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Peterson

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[54] **ELONGATED SURGICAL INSTRUMENT HOLDER**

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[52] **U.S. Cl.** ..... **211/60 T;** 21/105; 211/153; 211/181

[51] **Int. Cl.²** **A47F 5/13;** A47F 7/00; A61L 7/00

[58] **Field of Search** ..... 211/53, 52, 47, 51, 170, 211/164, 130, 132, 60 T, 60 R, 60 A, 40, 134, 135, 144, 148, 150, 153, 163, 165, 167, 181; 21/105, 82–85, 88; 248/240, 249, 291, 302

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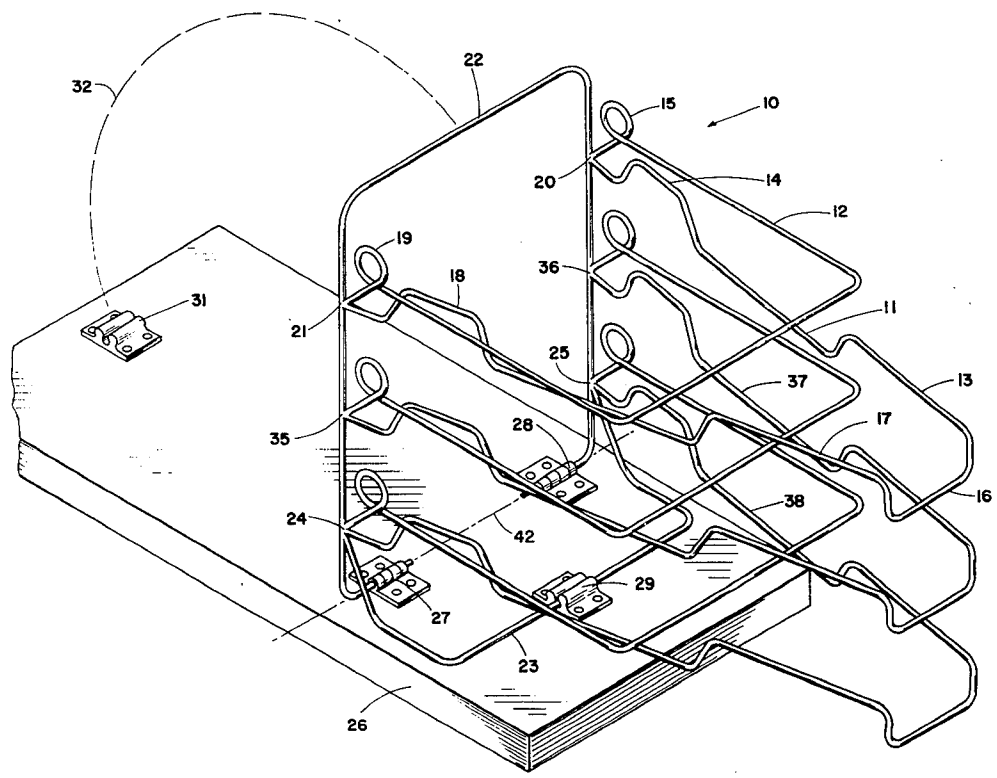
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[57] **ABSTRACT**

A holder for elongated surgical instruments for use during surgical procedures and during cleaning and storage of the instruments, for minimizing material and structural damage and bacteriological contamination resulting from handling by medical personnel during cleaning and storage of the instruments and during surgical procedures. The holder includes at least one shelf carried by a bracket and having means of longitudinally and laterally removably-securing instruments thereto; and in addition, a means whereby the bracket carrying the shelf while instruments are secured thereto is selectively positionable in an outstanding position for use during a surgical procedure, or in a collapsed position for cleaning and subsequent storage. The holder allows selective access to the bottom instrument as easily as the top instrument. The invention additionally provides for use with an ultrasonic cleaner as well as other well known cleaning devices while removably-securing elongated surgical instruments.

