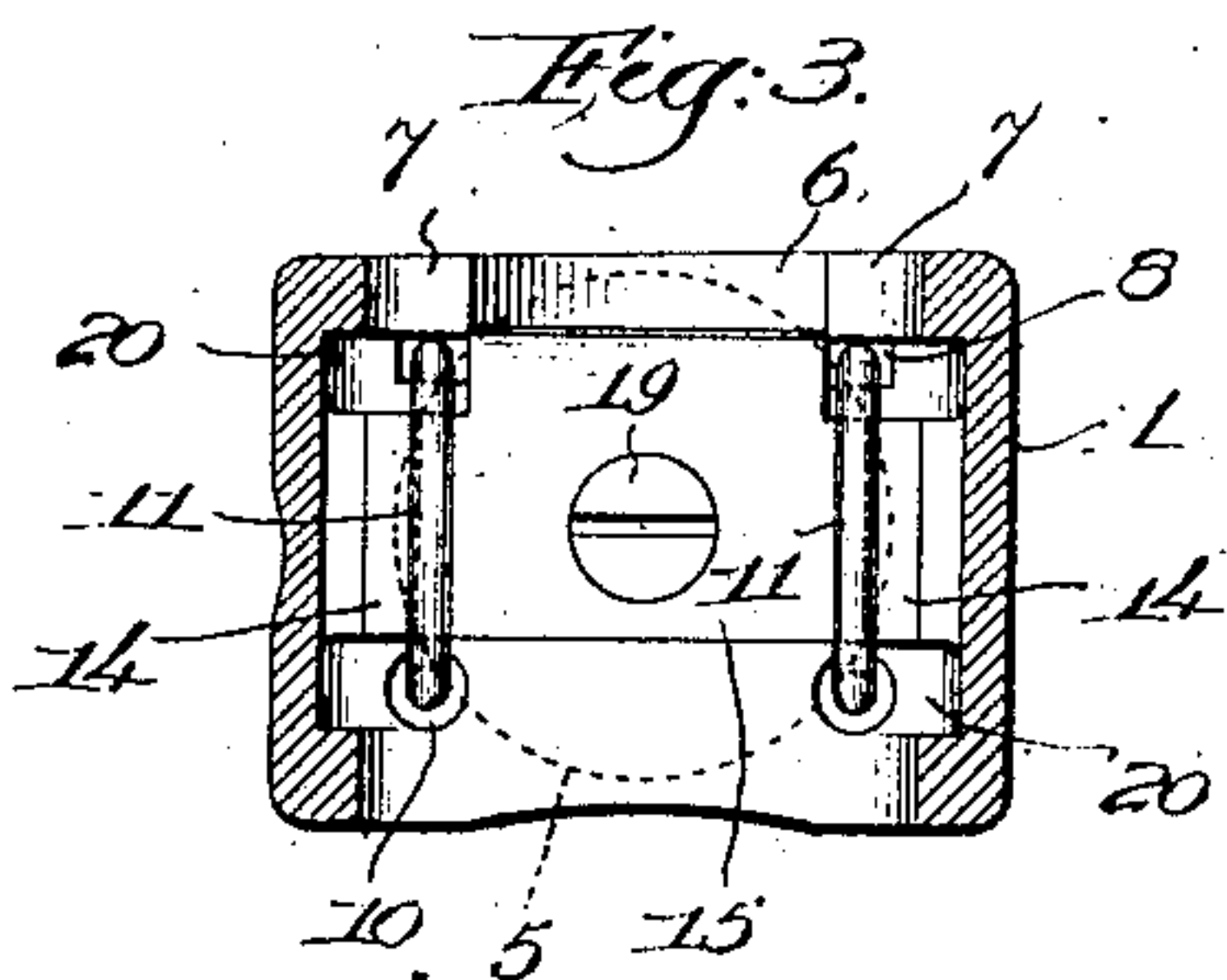
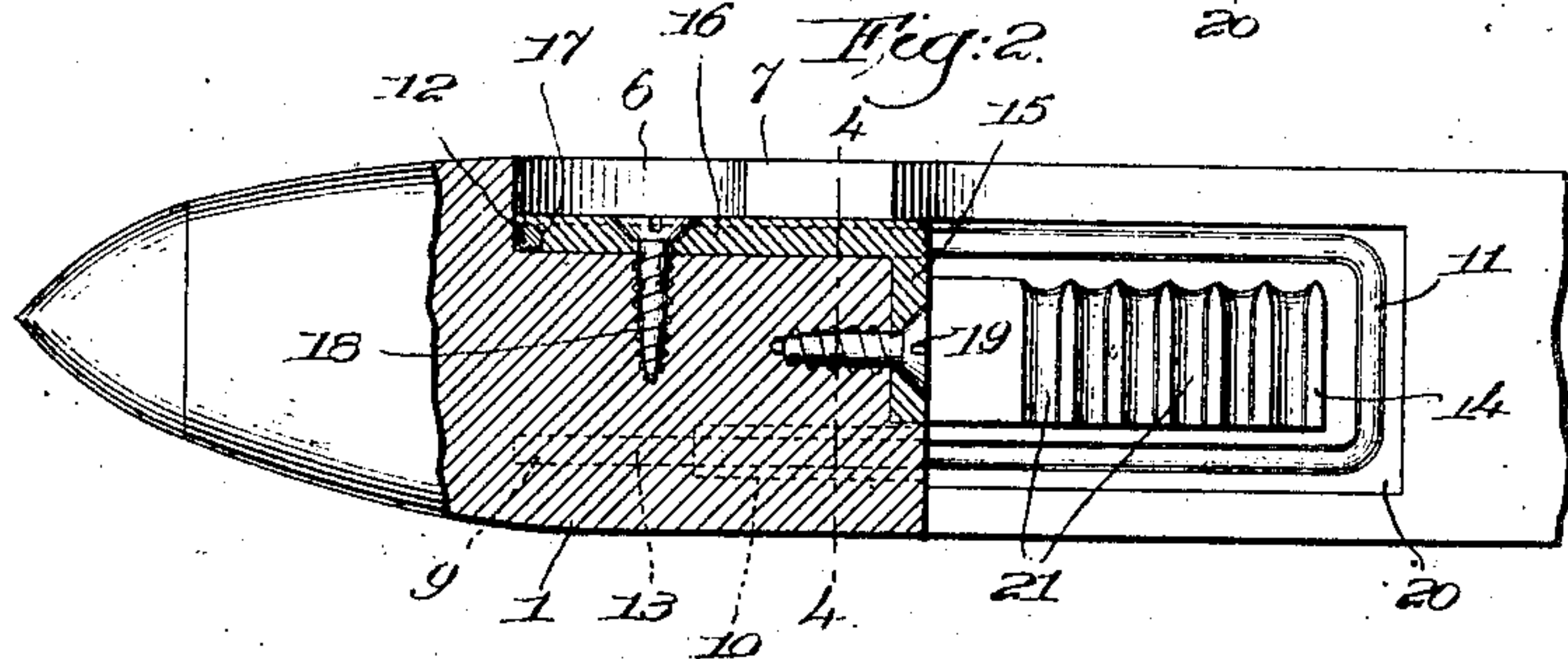
