

Aug. 20, 1940.

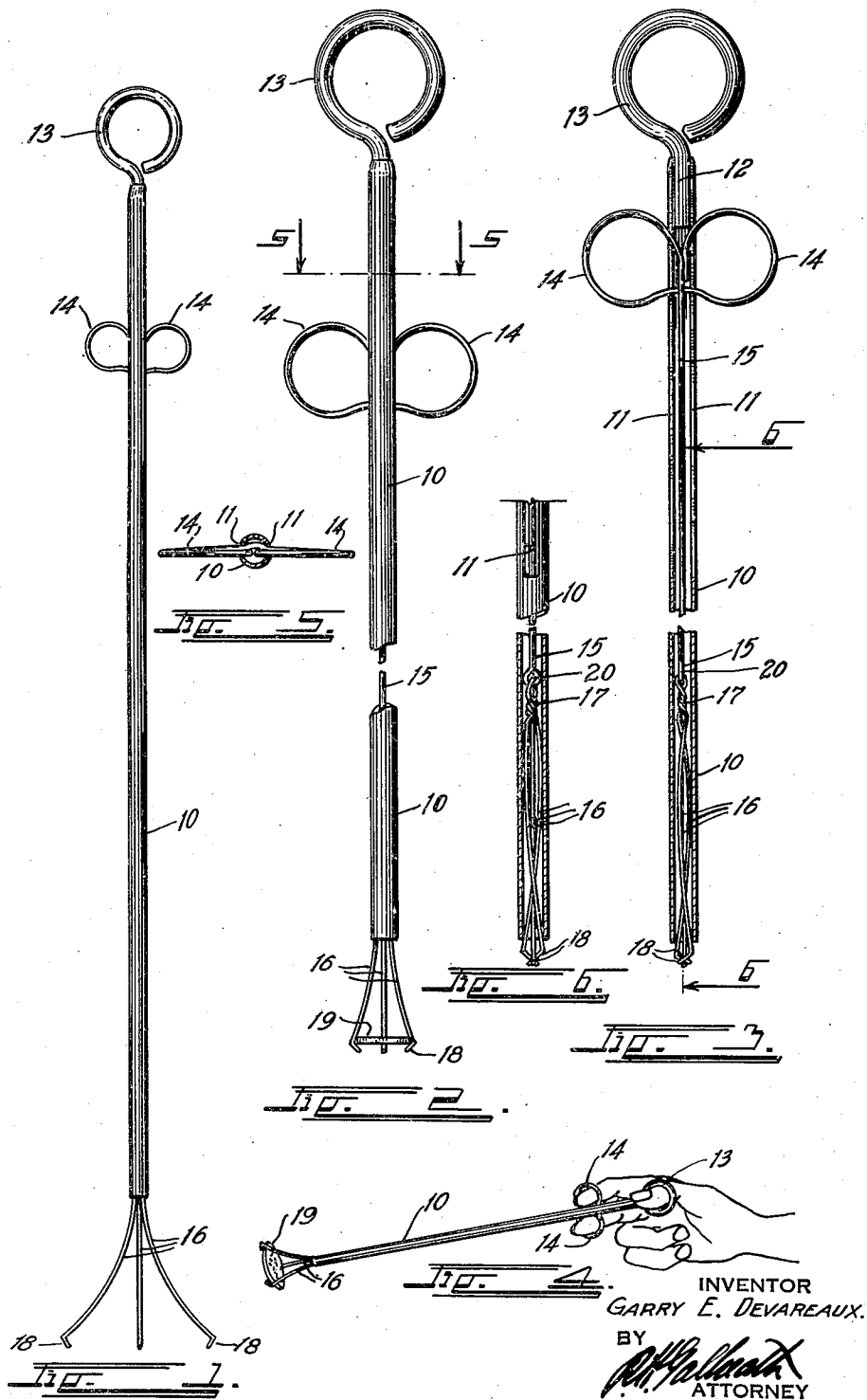
G. E. DEVAREAUX

2,212,013

RETRIEVING TOOL

Filed Sept. 16, 1939

2 Sheets-Sheet 1



Aug. 20, 1940.

