

(No Model.)

C. H. SMITH.

SNAP HOOK.

No. 353,889.

Patented Dec. 7, 1886.

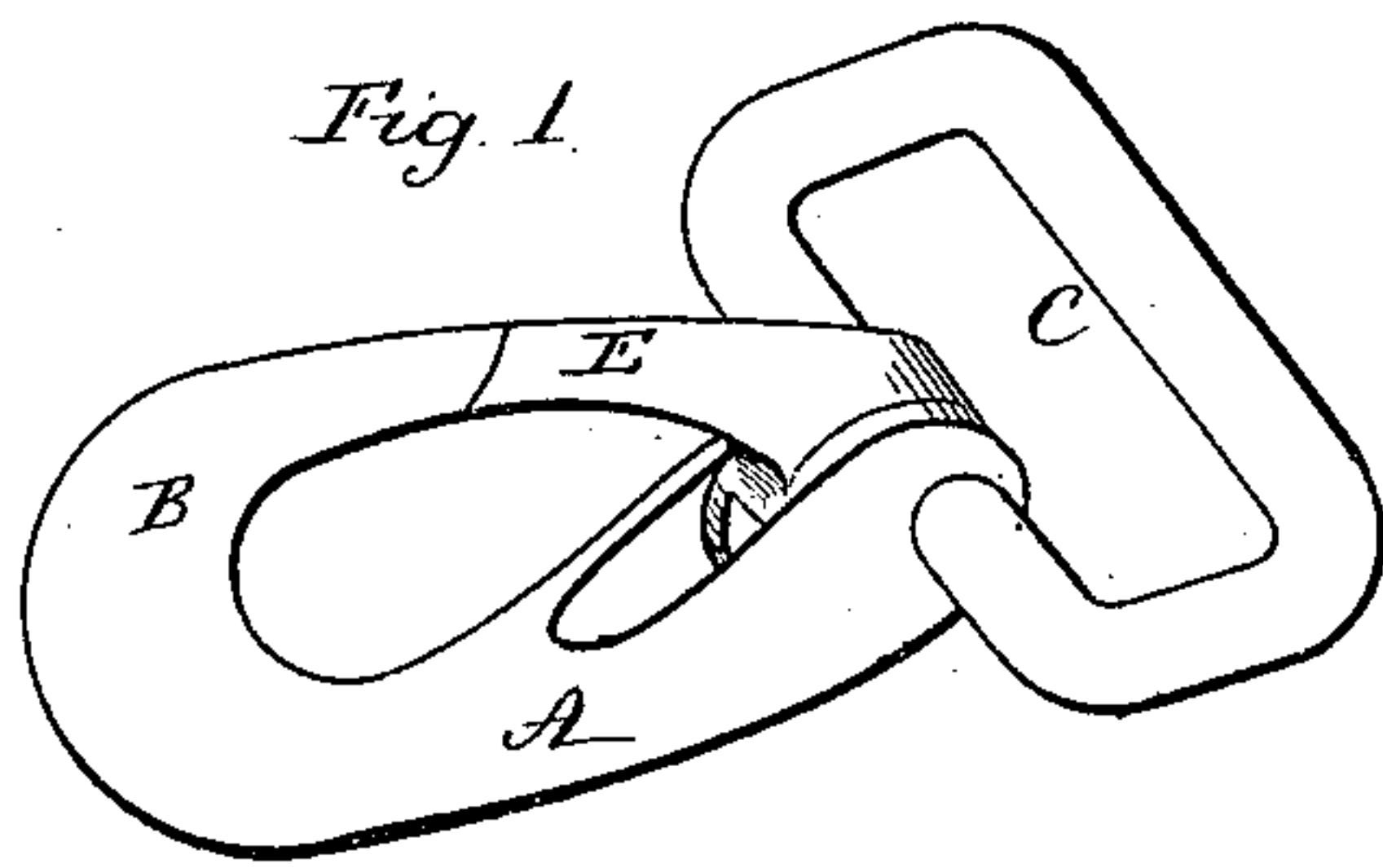


Fig. 2.

