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QUICK ACTING CLAMP

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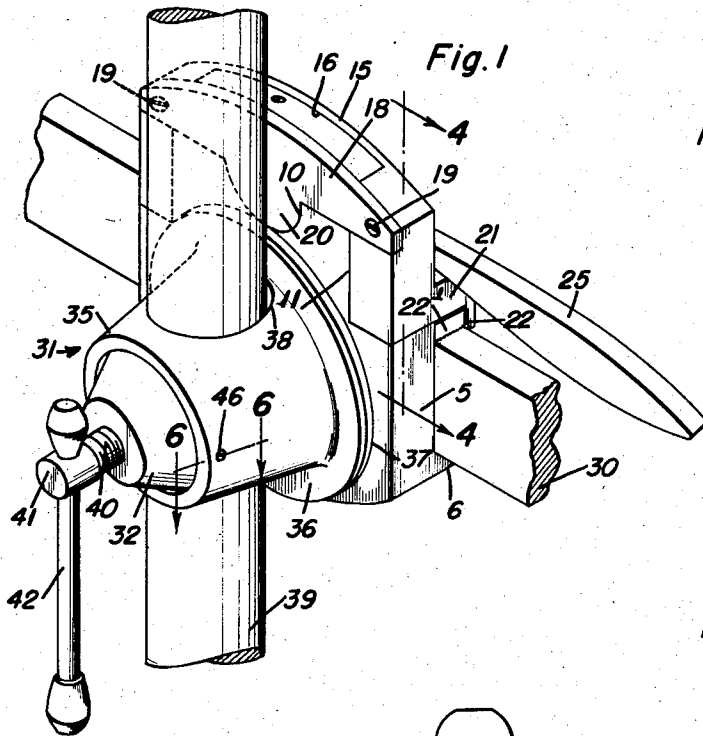


Fig. 1

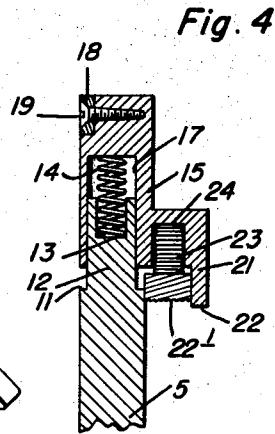


Fig. 4

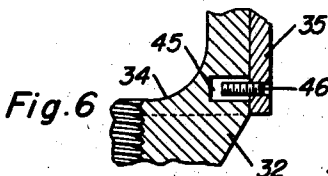


Fig. 6

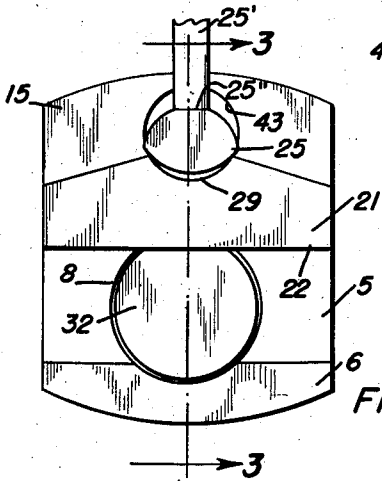


Fig. 2

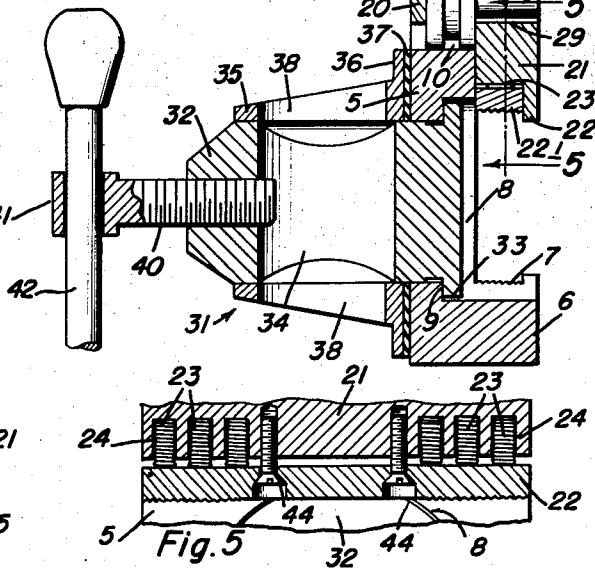


Fig. 3

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QUICK ACTING CLAMP

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3 Claims. (Cl. 248—41)

The present invention relates to new and useful improvements in quick acting clamps for use particularly on operating tables and has for its primary object to provide, in a manner as hereinafter set forth, a clamp comprising a novel construction, combination and arrangement of parts whereby a conventional limb support or rest may be expeditiously mounted for universal adjustment on the table rail.

