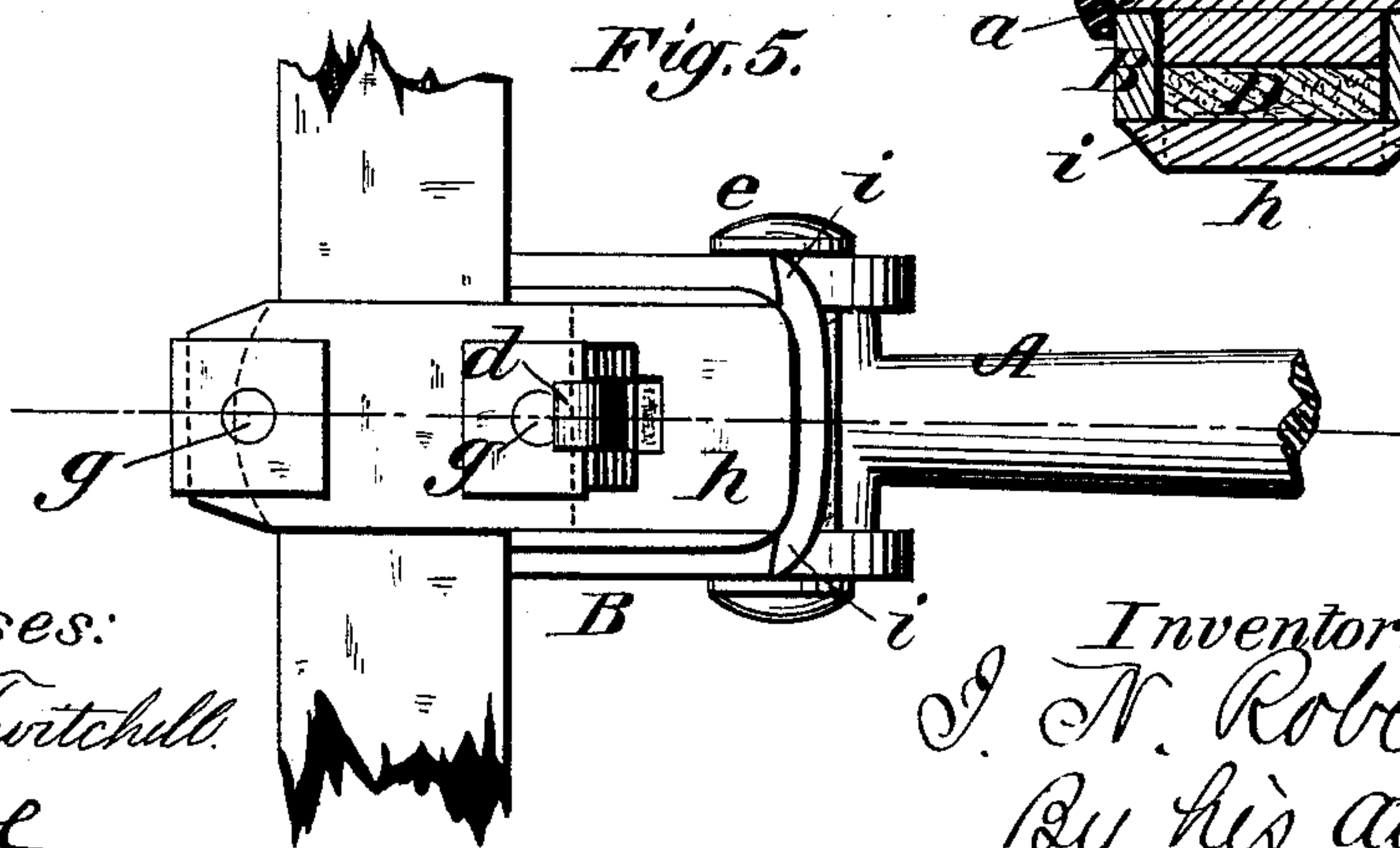
