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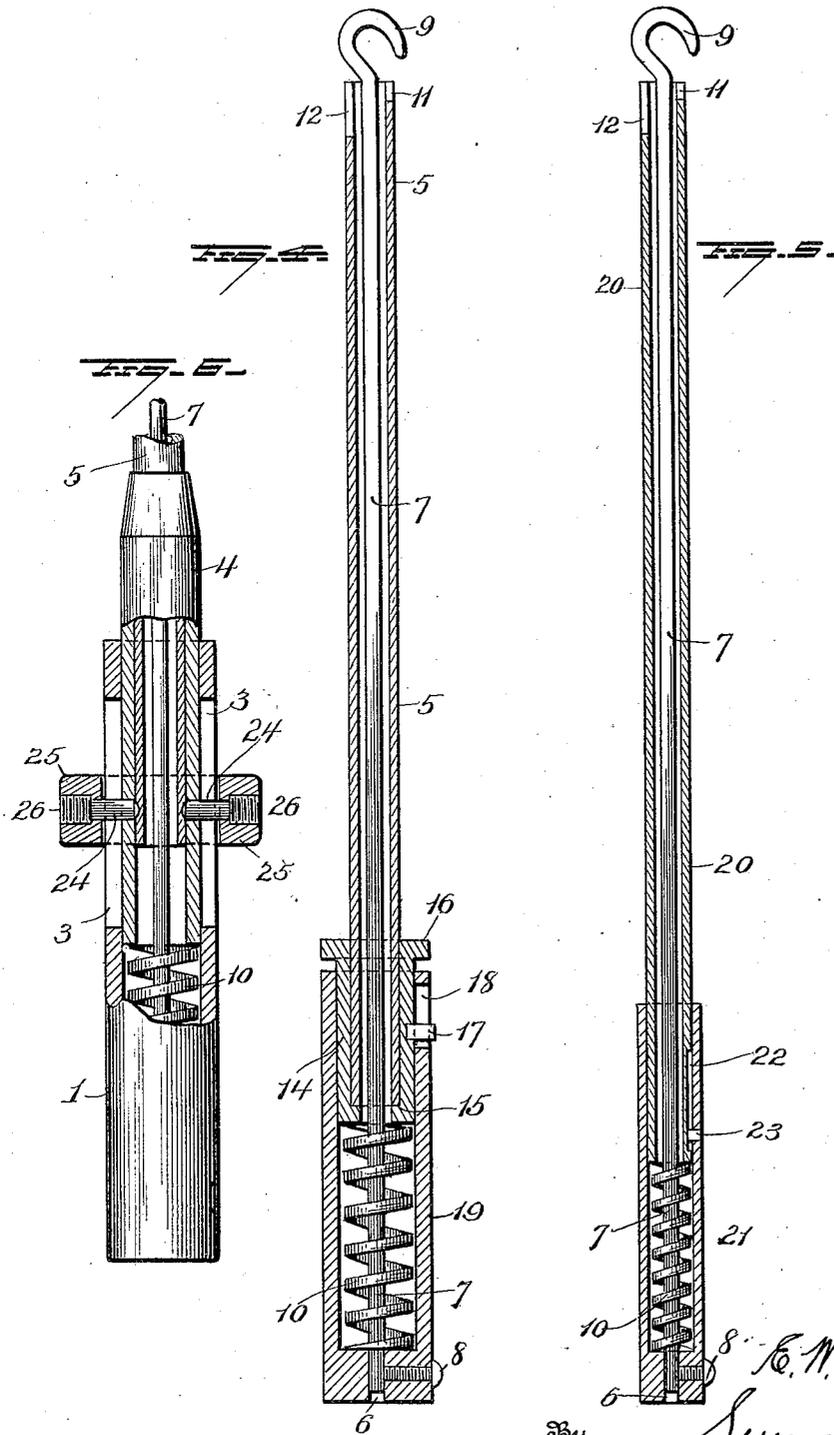
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TOOL

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TOOL.

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This invention relates to improvement in tools and more particularly to such as are adapted for use in handling small articles,— one object of the invention being to provide
5 a simple device with the use of which, small objects not readily accessible, may be easily reached and grasped without disturbing other objects which may be more or less associated with the object which it may be de-
10 sired to reach.

A further object is to provide a tool, with the use of which, parts may be easily reached and held, manipulated or removed when working in more or less complicated mechan-
15 isms such as radio apparatus, typewriting machines and other mechanisms in course of construction or repair.

A further object is to so construct a tool of the character mentioned, that it shall be easy
20 to manipulate; which shall be durable; which may be easy to manufacture and assemble; and which shall operate automatically when released by the user to grasp an object to be handled.

A further object is to so construct a tool of the character specified, that the object-engaging hook may be readily replaced with
25 another of larger or smaller size or more or less differently shaped according to the specific use to which it may be desired to adapt the device.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts as
35 hereinafter set forth and pointed out in the claim.

