

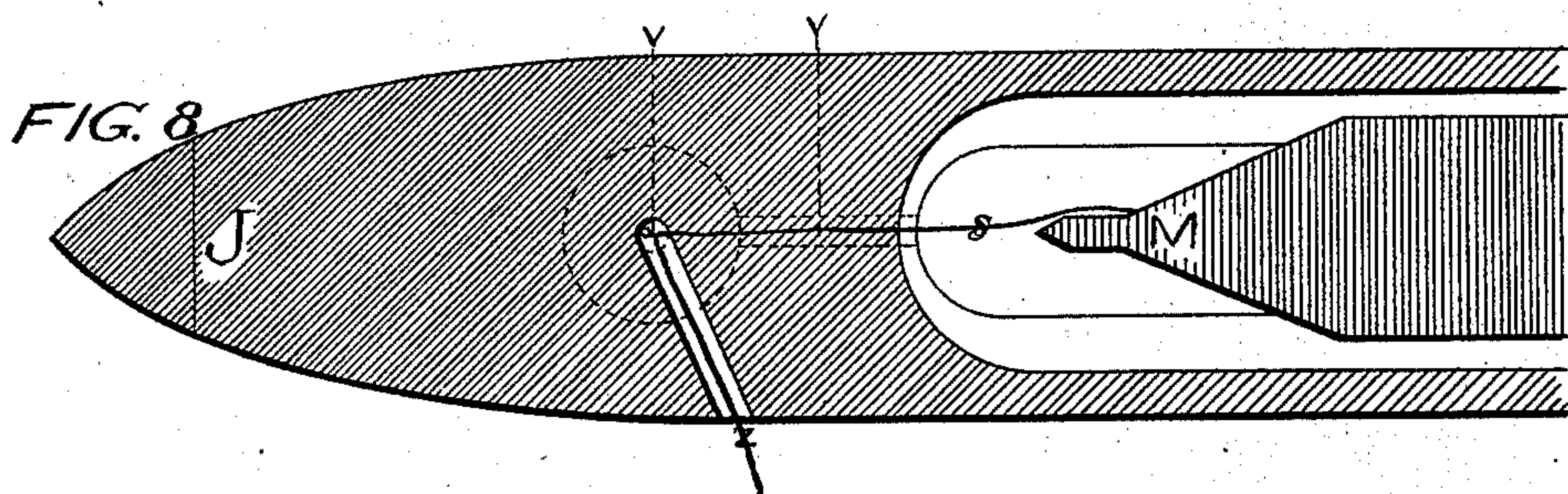
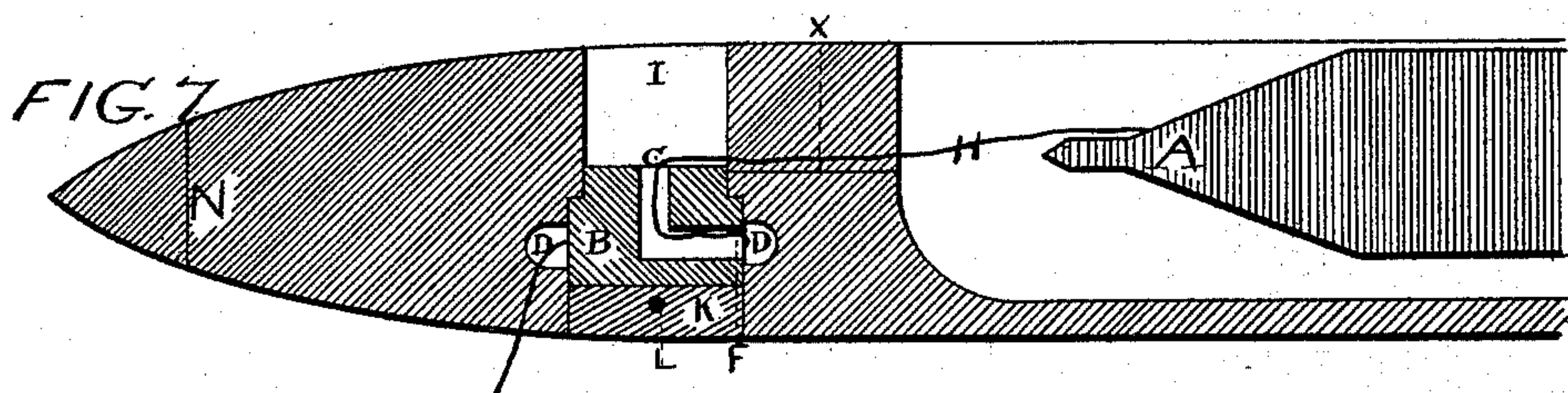