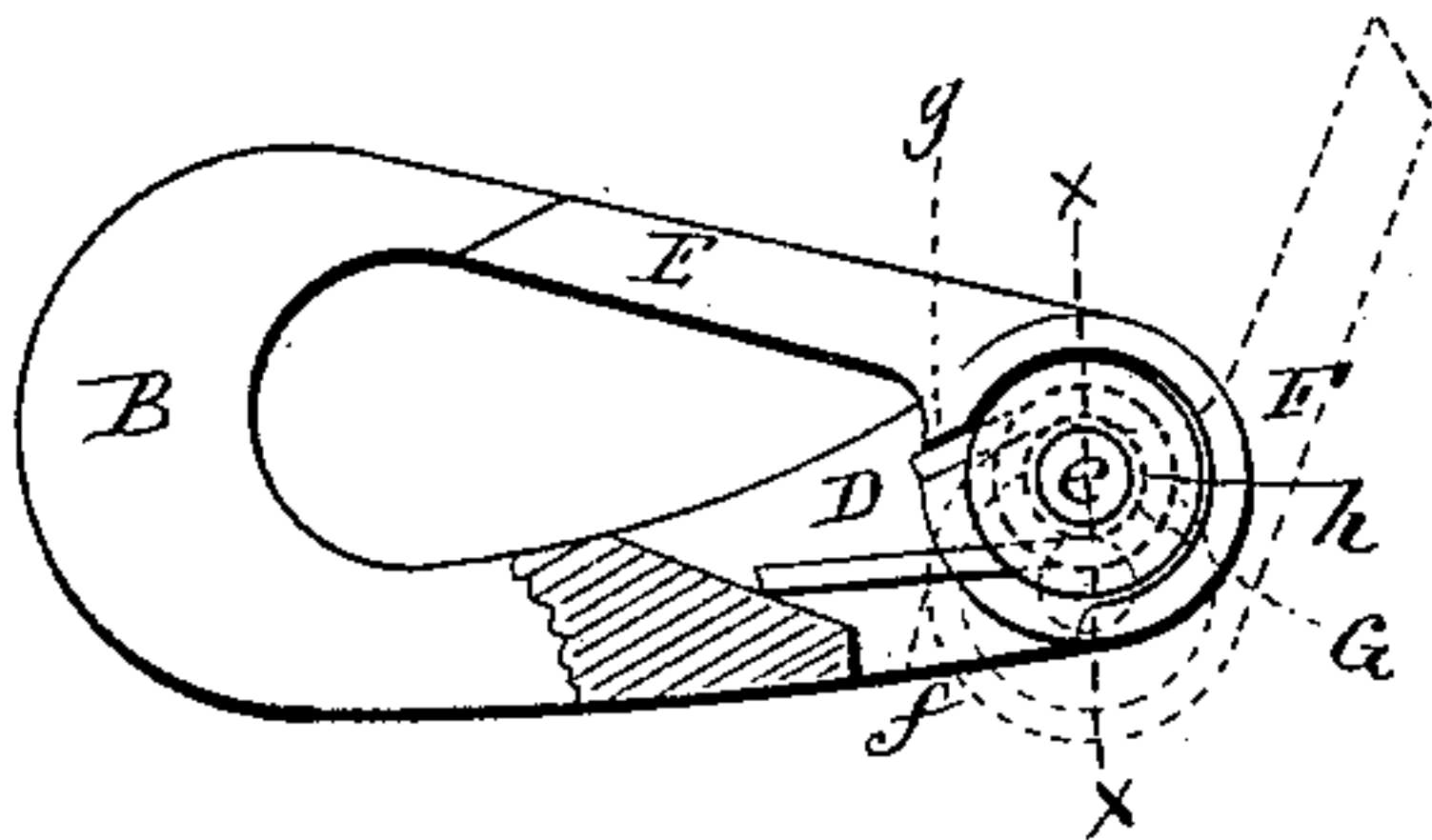


Fig. 3.