5 Claims, 3 Drawing Figures



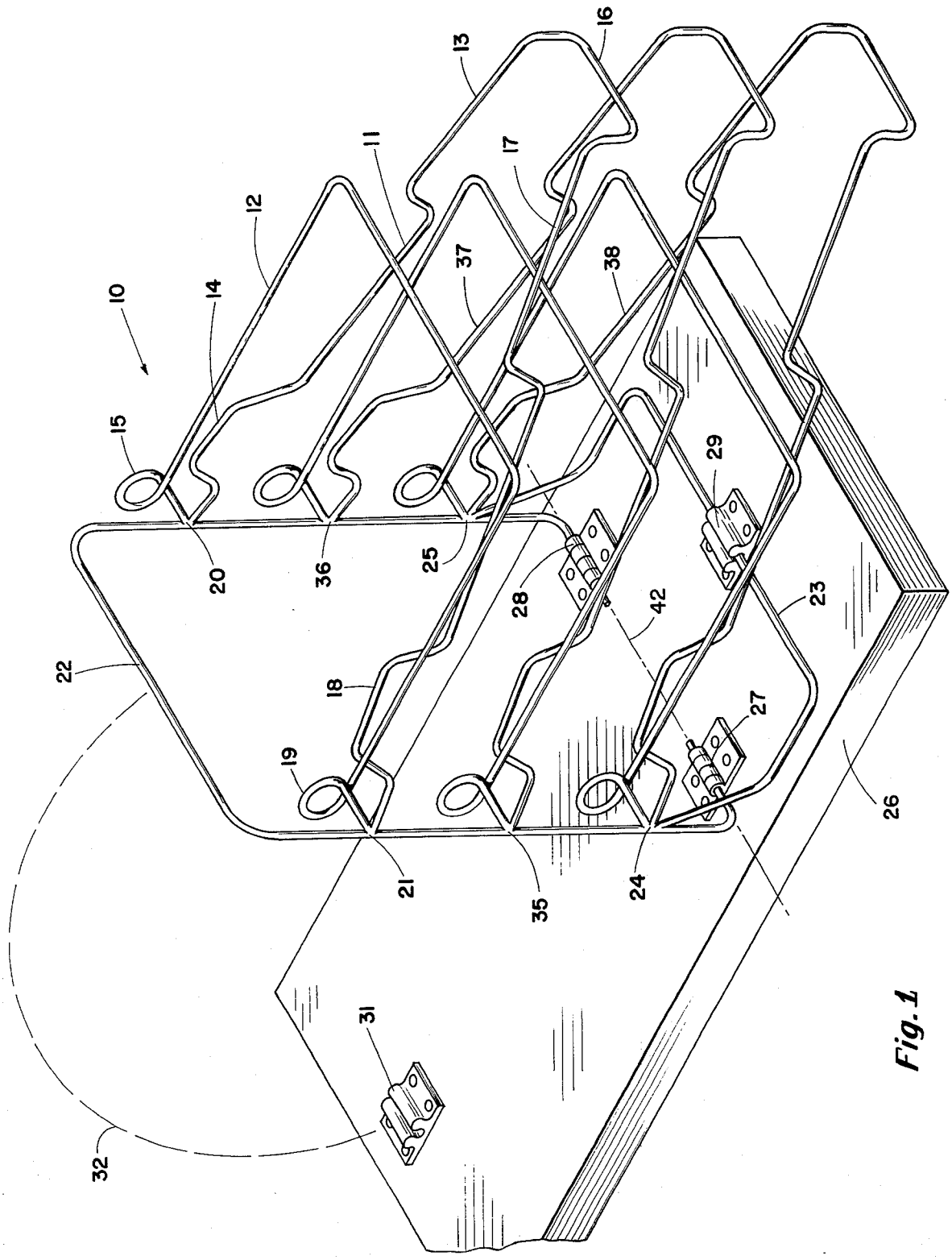

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Fig. 1

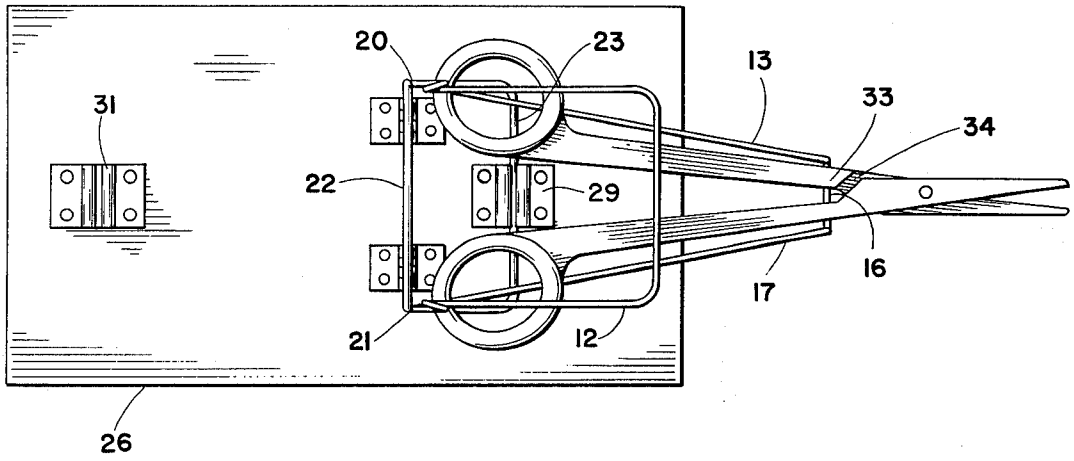

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Fig. 2

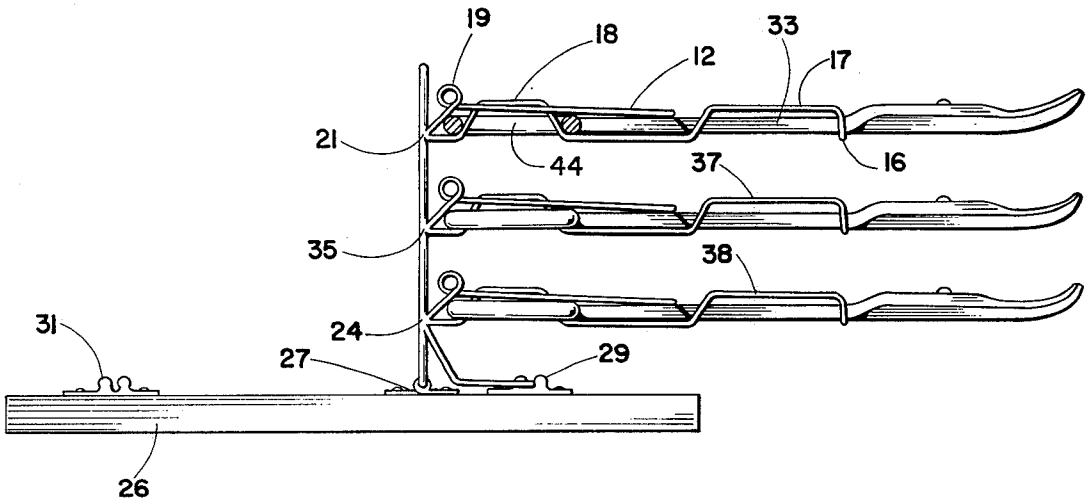

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Fig. 3

ELONGATED SURGICAL INSTRUMENT HOLDER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to improvements in a holder for elongated surgical instruments to be used in sterile environments and during cleaning and storage of the instruments, and more particularly to improvements in holders to thereby minimize structural damage and bacteriological contamination resulting from handling by medical personnel during cleaning and storage of the instruments.

2. Description of the Prior Art

Hospitals, medical centers, and doctor's offices employ rigorous procedures with respect to handling, cleaning, sterilizing, and maintaining instruments and equipment for medical, surgical and operating use. Naturally, the most important overall consideration is preserving cleanliness and sterility of the instruments and operating equipment prior to use. In the prior art, an operating room is prepared for surgery by first locating a "back" table generally away from the site at which the primary operating activity is to be conducted. The particular instruments required in the surgery, just prior to the operation, are removed from a protective prophylactic wrapper in which they are stored and arranged in readily accessible fashion on the back table. A second smaller table, frequently called a "Mayo" table is then positioned near the site of the operation, and during the course of the operation various surgical instruments are brought forward from the horizontal array of instruments on the back table and positioned on the Mayo table thereby providing the operating doctor or his assistant immediate access to the particular instruments as they are needed.