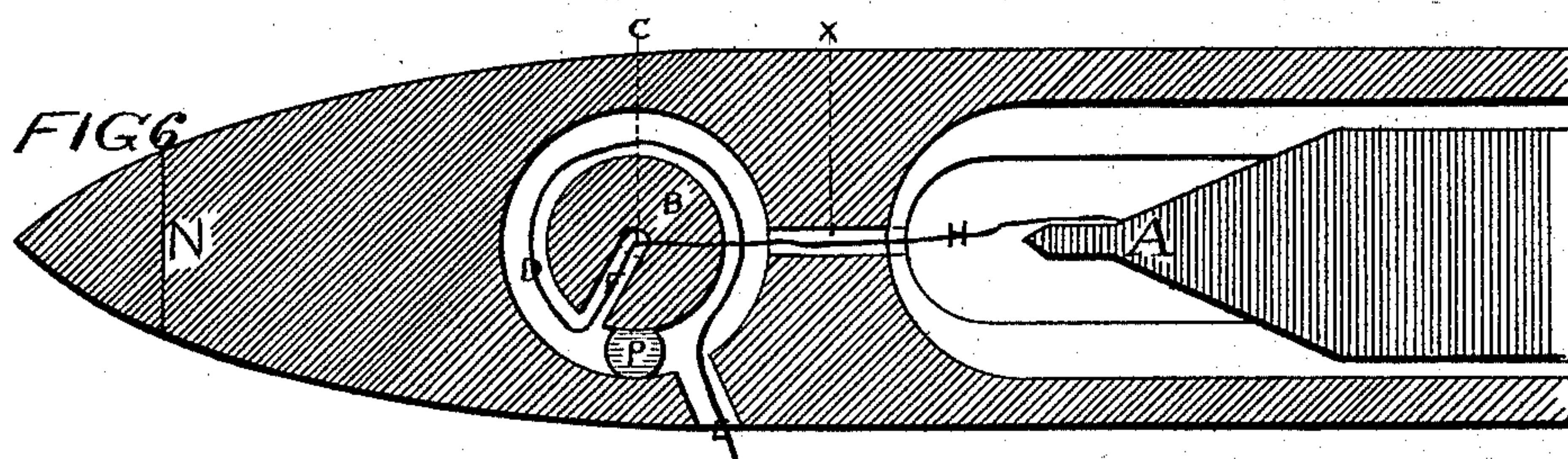
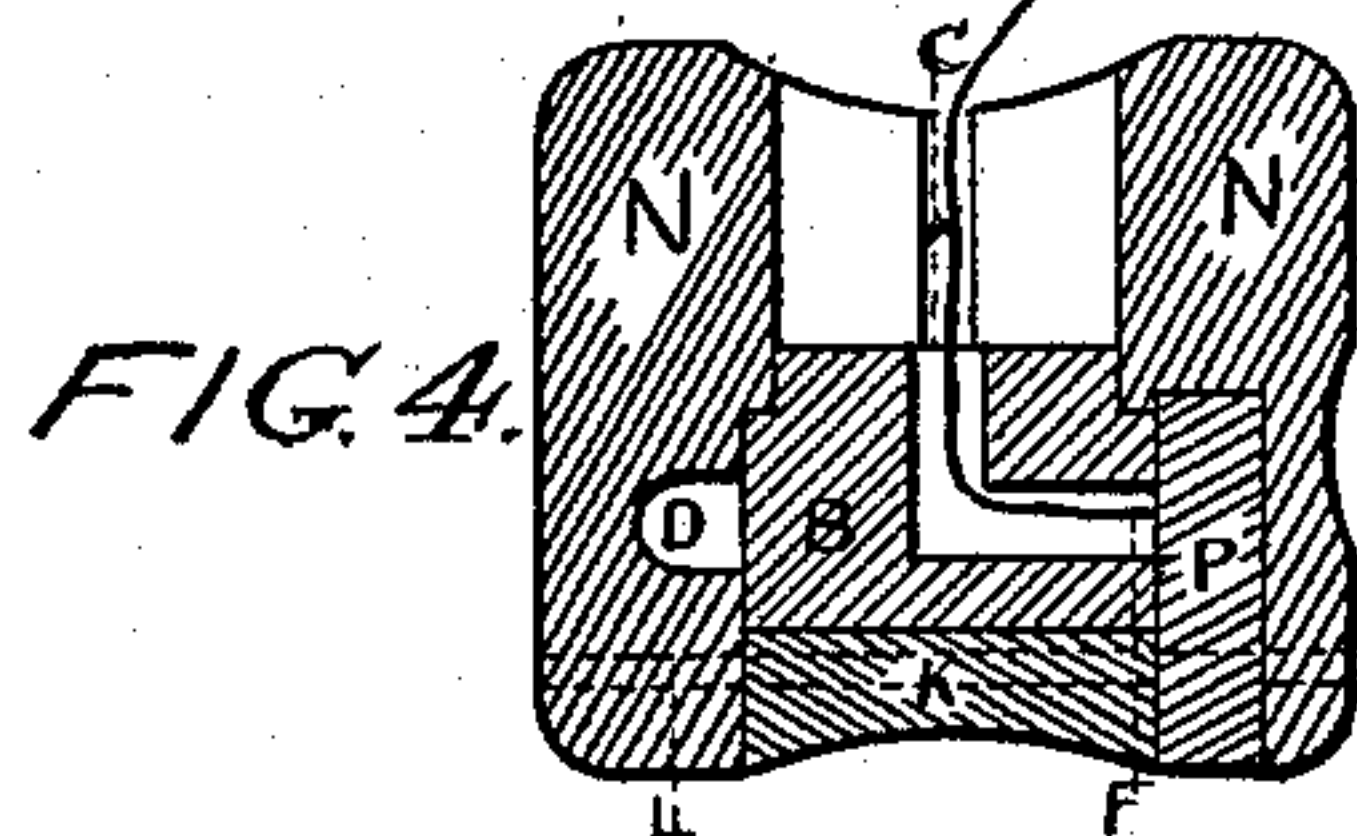
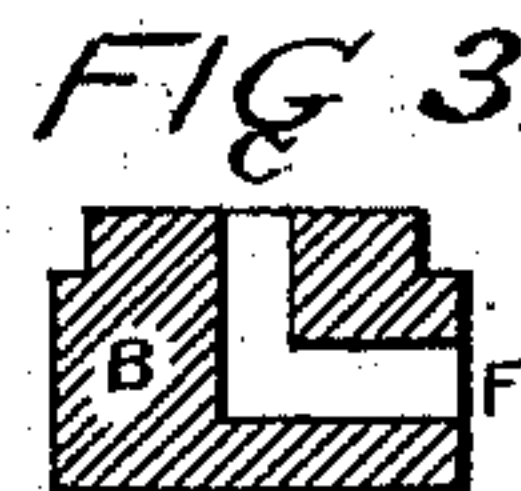