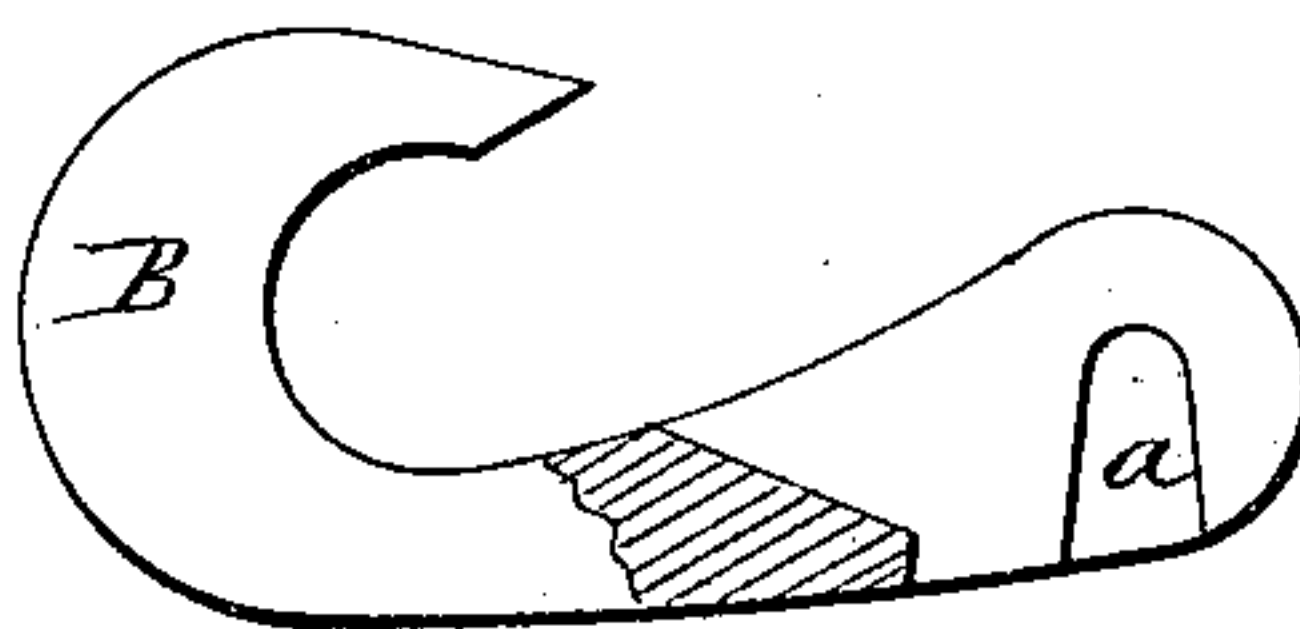


Fig. 5.

