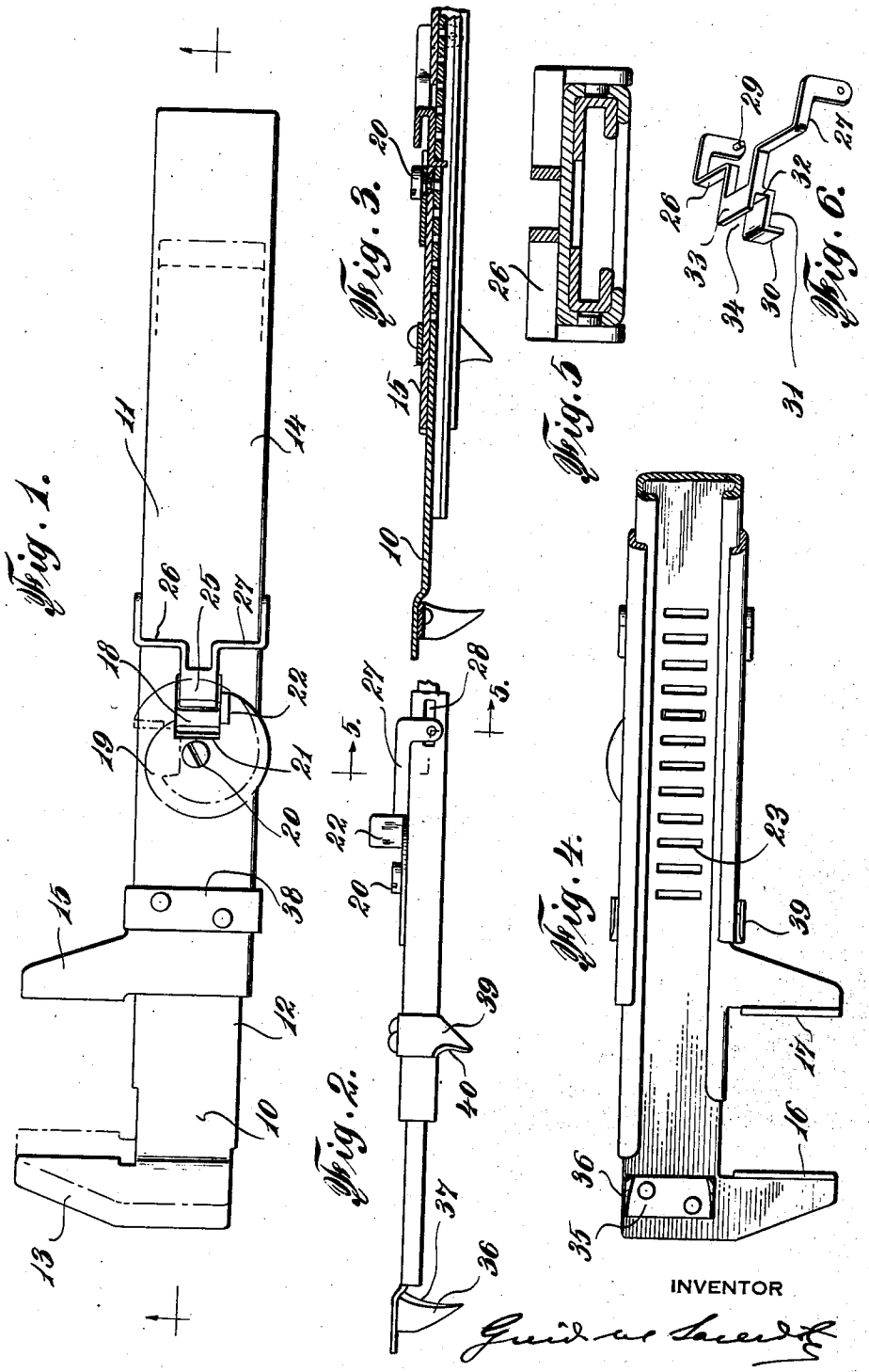
July 22, 1941. G. M. SACERDOTE 2,249,786