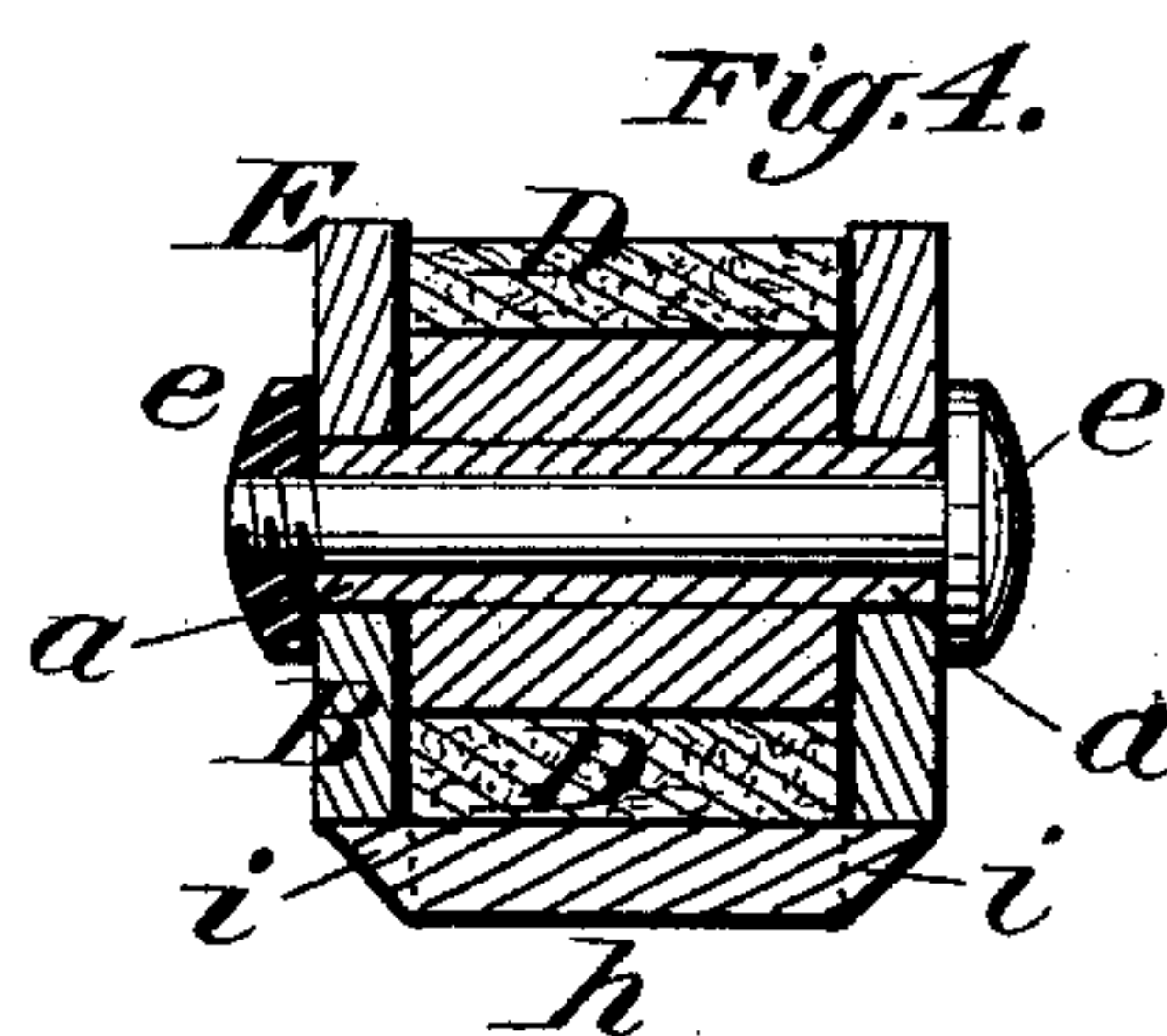