During the course of an operation, the instruments may become soiled by blood and other operating debris, which may cake or harden thereon and may be difficult to remove. Consquently, to ease subsequent cleaning processes, after use the instruments may be immediately dropped into a soaking solution to prevent blood or other operating debris from caking or hardening thereon.

After an operation, the used instruments may be cleaned by hand or machine washing, or by any other frequently used cleansing procedure. Because of the physically limited process involved in storing, carrying, and handling the instruments, the presently used cleaning methods have a number of disadvantages and consequent limitations. For example, hand washing, the most frequently used cleaning method, involves brushing and scrubbing each instrument in a soap solution to remove accumulated operating materials and debris. Clearly, such hand washing provokes an inherently high risk of damage to the instruments, particularly those with sharp and delicate edges. To mitigate and correct for these disadvantages, ultrasonic cleaning procedures have been developed for surgical instruments. As an illustration, in my U.S. Pat. No. 3,640,295, a surgical instrument case including a grid assembly disposed therein is shown for holding instruments during surgical procedures or during cleaning and storage of those instruments. The structure of the grid assembly holder shows a plurality of vertically extending "pegs" to laterally secure a horizontal array of surgical instruments. Consequently, surgeons using that particular type of holder "stack" one instrument on top of another.

The prior art shows an unrelated variety of supporting stands for surgical or other instruments. For example, an 1888 U.S. Pat., Leonard, No. 391,540, shows an improvement in cases for surgical, mathematical, and other instruments and apparatus. That patent simply shows a plurality of clamps secured to a plate or other flat surface for holding the handles of instruments secured thereby. The prior art additionally shows a supporting stand for instruments, Dold, U.S. Pat. No. 3,564,662, having a plurality of clamping sleeves secured to individual levers pivitol on a shaft. That device thereby provides for the clamping sleeves to be pivotal about the shaft whereby one end of each clamping sleeve can be raised to a position facilitating the insertion or retraction of an instrument to be held by that particular device. Other stands and holders are shown in the prior art, but as the Dold patent, fail to indicate or suggest any means for both laterally and longitudinally securing surgical instruments in a holder, both during surgical procedures as well as during cleaning and storage of the instruments.

SUMMARY OF THE INVENTION

In view of the above, it is an object of the invention to present a holder for elongated surgical instruments for use during surgical procedures and during cleaning and storage of the instruments, thereby minimizing material and structural damage and bacteriological contamination otherwise resulting from handling by medical personnel during cleaning and storage of the instruments.

It is a further object of the invention to present a holder for use during a surgical procedure wherein a surgical instrument is secured in the holder until used in the procedure, and after its use therein, is immediately resecured in the holder, thereby minimizing damage and contamination otherwise resulting from handling by medical personnel during cleaning and storage of the instrument.

It is a still further object of the invention to present a holder for use in combination with an existing surgical instrument cleaning device.

It is yet a further object of the invention to present a holder for use in combination with an existing ultrasonic surgical instrument cleaning device.

It is still a yet further object of the invention to present a selectively foldably-collapsible holder for use in combination with an existing surgical instrument case.

It is another object of the invention to present a means of securing pivoted, pincer-like surgical instruments having two elongated members pivotally joined in a partially opened position to facilitate cleaning of the instruments when held by the invention.

These and other objects, features, and advantages of the invention will become apparent to those skilled in the art from the following detailed description when read in light of the attached drawing and appended claims.

In accordance with the present invention, an elongated surgical instrument holder for use during surgical procedures and during cleaning and storage of surgical instruments. The holder incudes a shelf adapted to receive an elongated surgical instrument, a restrainer means which compressively secures the instrument to the shelf, a lateral retainer which prevents lateral

movement of the instrument on the shelf, and a bracket supporting said shelf. The invention additionally includes at least one protruding post outstanding from the shelf and extending through a hole or ring in the instrument which additionally secures and prevents movement of the instrument when secured by the invention. Additionally, when used in combination with an existing surgical instrument case, or when otherwise desired, the bracket may be pivotally secured to an existing base and provided with a locking means to allow selective foldable-collapsibility of the invention. Furthermore, the holder may have a teflon coating to withstand the corrosive character of an ultrasonic cleaning solution; thereby providing for use of the holder in combination with that cleaning method. Alternately, the holder may be used as an instrument holding means during a surgical procedure.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated in the accompanying drawing wherein:

FIG. **1** is a perspective view of the preferred embodiment of the holder of the invention showing it pivotally supported in a raised position on an existing base, and provided with a locking means to allow selective foldable-collapsibility of the holder.