Another very important object of the invention is to provide a clamp of the aforementioned character which may be readily applied to the rail at any desired point rather than over the ends thereof and which, further, is capable of longitudinal sliding adjustment on the rail.

Other objects of the invention are to provide a quick acting clamp of the character set forth which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, light in weight and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views; and wherein:

Figure 1 is a perspective view showing a clamp embodying the present invention in position on an operating table rail;

Figure 2 is a view in front elevation of the device showing the clamps in released position;

Figure 3 is a view in vertical section through the clamp, taken substantially on the line 3—3 of Figure 2;

Figure 4 is a fragmentary view in vertical section, taken substantially on the line 4—4 of Figure 1 but showing the clamps in released position;

Figure 5 is a fragmentary view in vertical section through the slidable jaw, taken substantially on the line 5—5 of Figure 3; and

Figure 6 is a fragmentary view in horizontal section through a portion of the bracket, taken substantially on the line 6—6 of Figure 1.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a plate 5 of suitable metal. Formed integrally with one end portion of the plate 5 is a flanged first jaw 6 comprising roughened or knurled face portions 7. Adjacent the jaw 6, the plate 5 has formed therein a circular opening 8 having a reduced end portion providing a shoulder 9.

The other end portion of the plate 5 has formed therein a circular opening 10. This end portion of the plate 5 is further provided with marginal recesses 11 which accommodate guide posts 12 (see Figure 4). The guides 12 have formed therein sockets 13 for the reception of compression springs 14.

Mounted for reciprocation on the guides 12 is a plate 15. The plate 15 is recessed, as at 16, to accommodate the transversely reduced upper portion of the plate 5. The plate 15 is further provided, in its end portions, with

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sockets 17 which receive the guides 12 for relative sliding movement between the guides 12 and the plate 15. The compression springs 14 yieldably support the plate 15. Recessed into the upper back portion of the plate 15 is a removable plate 18 which is secured in position by countersunk screws 19. The plate 18 includes a depending segment 20 which extends downwardly into the opening 10.

Formed integrally with the plate 15 is a second jaw 21 which is cooperable with the first jaw 6, said second jaw 21 including an integral flange 22. The jaw 21 further comprises a yielding face 22' in the form of a serrated bar of suitable metal which is slidably mounted on deeply countersunk screws 44 in said jaw 21. Compression springs 23 are provided between the face 22' and the jaw 21. Sockets 24 in the second jaw 21 accommodate the compression springs 23.

Mounted for swinging movement on the front portion of the plate 5 is a cam 25 which is actuated by a lever arm 25' secured to the cam 25 at 25''. The cam 25 includes, on its pivoted end portion, an integral trunnion 26 in the form of a disk which is journaled in the opening 10. The trunnion 26 has formed in its periphery a circumferential groove or channel 27 for the reception of a retaining screw 28 which is threaded in an opening provided therefor in the plate 5. The cam 25 which, as shown in Figure 3 of the drawing, is off-center on the trunnion 26, is operatively engaged in an arcuate recess 29 which is provided therefor in the second jaw 21 for moving said jaw toward the first jaw 6 against the tension of the compression springs 14. The jaws 6 and 21 are for the reception of an operating table rail therebetween, as at 30.

Projecting rearwardly from the plate 5 is a bracket which is designated generally by reference character 31. The bracket 31 includes a shank 32 which is rotatably and slidably mounted in the opening 8 in the plate 5 and which has formed therein a socket 45 (see Figure 6). A flange 33 on one end portion of the shank 32 engages the shoulder 9 for anchoring said shank in the plate 5. The shank 32 has formed therein a diametrically extending, elongated opening 34, the purpose of which will be presently set forth.

