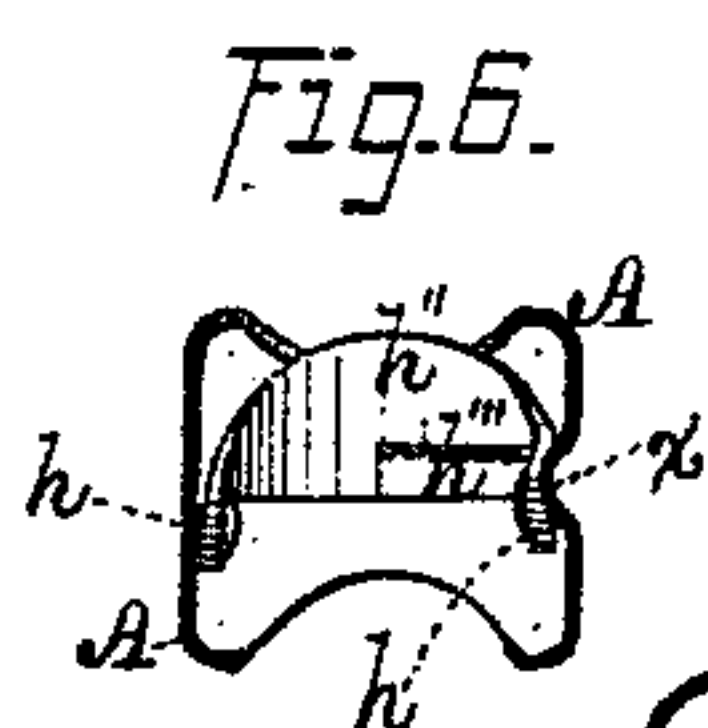
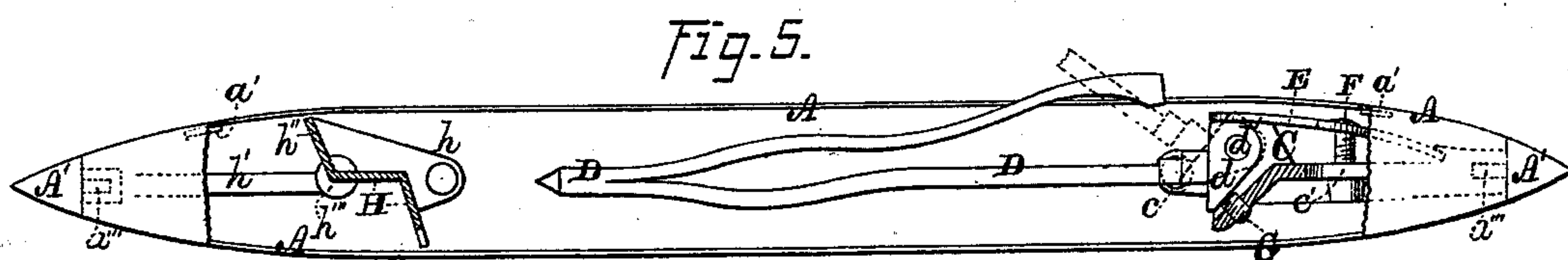
