

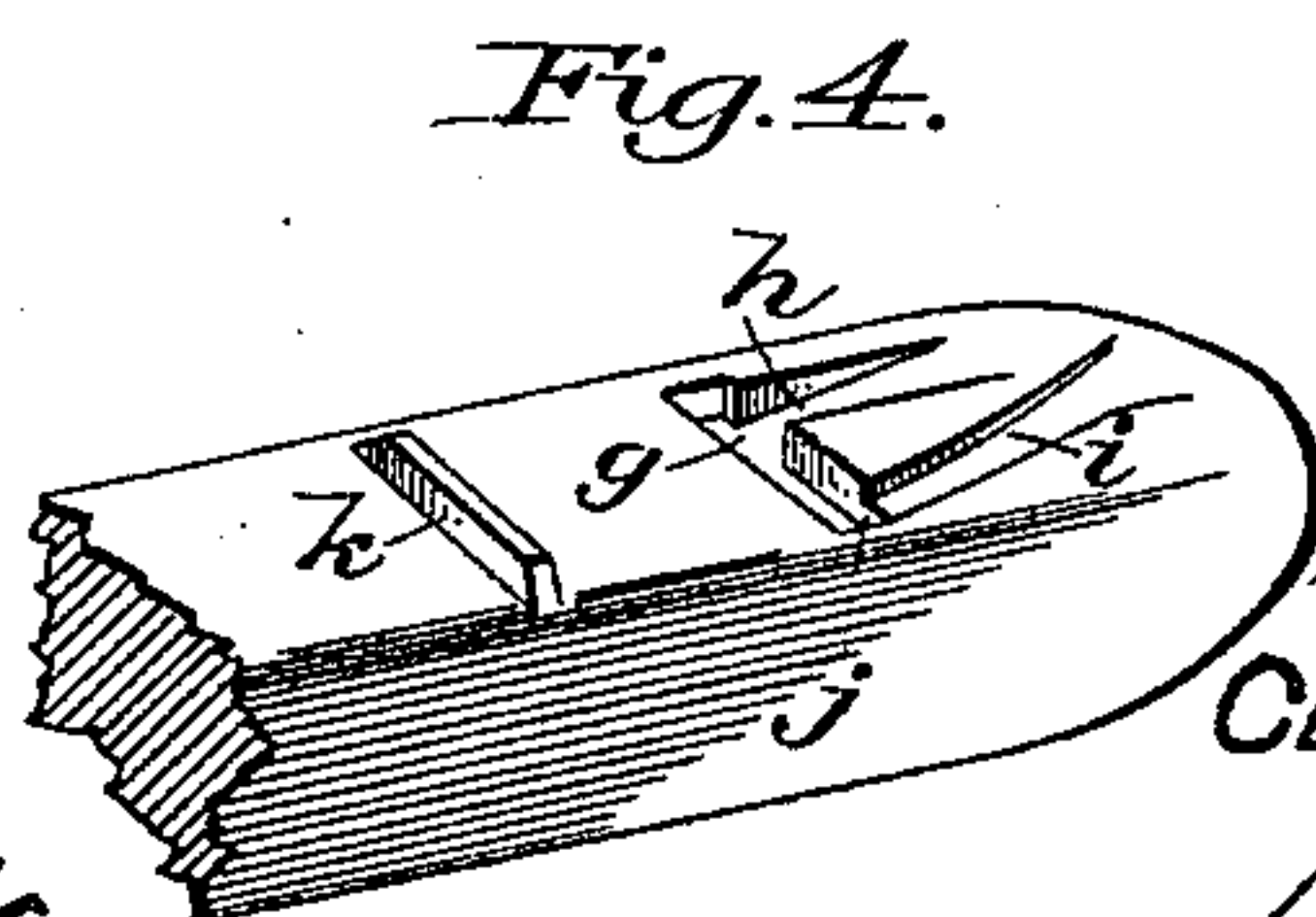
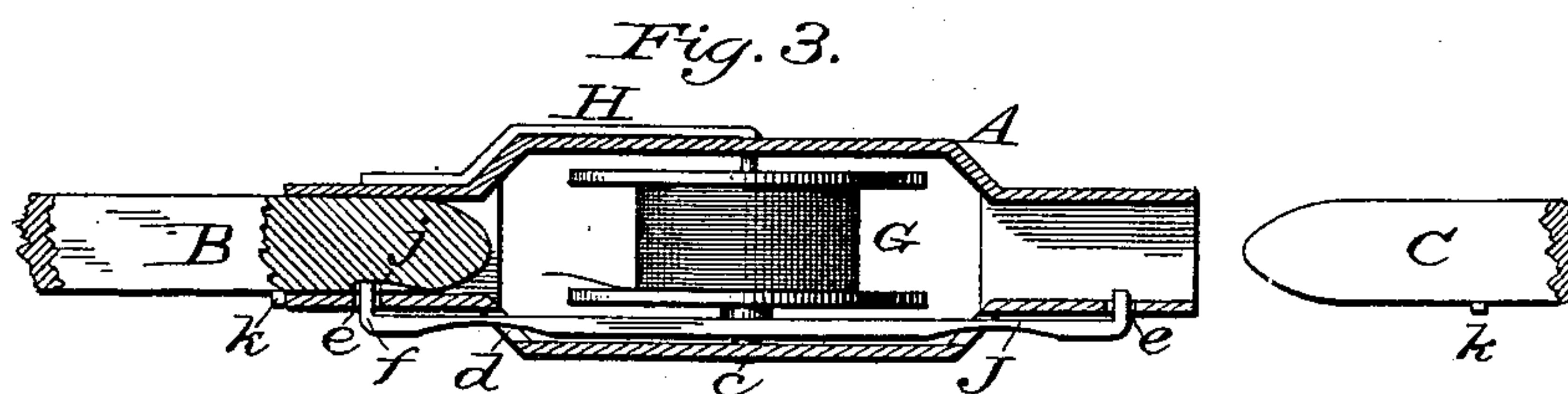