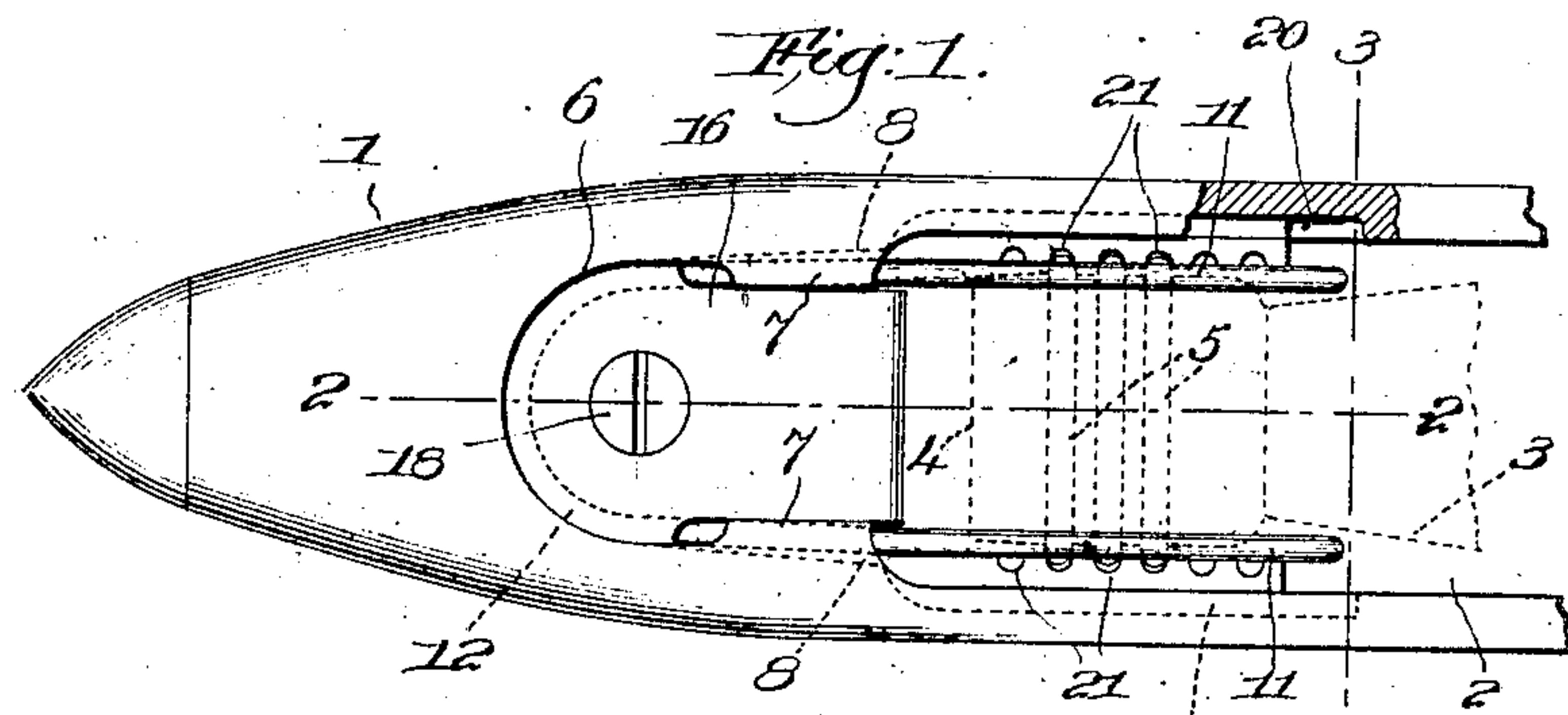


