

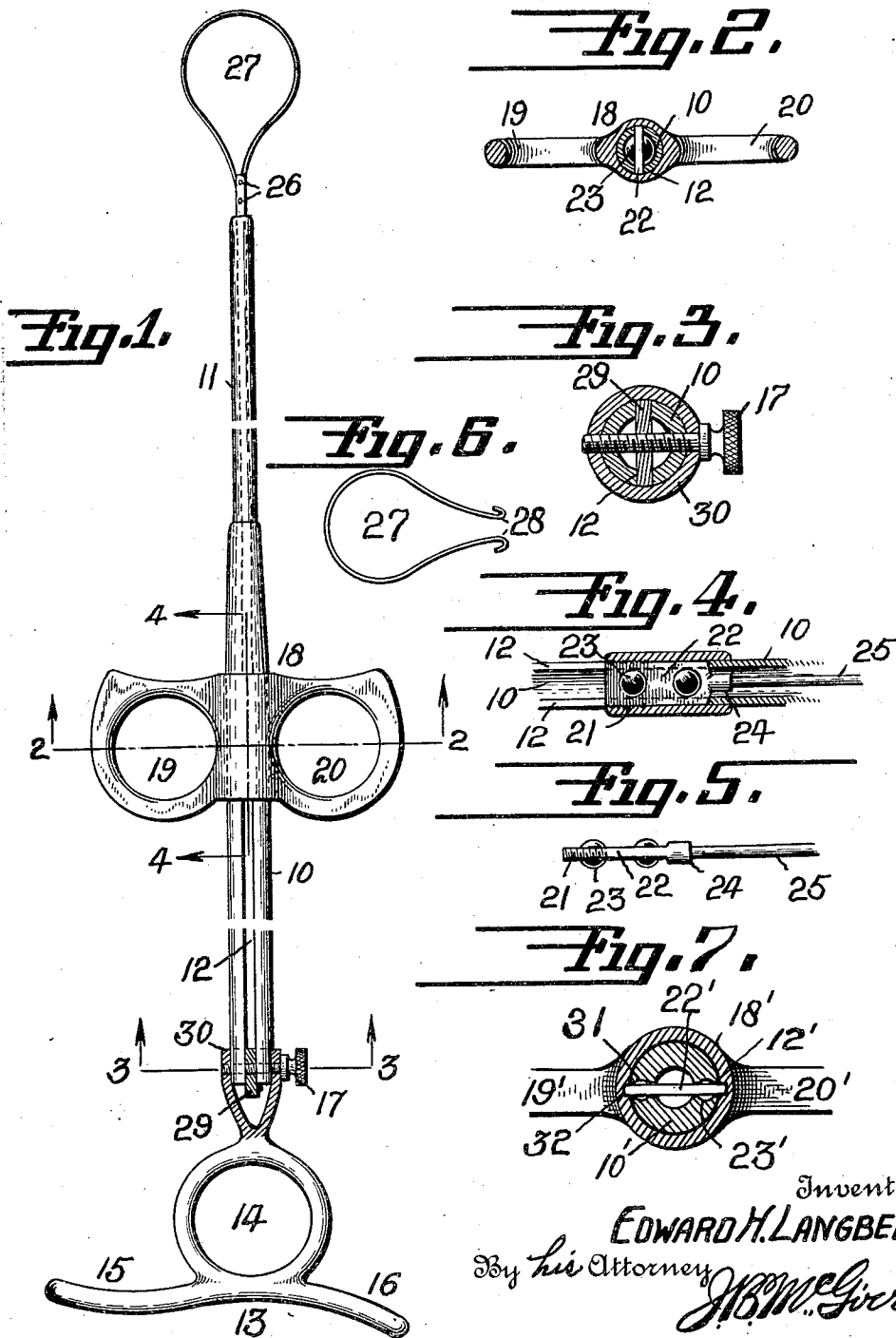
July 30, 1929.

E. H. LANGBEIN

1,722,474

SURGICAL SNARE

Filed Feb. 20, 1928



UNITED STATES PATENT OFFICE.

EDWARD H. LANGBEIN, OF BROOKLYN, NEW YORK.

SURGICAL SNARE.

Application filed February 20, 1923. Serial No. 255,318.

My invention relates to surgical instruments and to nasal and laryngeal snares in particular. My invention being applied in this particular instance to the well known
5 snare now used by surgeons generally for such operations on the nose and throat.

One object of my invention is to provide the instrument in use today for such operations with my improvement, so as to obtain
10 the very best results from its manipulation. Thereby providing means therein whereby it cannot bind or get stuck at a critical moment while being used.

Another object of my invention is, to provide
15 a ball bearing for the reciprocating member so as to afford an easy sure movement of the part that will conform exactly to the movement of the operator's fingers. That is to say, the ball bearing is so located
20 and arranged as to permit the reciprocating member to move with the greatest ease over the outside of the tubular body.

Another object is to provide the ball bearing that will operate on the inside of the
25 tubular member, and have the balls so caged as to insure of their not becoming detached, should the instrument be taken apart for any reason. By simply removing the retaining screw the handle may be detached,
30 and the reciprocating member with the ball bearing part removed.

