

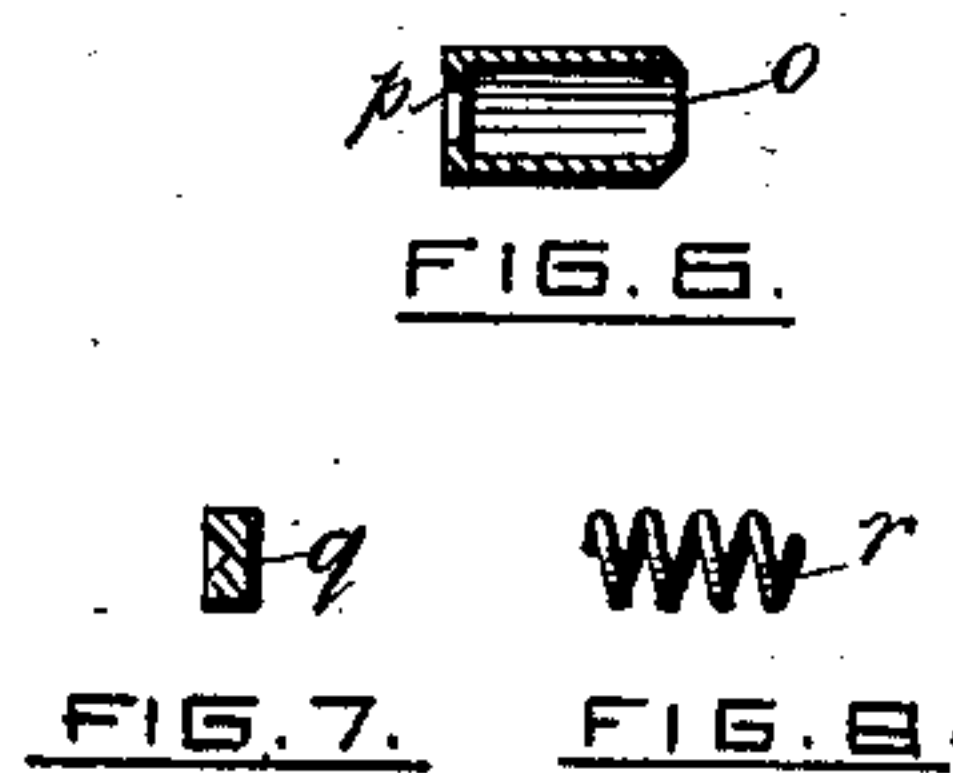
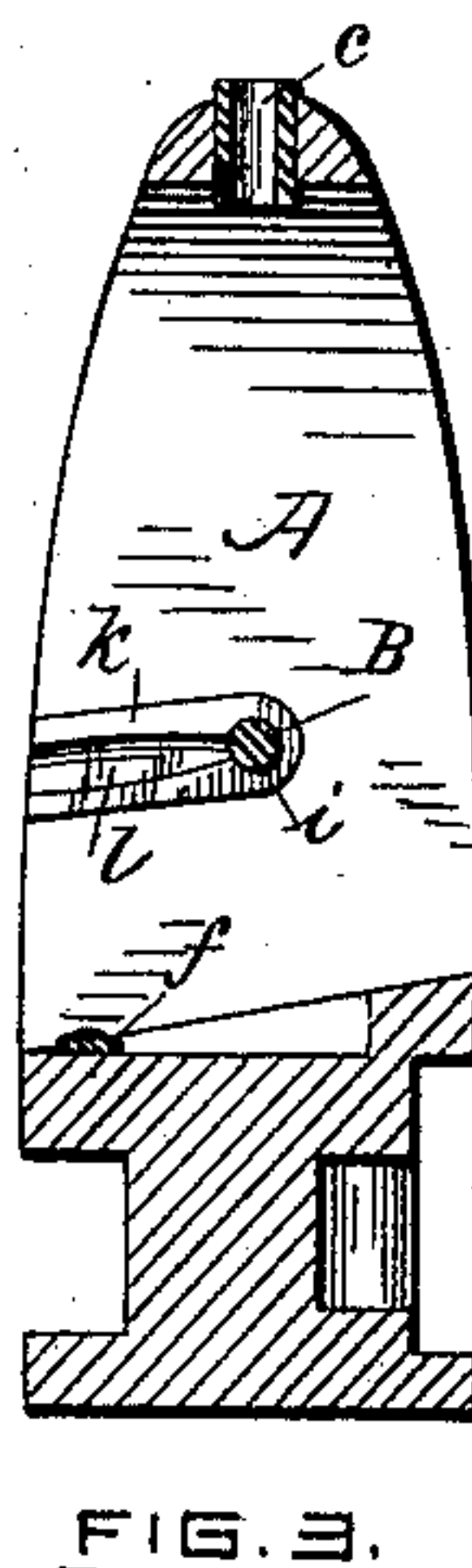
