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ADJUSTABLE CLAMPS

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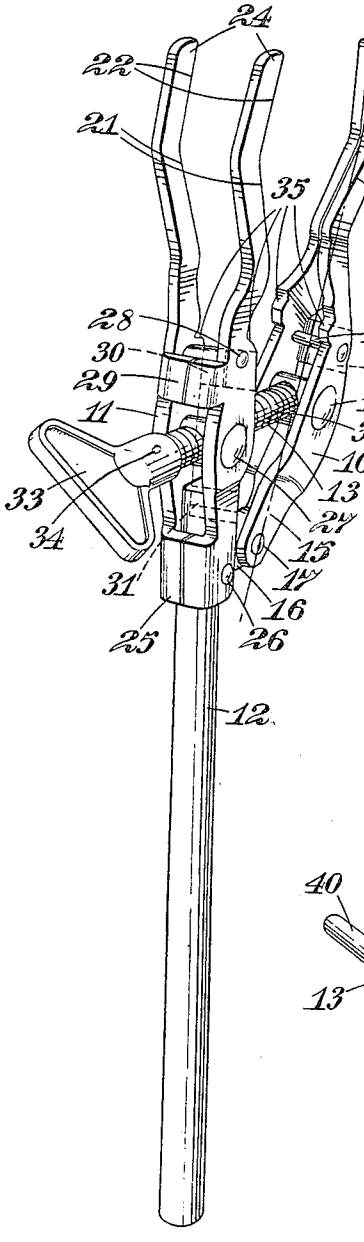
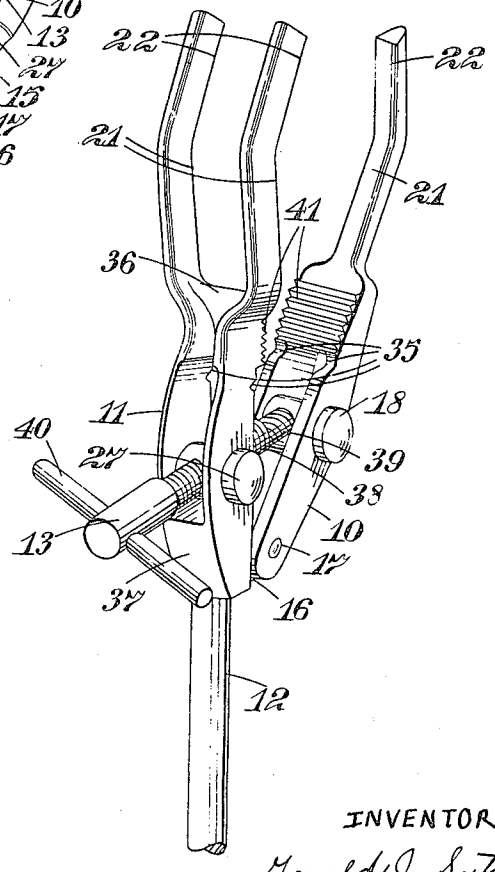


Fig. 1.

Fig. 2.



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ADJUSTABLE CLAMPS

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This invention relates to adjustable clamps particularly for use in laboratories and of the kind comprising a jaw fixed to a rod which may be secured to a stand, another jaw pivoted to the first said jaw or to said rod so that the jaws may be brought together or separated, and a screw jack between the paws to effect said movement. An object of the invention is to provide a construction of a clamp which is simple and cheap to manufacture.

According to this invention, an adjustable clamp of the kind referred to is characterised in that part of each jaw comprises two plates spaced apart, the extremities of the spaced plates on one jaw being arranged to straddle a lug extending laterally of said rod to which lug they are pivoted, trunnions rotatably mounted between each pair of plates and a screw jack associated with the two trunnions.

Preferably, the aforesaid lug is formed integrally with one of the jaws. The aforesaid screw jack may comprise a spindle formed with oppositely threaded portions along the length thereof, which threaded portions engage oppositely threaded bores in said trunnions.

In a preferred form of construction, each said jaw is formed from two plates stamped from sheet metal, which plates are spaced apart at required locations by suitable spacing elements and are held together by securing means. The means for securing the two plates together may comprise rivets extending through holes in said plates.

The extremities of one pair may lie flat against one another so that they may pass between the extremities of the pair of other plates which are spaced apart. The other ends of one pair of plates may be so shaped as to provide a socket for the aforesaid rod and a securing rivet may extend through said rod and through the walls of the socket.

The socket portion of the two plates may be provided with laterally extending ears which abut one another and form the aforsaid lug. The spaced portions of each pair of plates may be bridged at the base of the jaws so as to provide gripping by platforms which are preferably roughened and which lie flat against one another at the inner limit of movement of the jaws.

Niches may be formed in the adjacent edges of the two pairs of plates so as to grip small rods or tubes when the jaws approach one another.

The extremities of the jaws may be covered by rubber tubing in known manner.

In the case where the screw jacks are provided with quick pitch thread and are thus required to be of appreciable diameter, the aforesaid plates as they extend away from the socket portion in the one case and from the lug in the other case are provided with outward inflexions so that they are spaced apart sufficiently to accommodate the screw jack and the trunnions with which they engage.

