(No Model.)

C. H. SMITH.

SNAP HOOK.

No. 353,891. Patented Dec. 7, 1886.

Fig 1

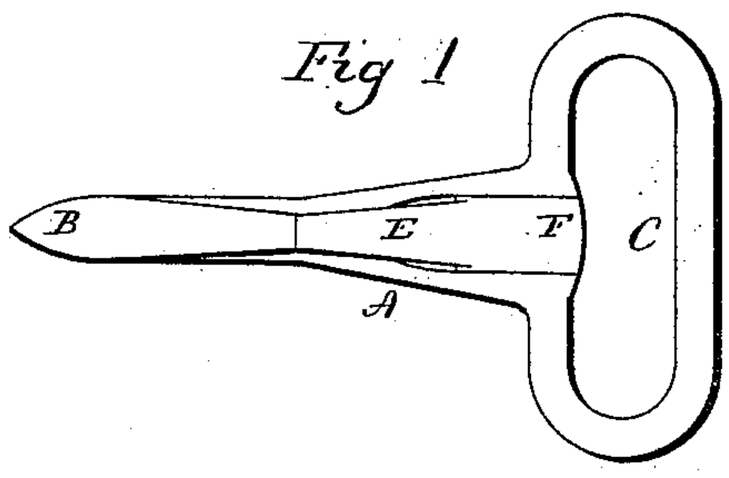


Fig. 2

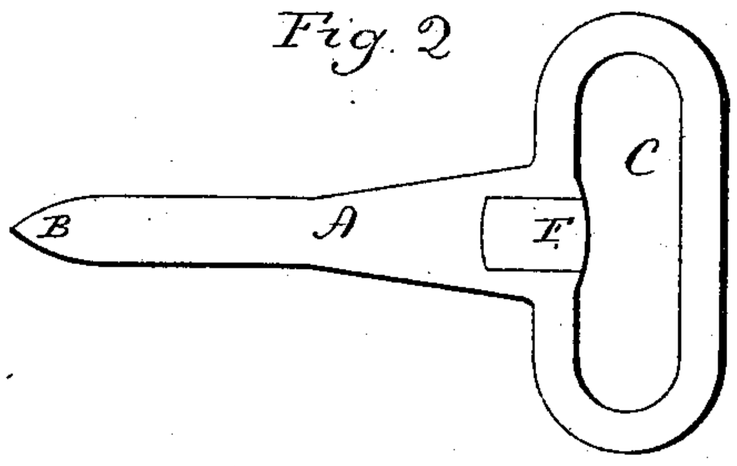


Fig. 3.