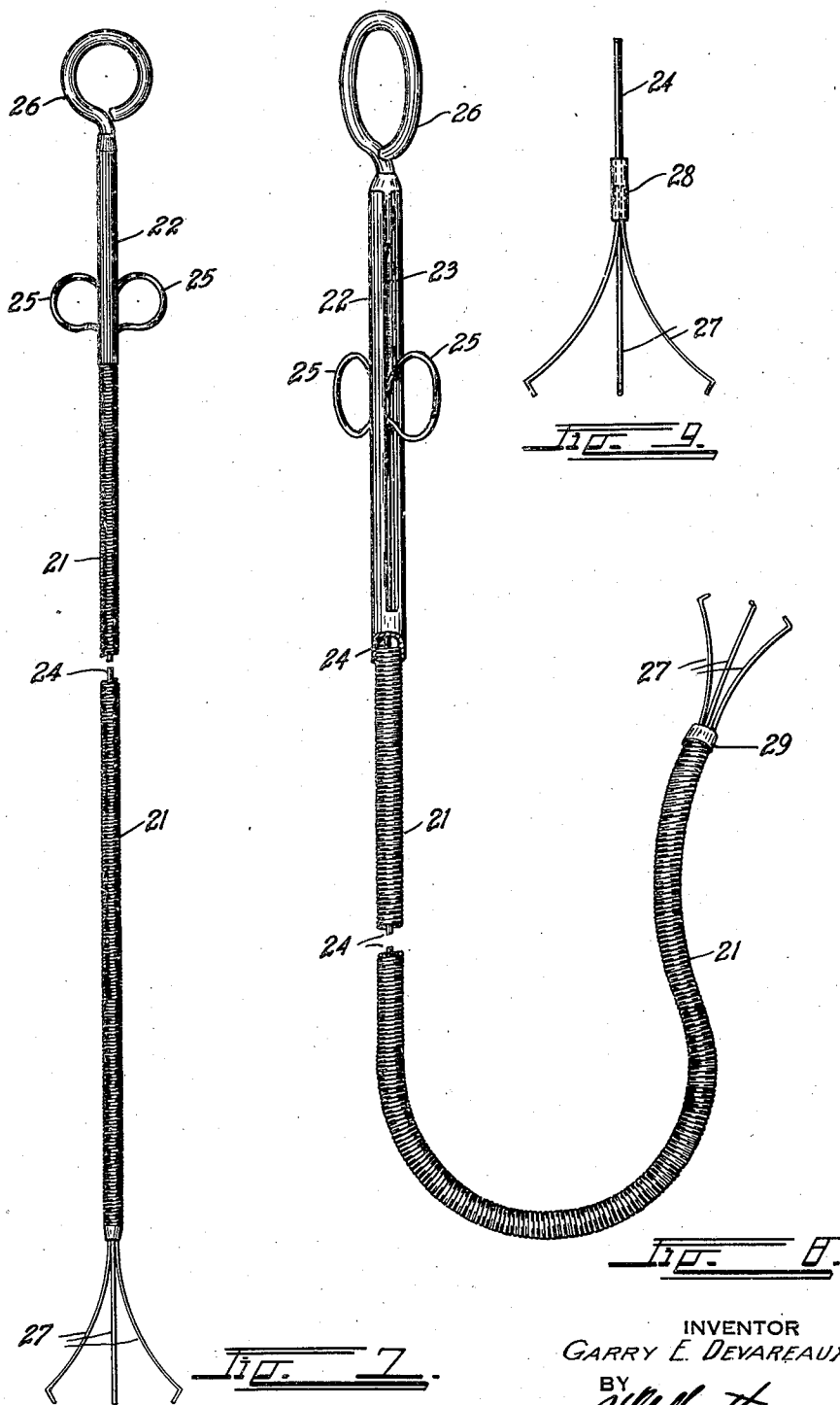
G. E. DEVAREAUX

2,212,013

RETRIEVING TOOL

Filed Sept. 16, 1939

2 Sheets-Sheet 2



INVENTOR
GARRY E. DEVAREAUX
BY
R. H. Heath
ATTORNEY

UNITED STATES PATENT OFFICE

2,212,013

RETRIEVING TOOL

Garry E. Devareaux, Denver, Colo., assignor of
one-half to William S. Bennett, Denver, Colo.

Application September 16, 1939, Serial No. 295,236

5 Claims. (Cl. 294—100)

This invention relates to a device for picking up articles from difficultly accessible places and has for its principal object the provision of a device of this character which will be economical to manufacture, light in weight, and easily manipulated; which will be free from projecting parts so that it may be easily inserted in and withdrawn from obstructed passages; which firmly grip any article regardless of its size or shape; and which can be positioned and operated by the fingers of a single hand.

The device has a universal application. It will especially be useful to mechanics for retrieving small parts, bolts, nuts, screws, etc., which may be dropped into difficultly accessible places in machines, motors, etc. It is, however, not limited to this particular field as its economical and neat design will make it desirable in stores, offices, homes, etc., for reaching articles in inconvenient places.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawings which form a part hereof. Like numerals refer to like parts in all views of the drawings and throughout the description.

In the drawings:

Fig. 1 is an elevational view of the complete tool in the expanded position.

Fig. 2 is an enlarged fragmentary view illustrating the tool as it would appear when gripping an article such as a coin.

Fig. 3 is a vertical section through the tool illustrating the fully retrieved position as when not in use.

Fig. 4 is a reduced perspective view of the tool as it would appear in use.

Fig. 5 is a cross-sectional view, taken on the line 5—5, Fig. 2.

Fig. 6 is a fragmentary longitudinal sectional view, taken on the line 6—6, Fig. 3.

Figs. 7 and 8 illustrate a flexible form of the retrieving tool.

Fig. 9 illustrates an alternate method of attaching the retrieving prongs to the operating wire.

The improved retrieving tool employs a relatively long slender tube 10 the opposite sides of which are slotted near one extremity to form two opposite, longitudinally extending guide slots 11. The latter extremity is closed by means of a stem

member 12 which is formed on a thumb ring 13.