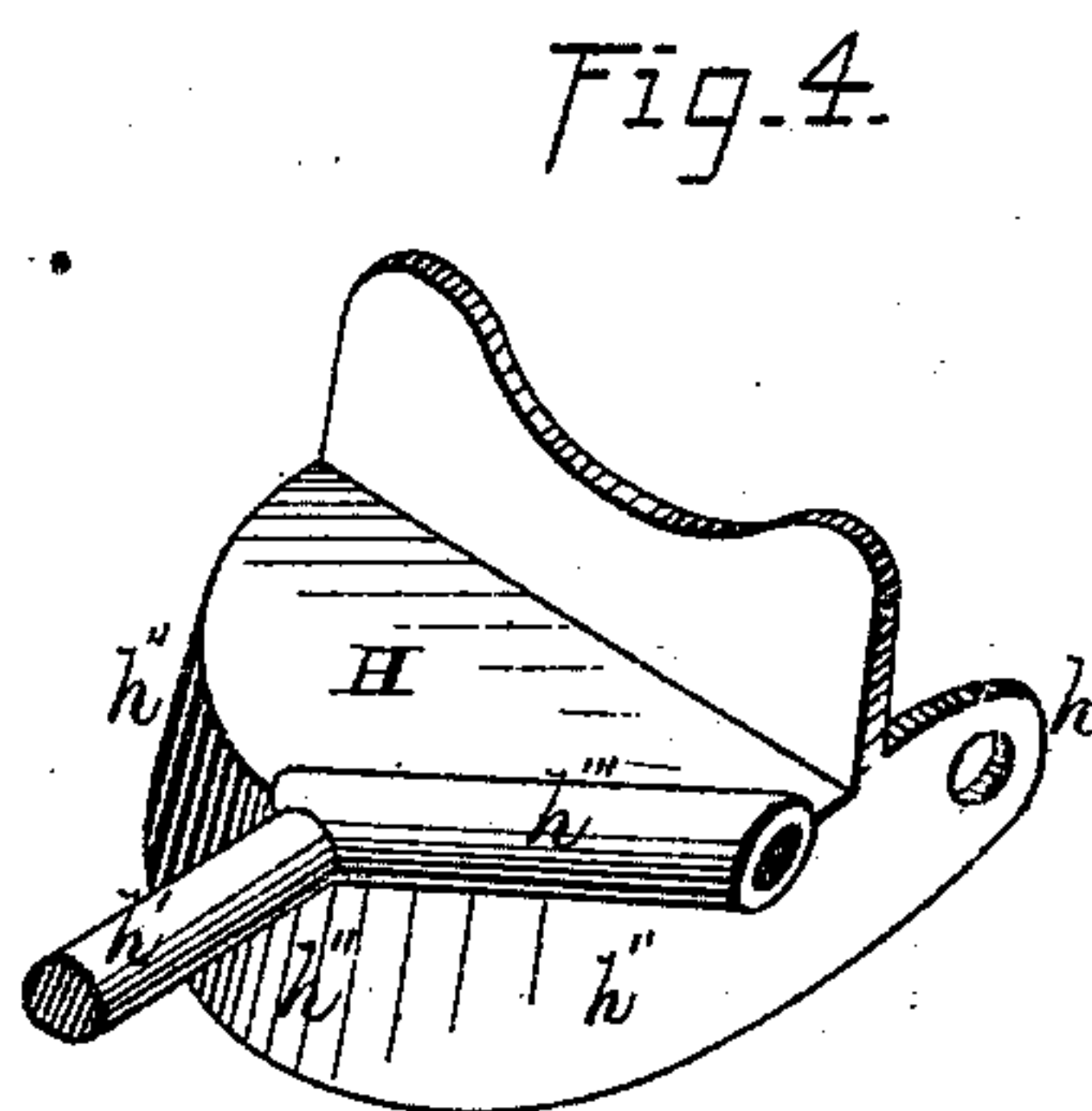