In the accompanying drawings;

Figure 1 is a view in elevation of a tool in which my improvements are embodied, the
40 hook being shown in projected position;

Figure 2 is a vertical transverse sectional view;

Figure 3 is a view partly in elevation and partly in section, with the hook in retracted
45 position;

Figures 4 and 5 are sectional views showing other embodiments of the invention, and

Figure 6 is a view partly in section and partly in elevation and partly broken away,
50 in which another modification is illustrated.

In the embodiment of the invention shown in Figures 1, 2 and 3, the handle portion of the tool is shown at 1 and the same is made
55 in the form of a tube or sleeve having at its lower end, a head 2, and the tubular handle 1 is also provided with diametrically opposite,

longitudinal slots 3 for a purpose herein-after explained.

A tubular plunger 4 enters the tubular handle and these parts are movable longi-
60 tudinally with relation to each other. The plunger 4, (which projects forwardly beyond the forward end of the handle 2) receives a tubular stem 5 which is movable with said
65 plunger. The tubular stem 5 may be forced into the plunger and caused to terminate preferably above the lower end of the latter. Pins or finger holds 6 pass through the wall of the plunger 4 and engage (at their inner
70 ends) the lower portion of the stem 5, said pins or finger holds extending outwardly through the slots 3 in the handle 1 and projecting suitable distances beyond the outer
75 face of said handle, in order that they may be readily engaged by fingers of the user.

The head 2 at the lower end of the handle 1 is made with a hole 60 which receives the lower end portion of a rod or wire 7 and a set screw 8 in said head secures said rod or wire to the handle so that it will move with
80 the latter. The rod or wire extends forwardly from its connection with the head 2 and passes through the handle 1 and the tube and constitutes a shank for a hook 9 formed on the forward end of said rod or wire. A
85 spring 10, housed within the tubular handle 1 bears at one end against a seat formed by the head 2 and at the other end against the lower end of the plunger 4, said spring thus
90 operating normally to cause such relative movements of the handle 1 and plunger 4 carrying the tubular shank 7, as to cause the hook 9 to be retracted partially, within the forward end of said tubular stem 5 as shown
95 in Fig. 3, said stem 5 being provided at its forward end with notches or recesses 11, 12 to permit such disposition of the hook.

It will be observed that the rod or wire 7 constituting the stem of the hook 9, is appreciably smaller in diameter than that of the
100 bore of the tubular stem 5, thus permitting said rod or wire to be flexed slightly in a lateral direction and facilitate the grasping by the hook of an article to be manipulated or removed or replaced. With a tool con-
105 structed in accordance with my improvements, the rod or wire 7 with its hook 9, may be easily removed and replaced by another rod or wire having a hook of a different size or shape which may better adapt the tool for
110 a particular use. By adjusting the connection of the rod or wire with relation to the

head 2 of the handle, the tension of the spring 10 may be adjusted.

Normally, the parts will be disposed as shown in Fig. 3, with the hook 9 in retracted position. In operating the device, the operator will engage the pins 6 with two fingers and the end of the head 2 of the handle with his thumb. Application of pressure against the handle and the plunger in opposite directions will cause relative longitudinal movements of these parts against the resistance of the spring 10 and said parts will be guided and prevented from relative turning movement by the pins 6 moving in the slots 3. The hook 9 will therefore be projected from the retracted position shown in Figs. 1 and 2. The hook 9 may now be caused to engage the article or object to be handled or manipulated, and upon release of pressure by the user, the spring 10 operates to move the parts and cause retraction of the hook and the article to be handled, the article being clamped firmly between said hook and the end of the tubular shank 5. The end of the shank 5 is provided with a recess 13 to receive the article or object being handled.

In the embodiment of the invention shown in Fig. 4, a plunger 14 is substituted for the plunger 4 shown in Figs. 1, 2 and 3, said plunger 14 receiving the tubular shank 5 and being formed near its lower end with a shoulder 15 to be engaged by the lower end of said shank. The plunger 14 is provided at its upper end with a plunger or head 16 to facilitate manipulation by the user, and said plunger 14 is provided with a pin 17 mov-

able in a slot 18 in the handle portion 19 of the device.

In the embodiment of the invention shown in Figure 5, the plunger (such as indicated at 4 and 14) is omitted and the tubular shank 20 made to enter directly into the handle portion 21. The shank 20 is provided with a groove 22 to receive a pin 23 projecting inwardly from the tubular handle portion 21.

The construction shown in Fig. 6 is similar to that shown in Figs. 1, 2 and 3, except that pins 24 (corresponding to the pins 6) are engaged by a ring or collar 25 movable on the handle portion 1, said pins 24 being provided with threaded portions 26 to engage in threaded sockets in the ring.

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

In a device of the character described, the combination of a tubular handle member having longitudinally extending slots, a tubular plunger entering the tubular handle, said handle member and plunger being relatively movable, a tubular stem movable with said plunger, a rod attached to the handle member and extending through the plunger and stem, a hook at the forward end of said rod, pins projecting from the plunger and entering the longitudinally extending slots of the handle member, and a spring housed in the handle member and engaging said plunger.

In testimony whereof, I have signed this specification.

EARL W. STUDWELL.