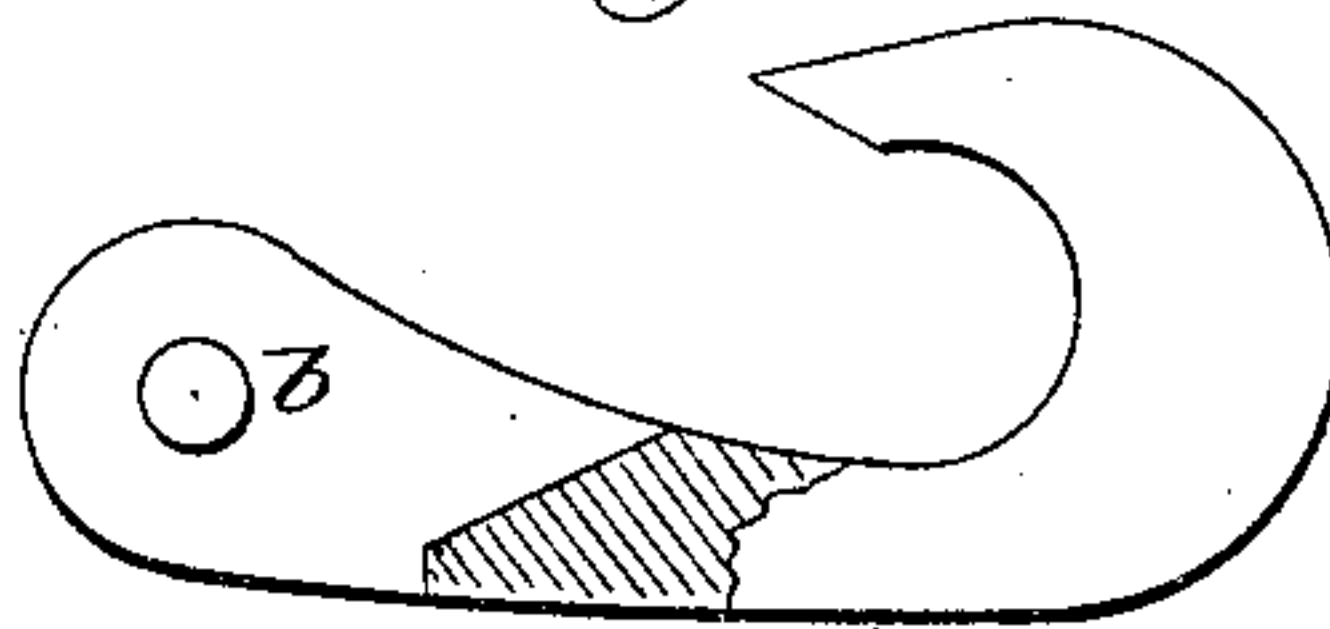


Fig. 4.

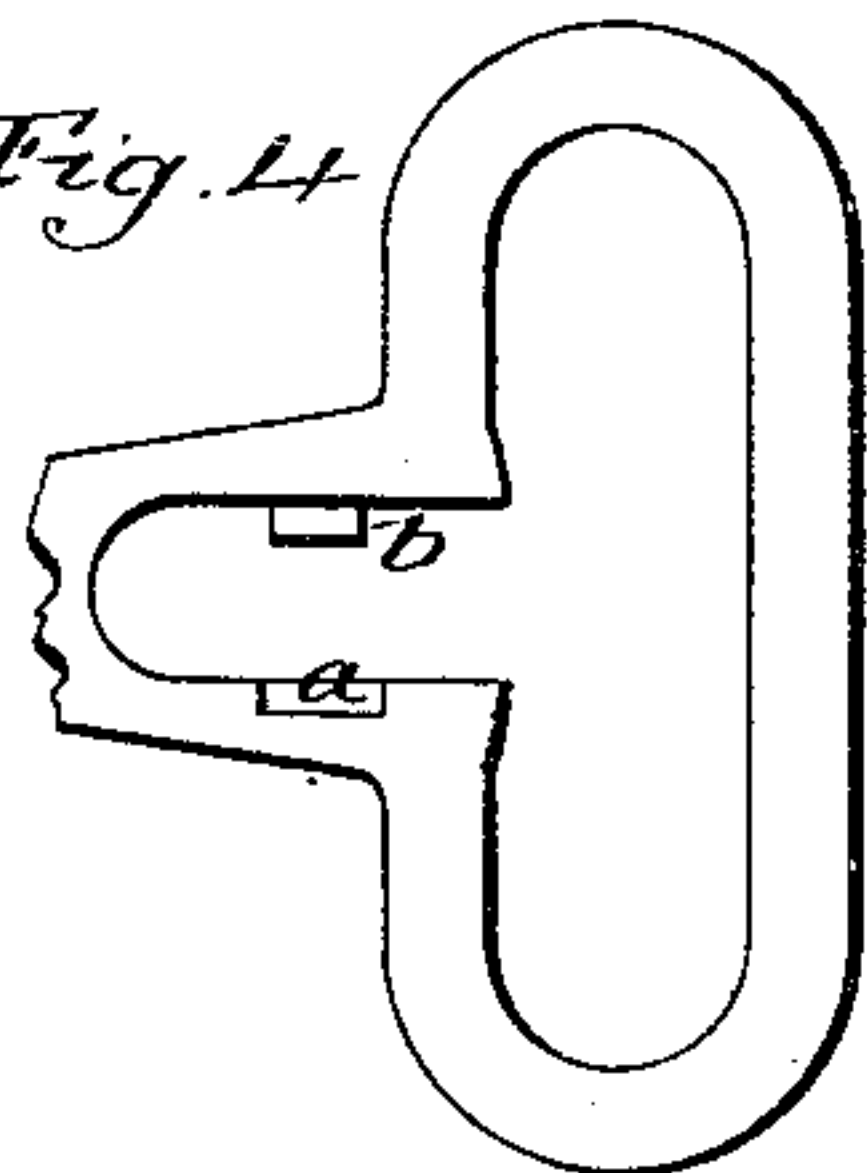


Fig. 6.