The sides of the tube are preferably permanently attached to the sides of the stem member by means of solder or other means.

A relatively stiff operating wire 15 is contained within the tube 10. The latter is formed at its upper extremity to form two oppositely extending loops which project outwardly through the guide slots 11 to form finger rings 14.

The lower extremity of the operating wire 15 is formed into a relatively small eye 20 for supporting a plurality of resilient gripping fingers 16, the extremities of all of which are turned at an angle to form relatively short holding fangs 18.

The gripping fingers are formed from exceedingly stiff highly resilient material such as "piano wire." Preferably three of the fingers are employed, as this number appears to be more satisfactory for gripping articles of all shapes. The fingers are attached to the wire 15 by first passing a single length of piano wire through the eye of 20 and thence drawing it downward to form two of the gripping fingers. A third wire of a length to form the third finger is then placed between the other two fingers and the three are twisted together below the eye 20, as shown by the twist 17 on the drawings to firmly lock the fingers together and to the operating wire 15.

The length of the guide slots 11 is such as to allow the twist 17 to approach the open end of the tube without allowing it to project therefrom. When in the latter position, the fingers spread apart, as shown in Fig. 1, of their own inherent elasticity. When the operating wire is withdrawn into the tube, by the action of the fingers in the rings 14, the fingers are forced together by the confining action of the tube, as shown in Figs. 2 and 3.

It is desired to call attention to the fact that the tube 10 is exceedingly slender and that its exterior surface is perfectly smooth and devoid of projections. This allows the tool to be inserted into difficult places and passages in machines and the like without danger of its becoming fast or entangled therein.

In Figs. 7 and 8, a flexible form of the same tool is illustrated, more particularly designed for retrieving articles from plumbing fixtures and the like. This form consists of a flexible tube 21, perfectly but not necessarily formed from tightly coiled spring wire. The upper extremity of the flexible tube is secured to a split sleeve 22, the opposite sides of which are slotted as indicated at 23.

A flexible operating wire 24 extends throughout the length of the tubular shaft 21 as in the previous form. The handle extremity of the wire is formed with two finger loops 25 which extend through the slots 23 in the sleeve 22. The extremity of the sleeve is closed by means of a thumb ring 26. The other extremity of the wire 24 is secured to a series of spring wire prongs 27 which operate similarly to the previously described form.

In this form, it is preferred to employ a different method for securing the prongs 27 to the wire 24 in order that they may slide more smoothly within the flexible tube 21. This is accomplished by extending the extremities of the three prongs 27 and the extremity of the wire 24 into a relatively tight-fitting sleeve 28 and securing them therein by soldering, spot welding, or in any other desired manner.

This form of connection could also be used with the first described form of the device if desired. The free extremity of the flexible tube 27 is preferably finished by means of a ferrule 29 secured thereon.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A retrieving tool comprising: a continuous enclosing tube; longitudinally extending guide slots in said tube adjacent its one extremity; an operating member extending longitudinally within said tube; finger engaging means projecting oppositely outward from said operating member through the slots in said tube; and self-expanding gripping fingers attached to the other extremity of said operating member so as to be contracted by being withdrawn into said tube by the movement of said finger engaging means in said slots.

2. A retrieving tool comprising: a continuous enclosing tube; longitudinally extending guide slots in said tube adjacent its one extremity; a thumb engaging ring secured on the latter extremity of said tube; an operating wire extend-

ing longitudinally of said tube; oppositely extending finger rings formed on one extremity of said operating wire and projecting outward through said guide slots in close relation to said thumb ring; a plurality of spring wire, expanding, gripping fingers secured to the other extremity of said operating wire so that when said finger rings are in one extremity of their slots said fingers will be drawn into said tube, and when in the other extremity of their slots said fingers will be projected from the tube so as to be free to expand under their inherent resiliency.

3. A retrieving tool comprising: a continuous enclosing tube; longitudinally extending guide slots in said tube adjacent its one extremity; an operating member extending longitudinally within said tube; finger engaging means projecting oppositely outward from said operating member through the slots in said tube; and self-expanding gripping fingers attached to the other extremity of said operating member so as to be contracted by being withdrawn into said tube by the movement of said finger engaging means in said slots; the unslotted portion of the tube being freely flexible.

4. A retrieving tool comprising: a relatively long flexible tube; a relatively stiff sleeve portion secured to one extremity of said tube and provided with longitudinally extending slots; a flexible wire extending throughout the length of said tube; loops formed on one extremity of said wire and extending outwardly through said slots; a series of resilient fingers secured to the other extremity of said wire so that when the latter is projected they will flare from the open extremity of said tube.

5. A retrieving tool comprising: a relatively long flexible tube; a relatively stiff sleeve portion secured to one extremity of said tube and provided with longitudinally extending slots; a flexible wire extending throughout the length of said tube; loops formed on one extremity of said wire and extending outwardly through said slots; a sleeve member on the free extremity of said wire; and a series of resilient wires secured in said sleeve member so that they will flare from the open extremity of said tube when said wire is projected.

GARRY E. DEVAREAUX.