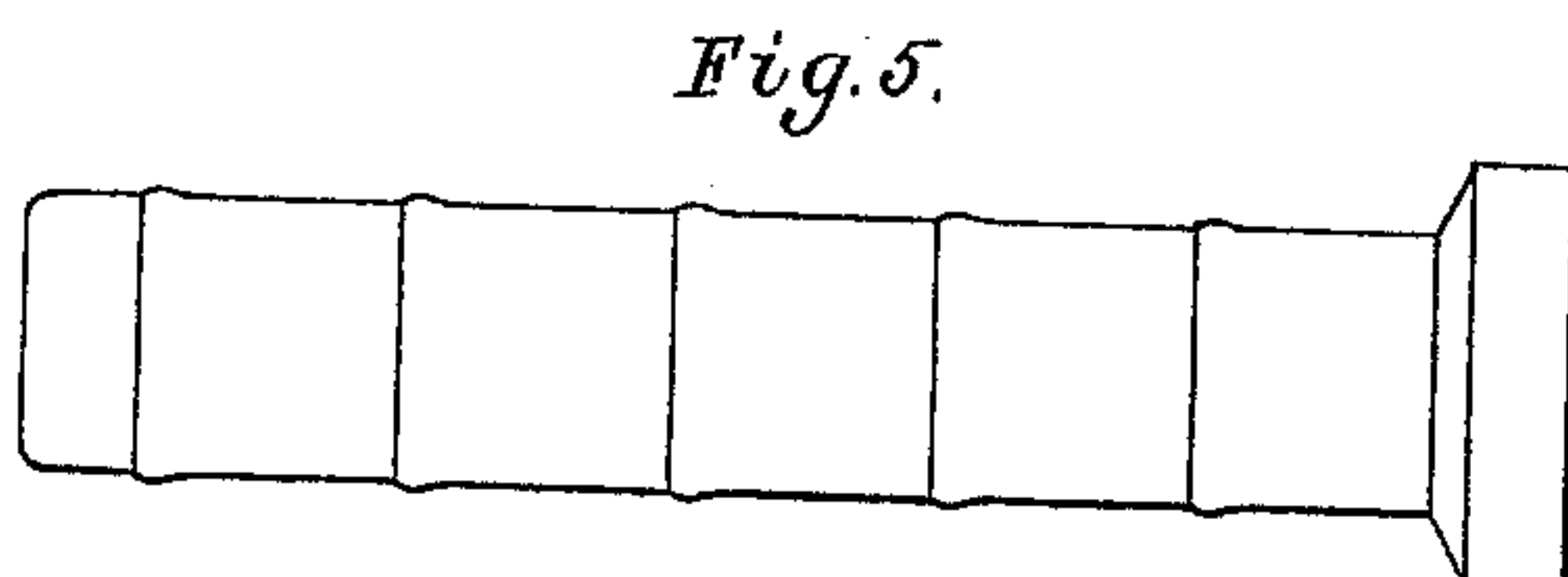
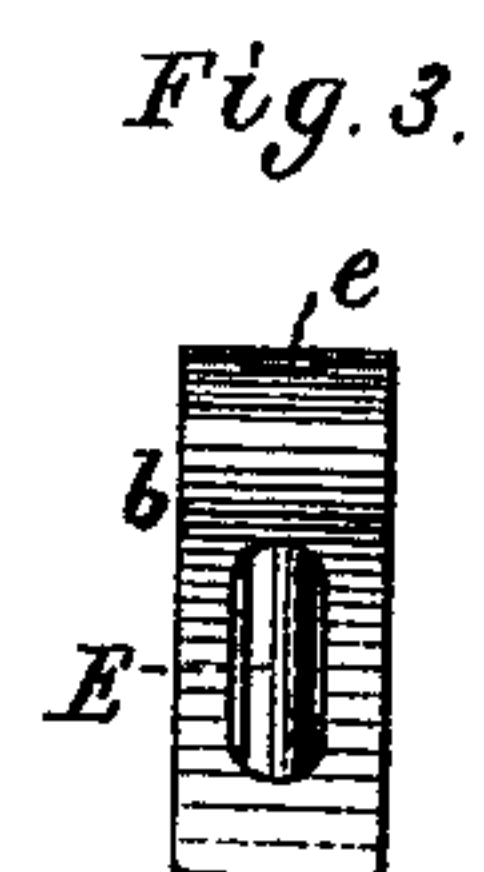
