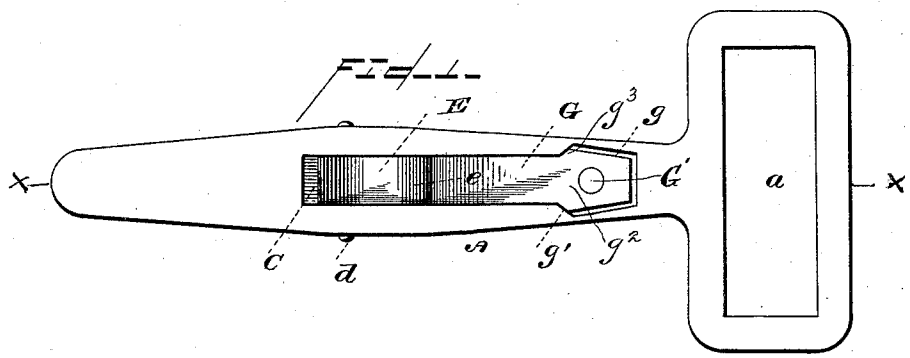
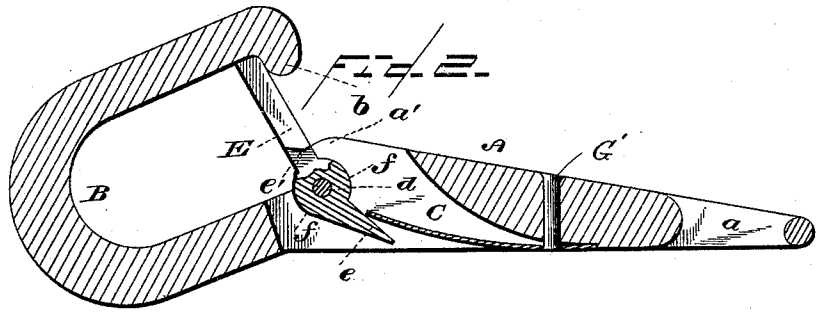
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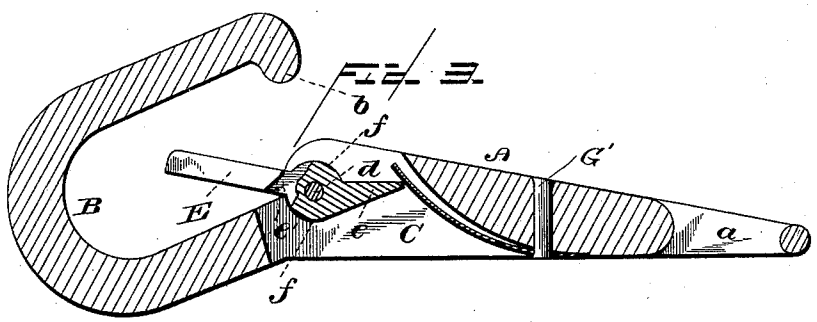
L. E. HALE.

SNAP HOOK.

No. 426,498. Patented Apr. 29, 1890.







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SNAP-HOOK.

SPECIFICATION forming part of Letters Patent No. 426,498, dated April 29, 1890.

Application filed May 3, 1888. Serial No. 272,620. (No model.)

To all whom it may concern:

Be it known that I, LORIN E. HALE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Snap-Hooks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improved snap-hook; and it consists of the novel construction and arrangement of parts, as will be hereinafter fully described, and pointed out in the claims.

The object of my invention is to provide an improved snap-hook in which the snap and its retracting-spring are so arranged and combined that the spring exerts two degrees of pressure on the snap, the snap yielding easily and freely up to a certain point, when pressure is first applied thereto to permit the initial entrance of a ring to be easily accomplished, and during the latter part of the depression of the snap past the open end, and before the ring passes through the space and the strap-lip of the hook, the spring exerts a stronger and greater pressure on the snap to prevent accidental displacement of the snap after the ring has been connected to the hook to such an extent as to permit the ring to be disconnected. By thus arranging the parts so that the tension of the spring on the snap varies according to the position of the snap I secure two very highly-desired results in a snap adapted for use on the pole of a fire-engine, to which purpose my invention is especially adapted for service. These results are, first, the easy, rapid, and effective coupling of a ring or other device to the hook, which end is secured by causing the snap to yield or give freely when the snap is pressed against the ring, or vice versa, and, second, the effective retention of the ring in the snap after the two have been connected, which is due to the greater or stronger degree of tension exerted by the spring on the snap before the latter has been depressed sufficiently to allow a ring, &c., to slip past its free end and the extreme end of the hook.

Another object my invention has in view is the protection of the pressure-spring from injury, which is very liable to take place in a device of this kind when subjected to rough service in a fire-department.

In the accompanying drawings, Figure 1 is a plan view of a snap-hook embodying my invention. Figs. 2 and 3 are longitudinal sectional views on the line *x x* of Fig. 1, with the snap in different positions to illustrate the action and position of the retracting-spring.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the shank of a snap-hook embodying my invention, which has at one end an integral loop *a*, to which a strap is adapted to be connected, and is bent or formed at its opposite end into an overhanging hook B, the free end of said hook having a depending inclined stop flange or lip *b*. This end of the hook lies immediately over a longitudinal slot or mortise C, formed in the shank A at an intermediate point of the length thereof, and near one end of the slot the shank is reduced or cut away to provide the shoulders *a' a'* on opposite sides of the slot, said shoulders being curved concentric with a pivot or shaft *d*, on which is hung a snap E. This snap is made broad and flat for strength, and when closed across the open space between the shank and free end of the hook the unconfined end of the snap impinges against the inclined stop-lip of the hook, as indicated in Fig. 2.