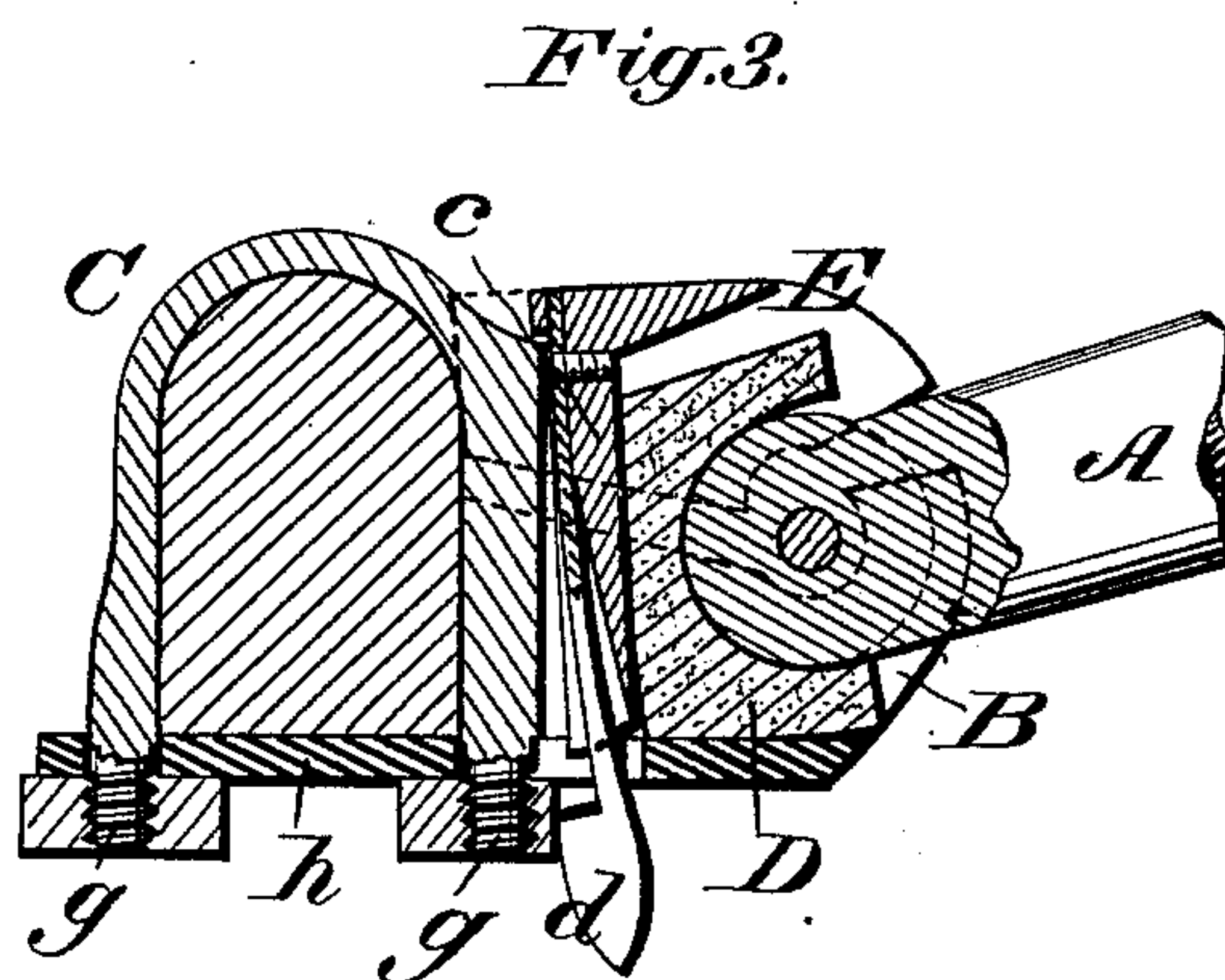