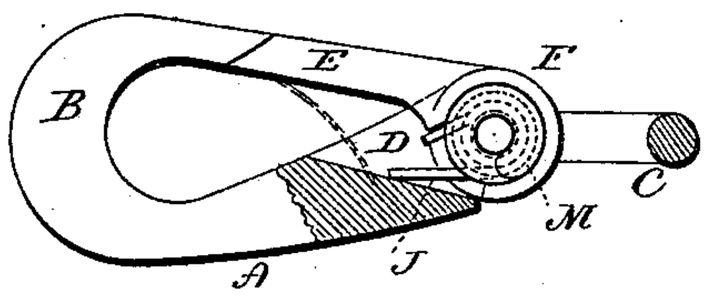


Fig. 4

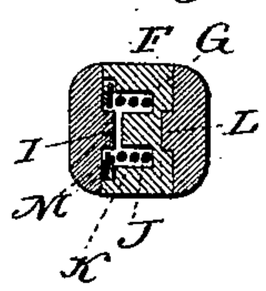


Fig. 5

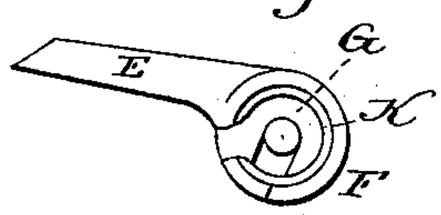


Fig. 6

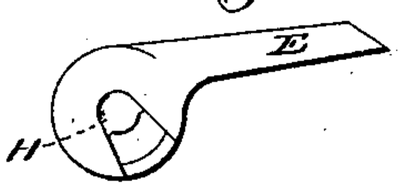


Fig. 10

Fig. 8

Fig. 9

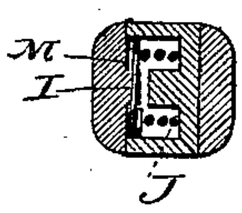


Fig. 7

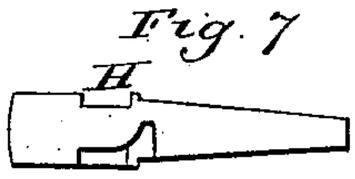
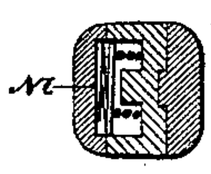


Fig. 11



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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. 353,891, dated December 7, 1886.

Application filed October 4, 1886. Serial No. 215,217. (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 top view of the hook complete; Fig. 2, an under side view of the hook; Fig. 3, a sectional side view, looking upon the spring M; Fig. 4, a transverse section cutting centrally through the hub; Fig. 5, a recessed side view of the tongue; Fig. 6, an opposite side view of the tongue; Fig. 7, an under side view of the tongue; Fig. 8, the spring M detached; Figs. 9, 10, and 11, 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 at the other end provided with means for attachment, and in which a spring-tongue is hung in a recess in the body at the securing end and so as to swing in the plane of the hook, the object of the invention being to cast the tongue and hook in their final complete shape and avoid the bending of the parts in assembling or the mechanical introduction of a pivot, upon which the tongue may swing.

In another application I have shown and described a construction in which the same object is accomplish by making the tongue-spring an open helical spring, and so that under its expansion in an axial direction, after the tongue and the spring have been introduced in the recess in the body, the spring will make engagement between the tongue and the body, so as to hold the tongue in place. By the present invention I retain the tongue-spring in its usual shape and accomplish the same result by the introduction of an independent spring.

A represents the body, terminating at one end in the hook B and at the opposite end in the usual loop, C. The body is constructed with a longitudinal recess, D, in the plane of the hook, and in this recess the tongue E is arranged, the width of the recess corresponding to the hub F of the tongue, and so as to allow free play of the tongue.

In one side of the tongue a concentric recess, G, is formed to receive the spring. On the reverse side of the hub is a concentric recess, H, (see Fig. 6,) which opens to the lower side of the hub, as seen in Fig. 7.

In the side of the recess in the body corresponding to the recessed side of the tongue a concentric inwardly-projecting stud, I, is formed. The depth of the recess in the hub is somewhat greater than the length of the coil portion of the spring J, the spring J being coiled, (by preference the usual coiled-wire spring employed in this class of hooks,) the coils terminating at each end in an arm, one of the arms bearing against the body of the hook and the other against the tongue in the usual manner, and as seen in Fig. 3.

Within the recess in the tongue I preferably form a shoulder, K, near the outer end of the recess.

On the side of the recess in the body opposite the stud I is a like concentric stud, L, which corresponds to the concentric recess H in that side of the tongue. In introducing the tongue the opening from the recess H permits the tongue to pass into the recess in the body over the stud L, and until the tongue comes to a bearing thereon, as seen in Fig. 4.

M is an auxiliary spring, preferably a flat helical spring, as seen in Fig. 8, detached, its diameter corresponding to the outer end portion of the recess in the tongue and so as to rest upon the shoulder K. The extent of this spring is somewhat greater than the distance from the shoulder to the outer edge of the tongue, but so that the spring may be compressed within the plane of the hub of the tongue.