WRENCH AND JAR OPENER

Original Filed Jan. 29, 1930 3 Sheets-Sheet 1



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WRENCH AND JAR OPENER

Original Filed Jan. 29, 1930 3 Sheets-Sheet 2

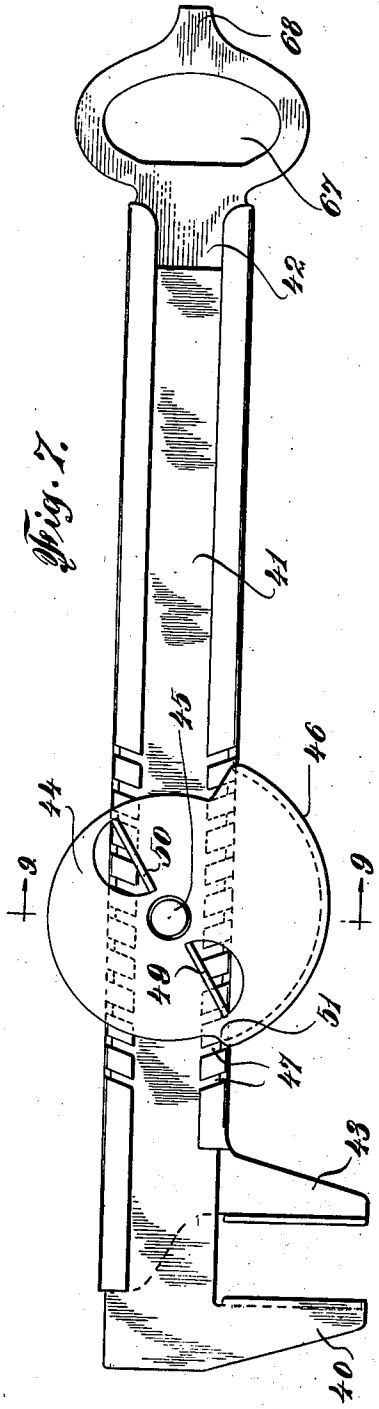


Fig. 7.

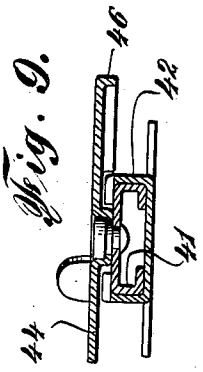


Fig. 9.

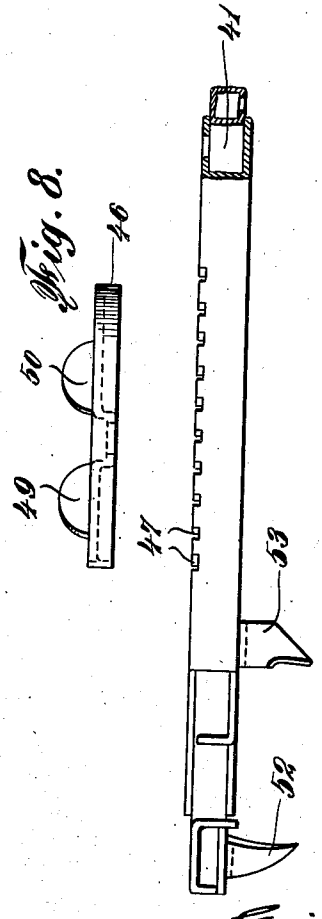


Fig. 8.