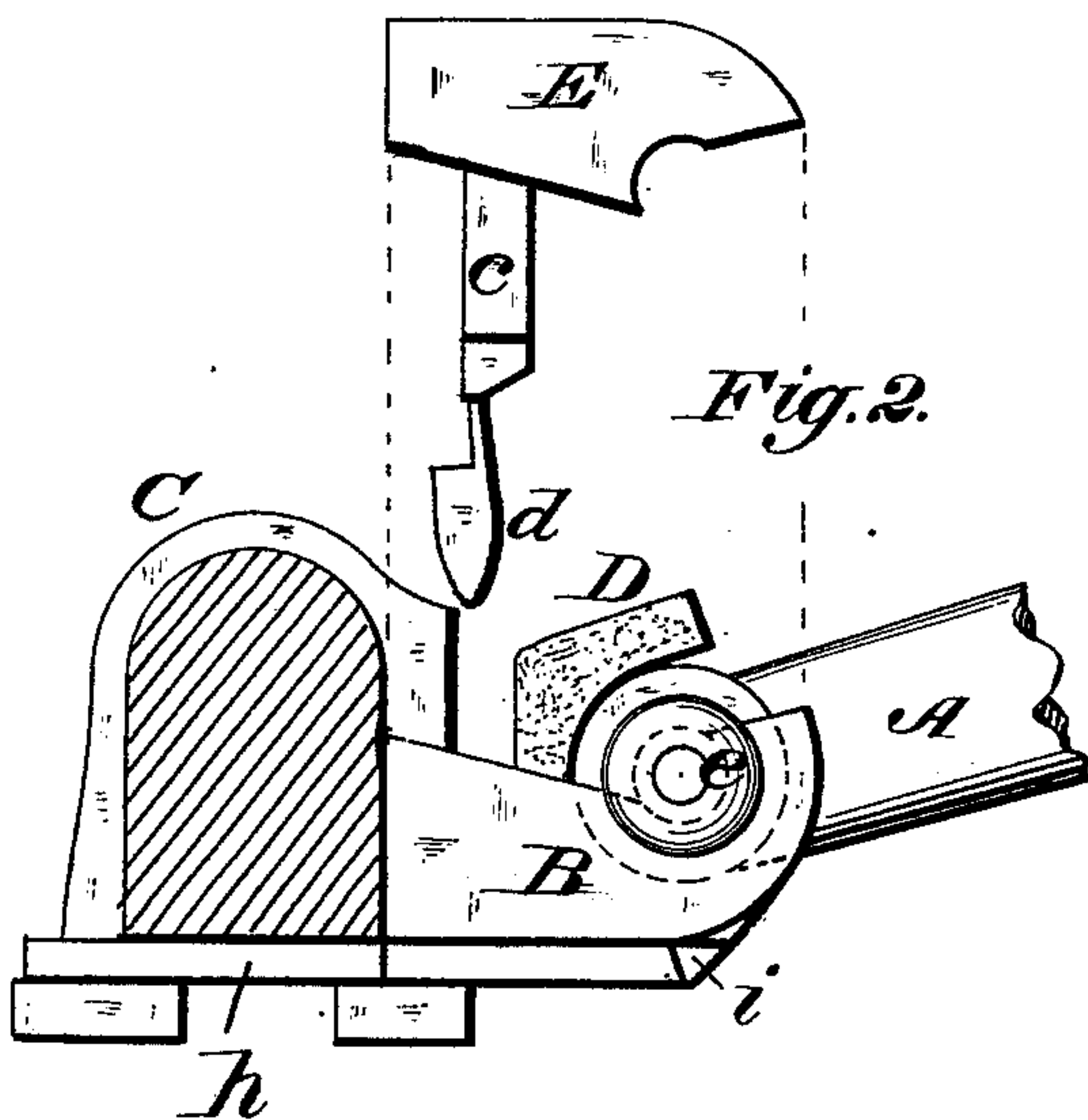