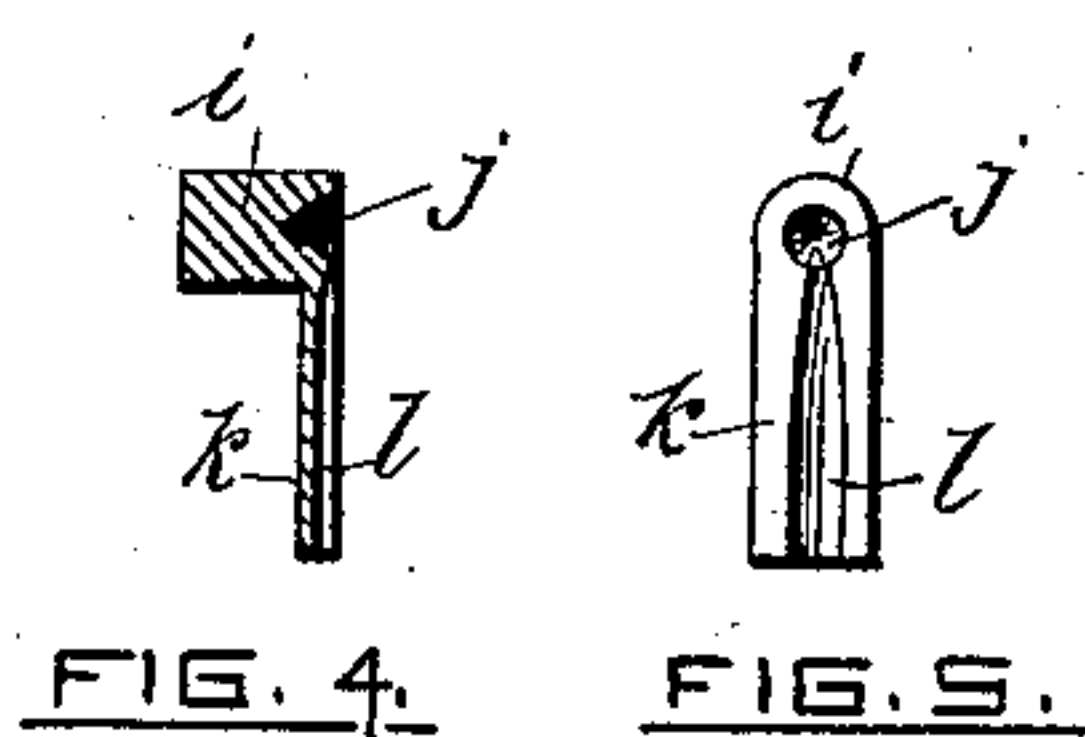
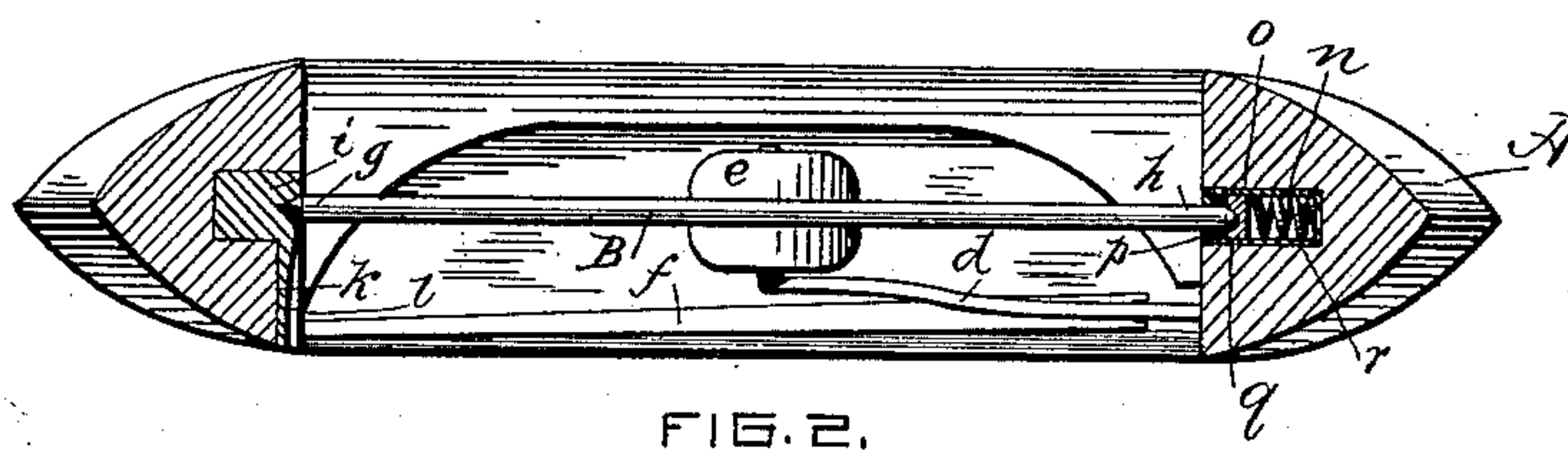
