United States Patent [19]

Ericson

[11] **3,786,815**

[45] **Jan. 22, 1974**

[54] **RADIOPAQUE CLAMP**

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[73] Assignee: **C. R. Bard, Inc.,** Murray Hill, N.J.

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[52] **U.S. Cl.** **128/321,** 128/346

[51] **Int. Cl.** **A61b 17/28,** A61b 17/08

[58] **Field of Search** 128/321, 322, 346

[56] **References Cited**

UNITED STATES PATENTS

2,796,065	6/1957	Kapp	128/346
3,461,876	8/1969	Miller, Jr.	128/346
2,468,823	5/1949	Housepian	128/346
3,646,939	3/1972	Sklar	128/321
2,993,235	7/1961	Brown et al.	264/108

Primary Examiner—Channing L. Pace

Attorney, Agent, or Firm—Chester E. Martine, Jr.

[57] **ABSTRACT**

A surgical clamp of the scissors type, adapted to be locked closed and having knurled clamping surfaces which can be brought into contact, straight edge clamping portions which cannot be brought into contact, and an opening between the pivot point and handles through which a tube can be passed and held while the first named clamping surfaces are engaged with a support such as a bed sheet, the two halves of the clamp being identical and being injection molded of glass-fiber-filled nylon.

5 Claims, 6 Drawing Figures

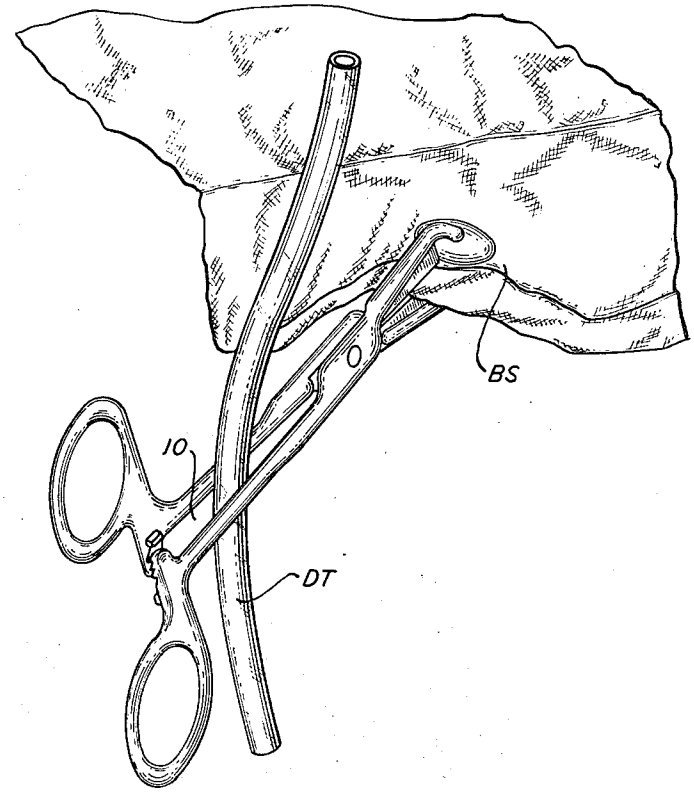


FIG. 1

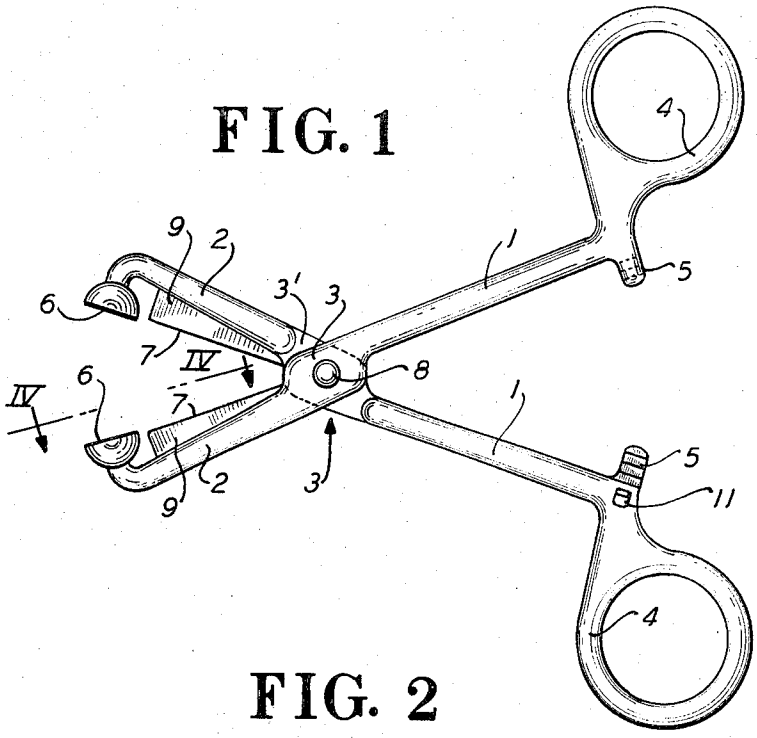


FIG. 2

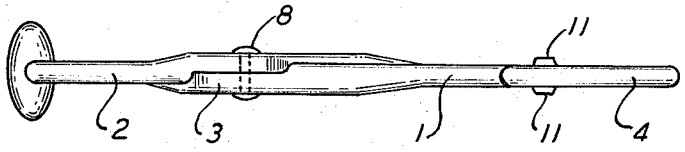


FIG. 3

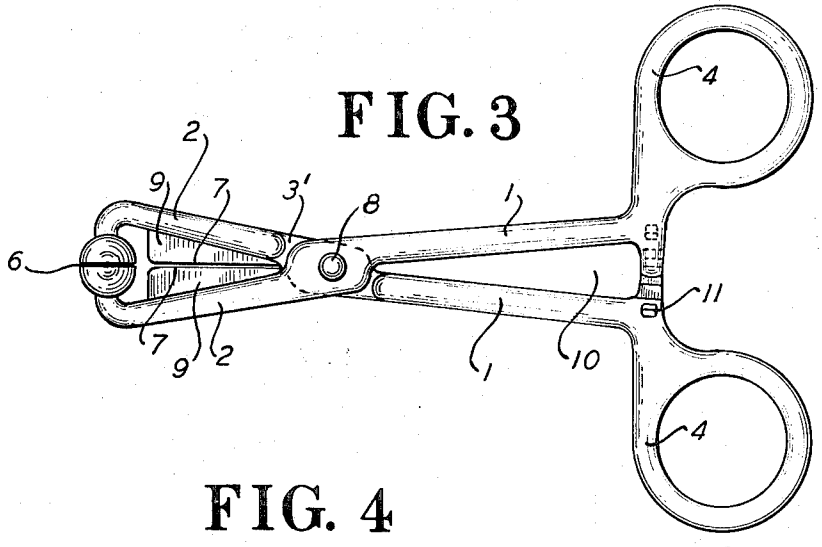
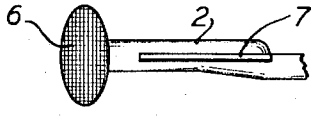
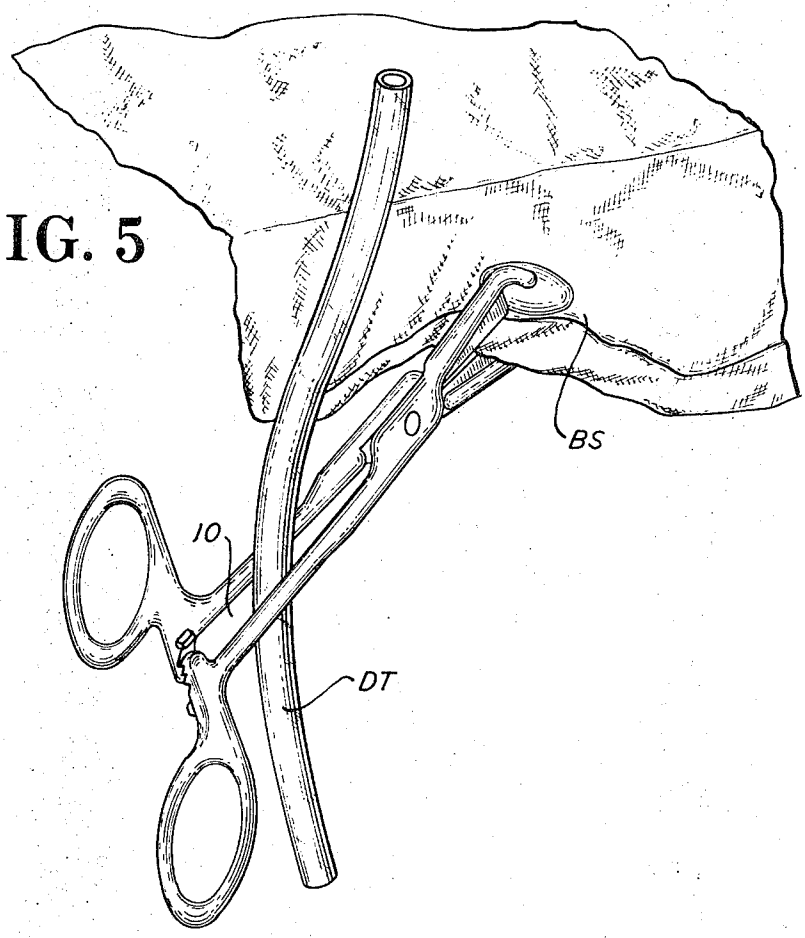