With these and other objects in view, my improvement consists in the construction, combination and arrangement of the parts,
35 as will be hereinafter more fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended.

The invention as at present preferred
40 will be more clearly understood by reference to the drawing which illustrates merely an example of means for putting my improvement into practice, and wherein;

Fig. 1, is a face view of a surgical snare
45 with my improvement applied thereto;

Fig. 2, is a sectional view of the snare taken on line 2—2 of Fig. 1;

Fig. 3, is enlarged sectional view taken on line 3—3 of Fig. 1;

Fig. 4, is a longitudinal sectional view taken on line 4—4 of Fig. 1, showing the manner of housing and retaining the balls in position;

Fig. 5, is a view of the cage and balls as they appear before being attached to the reciprocating member, and

Fig. 6, is a view of the snare.

Fig. 7, is an enlarged view showing a modified arrangement of my improved ball bearing.

Like reference characters designate like parts throughout the several figures of the drawings.

As noted above my invention is illustrated in connection with a snare that is popular
65 in the medical profession, while it is so illustrated, it will be understood that the idea of having a reciprocating ball bearing such as illustrated, may be applied to any instrument of whatsoever character. The
70 snare illustrated is generally used by the profession and the reciprocating member has at times been known to cohere when being used, which is detrimental to the doctor and very dangerous to the patient. Thus
75 my improvement for eliminating any and all possible friction or other reasons that may cause the reciprocating member to move other than with perfect freedom. My improvement permits of a positive action
80 with that force and effect as may be desired or found necessary by the surgeon.

The snare comprises a tubular body portion 10, having a reduced hollow extension 11 thereto at one end. The tubular body part
85 10 has longitudinal slots 12 on opposite sides for a distance of its length, while the other end of the tubular body portion is provided with a handle 13, comprising a thumb hole 14 and two extensions 15 and 16, the screw
90 17 secures the same to the tube 10. Over the outside of said tubular part reciprocates a member 18 which may be provided with finger openings 19 and 20. The inner face of the reciprocating member 18 is screw
95 threaded for a portion of its length, as shown at 21, so as to secure and hold fast a snare carrying base 22 which in turn holds and retains a plurality of balls 23 in position within the tube 10. The balls are just
100 a little less in diameter than the inner diameter of the tube 10, and thereby prevent any friction between the tube 10 and the reciprocating member 18 and permits perfect freedom of movement of the same. The
105 snare base 22 on its outer end may be provided with a boss 24 into which may be secured one end of a snare carrying rod 25, the outer end of which has therein two eyes 26, to which the snare 27 may be connected by
110 means of hooks 28 that may be secured in the perforations 26. As shown the rod 25

with the snare 27 secured on its outer end is adapted to enter the hollow member 11, when the reciprocating member approaches the handle 13.

5 Referring to Fig. 2, it will be seen that the snare carrying base 22 is the full diameter of the inner bore of the reciprocating member 18, and permits the member to reciprocate back and forth freely. While
10 as has been noted the balls 23 just fitting the inner diameter of the tube 10, they move smoothly within the inner face of the tube and allow the reciprocating member 18 to be drawn over the tube 10 with the greatest
15 freedom, and with every assurance of it not binding at any point of its travel. It matters not whether the operator exerts more pressure with one finger than the other, the member 18 will under any and all cir-
20 cumstances respond to the pressure and move smoothly in the direction of the pressure, be it forward or backward. When the base 22 engages the end of the slot 12 as shown in Fig. 4, the snare expands to its
25 full spread as shown in Fig. 1.

The handle 13, where it receives the tube 10, is provided with a spacing section 29, which will hold the two legs of the bifurcated tube spaced apart so as to prevent any
30 possible friction to the reciprocating member. The screw 17 entering the outer walls 30 of the handle 13, and the spacing section as well as the tube 10, holds these parts securely together, and vice-versa when the
35 screw is removed the parts may be detached for cleaning or other purpose.

With my improvement applied to this snare, it is not necessary to place any agencies whatsoever, such as grease, on the tube
40 10, as is done now, to assist the reciprocating member to glide over the tube. The ball bearing within the tube causes the same to move with perfect freedom, and with that
45 positive assurance that the reciprocating part cannot possibly cohere or stick no matter how it may be held or twisted. As stated above, the reciprocating ball bearing is shown and described in connection with a surgical instrument, but it may be applied
50 to any bearing or any instrument where a free reciprocating movement is desired from all friction.

In Fig. 7, it will be seen that another variation of my invention is provided. In
55 this adaptation the tube 10' is not only slotted as shown at 12' but that said slot is provided with a channel 31 for the ball or balls 23 to operate within. The snare carrying base 22' in this modification is anchored in
60 the wall 32 of the hub of the finger grips, or reciprocating member 18. A much thicker tube is used for this form of my invention so as to accommodate the channel grooves in its edges. While the snare
65 carrying base 22 in this instance is held se-

cure in the reciprocating member 18 by any means. For instance by a small rivet, pin or screw.