In assembling the parts the spring J is placed into the recess in the hub of the tongue in the usual manner. Then the spring M is introduced, and rests against the shoulder K. The tongue is now set into the recess in the body, the spring M being compressed to such an extent that it may pass the stud I. The opening through the spring corresponds to the stud, and so that as the tongue is forced to its place, with the spring M compressed, when the hub has arrived in the recess to its proper concentric position, and the spring M left free, its ex-

pansion will cause it to pass onto the stud I, as seen in Fig. 4. The stud thus takes a bearing within the spring M, while the spring M takes a bearing within the hub, and thus the spring and stud I form the pivot between the tongue and body, and because of the expansion of the spring onto the stud, to make such engagement, the tongue cannot be removed, except by again compressing the spring, and such compression cannot be conveniently made, and never can occur accidentally. The spring J performs its usual function in the opening and closing of the tongue.

The stud L, in the recess upon the opposite side of the hub, aids somewhat in the support of the tongue; but it is not essential, and may be omitted altogether, as seen in Fig. 9.

While I prefer to support the spring M on a shoulder in the tongue, as I have described, the shoulder may be omitted, as seen in Fig. 9, and the spring M rest against the coils of the spring J, and accomplish the same result.

I have represented the spring M as a flat helical spring, and this I prefer; but it may be a disk-spring, as seen in Fig. 10, and accomplish the same result.

Instead of forming the stud I in the recess in the body, with which the spring M may engage, the body may be constructed with a recess corresponding to the spring and into which the spring will expand when the parts are assembled, as seen in Fig. 11.

It will be apparent that the spring M is in no way necessarily dependent upon the spring J, and that any known spring may be substituted for the spring J—as, for illustration, a flat spring fixed in the body, as indicated in broken lines, Fig. 3. By this construction I am enabled to avoid openings which appear in the construction shown and described in the other applications to which I have referred.

Certain features found in the hook in this application are also shown in two other applications, Serial Nos. respectively 213,995, 213,996. I do not wish to be understood as claiming anything in this application which I have claimed in the said two other applications.

I claim—

1. In a snap-hook substantially such as described, the combination of the body, constructed with a hook at one end and an attaching device at the other end, and with an open recess, D, at the attaching end in the plane of the hook, a tongue having a hub corresponding to said recess in the body and constructed with a concentric recess in one of its sides, a spring to actuate the tongue, and a second spring arranged in the said concentric recess in the hub of the tongue, the said spring adapted for contraction and expansion in the direction of the axis of the hub, the corresponding side of the recess in the body constructed to receive the said second spring under its expansion in said axial direction, substantially as described, and whereby said spring substantially forms the pivot upon which the said tongue swings.

2. In a snap-hook, the combination of the body A, constructed with a hook at one end and an attaching loop at the other end, and with an open recess at the loop end in the plane of the hook, said recess constructed with an inwardly-projecting stud, I, in one side of the recess, the tongue having its hub corresponding to said recess in the body and constructed with a recess, G, in the side of the hub toward the said stud I, a spring to actuate the tongue, and a second spring, M, arranged in said concentric recess in the hub of the tongue, the said spring adapted for contraction and expansion in the direction of the axis of the hub, the external diameter of the spring corresponding to the internal diameter of the said recess, and the internal diameter of the spring corresponding to said stud I, substantially as described, the said spring M being adapted to engage the said stud I when the parts are assembled and form the pivot upon which the tongue may swing.

3. The combination of the body A, terminating at one end in a hook, B, and at the other end in an attaching-loop, C, constructed with a recess at the loop end in the plane of the hook, the body and the said tongue constructed with a concentric recess upon one side, a helical spring, J, arranged in the said recess, one arm of said spring taking a bearing upon the body and the other arm of the spring taking a bearing upon the tongue, and a second spring, M, arranged in the said concentric recess in the hub of the tongue, the said spring adapted for contraction and expansion in the direction of the axis of the hub, the corresponding side of the recess in the body constructed to receive said second spring under its expansion in said axial direction, substantially as described.

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Witnesses:
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G. H. SCRANTON, Jr.