

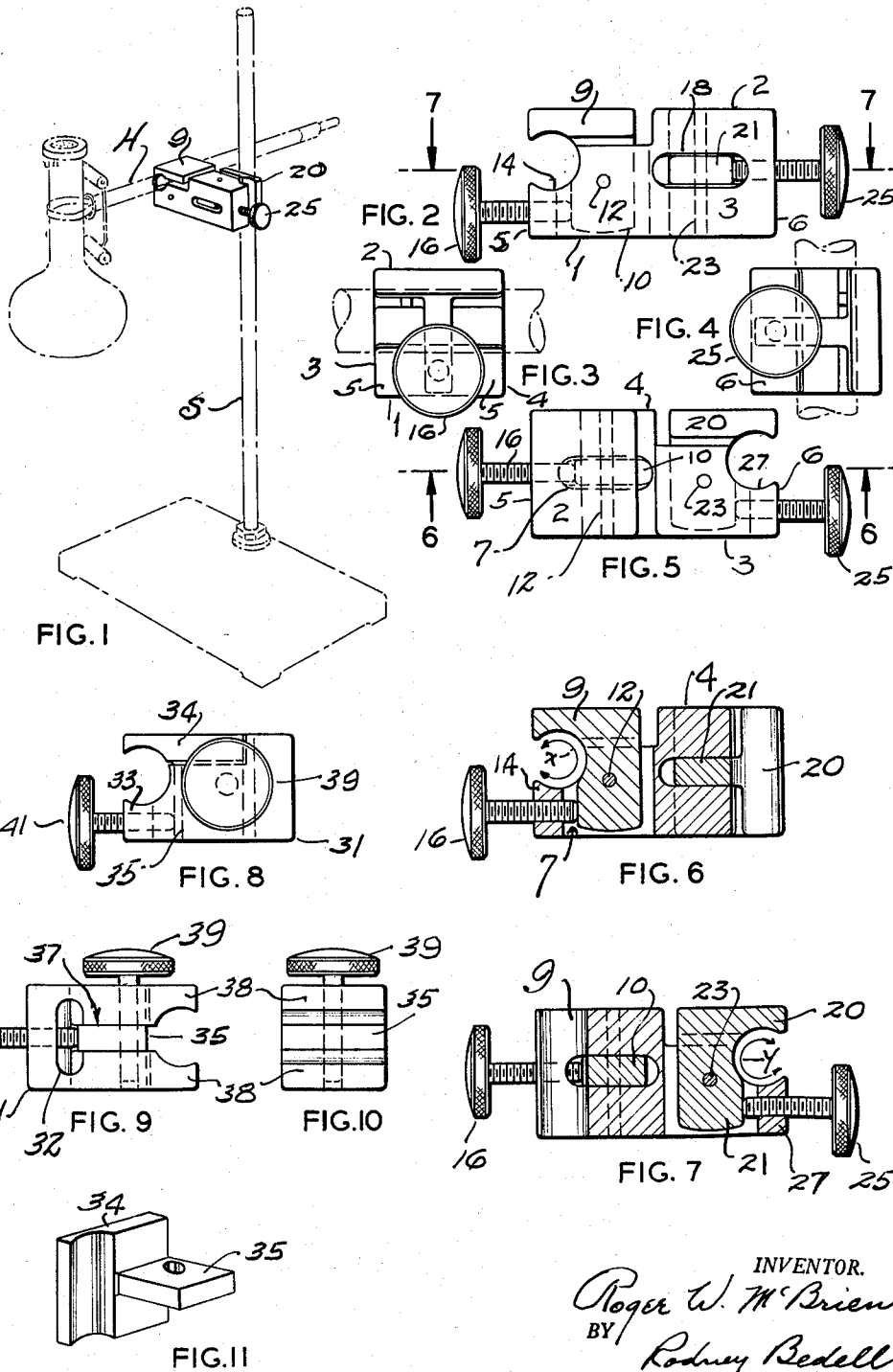
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LABORATORY CLAMP

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LABORATORY CLAMP

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7 Claims. (Cl. 24—81)

The invention relates to clamps particularly, but not exclusively, useful in mounting laboratory equipment such as holders for test tubes and flasks of a nature shown in Patent 2,693,015.

One object of the invention is to facilitate ready and easy tightening of a pair of clamp jaws about a rod or bar on which the clamp is mounted or which the clamp supports.

Another object is to combine two pairs of clamping jaws in a simple structure facilitating the tightening or loosening of the jaws of either pair.

Another object is to arrange the pairs of jaws and their tightening elements so that they may be readily enclosed in one hand and manipulated with the fingers of that hand while being applied to or removed from the mounting or the supported structure, thus leaving the other hand of the operator free.