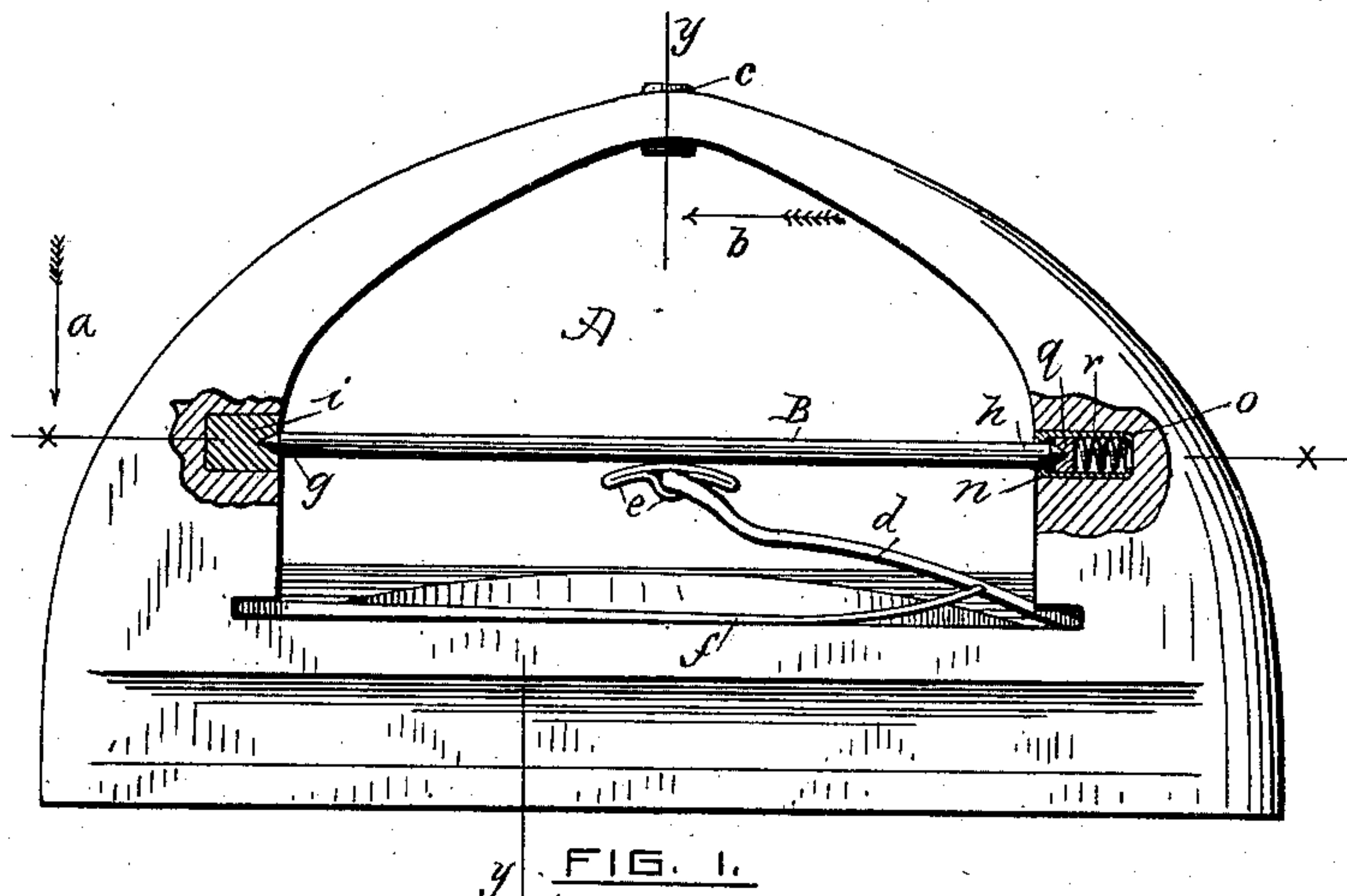
(No Model.)