FIG. 4



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FIG. 5



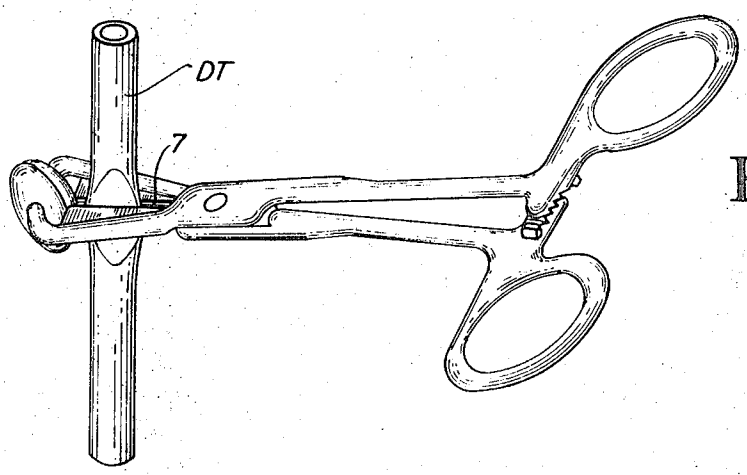


FIG. 6

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RADIOPAQUE CLAMP

It is an object of the invention to provide an inexpensive, disposable radiopaque surgical clamp having great strength and adaptibility for various uses, including attachments of tubing to bed clothes or to other surgical accessories (e.g., drapes) or even to human skin, with the tubing either patent or occluded, the clamp being releasably lockable.

The clamp operates, mechanically, not with the outer-end hinging of tweezers or forceps, but rather in the manner of scissors, hinged at a crossing point between the ends of identical halves. Pertinent but different examples of instruments operating in this manner are disclosed in Housepian U.S. Pat. No. 2,468,823 and Eizenberg U.S. Pat. No. 3,404,683.

The clamping surfaces are suitably oval in outline and knurled, with additional clamping edges on the minor arms of the instrument between said surfaces and the pivot point, said edges being so located that they can be moved toward each other, as the clamp is closed, but will stop out of contact when the clamping surfaces have been brought together. Adjacent the finger loops the major arms are provided with conventional complementary sawtooth latching means adapted to hold the major arms at a plurality of selected spacings while the clamping surfaces are engaged and the clamping edges substantially uniformly spaced.