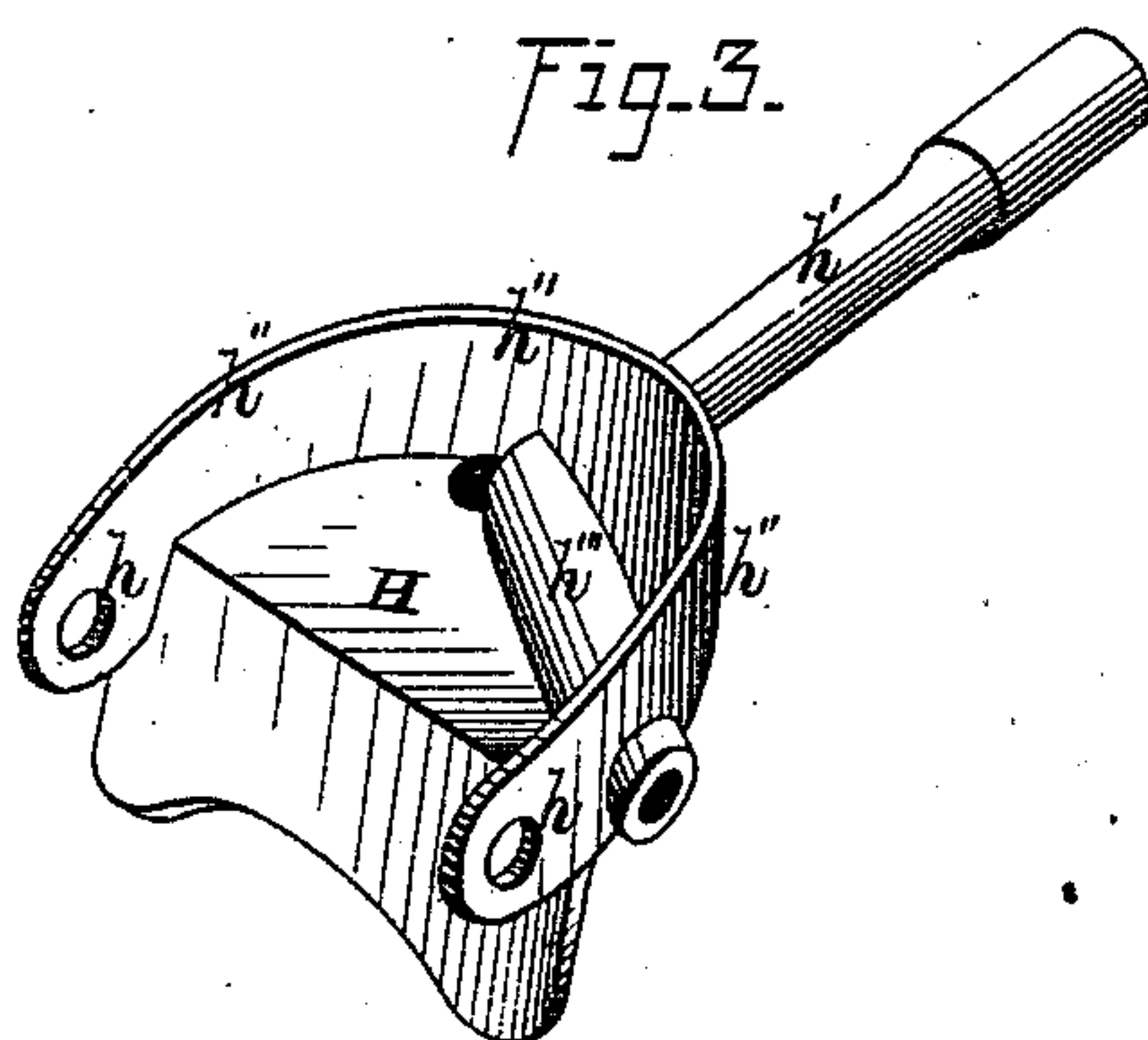
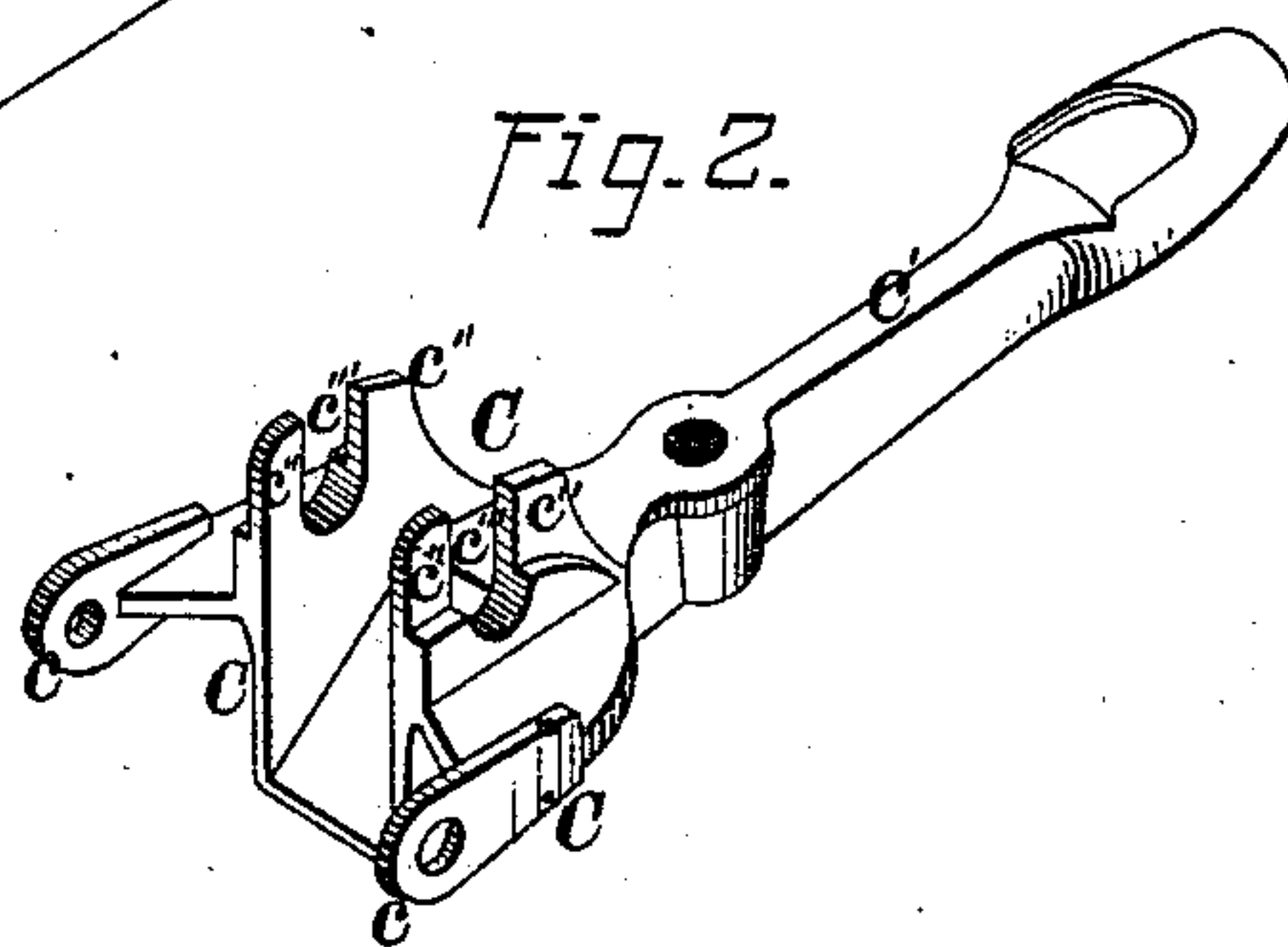