The following is a description of two alternative forms of clamp according to the invention reference being made to the accompanying drawing in which—

Figure 1 is a perspective view on one form of clamp, and

Figure 2 is a perspective view of another form of clamp.

Referring to the arrangement shown in Figure 1, the clamp comprises four main integers, two jaws **10** and **11**, a supporting rod **12** attached to one jaw and a screw jack **13**.

Each of the jaws is formed from two mild steel plates which are stamped and pressed into the required shape. The outer gripping sections **14** of the plates forming the jaw **10** are arranged to abut one another, while the inner extremities **15** are splayed apart and straddle two lug portions **16** formed at the inner extremity of the other jaw **11** to which they are secured by a fulcrum pin **17**. Each of the plates forming the jaw **10** are provided with a hole for receiving a trunnion member **18** which is inserted before the two plates are secured to the lug portions **16**. The two plates are further held together by a rivet **19** and are spaced the required distance apart by inwardly bent lugs **20** formed on the two plates. The two plates are shaped to provide two gripping faces **21**, **22** at an angle to one another and capable of gripping a comparatively large object. The faces are so disposed that a line passing normal to the axis of rotation through the points of contact of the faces with any sized article passes through the axis of the pivot pin **17** one such line being indicated at **23**.

As indicated above, the other jaw member **11** is also formed from two plates, which are so shaped that the outer extremities **24** are spaced apart, so as to enable the outer extremity of the other jaw part **10** to pass between them. Each of the plates may be provided with V-shaped gripping faces **21** and **22** as described with reference to jaw **10**. Each of the plates at its inner extremity is provided with the aforesaid lug **16**, and with another lug **25** which is shaped to form a socket portion for the rod **12**. A rivet **26** is arranged to pass through the lugs and through a hole in the rod. Another trunnion member **27** is rotably mounted in holes formed in the two plates. The two plates are additional secured together by a further rivet **28**. The two plates are provided with inwardly bent ears **29** and **30** on opposite sides thereof adjacent the rivet **28**, and further ears **31** are provided adjacent the socket part **25** so as to space the plates at a required distance apart. The fulcrum members **18** and **27** are provided with cross bores which are internally threaded with opposite handed threads. The aforesaid screw jack comprises a spindle which has oppositely handed threads on either side of a centre portion **32**. One extremity of this threaded rod engages a socket on a manipulating piece **33** and is held in position by a pin **34**.

Each of the plates of the two jaws **10** and **11** are provided with niches **35** for gripping small diameter rods or tubes when the jaws are brought together. The gripping extremities of both jaws may be covered with rubber tubing.

With the above arrangement, when the jaws are clamped upon a cylindrical article a six point engagement results, four points on the jaw **11** and two points on the jaw **10**.

The arrangement shown in Figure 2 is very similar to that described above with the exception that each jaw part **10** and **11** is formed from a die casting avoiding the necessity of rivet for holding the two plates together, since the spacing members **36** are cast integrally with the plates, as is also the socket portion **37** and lug **16** on the jaw part **11**. The inner faces of the spacing members **36** are serrated as indicated at **41** in order to provide a vise in addition to the niches **35**. As in the previous construction the screw jack **13** is provided with two oppositely threaded portions **38** and **39** which in this instance are of different diameters. In place of the flat manipulating piece of the previous construction, the screw jack is

provided with a cross bar **40**. The arrangement and disposition of the flat gripping faces **21** and **22** are similar to the previous construction.

I claim:

1. An adjustable clamp comprising a rod, two jaws, each of which jaws is formed solely from two separate sheet metal plates, spacing means between each pair of plates, securing means holding the two plates together, one pair of which plates is formed both with a socket which grips the end of the rod, and a lug projecting from the socket, a pivotal connection between said lug and one end of the other jaw, a trunnion pivotally mounted between each pair of plates and disposed away from said pivotal connection, which trunnions are provided with opposite threaded bores and a screw jack engaging said threaded bores.

2. An adjustable clamp according to claim 1 wherein said spacing means comprise lugs formed integrally with the plates and wherein said projection on said socket is formed by two ears extending respectively from the two plates and abutting one another.

3. An adjustable clamp according to claim 1 wherein the outer extremity of each jaw is provided with two gripping faces arranged at an angle to one another, and so disposed in relation to the pivotal connection, that a line passing normal to the axis of rotation through the

two areas of contact between any circular article gripped by said two gripping faces intersects the axis of said pivotal connection.

4. An adjustable clamp according to claim 1 wherein the outer extremities of one pair of plates in one jaw lie flat against one another, whereas the outer extremities of the other pair of plates of the other jaw are spaced apart and are adapted to permit the extremity of the other jaw to pass between them.

References Cited in the file of this patent

UNITED STATES PATENTS

705,932	Kennedy	July 29, 1902
722,349	Young	Mar. 11, 1903
795,782	Porter	July 25, 1905
868,945	Sewall	Oct. 22, 1907
887,103	Lane	May 12, 1908
1,162,059	Hersey	Nov. 30, 1915
1,246,325	Rohmer	Nov. 13, 1917
1,386,084	Adamson	Aug. 2, 1921
1,409,233	Pataky	Mar. 14, 1922
1,895,156	Fisher	Jan. 24, 1933

FOREIGN PATENTS

219,939	Germany	Mar. 11, 1910