(No Model.)

G. W. MABIE.

BUTTON HOOK.

No. 416,932. Patented Dec. 10, 1889.

Fig. 1.

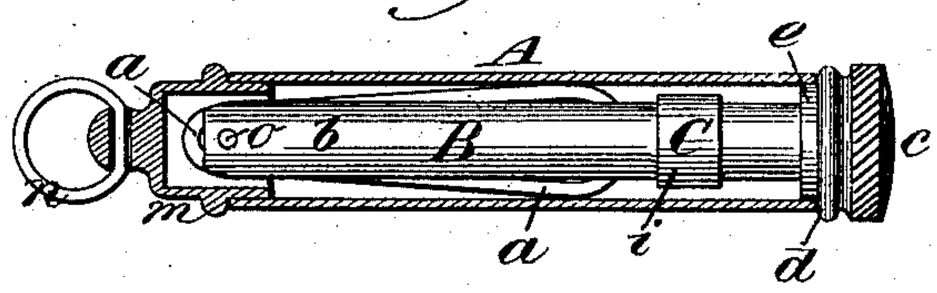


Fig. 2.

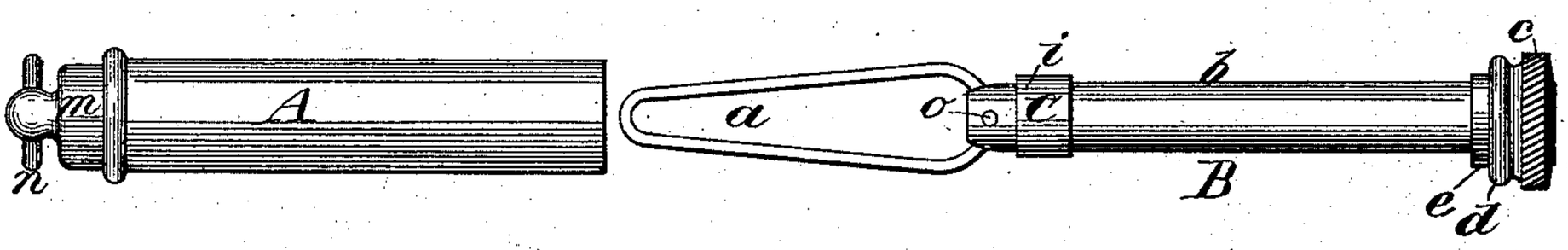


Fig. 3.

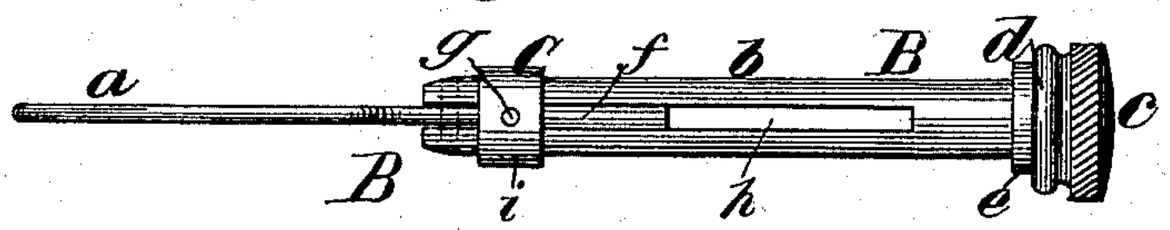
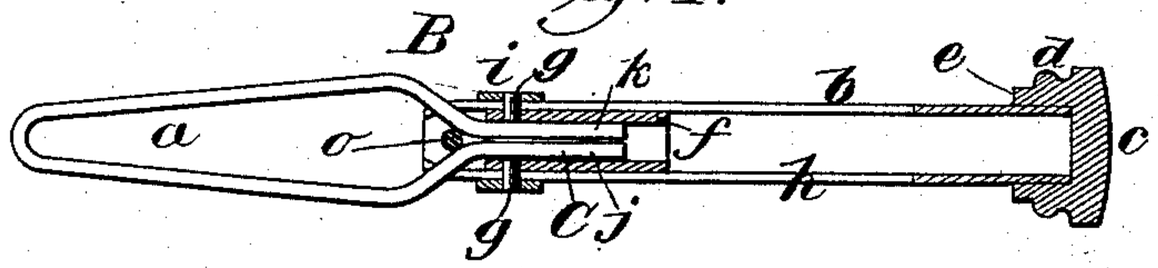


Fig. 4.



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BUTTON-HOOK.

SPECIFICATION forming part of Letters Patent No. 416,932, dated December 10, 1889.

Application filed February 23, 1889. Serial No. 300,839. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MABIE, of Brooklyn, in the county of Kings, in the State of New York, have invented a new and useful Improvement in Button-Hooks, of which the following is a specification, reference being had to the accompanying drawings.

This improvement relates to an extensible button-hook which is provided with a separate case, to be carried in the pocket or on a watch guard or chain, and which is extended by the act of pulling it out from the case.

I will proceed to describe the invention with reference to the drawings, and afterward point out its novel features in claims.