Another object is to avoid the marring of the surface of a part gripped by the clamp.

These and other detail objects as will appear from the description below are attained by the structure shown in the accompanying drawings, in which:

Figure 1 shows, largely diagrammatically, the use of the clamp, indicated in solid lines, in association with an upright standard and a flask holder and flask indicated in dot-lines.

Figure 2 is a front view of the clamp shown in Figure 1.

Figure 3 is a view of the left hand end of the clamp.

Figure 4 is a view of the right hand end of the clamp.

Figure 5 is a view of the top of the clamp.

Figure 6 is a detail vertical section on line 6—6 of Figure 5.

Figure 7 is a detail horizontal section on line 7—7 of Figure 2.

Figure 8 corresponds to Figure 2, but illustrates another form of the invention.

Figure 9 is a bottom view of the clamp shown in Figure 8.

Figure 10 is an end view of the clamp as shown in Figure 9, looking toward the right hand end.

Figure 11 is a perspective of one of the clamp jaws.

The clamp shown in Figures 1—7 comprises a block-like body having a bottom 1, a top 2, a front face 3, a rear face 4, a left hand end 5 and a right hand end 6. The left hand portion of the block is slotted vertically from top face 2 to bottom face 1, as shown at 7. A movable jaw 9 of the same width as the block has a relatively narrow lug 10 received in slot 7 and pivoted to the jaw by a horizontal pin 12. The corresponding portion of the body is cut away to form a fixed jaw 14. The working surfaces of jaws 9 and 14 are arcuate in contour and the span X (Figure 6) from the edge of one jaw, around the jaws to the edge of the other jaw, slightly exceeds 180°. A clamping screw 16 is threaded into block end 5 and the inner end of the screw opposes the outer portion of lug 10. When screw 16 is threaded inwardly, jaw 9 is swung about pin 12 to move toward jaw 14 and clamp whatever is between the jaws.

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The clamp body is also slotted horizontally from front face 3 to rear face 4 as indicated at 18. A movable jaw 20 of the same depth as the body has a relatively shallow lug 21 received in slot 18 and pivoted to the body by an upright pin 23. A clamp screw 25 is threaded into the right hand end of the body and its inner end opposes the swinging outer end of lug 21 so that when the screw is tightened, jaw 20 is moved toward the fixed jaw 27 formed in the clamp body. The span Y from the edge of jaw 20 to the edge of jaw 27 corresponds to span X of the other pair of jaws.

It will be noted that when the clamp screws are slightly loosened the edges of the jaws will be spread apart sufficient to permit the lateral insertion or removal, transversely of its axis, of an elongated object to be clamped between the jaws, such as standard S, Figure 1, or holder H. The inner face of each screw head faces toward the outer end of its jaw, although spaced from it a substantial distance, thus accommodating the movement of the elongated object as described.

The clamp is readily held by the palm and fingers of one hand so that either the clamping screws may be manipulated by the thumb and first finger of the same hand.

Figures 2—7 are approximately full size of a convenient form of the clamp for laboratory use. An article gripped by the clamp is held between elongated surfaces of the jaws and is not contacted by the clamp screw, hence there is no distortion of the surface of the clamped object by the rotation of a restricted screw end, as characterizes clamps now generally used.

The arrangement shown in Figures 8—11 embodies a simpler and a smaller form of the invention, in which the clamp comprises a block-like body 31 having intersecting slots 32, 37. The lower portion of one end of the body is recessed to form an upwardly facing arcuate jaw 33. The right hand end of the body is recessed to form opposing laterally facing arcuate jaws 38. A movable jaw 34 has a lug 35 received in slot 37. A horizontal clamping screw 39 passes through the two halves of body 31, being threaded into the front half and freely received into the rear half, and also forms a pivot for lug 35 of jaw 34. A horizontal clamp screw 41 is threaded into the left hand end of the clamp body and opposes the forward edge of lug 35 below its pivot 39 (Figure 8). Screws 39 and 41 may be turned independently of each other to tighten or loosen jaws 33, 34 or jaws 38, 38 respectively.

This arrangement has all the previously mentioned advantages of the first form of the invention described above, and comprises fewer parts, namely, one less jaw and on pivot pins. The clamp is more readily produced because the body contour shown in Figure 9 may be made in aluminum or magnesium by a continuous extruding process, and the contour shown in Figure 8 provided by successive milling cut off operations in the extruded bar. The jaws used in both forms of the invention may be made from a continuous extrusion by successive milling cut off operations.

Each of the clamps attains the general object set forth in the introductory portion of the specification.

Other variations in the clamp structure may be made without departing from the spirit of the invention and exclusive use of those modifications covered by the claims is contemplated.