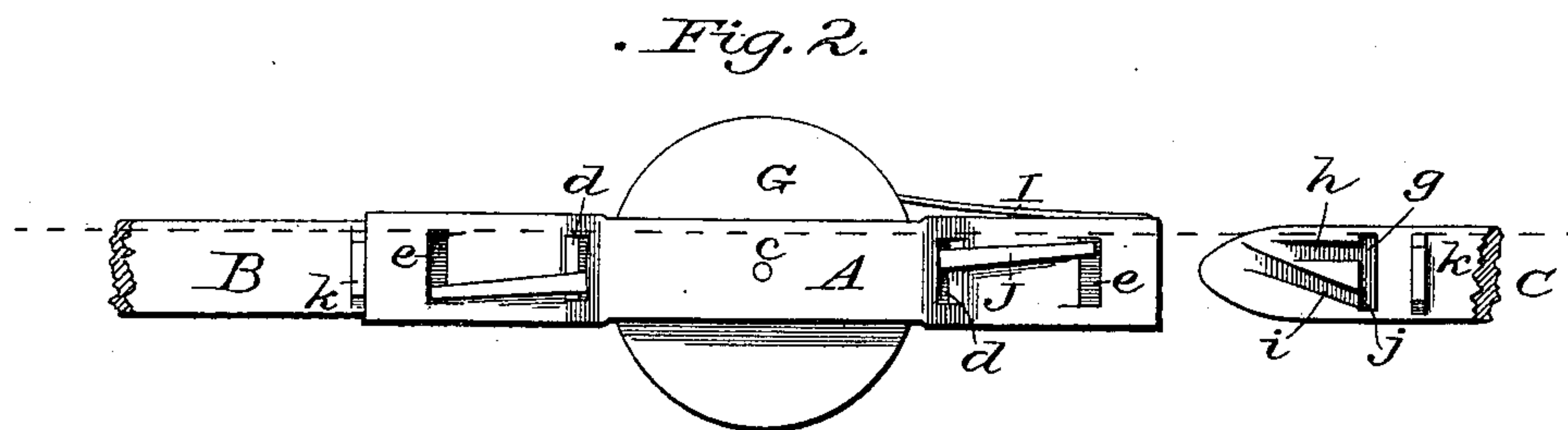
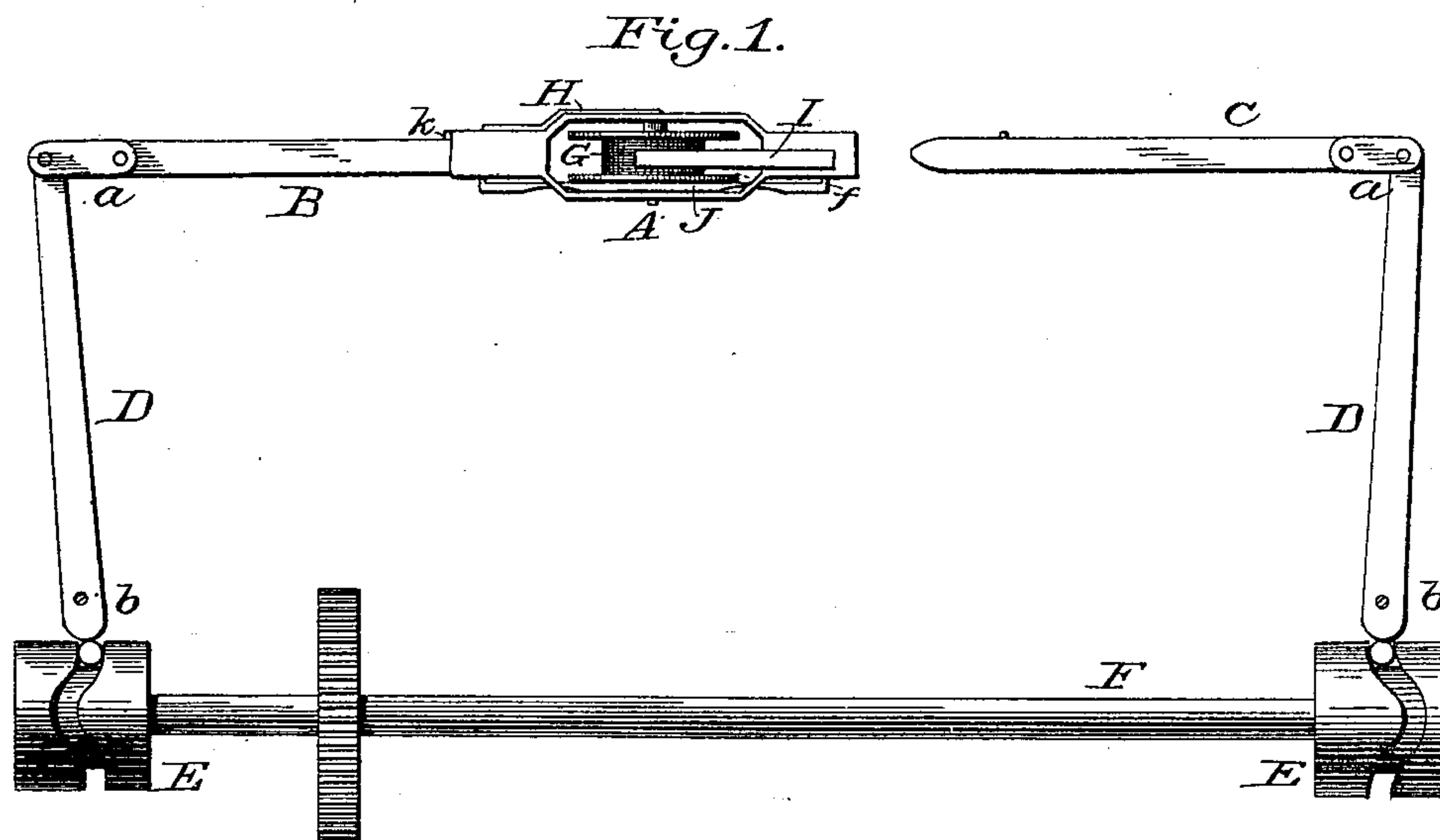
(No Model.)