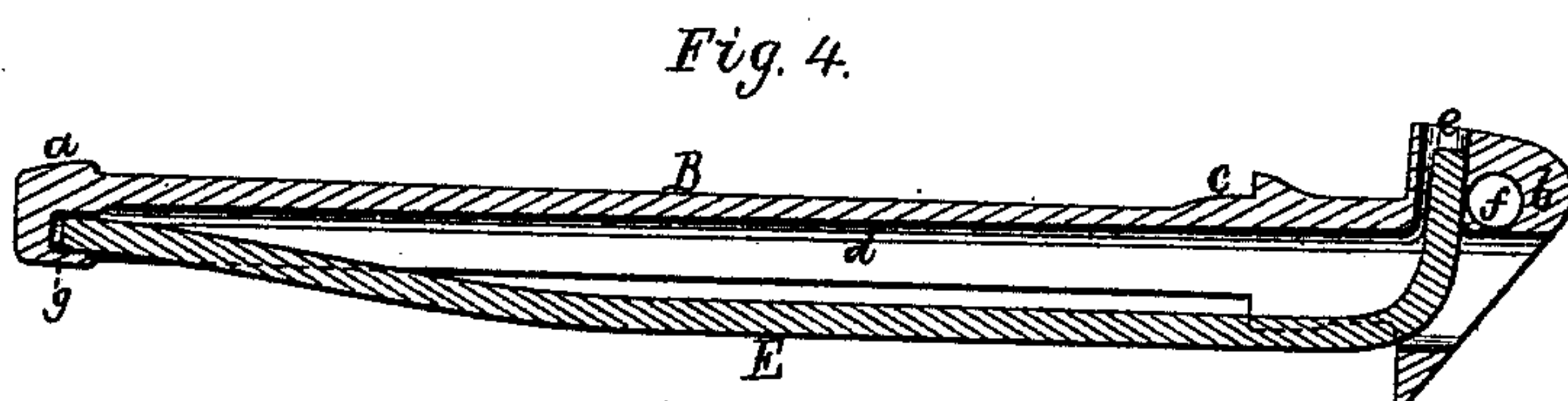
