J. T. GREELEY.

SURGICAL NEEDLE HOLDER.

APPLICATION FILED APR. 16, 1917.

1,266,456

Patented May 14, 1918.

Fig. 1.

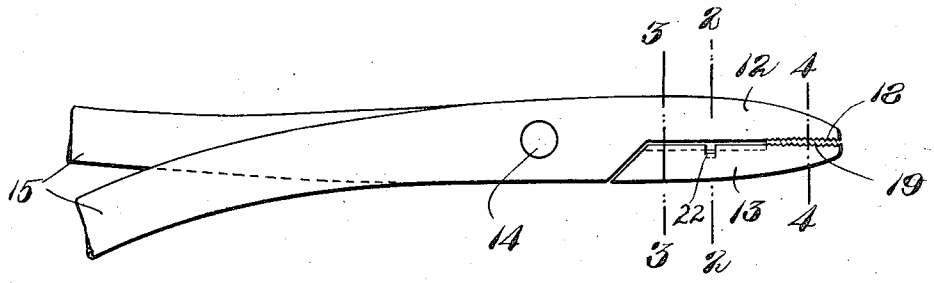


Fig. 2.

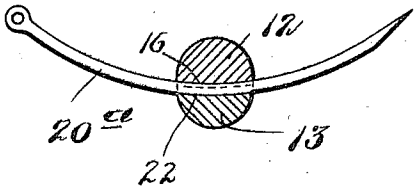


Fig. 3.

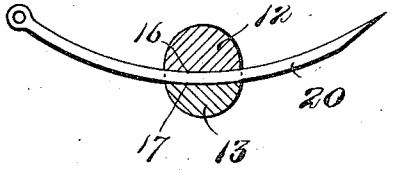


Fig. 5.

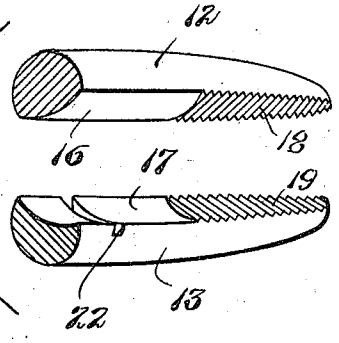
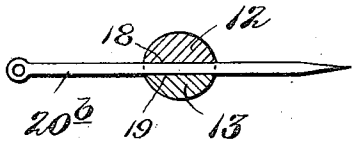


Fig. 4.



Inventor

James T. Greeley

by Wright Brown Quinby & May

attys.

UNITED STATES PATENT OFFICE.

JAMES T. GREELEY, OF NASHUA, NEW HAMPSHIRE.

SURGICAL-NEEDLE HOLDER.

1,266,456. Specification of Letters Patent. Patented May 14, 1918.

Application filed April 16, 1917. Serial No. 162,315.

To all whom it may concern:

Be it known that I, JAMES T. GREELEY, a citizen of the United States, residing at Nashua, in the county of Hillsborough and State of New Hampshire, have invented new and useful Improvements in Surgical-Needle Holders, of which the following is a specification.

In many surgical procedures the placing of a suture or a ligature requires the use of a surgical needle. From the nature of a needle itself and from the nature of the tissue through which it is often obliged to be passed, and from the nature of the location of the tissues to be treated, surgeons are under the necessity of employing a dependable instrument for the precise placing of such a suture or ligature.

The fingers of a surgeon, usually gloved, lack the necessary power for this exacting use. Also, in many instances, lack of room would preclude the introduction of the surgeon's hand within the incision for the suturing or ligating needed.

Surgical needles are divided into two classes, those of one class being curved and those of the other straight, the curved being again divided into half or full curved needles. At the bottom of a deep incision, as in the pelvis, the curved needle is used almost exclusively.

If, during the process of placing a suture or ligature with a curved needle, the needle turns upon its long axis, a halt has at once to be called, the needle, ligature and needle holder removed from the incision, and readjusted, and the stitch begun over again.

A needle holder, therefore, which will not permit a curved needle to turn upon its long axis during use is vitally necessary to quick and satisfactory ligating or suturing.

I have found that a curved needle can be best held by jaws whose opposed gripping surfaces are curved, the one convex and the other concave, the curve of these gripping surfaces conforming to the curve of the needle to be held. A curved needle of the same curve held by such gripping jaws will not, according to mechanical laws, turn upon its own long axis.

As, however, it is often necessary to use a straight needle in surgery, and as curved jaws suitable for holding rigidly a curved needle, if used to hold a straight needle, would be liable to break the latter, it is desirable to so form the gripping jaws that both curved and straight needles can be properly held by the same holder.