C. S. STROWBRIDGE.

POSITIVE SHUTTLE MOTION FOR LOOMS.

No. 332,217.

Patented Dec. 8, 1885.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## POSITIVE SHUTTLE-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 332,217, dated December 8, 1885.

Application filed December 13, 1884. Serial No. 150,279. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE S. STROWBRIDGE, of Cortland, in the county of Cortland and State of New York, have invented certain  
5 new and useful Improvements in Positive Shuttle-Motions for Looms, of which the following is a specification.

My invention relates to looms for weaving wire fabrics and for like work, in which the  
10 shuttle is transferred from one carrying or actuating arm to another, and is drawn forward by a positive action.

The invention consists in a novel construction of the shuttle and actuating-arms, and  
15 particularly in the construction of the catch or locking device by which the shuttle is connected with and disconnected from the carrying-arms alternately.

In the drawings annexed, Figure 1 represents the shuttle and actuating mechanism in elevation. Fig. 2 is a bottom face view of the shuttle and portions of the carrying-arms. Fig. 3 is a view showing the shell of the shuttle and end of one of the carrying-arms in  
25 section, and the remaining portions of the shuttle and end of the other carrying-arm in elevation. Fig. 4 is a perspective view of the end of one of the carrier-arms.

The mechanism for moving or actuating the  
30 shuttle-carrying arms may be of any simple or common construction, the present invention relating solely to the means of connecting and disconnecting the shuttle with and from the carrier-arms, which will now be explained in  
40 detail in connection with the drawings, in which—

A indicates the shuttle, and B C the actuating or carrying arms, which in practice are suitably supported and guided, connected by  
40 links *a* to upright levers D, pivoted near their lower ends, as indicated at *b*, and having their lower ends extended into grooved cams E, secured upon a rotary shaft, F. The rotation of this shaft and its cams E, the grooves of which  
45 are suitably formed, imparts vibratory movement to the levers D, and through them to the actuating or carrying arms B C to the extent and at the times required.