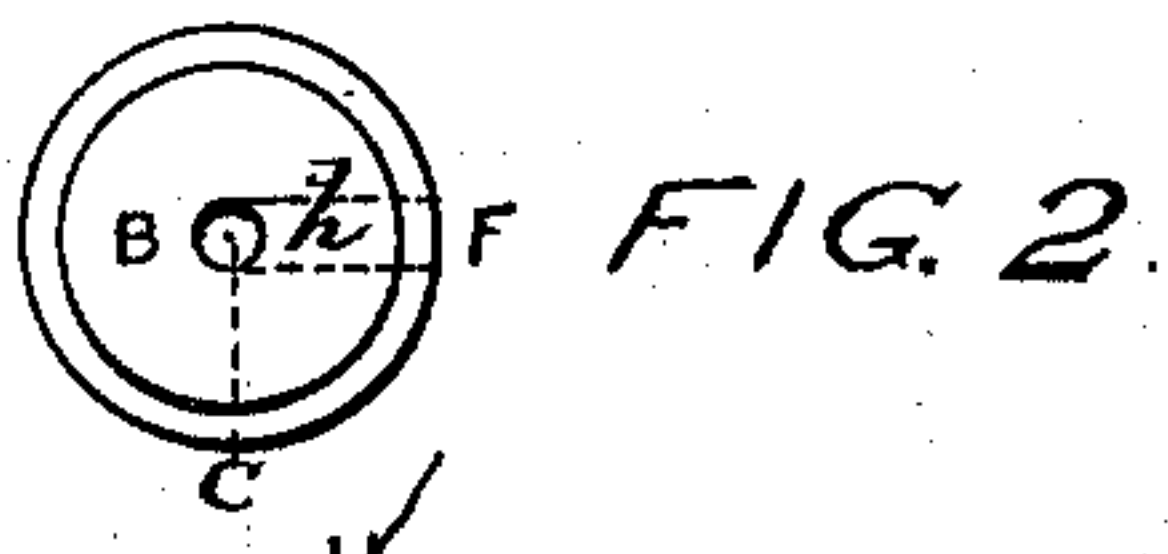
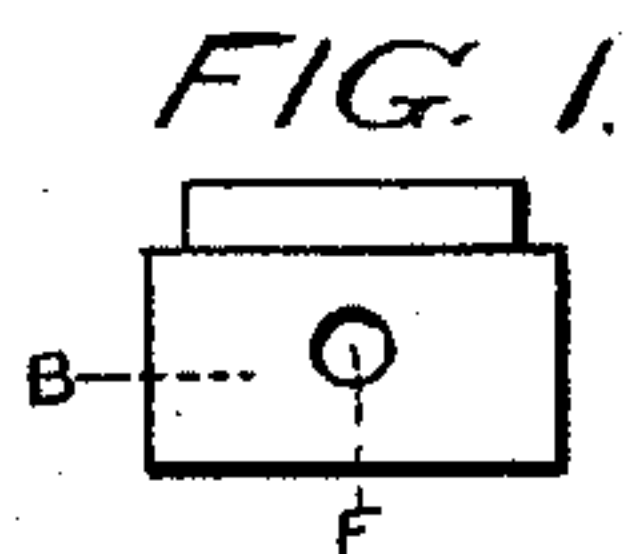
(No Model.)