FIG. **2** is a plan view of the preferred embodiment of the holder in a raised position showing it removably-securing a pincer-like surgical instrument having two elongated members pivotally joined in a partially opened position.

FIG. **3** is an elevational view of the preferred embodiment of the holder in a raised position showing it removably-securing a pincer-like surgical instrument having two elongated members pivotally joined shown in FIG. **2.**

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A holder in accordance with the invention is illustrated in FIGS. **1** through **3** and is generally indicated by reference character **10.** The holder includes a shelf **11** supported by a frame or bracket **22** which is pivotally secured to an existing base or similar surface **26** by pivotal means **27** and **28.** The shelf **11** is rigidly affixed to the bracket **22** by welding or other well known means at points **20** and **21.** Shelf **11** is secured to the bracket **22** in a manner whereby the surface of the shelf **11** is substantially parallel to the pivotal axis **42.** The invention additionally provides for a plurality of shelves **37** and **38,** although not limited thereto, which are substantially parallel to shelf **11** and are rigidly affixed to the bracket **22** in the same manner as shelf **11** at **35** and **36,** and **24** and **25,** respectively.

FIG. **1** shows a restrainer **12** disposed laterally parallel to the plane of the shelf **11.** The restrainer **12** and the shelf **11** may be of one-piece construction as set out in the preferred embodiment, or in an alternate form, the restrainer **12** may be a separate component welded or otherwise secured to the structure of the invention to position it laterally parallel to shelf **11.**

A spring means, shown at **15** and **19,** is included in the invention to facilitate and insure lateral resiliance in the restrainer. By this means, when an instrument is to be held by the holder of the invention, it can be inserted longitudinally above and across the outer end **16** of the shelf **11** and thereafter emplaced on said shelf, while being disposed between said shelf and restrainer. Because the restrainer **12** is forceably deflected away from the adjacent parallel shelf **11** when an instrument is inserted therebetween, the instrument is compressively secured between the shelf **11** and the adjacent parallel restrainer **12.**

As particularly shown in FIGS. **2** and **3,** which additionally show pincer-type surgical instruments having two elongated members pivotally joined held by the holder, the invention includes a lateral retainer and a finger-gripping-ring securing means for each shelf of the invention. As hereinbefore set out, the lateral retainer prevents lateral movement of the instrument on the shelf **11.** In the preferred embodiment of the invention it includes retaining ridges **13** and **17** disposed on either side of the outer end **16** of the shelf **11** to thereby arrest lateral movement of an instrument held by the invention.

The finger-gripping-ring securing means consists of posts formed of a to protrude in the wire on each side of the shelf **11** and, outstanding from the shelf **11** protrude and extend through a finger-gripping-ring on each handle of pincer-type surgical instruments held by the holder, or as shown at location **44** in FIG. **3,** the manner in which the instrument is secured is illustrated by, one post which can be seen extending through a cut away portion of a ring on one handle of an instrument. This feature provides means for securing an instrument in the holder; and, when taken in conjunction with the lateral retainer, provides a means of securing pincer-like surgical instruments in a partially opened position to facilitate cleaning of the instruments when held by the invention as hereafter described.

As illustrated in FIG. **2,** the pincer-like surgical instrument held by the holder of the invention is secured on the shelf **11** in a partially opened position. By securing the instrument in this manner, the cutout portions **34** in both elongated members of the instrument are exposed sufficiently to facilitate, cleaning of foreign matter from the instrument without removing it from the holder. Consequently, the holder can be used to secure and hold surgical instruments during cleaning and sterilizing procedures thereby minimizing the possibility of structural damage and bacteriological contamination resulting from handling by medical personnel prior and subsequent to use in a surgical procedure. More specifically, when the invention is used in conjunction with an immersible fluid cleaner such as the ultrasonic cleaner disclosed in Peterson, U.S. Pat. No. 3,640,295, it is unnecessary to ever remove the surgical instrument from the holder except at the times it is actually used in the procedure; whereafter, the instrument is immediately returned and resecured in the holder.