The bracket 31 further comprises a clutch sleeve 35 which is mounted for limited sliding movement on the shank 32. The sleeve 35 includes, on its inner end, a flange 36 which is opposed to the plate 5. A friction disk 37 of suitable material is interposed between the sleeve 35 and the plate 5 on the shank 32. A stop screw 46 on the sleeve 35 is engaged in the relatively large socket 45 in the shank 32.

The sleeve 35 has formed therein diametrically opposite, substantially ovate openings 38 which communicate with the opening 34 in the post 32. The communicating openings 34 and 38 are for the reception of the usual standard 39 of a conventional leg or limb support or rest on an operating table. A setscrew 40 is threaded longitudinally into the outer end portion of the shank 32 for engagement with the standard 39. The setscrew 40 includes an apertured head 41 having slidably mounted therein an operating bar or rod 42.

It is thought that the use or operation of the clamp will be readily apparent from a consideration of the foregoing. Briefly, the compression springs 14 yieldingly maintain the jaws 6 and 21 in open position. When in open position, the jaws 6 and 21 are far enough apart to permit the clamp to be readily applied to the operating table rail 30 at any desired point. After being thus mounted on the rail, the cam 25 is swung in either direction to move the second jaw 21 toward the first jaw 6 against the tension of the coil springs 14, thus firmly clamping the rail therebetween. The compression springs 23 permit the face 22' of the second jaw 21 to yield as may be necessary or desirable. Of course, to remove the

clamp from the rail, the cam 25 is simply returned to its original position, thus permitting the coil springs 14 to move the second jaw 21 to open position. With the standard 39 engaged in the openings 34 and 38 and positioned as desired, the setscrew 40 is tightened thereon through the medium of the operating handle 42. When the setscrew 40 is thus tightened, the clutch sleeve 35 and the flange 33 frictionally clamp the plate 5 therebetween for securing the desired adjustment. The standard 39, when engaged by the setscrew 40, urges the clutch sleeve 35 inwardly while the shank 32 is pulled outwardly. It will thus be seen that the rotary and sliding adjustment of the standard 39 and the rotary adjustment of the bracket 31 on the plate 5 are all secured through the medium of the single setscrew 40.

It is believed that the many advantages of a quick adjusting clamp constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A clamp of the character described comprising: a plate having a circular opening therein, said opening including a reduced portion providing a shoulder, jaws on the plate for receiving and clamping a support therebetween, a bracket including a shank rotatably mounted in the opening, said shank comprising a flange engaged with the shoulder for anchoring the bracket to the plate, a clutch sleeve rotatably and slidably mounted on the shank, said clutch sleeve being engageable with the plate and cooperable with the flange for securing the bracket in adjusted position, said shank and said clutch sleeve having communicating openings therein for the reception of a standard, and a set screw threadedly mounted in the shank and engageable with the standard for securing said standard in position on the bracket and for frictionally clamping said bracket in adjusted position on the plate.

2. A clamp comprising a vertical plate having a circular opening in its upper portion, a pair of upstanding guides on said vertical plate on opposite sides of said

circular opening, a first jaw fixedly carried by the lower portion of said vertical plate, a second jaw movable on said vertical plate and said guides for cooperation with said first jaw, said second jaw having an opening therein communicating with said first named opening, a circular disk rotatably journaled in said first named opening, a lever actuated cam fixed off-center on said circular disk, said cam being engaged with the wall of said second named opening and operable to move said second jaw towards said first jaw, and means extending between said vertical plate and said second jaw for urging said second jaw away from said first jaw.

3. A clamp comprising a vertical plate having a circular opening in an upper portion thereof, a pair of upstanding guides on said vertical plate on opposite sides of said circular opening, a first jaw carried by the lower portion of said vertical plate, a second jaw mounted on the lower portion of said vertical plate, said second jaw having an opening therein communicating with said first named opening, a circular disk rotatably journaled in said first named opening, a lever actuated cam fixed off-center on said circular disk, said cam being rotatable in said second named opening and engaged with the wall of said second named opening for moving said second jaw towards said first jaw and for retaining said second jaw on said vertical plate, and means for moving said second jaw away from said first jaw, said second jaw having sockets therein accommodating said guides, said means including compression springs mounted on said guides engaged under compression in said sockets and engaging said second jaw, said compression springs yieldingly urging said second jaw away from said first jaw and into engagement with said cam.

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