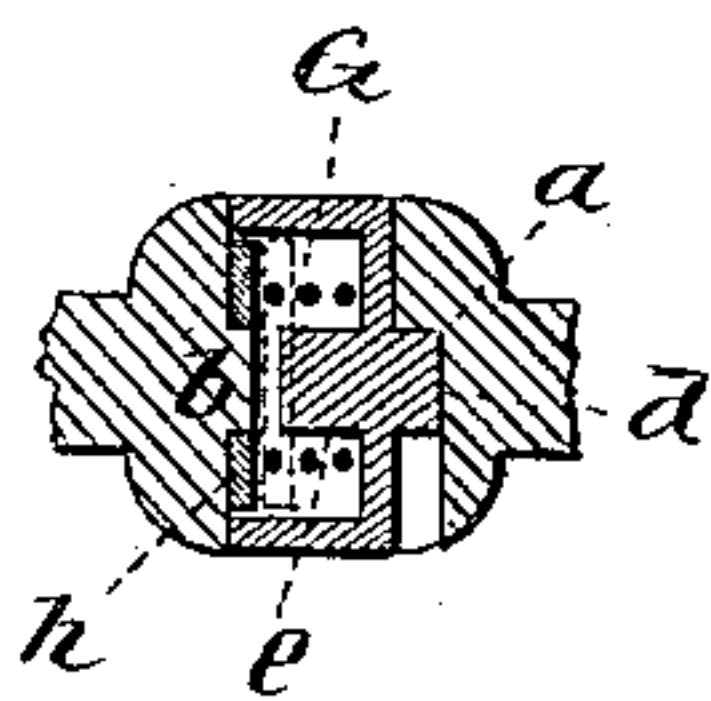


Fig. 8.

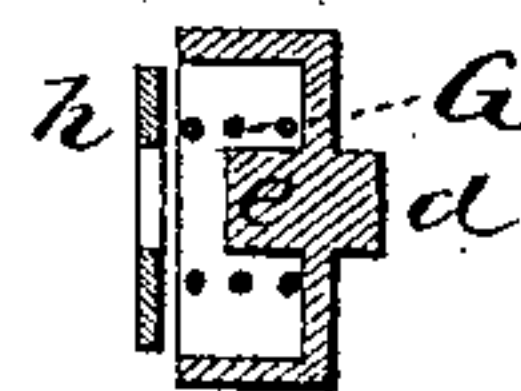


Fig. 7.

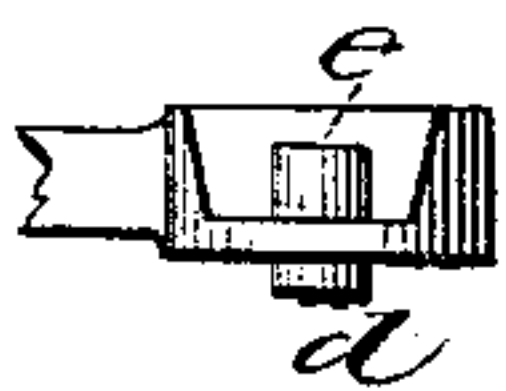


Fig. 10.