H. C. LIVERSEDGE.

TENSION REGULATING DEVICE FOR LOOM SHUTTLES.

No. 413,195.

Patented Oct. 22, 1889.



Witnesses
Frank L. Porter
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HENRY C. LIVERSEDGE, OF LAWRENCE, MASSACHUSETTS.

TENSION-REGULATING DEVICE FOR LOOM-SHUTTLES.

SPECIFICATION forming part of Letters Patent No. 413,195, dated October 22, 1889.

Application filed March 8, 1889. Serial No. 302,576. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. LIVERSEDGE, a citizen of the United States, residing at Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Tension-Regulating Devices for Loom-Shuttles; and I do declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to devices for use in loom-shuttles intended for producing a tension upon weft-yarn or filling as it is interwoven with the warp in making cloth.

The object of my invention is to produce a tension-producing device for use in loom-shuttles, whereby the tension of the yarn passing from the bobbin or cop within the shuttle may be regulated to any desired extent, the device being intended to maintain the yarn taut and prevent kinks being formed in the same, and to enable the production of a firm selvage and uniform smooth cloth.

In the accompanying drawings, Figure 1 is a side view of the tension-regulating plug used by me. Fig. 2 is a top view of the same. Fig. 3 is a vertical sectional view of the same. Fig. 4 is a view in cross-section of a shuttle having my invention applied thereto. Fig. 5 represents the key by which the plug is turned in its socket or chamber in the shuttle-body. Fig. 6 is a view in longitudinal horizontal section of part of a shuttle having my invention applied thereto. Fig. 7 is a view thereof in longitudinal vertical section, showing the slot in the shuttle and the thread passing from the bobbin through said slot and through the device and groove. Fig. 8 is a view in horizontal longitudinal section of part of a shuttle in common use.