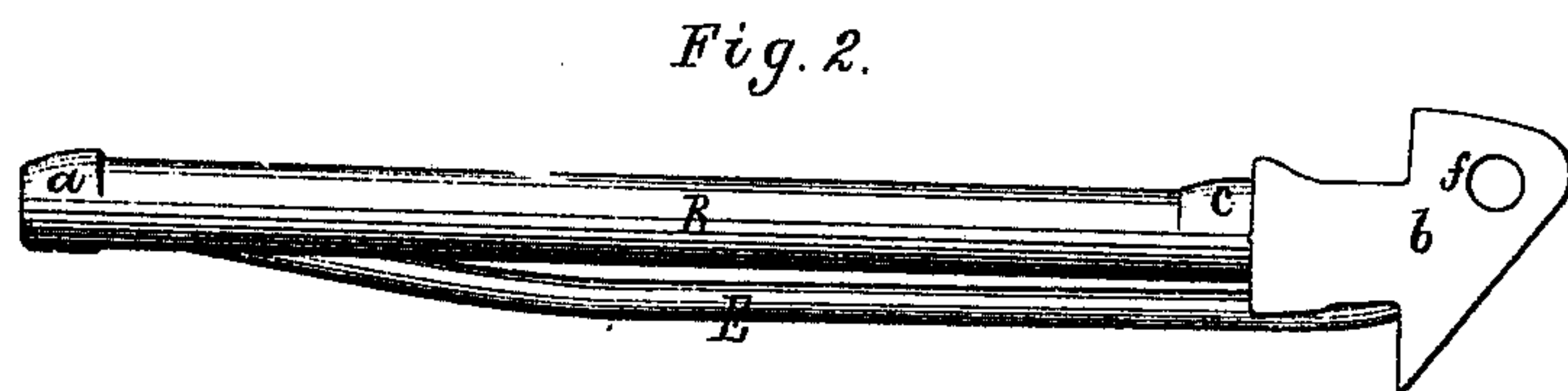
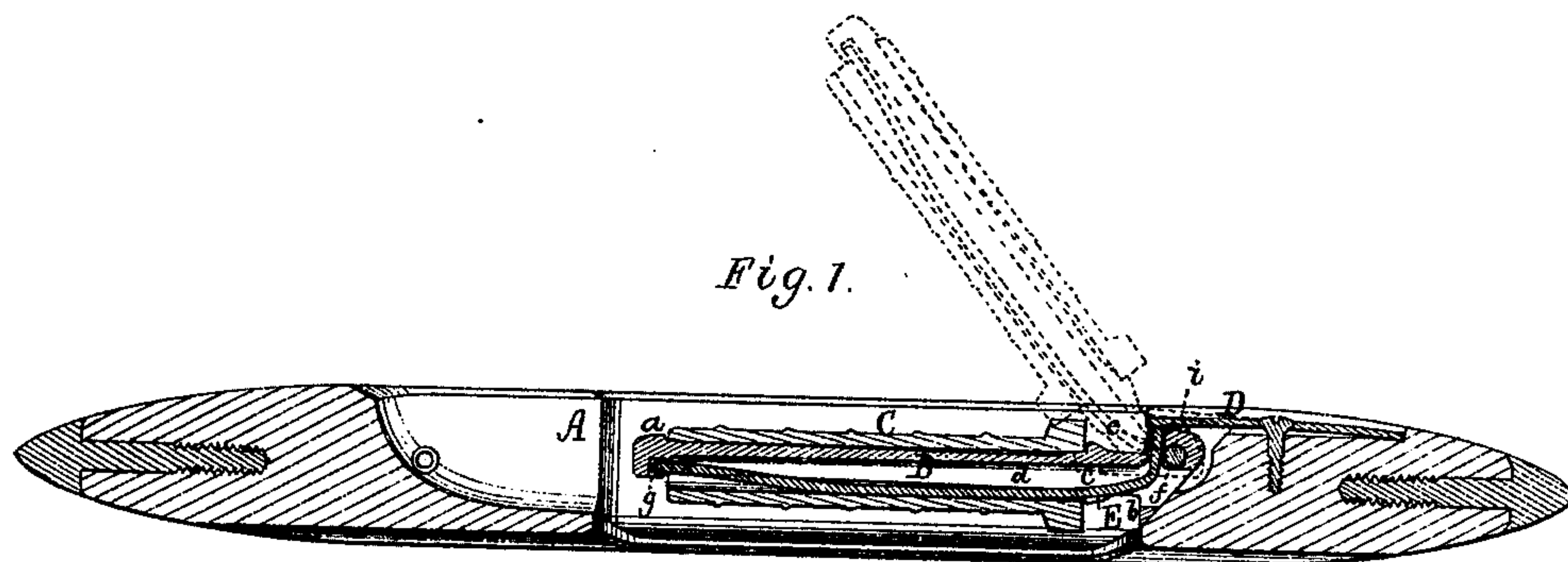