What is claimed is:

1. A clamp comprising a body forming a rigid jaw having a jaw face and having an elongated groove formed in the jaw face and concaved transversely of its length, there being a recess extending into the body from the bottom of said groove and intermediate the ends of said groove, a movable jaw having a jaw face and hav-

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ing a similarly elongated and concaved groove formed in the jaw face and opposing said first mentioned groove, said movable jaw having an integral lug with a part projecting beyond the grooved face of the movable jaw and received in said recess, a pivot pin extending through said body and lug parallel to the direction of elongation of said grooves but spaced from the latter, the outer portion of said lug extending beyond said pin, and a clamping screw threaded into the body near the outer edge of the groove therein and with its inner end bearing against said lug part, there being a manually operable head at the outer end of said screw adjacent to said body jaw face.

2. A clamp according to claim 1 in which the body comprises part of a block-like structure, the jaws described being positioned at one end of the block, there being another pair of cooperating grooved jaws remote from the first mentioned jaws and adjacent the other end of the structure and provided with a clamping screw threaded into one of them, the grooved faces of one pair of jaws being elongated in a direction substantially at right angles to the elongation of the grooved faces of the other pair of jaws, the head of the latter mentioned screw being adjacent to the groove of the jaw into which the latter mentioned screw is threaded.

3. A clamp of the type described comprising a block-like body and a member movable thereon, the body having a slot extending horizontally intermediate the top and bottom of the body from side to side of the body and being closed near one end of the body and opening through the opposite end of the body, elongated arcuate grooves extending from side to side of the body in the opposing faces of the slot and near the latter mentioned end of the body, there being an upright screw extending through the body transversely of the length of the slot and spaced inwardly from the adjacent grooves and having a shoulder bearing on the body upper face and threaded into the body below the slot, and serving to draw the grooved portions of the body together when tightened, the end of the body near the closed side of the slot having an arcuate groove elongated vertically, said member having an upright web, opposing said groove and being similarly grooved, and having a horizontal lug projecting into said slot and apertured to receive said screw as a pivot, and a second screw threaded into said block between said upright groove and the outer side of the block with its inner end bearing against the end of said lug to swing the latter about the pivot-forming screw and thrust the grooved portion of said member toward the opposing grooved portion of the body.

4. A clamp comprising a body having a slot extending from one end of the body inwardly throughout the major portion of the length of the body and forming a pair of opposing jaws at said end extending parallel to the general plane of said slot and for the full width of said body, said jaws being movable to and from each other by the distortion of the jaws, a headed clamp screw extending freely through one of said jaws and across said slot at a point spaced inwardly from the outer ends of the pair of jaws and threaded into the other of said jaws, a single jaw formed by said body at the end of the latter

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remote from said pair of jaws, an L-shaped member one arm of which is as wide as the body and is opposite to said body single jaw and the other arm of which L-shaped member being relatively thin and received in said slot and is pivoted on said clamp screw, and a headed clamp screw threaded into said body and clear of the space between the swinging end of said member jaw and the adjacent end of said body single jaw and engaging the outer end of said thin arm to swing it on its pivot and thrust the wide arm of said swinging L-shaped member toward the single jaw of the body.

5. A clamp according to claim 4 in which the axes of the two pairs of jaws are disposed substantially at right angles to each other.

6. A clamp of the type described comprising a body having a horizontal slot between the top and bottom of the body and extending inwardly from one end of the body and from side to side of the body, an L-shaped part having one leg disposed horizontally and received in said slot and having its other leg disposed vertically at one side of the body, there being complementary upright grooves in the opposing upright faces of said body at opposite sides of said slot and having a total arc across said slot slightly exceeding 180°, a clamp screw extending vertically through said body and leg and across said slot and spaced from said grooves, and a screw threaded into a face of the side of said body, having a head adjacent to but clear of said grooves and having an inner end bearing against said leg and tilting said L-shaped part on said body about said clamp screw to move the groove face on said part toward the opposing groove face on the body,

7. A clamp for gripping bars with their axes disposed angularly to each other, comprising a body having an integral jaw at each end each jaw having a concave groove elongated in one direction, movable jaws opposing said integral jaws respectively and separately mounted on the integral body to move toward and away from the corresponding body jaws, each integral jaw and the associated movable jaw having side edges spaced apart and defining an unobstructed opening between them for the insertion of an elongated bar into the jaws in a direction transversely of the length of the jaws, there being a headed screw threaded into the outer end of each integral jaw with its inner end disposed to engage the associated movable jaw and move it toward the integral jaw when the screw is rotated in one direction, each screw extending from the integral jaw past the opening between the latter and the movable associated jaw, and the inner face of the head of each screw facing toward said opening, but being spaced substantially from and clearing said opening to facilitate one-hand manipulation of the screw and a bar movable transversely of its length through the opening.

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