W. WATTIE.

SHUTTLE FOR NARROW WARE LOOMS.

No. 370,910.

Patented Oct. 4, 1887.



WITNESSES:

*Chas. F. French*  
*M. Ralph Bryden*

INVENTOR:

*William Wattie*  
by *John C. Dewey*  
Attorney.



# UNITED STATES PATENT OFFICE.

WILLIAM WATTIE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE  
KNOWLES LOOM WORKS, OF SAME PLACE.

## SHUTTLE FOR NARROW-WARE LOOMS.

SPECIFICATION forming part of Letters Patent No. 370,910, dated October 4, 1887.

Application filed April 15, 1887. Serial No. 234,879. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WATTIE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Shuttles for Narrow-Ware Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, which, in connection with the drawings making a part of this specification, will enable others skilled in the art to which my invention belongs to make and use the same.

My invention relates to shuttles used in looms for weaving narrow wares; and my invention consists in an improved means of applying and holding in place in the shuttle-frame the spindle upon which the bobbin or spool is supported, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a top or plan view of a shuttle for narrow-ware looms embodying my improvement, with parts broken away at each end of the bobbin-spindle to illustrate certain features of my invention. Fig. 2 is a vertical section on line *x x*, Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 is a vertical cross-section on line *y y*, Fig. 1, looking in the direction of arrow *b*, same figure; and Figs. 4, 5, 6, 7, and 8 are detail views of the spindle-bearings detached from the shuttle-frame for a more clear illustration and understanding thereof.

In the drawings, A is the shuttle-frame, of the ordinary form, provided with an eye, *c*, through which the thread from the bobbin passes, the tension-wire *d*, carrying a pivoted brake, *e*, at its upper end to bear against the surface of the bobbin or spool, (not shown in the drawings,) supported and revolving on the spindle B, and the spring *f*, for holding up the tension-wire *d*, all in the usual manner.