(No Model.)

F. J. FREESE.
Loom Shuttle.

No. 233,925.

Patented Nov. 2, 1880.



Witnesses.

S. N. Piper

Inventor.

Francis J. Freese

UNITED STATES PATENT OFFICE.

FRANCIS J. FREESE, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND WILLIAM E. BASS, OF SAME PLACE.

LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 233,925; dated November 2, 1880.

Application filed April 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS J. FREESE, of Lawrence, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Loom-Shuttles; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a longitudinal section of a shuttle provided with my invention. Fig. 2 is a side view, Fig. 3 a rear end view, and Fig. 4 a longitudinal section, of the spindle and its bobbin-holding appurtenance. Fig. 5 represents a shorter bobbin.

In the said Fig. 1 the bobbin is shown as upon the spindle and down within the bobbin-chamber of the shuttle, such bobbin and spindle being, by the dotted lines, represented as in a raised position. The spindle and its bobbin-holding devices are somewhat analogous to what is represented in "Division B" of the reissue of the Patent No. 97,882, though there are important differences which relate to the construction of the spindle and to that of the bobbin-holder applied to the said spindle.

In the drawings, A denotes the shuttle-body; B, the spindle; C, the bobbin; D, the top spring, and E the bobbin-holder. The said spindle B is provided, near its outer end, with a bobbin-holding projection or shoulder, *a*, while at the base of the spindle, or its junction with the neck of the head *b*, the spindle is formed with an auxiliary or inclined projection, *c*, as shown. Furthermore, the spindle is channeled or grooved, as at *d*, in its lower side from near its outer end to and through the neck of the head, and from thence there is a hole, *e*, which extends from the groove up through the head and in front of the pivotal hole *f* thereof. There is also at the front end of the groove, and in the spindle, a pivotal recess or socket, *g*, to receive the bobbin-holder E and keep it in place in connection with the spindle. This bobbin-holder is a piece of wire bowed or curved at its middle and bent near its rear end, in manner as represented, so as to extend up through and to or nearly to the upper end of the passage or hole *e* of the head.

The spindle so made and provided with the bobbin-holder is connected to the shuttle-

body by a pin, *i*, which goes through such body and the hole *f*.

On the spindle being turned up to its highest position relatively to the shuttle-body the bobbin can be removed from the spindle, or a bobbin can be placed on such spindle, in which latter case the bobbin will rest on the spindle and between and against the neck of the head and the projection *a*, provided the bobbin be of sufficient length therefor; but should it be of less length, as represented in Fig. 5, it, by the inclined projection *c*, will be supported at or near its rear end from slipping back against the neck. On the spindle with a bobbin on it being turned down into the chamber of the shuttle the upper end of the bobbin-holder will be borne downward by the top spring, D, so as to force the middle of the bowed part of the holder against the bore of the bobbin in a manner to hold the bobbin firmly in place on the spindle, and especially so with the projections *a* and *c*, or with the projection *a* and the neck of the head of the spindle.

Thus it will be seen that I have to the spindle no spring adapted to expand within the bobbin and hold it within its base. The bobbin-holder hereinbefore described operates to hold the bobbin at or near the middle of its bore, and besides such holder, to accomplish such, is borne downward by the top spring.

I am aware that it is not new to have to a shuttle-spindle a bobbin-holder like that hereinbefore described, such being shown in the British Patent No. 507 for 1866; but in such case the spindle was not, like my spindle, provided on its side with two projections extending therefrom and serving to receive the bobbin between them and to prevent it from being driven forward or backward on the spindle on the shuttle being stopped in its flight over the race-beam of the lay of a loom.

What, therefore, I claim as my invention is as follows—viz:

1. The loom-shuttle spindle provided on its upper side with the two projections *a* and *c* and on its lower side with a groove extending longitudinally from near its outer end to and into its head, and having a passage leading from it (the said groove) up through the said head, in combination with the bowed bobbin-

holder, as described, arranged in the groove and pivoted to the spindle and extending upward into the passage of the head and adapted to bear against the top spring, all being substantially as and to operate as set forth.

2. The loom-shuttle spindle, constructed as described—viz., with the two projections *a* and *c* on its upper side, the bobbin-holder recess near its end, and the groove *d*, extending from such recess through the lower side of the spindle and opening through its head at the back thereof, and provided with a passage, *e*, to lead upward to the top of the head—in combination with a bobbin-holder, as described,

arranged in the said recess and groove and extended up through the passage *e*, all being arranged substantially as set forth.

3. The combination of the shuttle-body *A* and spring *D* with the spindle *B*, provided with the projections *a* and *c*, groove *d*, and passage *e*, and the bobbin-holder *E*, adapted to enter groove *d* and recess *e*, and be retained in connection with the spindle, substantially as specified.

FRANCIS J. FREESE.

Witnesses:

HENRY TONGUE,
JOHN K. TARBOX.