In the construction shown in Fig. 8, representing the shuttle in common use, the yarn passes, as indicated by the fine line *s*, from the bobbin or cop *M* first through a vertical slot *y* in the upper part of the shuttle-body into a chamber or recess *v*, into which the forward end of the said slot opens, and from said chamber *v* passes through an educt to

the outside of the shuttle-body at *z*. Generally the educt consists of a tube or eye, the inner end of which is exposed at the inner side of the chamber *v*. In this construction the only tension produced in the yarn is that produced by the passage of the yarn through the slot *y* around the angle at the inner end of the tube and through the tube or eye *o z*.

In my construction I form in the wall of the chamber *I*, Figs. 4, 6, and 7, a groove *D*, extending around the same, into which groove opens the delivery-eye *E*. Within the chamber *I*, I place the plug *B*, having formed therein a hole *C*, extending downward from the upper side or end thereof in a line with the axis thereof, and a hole *F*, extending from the periphery thereof inward and intersecting the vertical hole *C*. At one side of the plug *B* and in front of the delivery-eye *E*, I place a post *P*, of rubber, which extends across the groove *D* and completely closes the same at that point. The post *P* may be made of rubber or any other suitable material. The plug *B* has a rabbeted upper end; and the shoulder thereon rests against a corresponding shoulder in the wall of the chamber *I*, the said plug being held in place in the chamber by a disk of wood *K*, which is secured in position by a pin *L*, passing through the post *P* and the wood of the shuttle-body.

In order to thread a shuttle having my improvement applied thereto, the end of the yarn is pulled off the bobbin or cop and drawn through the slot *X* and placed in the chamber *I*. Then when the loom-attendant places his lips to the side of the shuttle-body around the educt *E* and sucks the air through the said educt the yarn is drawn through the holes *C* and *F*, into the plug, through the groove *D*, around the plug and through the educt *E*. The degree of tension imparted to the yarn depends upon the position of the hole *F* relative to the educt *E* and the consequent distance the yarn has to pass around the exterior of the plug. By making rotary adjustment of the plug the tension may be regulated as desired.

A mark of a suitable character—as, for instance, the letter *h* in Fig. 2 of the drawings—is made upon the top of the plug above the hole *F* in order to indicate the position of the said hole. The plug may be of porcelain or

any other hard substance that will not wear the thread nor be worn by it. The post P serves to close the groove D on one side of the educt E and causes the yarn to pass in the proper direction around the plug B and helps hold the plug firmly as it may be set. The plug is rotated by the key, which is represented by Fig. 5, by placing the short turned or bent end in the hole C.

10 I am aware that Letters Patent No. 366,296 have been issued for a tension-regulating device in loom-shuttles making use of a rotary plug. I ascribe to my device advantages over the device above referred to in the following 15 important particulars:

First. My device has the upper end of the plug rabbeted, by reason of which that end of the plug presents three different bearings against the wall of the chamber I in the shuttle-body, in that part into which the top of the plug is made to fit, thus greatly increasing the security against leakage of air over a device having but one bearing of the upper end of the plug against the wall of the chamber in the shuttle-body, as in the device referred to, it being absolutely necessary to have the passage through the groove air-tight in order to thread the shuttle in the manner above set forth.

30 Second. My device is held firmly in place by the close-fitting disk of wood K and pin L, so as practically to exclude the air in that direction from said groove and at the same

time to hold the rabbeted end of the plug firmly against its bearings in said chamber. 35

Third. The groove in my device being in the wall of the chamber I of the shuttle-body, the reduction of the size of the plug is avoided and a greater capacity and range of friction is obtained than can be obtained if the groove 40 be cut in the plug itself, as in the said device referred to.

Fourth. In my device the plug P can be easily removed in case of necessity by simply withdrawing the pin L and removing the disk 45 K, which could not be readily done were the plug riveted to the shuttle-body, as in the device referred to.

The post P serves to close the groove D on the side of and near the educt E and cause 50 the yarn to pass in the proper direction around the plug B.

Having described my invention, I claim and desire to secure by Letters Patent—

The combination, with the shuttle-body 55 having a slot X, a chamber I, with groove D around the same, and the educt E, of the plug B, having the holes C F, the post P, the disk K, and the pin L, substantially as shown and described. 60

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. LIVERSEDGE.

Witnesses:

JAMES H. ASHWORTH,
FRANK L. PORTER.