The spindle B has a fixed bearing, *i*, at one end, *g*, in the shuttle-frame A, and a movable or spring-actuated bearing, *n*, at the other end, *h*, in said frame, thus permitting of a slight longitudinal motion of said spindle in its bearings and allowing said spindle to be applied to the shuttle-frame by inserting the end *h* in its movable bearing *n* and pushing the spindle in the direction of its movable bearing, permitting the end *g* to enter into its fixed bear-

ing *i* and be held therein by the action of its spring-actuated bearing *n*. The spindle B is removed from the shuttle-frame A by withdrawing first the end *g* from its bearing and then the end *h*.

The fixed bearing *i* is made separate from the shuttle-frame and preferably of metal. It is provided with a projection or lip, *k*, extending out from one side thereof, which has a shallow groove, *l*, therein leading from the edge or end of the lip *k* to the hole or center *j* in the bearing-piece *i*, the object of which is to allow of the pointed end of the spindle B traveling along in the groove *l* and entering into the hole *j* without coming in contact with the wood of which the shuttle-frame A is made. The bearing-piece *i*, with its lip or projection *k*, is fitted into the end of the shuttle-frame, cut out to receive it, so that the projection *k* will extend toward the top of the shuttle-frame as far as the edge thereof, (see Fig. 3,) and the top surface thereof and of the bearing-piece *i* will be flush with the surface of the frame A. (See Figs. 1 and 2.)

The movable or spring-actuated bearing *n* for the other end of the spindle B consists of a metal tube, *o*, provided with a narrow rim or flange, *p*, at its front end, projecting in toward the center of said tube, and a bearing-piece or center, *q*, and a small spiral spring, *r*, inclosed within said tube *o*. The spiral spring *r* has its bearing at one end against the end of the tube, which end is pressed or bent over after the center *q* and spring *r* are inserted therein, (see Figs. 1 and 2,) and at its other end against the bearing-piece *q*, which is adapted to slide back and forth in the tube *o*, (as the spindle B is pushed in or drawn out,) but prevented from being forced out of said tube by the flange *p*, extending around the outer end thereof, as above described.

The movable bearing *n* is made in the manner above described, and the tube *o*, bearing-piece *q*, and spring *r* are combined together before the bearing is applied to the shuttle-frame, by inserting the tube *o* in a hole bored out in said frame adapted to receive it, the outer end of said tube *o* being flush with the surface of said frame. (See Figs. 1 and 2.)

The operation of the spindle B in connec-



tion with its bearings, as above described, will be readily understood by those skilled in the art.

The spindle is applied to the shuttle-frame by inserting one end, as *h*, in the bearing-piece *q* and pushing the same inwardly against the action of the spring *r* until the other end, as *g*, passing along the groove *l* in the projection *k*, reaches the hole *j*, when the spring *r* forces the bearing *q* out, causing the end *g* to enter into the hole *j* and to be held therein.

In order to remove the spindle, the end *g* is drawn out of its center against the action of the spring *r*, causing the bearing-piece *q* to move inwardly and allowing said end *g* to be disconnected and withdrawn from its bearing *i* and afterward the end *h* of said spindle.

In case a spool-spindle of the ordinary construction, with one end bent, is used in connection with a shuttle-frame provided with my improved bearings for the ends of the spindle, the hole or center *j* in the fixed bearing *i* may be dispensed with and only the groove *l* employed.

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

1. In a shuttle for narrow-ware looms, the combination, with the shuttle-frame, of a fixed spindle-bearing, *i*, having a lip or projection, *k*, with a groove, *l*, therein, extending out therefrom for the purpose stated, and a movable or spring-actuated spindle-bearing, *n*, composed of a tube, *o*, spring *r*, and bearing-piece or center *q*, combined together, substantially as shown and described.

2. The combination, with the shuttle-frame, of a fixed spindle-bearing, *i*, provided with a hole, *j*, therein, and a lip, *k*, with a groove, *l*, therein, and the movable or spring-actuated spindle-bearing *n*, secured in the other end of the shuttle-frame and composed of a tube, *o*, spring *r*, and bearing-piece *q*, combined together, substantially as set forth.

WILLIAM WATTIE.

Witnesses:

JOHN C. DEWEY,

M. RALPH DRYDEN.