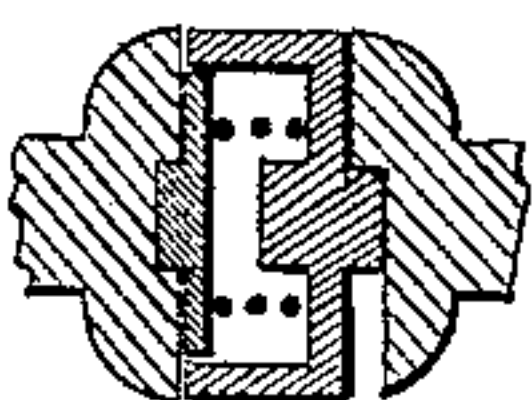
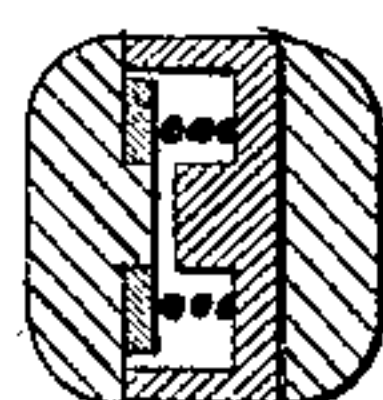


Fig. 9.



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UNITED STATES PATENT OFFICE.

CHARLES H. SMITH, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO O. B. NORTH & CO., OF SAME PLACE.

SNAP-HOOK.

SPECIFICATION forming part of Letters Patent No. 353,889, dated December 7, 1886.

Application filed September 20, 1886. Serial No. 213,995. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SMITH, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Snap-Hooks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the hook complete; Fig. 2, a sectional side view cutting through the recess in the body, and showing side view of the tongue and of the collar therein; Fig. 3, a sectional side view of the body, showing one side of the recess; Fig. 4, an underside view of the body; Fig. 5, a sectional side view of the body, showing the side of the recess opposite that shown in Fig. 3; Fig. 6, a vertical central section through the hub, cutting on line *x x*; Fig. 7, an underside view of the tongue, looking into the opening into the recess in the tongue; Fig. 8, a vertical section through the tongue, showing the spring and the manner of applying the collar; Figs. 9 and 10, modifications.

This invention relates to an improvement in that class of snap-hooks in which the body is constructed with a hook at one end and a loop at the opposite end by which the hook may be attached, with a recess at the loop end of the body, in which the tongue is hung, the tongue being constructed with a hub and having a concentric recess in one side, in which a torsion-spring is arranged, one leg of the spring resting upon the body and the other taking a bearing upon the tongue, so as to force the tongue up against the point of the hook the object being to make the pivot upon which the tongue turns an integral part of the structure, to avoid drilling, and also to avoid bending any part of the body of the hook to secure the tongue upon its pivot.

A represents the body of the hook, terminating at one end in a hook, B, and at the other in a loop, C, or other known means for attachment. At the loop end the body is constructed with a recess, D, through it in the plane of the hook, the width of the recess corresponding to the thickness of the hub of the tongue.

E represents the tongue, formed as a part of a hub, F. In one side or cheek of the recess a groove, *a*, is formed, extending from the under side and terminating in semicircular shape concentric with the center of the cheek, as seen in Figs. 3 and 4. Upon the opposite side, and concentric with the upper end of the recess *a*, is a short stud, *b*, as seen in Figs. 4 and 5.

The tongue is constructed with a concentric recess in one side, as seen in Figs. 2 and 7, to form the spring-chamber, and substantially as in similar hooks. The recess opens at one side below the tongue, through which the legs of the spring may extend, as seen in Fig. 2, also in the usual manner.

Concentrically upon the hub of the tongue, on the outside, is a trunnion, *d*, corresponding to the groove *a*, and upon the inside of the recess is a short stud, *e*, also concentric with the hub. The tongue is adapted to pass up from the under side of the body, as indicated in broken lines, Fig. 2, and so that the opening into the recess in the hub will pass the stud *b*, and so that the trunnion *d* will enter the groove *a* and come to a bearing therein at the center, and bring the trunnion *d*, with the stud *e*, into line with the stud *b*, as seen in Fig. 6.