The main idea is to provide a bearing for any instrument that will positively elimi- 70 nate any and all possibility to bind, stick or cohere by any twist or uneven pull of the hand operating the finger grips. The same construction may be adapted to any other mechanism or mechanical parts that may oper- 75 ate one over the other where it is desired to eliminate the friction between them. Again, in lieu of the balls 23 the base 22 may be provided with enlargements to take the place of the balls, its action with respect 80 to the respective parts would in all respects be the same as if the balls were therein.

In accordance with the provisions of the patent statutes, I have herein described the principal form of my invention which I now 85 consider to represent the best embodiment thereof, but I desire to have it understood that the form of bearing is only illustrative as it may be carried out in other arts than that described. While the design of the 90 reciprocating bearing is adapted for this particular instrument it can be changed or altered to meet the particular requirement without interfering in any way with the general appearance or operation of the in- 95 strument.

What I claim as new and desire to protect by Letters Patent is:

1. A surgical snare comprising a hollow tubular body having one or more guide slots 100 therein, a reciprocating member adapted to slide over said tubular body, a removable cage housing a plurality of balls adapted to slide within said tubular body, said cage having portions extending through the slots 105 and engaging the reciprocating member to hold the reciprocating member steady and limit the forward and backward movement of the same.

2. A surgical snare comprising a hollow 110 tubular body having one or more slots extending a portion of its length, an extension thereon, an operating part movable over said tubular body, a part operatable within said extension, a separating partition extend- 115 ing across the diameter of the movable part, said partition adapted to reciprocate with said operating part within the said slots and house a plurality of balls adapted to ride on the inner surface of the tubular 120 body, and a handle adapted to hold the parts in position and limit the movement of the reciprocating part.

3. A surgical snare comprising a hollow tubular body having one or more guide slots 125 therein, a reduced hollow extension secured thereto, an operating member adapted to reciprocate over the tubular body, a rod adapted to operate within said extension, said reciprocating member having means ex- 130

tending within the slots for guiding the same back and forth, said means housing a plurality of balls that operate within the tubular body, and a handle to assist the operator in operating the reciprocating member and to limit its rearward movement.

4. A surgical snare operating device comprising a tubular body part having a hollow extension thereon, a reciprocating finger operating member on the outside of the tubular body, means operatable therewith for housing a ball bearing member within said body, said member provided with a snare carrying rod slidable within the hollow extension, and a handle for holding and limiting the rearward movement of the reciprocating member.

5. A surgical snare operating device comprising a tubular body part having slots on opposite sides thereof, a hollow extension thereon, a member adapted to reciprocate on the outside of the tubular body having a finger operating member, a ball bearing member removably secured to the inside of the reciprocating member, said ball bearing member operatable within said tubular body and at the same time adapted to reciprocate within said slots, and a handle for holding the tubular member thereto and limiting the rearward movement of the reciprocating member.

6. A surgical snare operating device comprising a tubular body part having one or more slots therein, a hollow reduced extension thereon, a reciprocating member slidable over said tubular body, a ball bearing device adapted to fit and slide in the slot of the tubular part, said ball bearing device having attached thereto a snare carrying rod slidable within said extension, said reciprocating member operatable on the outside diameter of the tubular body while the ball bearing device operates within the same, a handle having detachable means for securing it to the tubular body and for limiting the movement of the reciprocating member.

7. A surgical snare operating device comprising a tubular body part having slots on opposite sides thereof, said slots having ways therein for ball bearings, a hollow extension secured to the tubular body part, a member adapted to reciprocate on the outside of the

tubular body having finger grips thereon, a ball bearing member secured to the inside of the reciprocating member, said ball bearing member operatable within ways in the slots of the tubular member, and means for limiting the forward and rearward movement of the reciprocating member.

8. A surgical snare comprising a hollow tubular body having guide slots therein, a reduced hollow extension applied to the first mentioned tubular body, an operating member adapted to reciprocate over the tubular body, a snare carrying base having a rod extending therefrom, said snare carrying base adapted to operate within the tubular body while the rod operates within the extension, the reciprocating member and the snare carrying base adapted to be removably secured together and in alignment with the tubular body, and a handle to assist the operator in operating the reciprocating member and to limit its rearward movement.

9. A surgical snare comprising a hollow tubular body having slots therein extending a portion of its length, a reduced hollow extension thereon, a reciprocating member movable over said tubular body, a snare carrying base made detachably secured to the reciprocating member and having an extension to which the snare is attached, a handle on the base of the tubular body to cooperate with grips on the reciprocating member, whereby, when pressure is applied to the reciprocating member, the snare carrying base, the rod carried therewith, and the snare will be withdrawn from the hollow members.

10. A surgical snare operating device comprising a tubular body, a slot in each wall of the tubular body extending a portion of its length, a reduced hollow extension, a reciprocating member removable on the tubular body, a detachable snare carrying base having a rod secured thereto provided with means for securing a snare, a handle on the bifurcated end to the tubular body, and a single screw for holding the handle to the tubular body secure and limiting the movement of the reciprocating parts of the snare.

In testimony whereof I affix my signature.

EDWARD H. LANGBEIN.