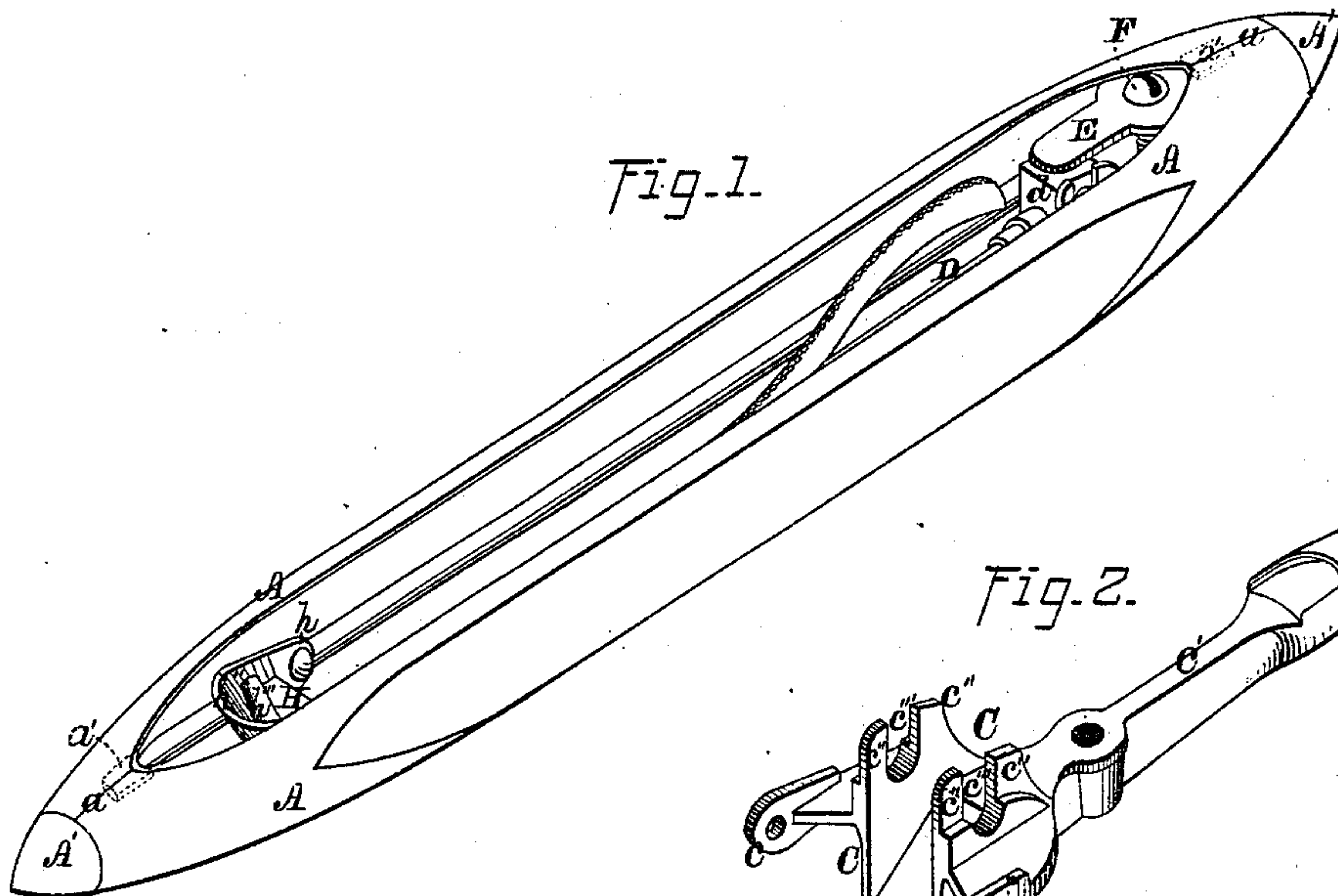