E. S. WOOD.
BOBBIN HOLDING MEANS FOR LOOM SHUTTLES.
APPLICATION FILED FEB. 10, 1908.

907,666.

Patented Dec. 22, 1908.



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UNITED STATES PATENT OFFICE.

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BOBBIN-HOLDING MEANS FOR LOOM-SHUTTLES.

No. 907,666.

Specification of Letters Patent.

Patented Dec. 22, 1908.

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To all whom it may concern:

Be it known that I, EVERETT S. WOOD, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Bobbin-Holding Means for Loom-Shuttles, of which the following is a full, clear, and exact specification.

This invention has for its object the production of improved means for holding and positioning the bobbin in a loom shuttle intended particularly for use in that class of looms wherein the active weft or filling is changed automatically while the loom is in motion by the insertion of a fresh or full bobbin into the shuttle. Heavy spring-jaws are commonly employed for this purpose, having concave seats on their inner faces to receive the rings with which the head or butt of the bobbin is provided, the jaws being made stiff and heavy enough to not only grip the rings but to position the bobbin both longitudinally and horizontally. That is, the jaws must prevent longitudinal movement of the bobbin in the shuttle and they must hold it in proper position with relation to the top and bottom of the shuttle. As this requires a strong grip the jaws are made so stiff that the bobbin must be inserted forcibly in order to spread the jaws for the incoming bobbin and to permit discharge of the outgoing bobbin. The bobbins are in consequence subjected to heavy wear and tear and the bobbin-inserting means has to be made very powerful in its action.

My present invention is designed to make the insertion and discharge of a bobbin much easier, with a great deal less force, while at the same time holding it properly in position in the shuttle, and by the construction and arrangement to be described the cost of manufacture is reduced.

Figure 1 is a top plan view, partly broken out, of one end of a loom shuttle provided with bobbin-holding means embodying my invention, a portion of the bobbin being shown in dotted lines; Fig. 2 is a partial longitudinal section in the line 2—2, Fig. 1; Fig. 3 is a cross section on the line 3—3, Fig. 1, looking toward the left; Fig. 4 is a similar section on the line 4—4, Fig. 2; Fig. 5 is a perspective view of the rigid holding member or jaws, detached; Fig. 6 is a like view of the yielding holding member.

A portion of the loom shuttle is indicated

at 1, having an opening 2 from top to bottom of the shuttle for the bobbin 3, see dotted lines Fig. 1, the butt 4 of the bobbin having usual annular projections or rings 5 thereon. The shuttle wood at the end of the opening 2 is recessed at 6, leaving inturned portions 7 which are undercut at 8, Figs. 3 and 4, and parallel holes 9 are bored longitudinally in the shuttle wood, near its bottom, the holes being counterbored at 10.