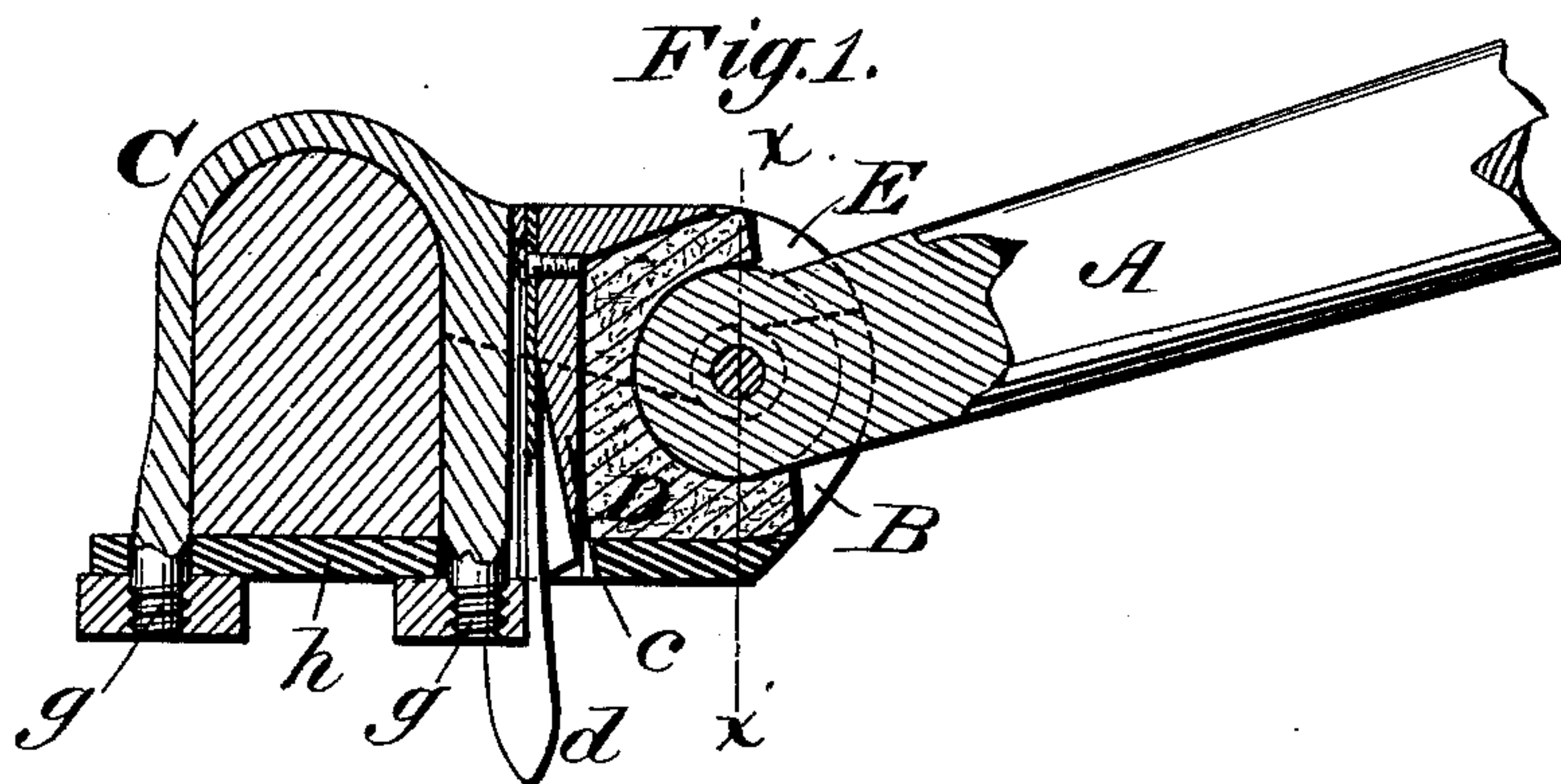