The preferred embodiment of the invention additionally provides for the bracket **22,** carrying the shelf **11,** to be pivotally supported on an existing base **26** or similar surface. This particular feature provides for the selective foldable-collapsibility of the invention whereby the bracket **22** may be positioned in an outstanding position as shown in FIG. **1** for use during a surgical procedure, and rotated about the pivotal axis **42** as illustrated by line **32** to a collapsed position for cleaning and subsequent storage. Additionally, to hold the bracket in the outstanding or collapsed position, locking means is provided in the invention such as the snap-clips shown at **29** and **31** in the drawings. As set out above, it should be particularly noted that the bracket

22 may be rotated and locked in either the outstanding or collapsed position when instruments are removably-secured by the holder.

This feature thereby effectively alters the outside dimensions and shape of the holder; thereby providing for improved utilization of cleaning devices such as an ultrasonic cleaner by facilitating the use of the holder with that type of cleaner, as well as the number of holders utilized during a particular cleaning cycle.

Turning now to consideration of the fabrication of the preferred embodiment, as well as the material utilized therein, the shelf **11**, restrainer **12**, lateral retainers **13** and **17**, and finger gripping ring securing means **14** and **18** are of one piece wire construction. Similarly, the bracket **22** is fabricated from one length of wire. In assembling the invention, after forming the two appropriate lengths of wire into their respective shapes, the wires may be welded one to the other as illustrated at points **20** and **21**; whereafter the bracket **22** is pivotally secured to an existing base to complete the assembly. This particular structure, in addition to providing an economic and simplified manner of construction, also provides a means whereby ultrasonic waves may adequately penetrate the holder to facilitate instrument cleaning when the holder is immersed in an ultrasonic cleaning bath.

Factors affecting the type of material used in the preferred embodiment of the invention include the final uses to which the holder will be put. For ordinary uses it may be of plastic or the like. In uses involving ultrasonic cleaning, because of the particularly corrosive character of ultrasonic cleaning baths, it should be constructed of or coated with a material which is substantially unaffected by repeated immersion in the ultrasonic cleaning bath. Polytetrafluoroethylene, referred to by the trademark "Teflon," is one material which has been found to meet this requirement; therefor, the preferred embodiment provides a Teflon coating for the shelf **11**, restrainer **12**, lateral retainers **13** and **17**, and finger gripping ring securing means **14** and **18**, although not restricted thereto.

Although the invention has been described and illustrated with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and agreement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

1. A holder for a surgical instrument having two pivotally joined elongated members with a finger gripping hole in the proximity of an end of at least one thereof, comprising:

a base,

a bracket pivotally mounted on said base to be moveable between a collapsed position substantially parallel to said base and to a position substantially perpendicular to said base, a wire shelf attached to and projecting outwardly from said bracket to receive the instrument thereupon,

said wire shelf having a portion being bent upwardly from the plane of the shelf and extending along a portion of each side adjacent a distal end thereof from said bracket, to arrest lateral movement of the instrument,

said wire shelf being bent upwardly along at least one portion thereof adjacent the bracket to form a post to engage the finger-gripping-ring of said at least one member of the instrument and to release the instrument upon application of a longitudinal force upon the instrument, and a wire restrainer attached to said bracket extending therefrom parallel to said shelf,

said wire restrainer having at least one portion formed into a loop to provide a bias on said restrainer in the direction of said shelf to compress the instrument between said restrainer and said shelf.

2. The holder of claim **1** comprising a plurality of similarly formed wire shelves and restrainers carried on said bracket to carry a plurality of instruments thereon and permit access to any selected one of said instruments.

3. The holder of claim **1** further comprising a locking means to enable said bracket to be selectively secured in said adjacent and said outstanding positions.

4. The holder of claim **1** wherein said receiving shelf material has a Teflon coating.

5. The holder of claim **1** wherein said shelf and restrainer are together of one piece construction.

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