My invention is embodied in a holder comprising a pair of jaws having opposed curved gripping faces, one of which is concave and the other convex, said faces being so arranged that when they close on a curved needle each will have a continuous elongated bearing thereon, one on the concave and the other on the convex side.

The invention is also embodied in a holder comprising a pair of jaws, each having two gripping faces, one curved and the other flat, one of the curved surfaces being concave and the other convex, so that they are adapted to coöperate in gripping a curved needle, the flat surfaces being adapted to cooperate in gripping a straight needle.

The convex and concave gripping surfaces, curved and arranged to conform to the curve of the desired curved needle, will not permit the turning of the needle upon its own axis. The turning of a straight needle held by the flat surfaces of the jaws upon its own long axis cannot, in any way, affect the use of the said straight needle, as its point will not change in its position nor direction.

The invention is embodied in the improvements hereinafter described and claimed.

Of the accompanying drawings forming a part of this specification:

Figure 1 represents a side view of a needle holder embodying my invention;

Fig. 2 represents a section on line 2—2 of Fig. 1, showing the holder engaged with a curved Hagedorn needle;

Fig. 3 represents a section on line 3—3 of Fig. 1, showing the holder engaged with an ordinary curved needle;

Fig. 4 represents a section on line 4—4 of Fig. 1, showing the holder engaged with a straight needle;

Fig. 5 represents in perspective the jaw portions of the holder.

The same reference characters indicate the same or similar parts in all the views.

The jaws 12 and 13 of my improved holder are connected by a pivot 14 and are provided with suitable handles 15 by which they are opened and closed.

The jaws are provided with two pairs of opposed needle-gripping faces 16, 17, and 18, 19, each of which is elongated in a direction at right angles with the pivot 14, and is relatively narrow crosswise. The faces 16,

17, are transversely curved, one being concave and the other convex in cross section, so that they conform to the curvature of a curved needle 20, as shown by Fig. 3.

One of the faces, and preferably the concave face 17, may be interrupted by a transverse groove 22 having a curved bottom. Said groove is adapted to receive a portion of a curved "Hagedorn" needle 20^a having flattened sides bearing against the sides of the groove, and a curved edge or back bearing on the bottom of the groove.

The faces 18 and 19 are substantially flat, and are adapted to engage a straight needle 20^b. Said faces may also be transversely corrugated, if desired, and the faces 16 and 17 may also be transversely corrugated.

The longitudinal edges of the faces of each jaw coincide with the longitudinal edges of the faces of the other jaw when the jaws are closed, so that the closed jaws have a compact cross-sectional area, whereby they are adapted to be inserted in incisions or cavities in a human body, there being no laterally projecting portions on either jaw. The longitudinal edges of the curved faces 16 and 17 are substantially parallel with each other, so that each face is of uniform width. Owing to the fact that the faces 16 and 17 are continuous or uninterrupted from edge to edge, and are of uniform width, said faces are adapted to exert uniform pressure on the entire sector of a curved needle interposed between them, without liability of straining and breaking the needle.

Having described my invention, I claim:

1. A surgical needle holder comprising a pair of jaws each having two gripping faces, one of which is curved to conform to a curved needle, while the other is substantially flat and conforms to a straight needle, the curved face of one jaw being convex and the curved face of the other jaw concave in cross section.

2. A surgical needle holder comprising a pair of jaws each having two gripping faces, one of which is curved to conform to a curved needle, while the other is substantially flat and conforms to a straight needle, the curved face of one jaw being convex and the curved face of the other jaw concave in cross section, and the two flat faces being transversely corrugated.

3. A surgical needle holder comprising a pair of jaws having opposed curved gripping faces adapted to conform to a curved needle, one of said faces being convex and the other concave in cross section, one of said curved faces being provided with a transverse slot to engage opposite sides and one edge of a curved needle.

4. A surgical needle holder comprising a pair of jaws connected by a transverse pivot and having opposed curved gripping faces which are elongated lengthwise in a direction at right angles to said pivot, are relatively narrow and continuous or uninterrupted crosswise and have substantially parallel longitudinal edges which coincide when the jaws are closed, so that the closed jaws have a compact cross-sectional area adapting them to be inserted in incisions or cavities in a human body, the curved face of one jaw being transversely convex, and the curved face of the other jaw being transversely concave in cross section, whereby said faces are adapted to conform to a curved needle interposed between the jaws.

In testimony whereof I have affixed my signature.

JAMES T. GREELEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."