I. N. ROBERTS.
Thill-Coupling.

No. 220,090.

Patented Sept. 30, 1879.



Witnesses:
Donn J. Twitchell.
D. P. Fowl

Inventor:
I. N. Roberts
By his attys
Dodge & Son

UNITED STATES PATENT OFFICE.

ISAAC N. ROBERTS, OF NORRISTOWN, ASSIGNOR TO WILLIAM H. LAWSON,
OF HONEY BROOK, PENNSYLVANIA.

IMPROVEMENT IN THILL-COUPPLINGS.

Specification forming part of Letters Patent No. **220,090**, dated September 30, 1879; application filed August 8, 1879.

To all whom it may concern:

Be it known that I, ISAAC N. ROBERTS, of Norristown, in the county of Montgomery and State of Pennsylvania, have invented certain Improvements in Thill-Couplings, of which the following is a specification.

My invention relates to couplings in which the thill-iron has its head or journal secured by means of a removable cap within a box or clamp containing rubber or equivalent cushioning material; and the invention consists in the manner of applying and securing the removable cap, in a special construction of the parts which receive the wear, so that they may be readily renewed without loss of the other parts, and in the special construction and combination of the coupling and the axle-clip.

Figure 1 is a longitudinal vertical section through the center of my device adjusted for use; Fig. 2, a side view, showing the cap removed; Fig. 3, a longitudinal section, showing the cap unfastened, but not removed; Fig. 4, a section on the line *xx*, Fig. 1; Fig. 5, a bottom-plan view of the device complete.

A represents the thill-iron, the rear end of which terminates in a rounded T-head, having journals *a* at its sides, as shown in Fig. 4. B represents a box or clamp formed upon the front side of the axle-clip C, with an interior space to receive the end of the thill-iron, and a rubber packing-block, D, and notched side arms or cheek-plates to receive the journals of the thill-iron. The cheek-plates are notched in the upper side, and in such manner that the entire forward strain of the thill-iron is received upon them. The cushion is recessed to fit over and around the end of the thill-iron.

E represents a removable cap or cover, which serves to hold the packing and the thill-iron to their places in the clamp. It is adapted to cover the clamp and packing and fit down closely over the journals of the thill-iron, and is provided with a rear arm, *e*, to extend down through an opening in the bottom of the clamp, and also with a spring-catch, *d*, mounted in a recess in the rear side of arm *e*, and adapted to engage automatically beneath the clamp when the cap is forced down to its

place, as shown in Fig. 1, so as to retain the cap in position.

The arm *e* serves to guide the cap to its place, to receive the strain and prevent the cap from tipping upward when a backward pressure is applied to the thill-iron, and to sustain and protect the spring.

When the thills are to be attached to the vehicle, the end of the thill-iron is applied to the rubber and the two dropped into the clamp, and then the cap simply placed on top and pushed downward until the catch engages.

To remove the thills it is only necessary to press the lower end of the catch forward, whereupon the parts may be separated.

In order to give additional strength to the parts, prevent the clamp from spreading sideways under lateral strains, and exclude the dust and dirt, I provide the journals of the thill-iron with outside heads, *e*, which engage over the outside of the clamp and cap, as shown in Figs. 2, 4, and 5.

As the journals receive nearly the whole strain and wear, they are not formed solidly upon the thill-iron, but by inserting a tube tightly through the iron, so that the ends extend on opposite sides to form the journals, as shown in Fig. 4.

The heads *e* are secured upon a stem or spindle passing centrally through the above-mentioned tube in such manner that one of the heads may be detached and the stem removed.

The above construction admits of the tube which forms the journals being driven out when worn and replaced by a new one without renewing the heads or other parts.

In order to render the device compact and cheap, and at the same time give it a strong connection with the axle, the axle-clip and the clamp are made in one piece, with two threaded necks, *g*, and the bottom plate, *h*, provided at its forward end with shoulders or projections *i*, seated in and engaging firmly with the under side of the clamp, as shown in Fig. 5.

I am aware that couplings having the thill-irons secured within a clamp by removable fastening-pieces and couplings having rubber packing therein have been made in a

great variety of forms, and that among other devices was one in which no cap was used, but the rubber retained in place by a hooked pin passing down through the center of the rubber, and engaging beneath the coupling; and also another in which a hinged cap was secured in place by two unprotected outside springs, and I make no claim to either of said arrangements.

What I claim as my invention is--

1. The combination of the journaled thill-iron, the socket B, recessed as shown, the cap E, provided with the arm c, extending downward, and bearing in a seat in the socket, and the single central spring seated within and protected by arm c, and arranged to engage beneath the socket, as shown.

2. The combination of the journaled thill-iron, the recessed socket having a central opening in its bottom, the recessed rubber block seated within the socket and embracing the end of the thill-iron, the removable

cap adapted to close the top of the socket and extend downward through the same behind the rubber, and the steel spring-catch secured to the cap on its rear side, and arranged to extend through the socket and engage thereunder, as shown.

3. In combination with the recessed socket or clip, the thill-iron provided with the removable tube, having its ends extended to form journals, and the central stem mounted within the tube, and provided with the removable and fixed heads, adapted to engage over the outside of the socket, as shown and described.

4. In combination with the combined clamp and axle-clip, the detachable bottom plate interlocking with the clamp, substantially as described and shown.

ISAAC N. ROBERTS.

Witnesses:

P. T. DODGE,

GEO. F. GRAHAM.