A practical embodiment of the invention in shown in the accompanying drawing, wherein:

FIG. 1 represents an elevation of the clamp, in open position;

FIG. 2 represents an edge view of the clamp, in closed position;

FIG. 3 represents an elevation of the clamp, in closed position;

FIG. 4 represents a detail face view of one of the minor arms as viewed from the line IV—IV of FIG. 1;

FIG. 5 represents a perspective view of the clamp in use, gripping the side of a bed and retaining in position a drainage tube, and

FIG. 6 represents a perspective view of the clamp in use, occluding a drainage tube.

Referring to the drawings, it will be noted that the two halves of the clamp are identical, each comprising a major arm 1, a minor arm 2, a pivot portion 3, a finger loop 4, a saw-tooth latching finger 5 adjacent the finger loop, a knurled clamping surface 6 at the free end of the minor arm 2 and a straight flat clamping edge 7 between the portion 3 and the surface 6. Each pivot portion 3 has a flat land 3' lying in the medial longitudinal plane of the clamp and said portions are perforated to receive a rivet 8 which holds the lands 3' in facing relation and serves as a pivot.

Each clamping surface 6 is shown as having an oval outline and lying in a plane perpendicular to the plane of the land 3'. Each flat straight clamping edge 7 is constituted by an edge of a flat web or blade 9 projecting from the minor arm 2 and spaced from the surface 6 and extending to pivot portion 3. As shown in FIG. 3, the edges 7 are so disposed that they remain spaced and substantially parallel when the clamp is closed. The latching fingers 5 are of a length such that an open space 10 remains between the major arms 1 when the latch is engaged in any one of its positions (shown as numbering three), the width of the space 10 being variable according to the number of teeth which are engaged. At the base of each row of saw teeth is a projecting stop 11, in a position to engage the end of the opposite finger 5 and thus limit relative motion in the closing direction.

The clamp halves may conveniently be made by injection molding, using a radiopaque compound of nylon and glass fibers in substantially equal proportion. This material sets to form a stiff, strong unit, with sufficient elasticity to permit the clamping of various sized objects between the surfaces 6, and engagement of the latch by means of one, two or three teeth for varying degrees of security.

Examples of the manner in which the clamp may be used are illustrated in FIGS. 5 and 6. In FIG. 5 a drainage tube DT passes through the open space 10 while a bight of the bed sheet BS is strongly gripped between the clamping surfaces, the clamp here serving the purpose for which the crude make-shift of rubber band and safety pin are commonly provided. The tube DT is held freely or with light frictional engagement between the arms 1, 1, depending on the O.D. of the tube and position of the latch. In FIG. 6 the drainage tube DT is held between the clamping edges 7,7 and is tightly occluded by their pinching action. The closing pressure between the surfaces 6,6 is such that the clamp can be nondestructively engaged with an edge or flap of skin, and the edges 7,7 may be used as a hemostat. If a larger opening between said edges is desired for a special situation, one or both of the edges may be ground or pared down to provide as much space as needed.

What I claim is:

1. A surgical clamp constituted by two identical members, each member having a pivot portion, a major arm extending in one direction from said portion, a minor arm extending in an opposite direction from said portion, a finger loop on the free end of the major arm and extending laterally therefrom latching means on the major arm, adapted to hold the clamp in at least one closed position, a clamping surface on the free end of the minor arm, and a flat web integral with the minor arm, between the pivot portion and said clamping surface, a free edge of said web constituting a clamping edge, the pivot portion having a flat land lying in a plane longitudinally medial of the arms, finger loop, clamping surface and flat web, said identical members being pivotally connected by a pivot element passing through the pivot portions to hold the flat lands in face-to-face relation.

2. A surgical clamp according to claim 1 formed of a stiff, slightly resilient radiopaque material.

3. A surgical clamp according to claim 2 in which the material is nylon reinforced with glass fibers.

4. A surgical clamp according to claim 1 wherein the clamping edges are so disposed that they remain out of contact when the clamping surfaces are brought into contact.

5. A surgical clamp according to claim 4 wherein the space between said edges in their closed position is such as to occlude a tube placed therebetween without damage to such a tube.

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