The shuttle A consists of a hollow shell,  
50 enlarged or bridged outward at its middle on the upper and lower sides to receive the bobbin G, which is formed with a hollow axle, to receive

center pins or journals carried by the shuttle, as usual, one of said journals being formed upon the end of a spring-arm, H, and extending inward through an opening in the side of  
55 the shuttle, as shown.

I indicates a friction or tension-regulating spring, secured at one end to the shuttle-body, and bearing at its other end upon the bobbin  
60 or upon the wire or other material wound thereon.

Both ends of the shuttle are made polygonal in form, preferably square and hollow, as shown in Fig. 3, to receive the ends of the actuating  
65 or carrying arms B C, which latter are pointed or tapered to insure their ready entrance into the ends of the shuttle.

J indicates a spring-bar, pivoted at its mid-length upon one of the journals *c* of the bobbin,  
70 passing outward through the slots or openings *d* in the sloping walls, connecting the middle and the end portions of the shuttle, and finally bent inward through slots or openings *e*, formed in the hollow ends of the shuttle, as shown in  
75 Figs. 2 and 3, the ends *f* projecting a short distance into the interior of said hollow ends, as shown in Fig. 3. The slots or openings *d* and *e* are of such length as to permit a free  
80 play of the inwardly-turned ends *f* nearly the entire width of one face of the end portions of the shuttle, for a purpose presently explained; and the body of the bar is made  
85 sufficiently flexible to permit the ends *f* to be pressed back flush with the inner faces of the shuttle-walls by a moderate pressure from within the shuttle. The ends *f* of the spring-bar J thus form two spring-catches, which  
90 engage alternately with one or other of the actuating-bars, the connection with one and disconnection from the other being effected by a rocking or swinging motion of the spring bar or lever J upon its pivot, which carries one of its ends *f* into and the other end *f* out of a  
95 notch or recess in the respective carrying-arms B C.

By referring now to Figs. 2, 3, and 4 this mode of locking and unlocking will be better understood. The free ends of the actuating  
100 or carrying arms B C are arranged in line with and opposite to each other, as shown in Figs. 1 and 3, and each is formed with a recess or depression, *g*, extending transversely across the face, as in Figs. 2 and 4. Two grooves, *h*



and *i*, extend forward from this recess toward the end of the carrying-arm, beginning at opposite ends of said recess, the groove *h* extending in a line parallel with the axis 5 of the arm and inclining regularly from the bottom of the recess up to the face of said arm, and the groove *i* running obliquely to the axis of the arm, and being of less depth than the recess *g*, thus producing a square shoulder, 10 *j*, across the inner end of said groove and across the space between the two grooves. From this construction it follows that if the bent end *f* of the spring-arm J enter the groove *i* and move along the same to its rear or inner 15 end the hook or bent end *f* will spring into recess *g* and lock against shoulder *j*, thereby firmly connecting the shuttle and the carrying-arm. At the same time the hook or bent end *f*, in traversing groove *i* and thus moving ob- 20 liquely across the face of the arm B or C, causes the lever or spring-arm J to rock upon its pivot and its other hook or bent end to traverse the recess *g* of the other carrying-arms, and thus to swing out from behind the shoulder *j* into line with the groove *h*, through 25 which it may freely pass out, and thus disconnect the shuttle from one carrying-arm in the act of connecting with the other. Stops *k* limit the entrance of arms B and C into the shuttle. The arms B C alternately approach 30 and recede from each other, and through the instrumentality of the spring arm or lever J the shuttle is transferred from one to the other.

The spring-arm J can be placed wholly within the shuttle; but the arrangement shown 35 is preferred.

Having thus described my invention, what I claim is—

1. The herein-described shuttle, consisting of a shell having hollow ends, and having an 40 elastic bar pivoted within the body of the shuttle, and having its free ends bent inward and extending through slots in the walls of the hollow ends, whereby said free ends of the bar are adapted to ride into and swing out of en- 45 gagement with the actuating or carrying arms of a loom, substantially as explained.

2. The combination, with a shuttle body or shell having hollow ends and provided with slots *d e*, of a spring-bar, J, pivoted to the shell 50 at a point between its ends, extending through the slots *d*, and having its ends bent inward through slots *e* and projecting into the hollow ends, substantially as shown and described.

3. The combination, with carrying-arms B 55 C, each provided with transverse recess *g*, grooves *h i*, and shoulder *j*, of means for reciprocating said arms B C, and shuttle A, provided with pivoted elastic bar J, having inwardly-turned ends extending into the hol- 60 low ends of the shuttle, substantially as shown.

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