The spring G is a coiled or helical spring made from wire, at one end terminating in an arm, *f*, and at the other end in an arm, *g*. This spring is composed of several coils wound open, so that it may be contracted in an axial direction, and thus have the capacity of both a torsion and helical spring.

h is a collar, having an opening through it corresponding to the stud *b* in one cheek of the recess, and in diameter the collar is substantially that of the recess in the side of the tongue. The length of the helical portion of the spring should be substantially the depth of the recess in the tongue. The spring is set into the recess in the tongue, as seen in Fig. 8, around the stud *e*, and the collar *h* is placed upon the spring and the spring compressed, so as to force the collar into the recess in the tongue, as seen in Fig. 8, and so that as the tongue is introduced through the recess in the body the collar *a* may pass the stud *b* on that side of the recess in the body, and as indicated in broken lines, Fig. 6; but so soon as the hub of the

tongue is brought to its concentric position in the recess in the body, then the collar is free to pass onto the stud *b*, and it is forced so to do by the reaction of the helical spring, and as seen in Fig. 6. Now, the stud *d* has come to a bearing in the upper end of the groove *a*, so that the tongue cannot pass upward, and the collar stands within the recess in the tongue and is supported upon the stud *b*; hence the wall of the recess in the tongue will take a bearing upon the collar, so that the movement of the tongue, other than upon its axis, is prevented.

One arm, *f*, of the spring bears upon the body of the hook and the other arm, *g*, upon the tongue, in the usual manner, so that the movement of the tongue produces the torsion action upon the spring.

The tendency of the spring is to lift the tongue; hence it is desirable that the trunnion *d* shall take a bearing in the groove *a*, so as to prevent any twisting or lifting action upon the tongue at the hub; but the trunnion *d* and the groove *a* may be omitted, as seen in Fig. 9.

The collar itself, held upon the stud *b* and fitting the recess in the tongue, may be sufficient to support the tongue and permit its proper working. By this construction the recess *D* is cast to correspond to the thickness of the tongue, and not open, as in many structures, to be closed upon the trunnions of the tongue after it has been introduced, and thus the breakage due to such bending is avoided.

Instead of forming a stud, *b*, on the side of the recess in the body and a corresponding opening through the collar, the side of the recess may be constructed with an opening and the collar with a corresponding projection, as seen in Fig. 10, it only being essential to the collar that it shall be interlocked with the side of the recess and held in such interlocked engagement by the spring, and so as to form a bearing upon which the tongue may turn.

Certain features of the hook described in this application are also shown in another application, Serial No. 213,996, and also in an application Serial No. 215,217. I do not wish to be understood as claiming anything in this application which I have claimed in either of said two other applications.

I claim—

1. In a snap-hook, the combination of the body, A, terminating in a hook, B, at one end

and loop C at the opposite end, constructed with a longitudinal open recess at the loop end adapted to receive the tongue, the tongue constructed with a hub corresponding to said recess in the body, and the tongue also constructed with a recess in one side, a helical spring in said recess the axis of which corresponds substantially to the axis of the hub of the tongue, and a collar in the said recess in the tongue bearing against said helical spring, the collar and corresponding side of the recess in the body interlocked with each other, the said spring serving to hold the said collar and side of the recess so interlocked, substantially as described.

2. In a snap-hook, the combination of the body A, terminating at one end in a hook, B, and at the other end in a loop, C, the body constructed with a longitudinal open recess at its loop end and with a concentric stud, *b*, on one side of said recess, the tongue E, constructed with a hub, F, having a recess upon the same side as the stud *b* and concentric therewith, a helical spring arranged in said recess in the hub of the tongue, and a concentric collar, *h*, in the recess in the tongue against the said helical spring, the said collar having an opening through it corresponding to the said stud *b*, the said spring terminating at one end in an arm adapted to bear upon the body of the hook and at the other end with an arm adapted to bear upon the tongue, substantially as described.

3. The combination of the body A, terminating at one end in a hook, B, and at the opposite end in a loop, C, with a longitudinal open recess through the body at the rear end and having a concentric stud, *b*, in one side of said recess and an open groove in the opposite side of said recess terminating concentrically with said stud *b*, a tongue, E, having a hub, F, constructed with a recess upon the same side as the stud *b* and concentric therewith, and with a trunnion, *d*, upon the opposite side corresponding to the said groove *a*, a helical spring arranged in said recess in the tongue, and a collar, *h*, concentric with said recess and having an opening through it corresponding to the stud *b*, substantially as described.

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Witnesses:

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