I make the yielding members or spring-jaws of the bobbin-holding means of stout spring wire, and referring to Fig. 6 I have shown a piece of wire of suitable character and size bent to form two opposite elongated loop-like jaws 11, the tops of said jaws being united by the bend 12 and their bottoms being formed by the straight and free ends 13 of the wire. The said ends 13 are forced into the holes 9, Fig. 2, into which they snugly fit, so that the jaws 11 project into the bobbin-receiving opening 2, while the bend 12 and adjacent portions lie in the recess 6, and under the inturned portions or shoulders 7. The undercuts 8 and the counterbores 10 permit some play of the portions of the jaws therein, as will be manifest, so that lateral separation or spread of the jaws is facilitated, the jaws being made to normally converge slightly toward their free ends, see Fig. 6, when the shuttle is empty, this being the usual practice in loom shuttles of this general type.

The cooperating rigid members are shown in Fig. 5 and are made of plate metal, comprising two stiff and rigid parallel, jaw-like portions 14 connected at 15 at their bases, the connection being continued at its top to form an extension 16 at right angles to said connection and shaped to fit in the recess 6. As shown the curved end of the extension 16 is undercut at 17 to fit over the bend 12 when the parts are assembled in the shuttle. The extension is rigidly secured to the shuttle and upon the bottom of the recess 6 by a suitable screw 18, a second screw 19 fastening the connection 15 firmly against the vertical end of the bobbin-receiving opening.

As will be clear from Fig. 3 the depth of the rigid jaws 14 is less than the distance between the top and bottom of the open spring-jaws 11, (see also Fig. 2) so that the said spring-jaws 11 may when spread move outward beyond the inner faces of the rigid jaws. There is a tight holding fit for the

bend 12 between the rounded end of the recess 6 and the undercut part 17 of the extension 16, so that when the parts are fixed in the shuttle the rigid holding members retain the yielding members securely and firmly in place. The outer faces of the jaws 14 rest squarely upon the inner surfaces of the sides of the opening 2 in the shuttle body, and the latter is cut out or recessed about the said jaws at 20, to afford free lateral movement for the spring jaws when necessary, as when a bobbin is being inserted or discharged.

A series of upright or vertical grooves 21 is made in the inner face of each jaw 14, the tops of the latter being preferably rounded off or convexed at the ends of the grooves, the latter being straight-bottomed and quickly made by suitable milling tools. I have shown six grooves in each jaw, and as bobbins are usually supplied with three rings considerable leeway is provided to compensate for slight variations in the position of the shuttle when a bobbin is inserted therein.

When a bobbin is inserted the lower portions of the rings first engage the tops of the spring-jaws 11 and spread the same as the bobbin descends, the greatest spread being effected at the instant that the full diameter of the rings is interposed between the jaw tops, and as the bobbin movement continues the rings slide down into some of the grooves 21 in the rigid or laterally unyielding jaws. The spring-jaws contract after the center of the butt passes their tops, as will be understood, till the top and bottom portions of said jaws engage the rings 5 when the bobbin is in proper position. At such time the spring-jaws yieldingly engage the bobbin rings above and below the axis of the bobbin and position the latter vertically, or with respect to the top and bottom of the shuttle, and as there is very little tendency to displace the bobbin from such position the spring-jaws do not require to be heavy or stiff in action. The longitudinal positioning of the bobbin is effected by the rigid jaws 14, and as the momentum of the bobbin tends strongly to move it longitudinally in the shuttle at each end of its stroke such jaws are made heavy and strong enough to resist such displacement.

I obviate the necessity for an inclined guide or director for the incoming bobbin, as the series of grooves 21 is sufficient to compensate for variations of the position of the shuttle in the box when a bobbin is inserted.

When a bobbin is discharged the rings engage the bottom portions of the jaws 11 and spread them laterally as the bobbin is driven down and out of engagement with the grooves 21.

In Fig. 3 the dotted circle indicates the ex-

ternal diameter of a bobbin-ring 5, and the holding members are shown in their relative position as regards each other and said ring.