In the drawings, Figure 1 represents a sectional view of a button-hook and case embodying my improvement, the button-hook being contracted and inclosed in the case. Fig. 2 represents the same button-hook and case fully extended. Fig. 3 represents the button-hook fully extended, presenting an edge view of the button-loop. Fig. 4 is a sectional view corresponding to Fig. 3 and at right angles to the view represented in that figure.

Like letters of reference indicate corresponding parts in all the figures.

A designates a hollow holding case or tube open at one end, and represented in the example given in the drawings as closed at the other end.

B indicates a detachable or separable extensible button-hook adapted to be retained within the case A by the friction caused by the expansion of a button-loop *a* against the inner surface of the holding-case.

b indicates the button-hook stem, showing a head *c* thereon, and a shoulder *d* on said head for closing the open end of the holder-case.

e indicates a projection on the inner face of the head *c* to fit the interior of the case for centering the head *c* in the end of the case.

The extensible button-hook B may consist of a stem *b* and of a button-loop *a*, having a sliding frictional connection C with said stem, whereby the button-hook may be extended and contracted longitudinally. The friction of the said sliding connection should be sufficient to prevent the untimely extension of the button-hook, but should be less than the friction against the interior of the case caused by the expansion of the button-loop therein, in order that the button-hook may be extended by the act of pulling it out from the holder-case.

An example of a sliding frictional connection C is represented in section in Fig. 4, in which *f* indicates a sliding loop-socket—in this example a tube fitted to slide in the interior of stem *b* and having fastenings *g*, extending through longitudinal slots *h* in the stem, rigidly connecting the socket *f* with a ring *i*, which is closely fitted to the outside of the stem. The slots *h* render the stem elastic enough to yield slightly to the pressure of the ring *i* upon it, allowing the ring to move longitudinally thereon, but with sufficient friction.

The button-loop *a* is formed of a single piece of wire, the ends *j* and *k* of which are permanently retained within the sliding loop-socket *f*. The diameter of the wire should be such that its elasticity will permit the loop *a* to yield when pushed into the case A and cause it to press against the inner surface of the case or tube while held therein. In Fig. 4 the internal diameter of the socket is somewhat greater than twice the diameter of the wire, thus leaving a space between the ends of the wire, and one end *j* of the wire is rigidly attached to the socket, as by soldering, while the other end *k* is loosely held therein, and thereby a stiffer wire may be employed to form the loop *a* and secure the elasticity required than if both ends *j* and *k* of the wire were to be rigidly secured to the socket.

To contract the button-hook longitudinally, as from the fully-extended position (represented in Figs. 2, 3, and 4,) to the contracted position, (represented in Fig. 1,) end pressure may be applied to overcome the sliding friction of the connection C; but when from the position of the button-hook represented in Fig. 2 that hook is pushed into the case A by pressure applied to the head *c* and the wider part of the loop comes in contact with the interior of the case the friction of the loop against the inner surface of the case will hold the loop until the button-hook is contracted, and when the button-hook is pushed into the

position represented in Fig. 1 it will be retained in the case by the friction of the loop against the interior of the case. The friction of the sliding connection C will prevent the button-hook from expanding or extending lengthwise until it is pulled out from the case. The shoulder *d* of the head covers and closes the end of the case, and the projection *e* enters the interior of said end and secures the concentricity of the head *c* with the case, and if accurately and tightly fitted therein will by its friction tend to prevent the button-hook from becoming extended until pulled out of the case. When the button-hook is pulled out of the case, the loop being held by friction, it will be fully expanded by such pulling out.

The case A is represented as closed at one end by a head *m*, permanently attached to the case, as by soldering. Pivotally connected with the end *m* is a ring *n*, by which the case may be attached to a watch chain or guard, and the parts may be symmetrically and elegantly formed and finished, making the button-hook and casing a pleasing ornament.

o is a stop-pin across the end of the stem *b* within the loop to prevent the loop from being pulled entirely out of the stem.

In my invention the only device required to hold the button-hook in the case is the friction of the said button-hook therein, while in other inventions for that or a similar purpose much more complicated and less effective expedients are employed.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a buttoner, the combination, with a hollow holding case or tube, of a detachable and extensible button-hook comprising a hollow stem provided with longitudinally-extending slots, and a loop having a sliding frictional connection with said stem and extending through said slots when within the stem, said button-hook being adapted to be passed into said holding case or tube with the loop end forward and to be retained therein by the frictional resistance caused by the expansion of the said loop against the inner surface of the holding case or tube, said frictional resistance operating to extend the button-hook when said shank is drawn outwardly, substantially as specified.

2. In a buttoner, the combination, with a hollow holding case or tube, of a detachable button-hook comprising a hollow stem provided with longitudinally-extending slots, and a loop having a sliding frictional connection with said stem, and extending through said slots when within the stem, both said stem and loop being adapted to be received within said holding case or tube and to be retained therein by the frictional resistance caused by the expansion of said loop against the inner surface of the holding case or tube, substantially as specified.

3. In a buttoner, the combination, with a hollow holding case or tube, of a detachable button-hook comprising a hollow stem provided with longitudinally-extending slots, a loop having a sliding frictional connection with said stem and extending through said slots when within the stem, and a loop-socket arranged in said stem and adapted to be slid longitudinally therein, said loop being made of a single piece of wire and having one of its ends rigidly secured to said loop-socket and the other of its ends loose, substantially as specified.

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