The snap is reduced at its lower end to provide a shank *e* and two shoulders *e'*, which lie on opposite sides of the shank, said shoulders being arranged to ride against the shoulders of the shank A, as shown, while the shank *e* of the snap fits in the slot or mortise C, the shank *e* corresponding in width to the width of the mortise, so as to fit snugly therein. The shank of the snap E is enlarged laterally, as at *f*, to adapt the shaft or pin *d* to pass therethrough and secure the necessary strength, and the shank *e* is further bent at an obtuse angle to the axis of the snap proper, as clearly seen in the sectional views, Figs. 2 and 3. The

unconfined or free end of the shank *e* of the snap terminates at a point just within the lower face of the shank A of the hook, so as to be housed within the mortise or slot C at all times and protected thereby.

G designates the retracting-spring for normally forcing the snap to its closed position. In the lower side of the shank A, at the end of the mortise or slot C adjoining the loop *a*, I form a recess *g*, which is of slightly-greater width than said slot, so as to form shoulders or ledges *g'*. The spring proper is made of the same width as the mortise C and the snap; but one end of the spring is widened slightly, as at g^2, and thus forms two shoulders g^3. In securing the spring to the shank A the widened end thereof is fitted in the recess *g* of the lower side of the shank, so as to lie flush therewith and cause the shoulders *g'* g^3 to abut together, and a rivet G' is passed through the shank and spring to securely connect the parts together. By making the spring to lie flush with the shank and providing the abutting shoulders the parts are securely and firmly united, and also protected from injury, whereby the strength and durability of the device are materially increased.

The unconfined or free end of the retracting-spring is bent to pass inwardly into the slot or mortise C, and the shank *e* of the snap and said end of the retracting-spring are relatively arranged so that only the extreme end of the spring comes in contact with the shank when the snap is closed, and at a point near the pivot or fulcrum thereof, as indicated in Fig. 2. By thus arranging the spring so that the body thereof is normally out of contact with the snap when the latter is closed and having its free end only bearing upon the snap at a point near the fulcrum thereof I provide a snap-hook which will yield freely and readily up to a certain point when initial pressure is applied against its free end, and thus permit the easy and expeditious coupling of the snap and a ring or other device; but when the snap has been forced back a limited distance the lower angularly-bent end of the shank *e* is forced or pressed against the spring at a point some distance below the free end thereof, and thus transfers the point of contact to a point where the spring has greater strength or resistance and exerts much greater pressure on the snap, which point of contact is also considerably below the fulcrum of the snap. The snap is thus effectually prevented from being accidentally thrown back or depressed far enough to allow a ring, &c., to become displaced, while at the same time the ring can be easily and quickly connected and detached by hand.

I am aware that it is not new to provide a snap-hook with a pivoted snap having a short arm in rear of the pivot, which arm is in line with the body of the snap, and a spring which is secured to the shank and bears on the extended arm of the snap; but in all such devices known to me the spring is arranged flush with or extends above the shank and bears on the arm of the snap throughout the length thereof. I have found by experience that snap-hooks thus constructed are not reliable in the fire-department service or for patrol-wagons and on vehicles generally, because the spring is constantly exposed to injury, is liable to be clogged with dirt and refuse matter, and, in fact, that the spring frequently becomes weakened and injured to such an extent as to require its renewal, which is objectionable.

In my improved snap-hook I have provided a slotted shank of such width as to receive the obtuse-angled arm of the snap and the free end of the spring, so that said parts are housed within the slot of the shank and protected from injury by the shank. I furthermore secure the spring very firmly and rigidly to the shank by means of a rivet, which passes through the spring and shank, and by recessing one face of the shank to receive the end of the spring and the lateral shoulders formed thereon. The arm of my improved snap, which extends beyond the pivot, is arranged at an obtuse angle to the length of the snap, and the spring lies between the arm and one of the walls of the slot in the shank, the free end of the spring bearing on one face of the arm at a point between the fulcrum of the snap and the lower extremity of its arm. This peculiar organization and arrangement is important, because the parts are protected from injury by the shank, and, further, the spring exerts its minimum force on the snap when the latter is first depressed; but when the snap is forced back a certain distance the free end of the obtuse-angled arm comes in contact with the spring at a point below the free end of said spring, so that the maximum resistance of the spring is exerted on the snap to cause the same to instantly fly back and close against the overhanging hook of the shank.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The improved snap-hook herein described, consisting of the wide shank provided with a transverse slot and the overhanging hook, a snap E, pivoted within the slot of the shank and having an arm *e* arranged at an obtuse angle to the length of the snap, and a spring C, fixed at one end to the shank and having its free end extended into the slot thereof between the arm of the snap and the adjacent wall of the slot, the free extremity of said spring bearing on the inclined arm at a point between the pivot of the snap and the lower end of its inclined arm, the arrangement of the spring being such that its minimum force is exerted on the snap at the initial movement thereof and its maximum effect produced when the snap is depressed sufficiently to throw the free end of the arm against the spring at a point intermediate of the length of said spring, as set forth.

2. The improved snap-hook herein de-

scribed, consisting of a slotted wide shank having a groove in one of its faces, and the shoulders g', located on opposite sides of the slot in said shank, a snap E, pivoted within the slot of the shank and having an inclined arm e, a spring C, fitted at one end within the groove of the shank and having the lateral shoulders g^3, which impinge against the shoulders g', the free end of said spring being extended into the slot of the shank and arranged between the inclined arm e and the adjacent wall of the slot, and a rivet which unites the outer end of the spring to the shank, for the purpose described, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LORIN E. HALE.

Witnesses:
D. W. PARKER,
WM. MCCUTCHEN.