W. BEATTY & G. M. EDWARDS.
Metallic Loom-Shuttle.

No. 213,031

Patented Mar. 11, 1879.



WITNESSES:
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UNITED STATES PATENT OFFICE.

WILLIAM BEATTY AND GRANVILLE M. EDWARDS, OF GRAY, MAINE.

IMPROVEMENT IN METALLIC LOOM-SHUTTLES.

Specification forming part of Letters Patent No. **213,031**, dated March 11, 1879; application filed November 27, 1877.

To all whom it may concern:

Be it known that we, WILLIAM BEATTY and GRANVILLE M. EDWARDS, of Gray, Cumberland county, and the State of Maine, have invented certain new and useful Improvements in Metallic Loom-Shuttles; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of our improved shuttle, with spindle in the position occupied when in operation. Fig. 2 is a like view of the head which forms a pivotal support for and connects the spindle with the shuttle. Figs. 3 and 4 are, respectively, enlarged perspective views of the upper and lower sides of the head which supports the thread-tube. Fig. 5 is a central longitudinal section of the complete shuttle, the dotted lines showing the position of the spindle when raised to receive a cop; and Fig. 6 is a central cross-section of the shuttle.

Letters of like name and kind refer to like parts in each of the figures.

The design of our invention is to increase the durability and efficiency of loom-shuttles; and to this end it consists, principally, in the peculiar construction of the thread-tube head, and its combination with the metallic shell, substantially as and for the purpose hereinafter shown.

It consists, further, in the means employed for connecting the tube-head and spindle-head with the ends of the shuttle-shell, substantially as and for the purpose hereinafter set forth.

It consists, further, in the peculiar construction of the spindle-head, and its combination with said spindle and the shuttle-case, substantially as and for the purpose hereinafter shown and described.

It consists, finally, in the means employed for regulating the inward motion of the spindle, substantially as and for the purpose hereinafter specified.

In the annexed drawings, A represents the shell of our shuttle, which has the usual form exteriorly, and is composed of two thin sheet-metal sections that are united upon an axial line, and at their ends are joined to two steel points, A', as shown in Figs. 1 and 5.

The edges of the shell-sections are joined by brazing, and are connected to or with the points A' in the same manner; and as experience has shown that the joints *a* between said sections are liable to open by use, and cause trouble and loss by the entanglement therein of the threads we place across the inner end of each joint *a*, upon the inner side of the shell, a small piece of metal, *a'*, which extends over the contiguous metal of each section and is brazed thereto, the result being that at such points said shell is practically solid, and no amount of ordinary use can impair said joints.

Within the shell A, near one end, is placed a head, C, which has the form seen in Fig. 2, and transversely extends between the sides of said shell, to which it is connected by rivets, that pass through the same and through two ears, *c*.

From the outer end of the head C an arm, *c'*, extends outward to the contiguous point A', and is provided at its end with an axial recess that passes over a stud, *a'''*, which extends inward from said joint.

From the upper side of the head C two lugs, *c''*, extend upward from points each side of the transverse center, and within each lug is provided a vertical recess, *c'''*, which is semi-circular at its bottom, as shown in Fig. 2.