The jaws while holding the bobbin in position yet permit a slight up and down movement thereof at its tip end, the tip in practice having a total play of about one-quarter of an inch, with very little resistance, as the bobbin-rings can rock slightly in the grooves 21 and the spring-jaws will permit such tipping, but beyond the slight movement referred to the bobbin is held firmly and cannot go beyond it. This slight movement of the bobbin tip tends to decrease filling breakage, for if there is some resistance as the yarn draws off the tip will give slightly and ease off the yarn accordingly.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a loom shuttle having an opening for the bobbin, means located in one end of said opening for retaining the bobbin in position and comprising opposite loop-like spring-jaws, and rigid vertically grooved jaws outside of and adjacent said spring-jaws, to receive the rings on a bobbin butt and longitudinally position the bobbin, the spring-jaws engaging the rings above and below the grooved jaws and yieldingly retaining the bobbin in position with respect to the top and bottom of the shuttle.

2. In a loom shuttle, bobbin-holding means comprising opposed rigid jaws having their inner faces vertically grooved, and loop-like spring-jaws adjacent the rigid jaws, the grooves in the latter receiving the rings on a bobbin butt and longitudinally positioning the bobbin while the spring-jaws yieldingly engage the rings above and below the rigid jaws and position the bobbin vertically.

3. In a loom shuttle, bobbin-holding means comprising a plurality of pairs of jaws each pair of which is adapted to cooperate with the rings on the butt of a bobbin, one pair of jaws preventing longitudinal movement of the bobbin in the shuttle and the other pair positioning the bobbin vertically.

4. In a loom shuttle, a pair of laterally separable, open spring-jaws to engage the rings on a bobbin butt above and below the axis of the bobbin, combined with fixed members having their opposite faces vertically grooved to receive portions of the bobbin rings between the top and bottom portions of the spring-jaws, said fixed members being located outside the spring-jaws and with their grooved faces opposite the openings of said jaws.

5. In a loom shuttle having a bobbin receiving opening, bobbin-holding means therein comprising a pair of fixed jaws and a pair of laterally yielding jaws, to cooperate with the butt of a bobbin, the fixed jaws preventing longitudinal movement of the bobbin and

the yielding jaws positioning the bobbin with relation to the top and bottom of the shuttle and yielding to permit the insertion or ejection of a bobbin.

5 6. In a loom shuttle, a pair of elongated, loop-like jaws made of spring wire, a pair of rigid jaws having a series of vertical grooves on their inner faces and located outside the spring jaws and opposite the open portions
10 thereof, said spring jaws yielding laterally to permit the rings on the butt of an incoming bobbin to enter opposite grooves in the rigid jaws and then closing upon the rings above and below their points of engagement with
15 the rigid jaws.

7. In a loom shuttle, bobbin-holding means comprising members to cooperate with and prevent longitudinal movement of the bobbin, and separate members to position the bobbin with relation to the top and
20 bottom of the shuttle, said latter members yielding laterally when the bobbin is inserted or discharged.

8. In a loom shuttle adapted to contain a
25 bobbin having rings on its butt, a pair of rigid jaws having their inner faces provided with upright grooves to receive the rings, and a pair of laterally yielding wire-loop jaws to bear upon the rings above and below the axis
30 of the bobbin when the rings thereof are seated in the grooves, the grooved jaws preventing longitudinal movement of the bobbin relatively to the shuttle while the laterally yielding jaws limit up and down move-
35 ment of the bobbin in the shuttle.

9. In a loom shuttle adapted to contain a bobbin having rings on its butt, a pair of rigid jaws having their inner faces provided with upright grooves to receive the rings, and

a pair of laterally yielding wire-loop jaws to
40 bear upon the rings above and below the axis of the bobbin when the rings thereof are seated in the grooves, and means connected with the rigid jaws to retain the yielding
45 jaws in position in the shuttle.

10. In a loom shuttle, rigid and laterally unyielding bobbin holding jaws adapted to longitudinally position the bobbin, combined with separate means to engage externally the
50 bobbin butt on opposite sides and position it vertically.

11. In a loom shuttle adapted to contain a bobbin having rings on its butt, means on the shuttle to cooperate with the rings and position the bobbin longitudinally while permit-
55 ting a slight rocking movement of the rings in said means, and other means to cooperate with the rings, and position the bobbin relatively to the top and bottom of the shuttle, and also limiting the rocking movement of
60 the rings.

12. In a loom shuttle adapted to contain a bobbin, means on the shuttle to cooperate with and longitudinally position the bobbin while permitting a slight up and down move-
65 ment of the bobbin at its tip, and means cooperating with the exterior of the bobbin on opposite sides to positively limit such movement and also to position the bobbin relatively to the top and bottom of the shuttle.
70

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

EVERETT S. WOOD.

Witnesses:

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JONAS NORTHROP.