Between the lugs *c''* is fitted the head *d* of a spindle, D, which loosely fills the space transversely, and is provided upon its sides with trunnions *d'*, that extend laterally into the recesses *c'''*, and form pivotal bearings for said spindle.

The upper side of the head *d* is flat and parallel with the axis of the spindle D, and upon the same rests one end of a flat spring, E, the opposite end of which rests upon the arm *c'*, near its outer end. A screw, F, passing downward through the longitudinal center of said spring, with its threaded end contained within a threaded opening in said arm, enables said spring to be caused to bear with any required force upon said spindle-head *d*, so as to hold the latter with yielding force in its normal position with said spindle in a line with the axis of the shuttle.

When it is desired to raise the spindle D for the purpose of placing thereon a cop, the spring E by such movement of said spindle is

pressed outward until the corner of the head d bears squarely against its lower side, in which position said spindle is held by said spring, and prevented from accidentally closing.

To remove the spindle, it is only necessary that the screw F should be withdrawn and the spring E removed, after which the spindle-head d may be lifted directly out of its pivotal bearings.

In order that the downward motion of the forward end of the spindle D may be limited and means afforded for the adjustment of said spindle to the axial center of the shuttle, the following-described construction is employed: The lower side of the spindle-head d inclines forward and downward, as shown in Fig. 5, and near the lower end of such inclined face rests upon the end of a screw, G , which passes through a threaded opening in the head C in a line at a right angle to the said bearing-face. By advancing or withdrawing said screw the outer end of said spindle will be correspondingly elevated or depressed, and when an adjustment has been once effected no change from use can occur in the position of said spindle unless it becomes accidentally bent.

Near the point of the spindle D , in a position corresponding to that occupied by the head C , is a tube-head, H , which has the form seen in Figs. 3 and 4, and extends between the sides of the shell A , and is secured to the latter by means of rivets that pass through the same and through two ears, h , which are formed upon opposite sides of said head.

From the outer end of the head H an arm, h' , extends outward to the contiguous point A' , and is provided with an axial recess that passes over a stud, a''' , which extends inward from said point, the arrangement being the same as in case of the head C .

The upper side of the head H is inclosed at its sides and outer end by a curb, h'' , which forms a continuation of the ears h ; and just within said curb, at the transverse center of the head, is placed one end of a tube, h''' , which from thence extends laterally outward and slightly toward the longitudinal center of the shuttle, the outer end of said tube being flush with the bottom of a thread-groove, x , which is formed within and extends longitudinally along one side of the shell A .

The spindle D , from its head d outward nearly to its point, is split longitudinally, its parts being connected at said point, and one of said parts disconnected at its rear end.

From the point of the spindle D rearward said spindle is straight for a short distance, and its sections then have an outward swell, after which the detached section extends outward and rearward in a curve, while the other section continues rearward in a straight line.

If, now, a cop is placed over the spindle D , it will not bind until its inner end impinges upon and presses down the outward-curving rear end of the detached section; but when the central portion of the latter bears upon the contiguous portion of the fixed section, it operates as a fulcrum, and the farther downward motion of the rear end of said detached section causes the swelled forward portion of said spindle to be distended vertically until it closely fills said cop and holds the latter firmly in place.

Having thus fully set forth the nature and merits of our invention, what we claim as new is—

1. The thread-tube head H , provided with the ears h , curb h'' , and thread-tube h''' , in combination with the shell A , constructed as shown, the said tube-head being connected to the shell by means of rivets which pass through said parts, substantially as and for the purpose described.

2. As a means for connecting the tube-head H and spindle pivotal head C to or with the ends A' of the shell A , and in combination with said parts, an axial arm, c' or h' , provided at its outer end with a recess which passes over a stud, a''' , that projects inward from said point, substantially as and for the purpose set forth.

3. The spindle pivotal head C , having the ears c and lugs c'' , provided with recesses c''' , in combination with the shell A and the spindle-head d , having the trunnions d' , substantially as and for the purpose shown and described.

4. The combination of the projection of the spindle-head d , inclined downward and forward, with the screw G , passing through the corresponding part in the head C to effect the proper adjustment of the spindle D , substantially as set forth and described.

In testimony that we claim the foregoing we hereunto set our hands this 22d day of November, 1877.

WILLIAM BEATTY.
GRANVILLE M. EDWARDS.

Witnesses:

CHARLES L. DRUMMOND,
JOHN O. WINSHIP.