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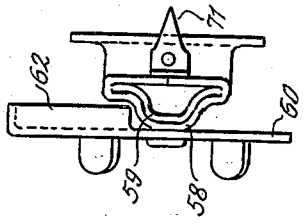


Fig. 12

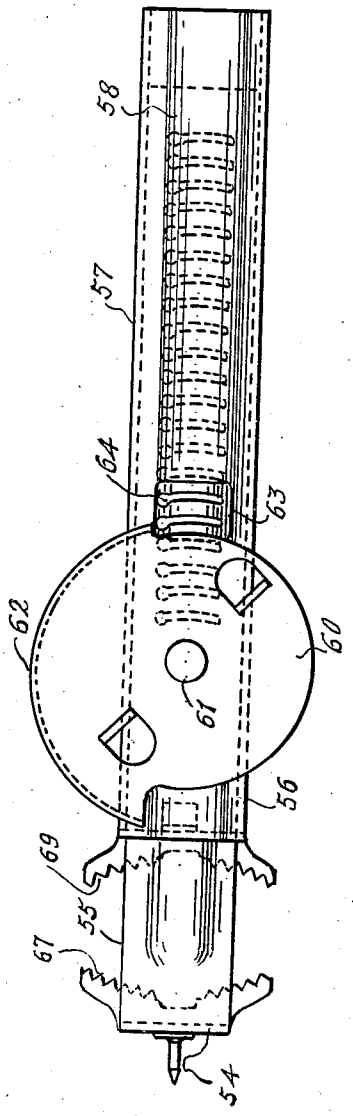


Fig. 10

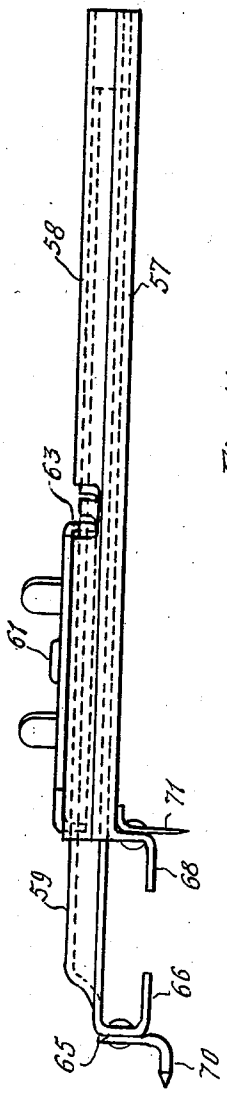


Fig. 11

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UNITED STATES PATENT OFFICE

2,249,786

WRENCH AND JAR OPENER

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Refiled for abandoned application Serial No. 424,201, January 29, 1930. This application March 17, 1939, Serial No. 262,439

4 Claims. (Cl. 81—128)

This invention relates to wrenches and more particularly refers to improvements in wrenches of the type in which two clamping members telescopically slidable in relation to each other are employed.

The primary object of this invention is to provide a wrench of a novel and improved design comprising two telescopically related clamping members adapted to be quickly set in or released from any desired position.

Another object is to provide a wrench of a novel and simple design in which the two clamping members can be quickly moved apart or towards each other, and set at a distance from each other slightly different from the one actually desired therebetween, said wrench being furthermore provided with means for thereafter effecting a relatively small displacement of one member in relation to the other, said means being also adapted to effectively lock the two clamping members against relative longitudinal movement.

A further object is to provide a novel and improved type of wrench which can be made out of sheet metal throughout, if desired, and which can, therefore, be manufactured at relatively low cost.

A still further object is to provide in a device of the character specified comprising two telescopically clamping members, means of a novel and effective character for effecting small relative adjustments of said two members and for retaining said two members in position.

An additional object is to provide in a device of the character specified comprising two telescopically related members, prongs or equivalent means associated therewith, adapted to firmly grip a cap or cover such as are currently used in preserve jars, for the purpose of turning said cap or cover loose from its seat.

Other objects and advantages of the present invention will more fully appear as the description proceeds and will be set forth and claimed in the appended claims.

Adjustable wrenches generally comprise two clamping members, formed with stem portions slidably or telescopically connected to each other, each stem portion terminating with a clamping portion or jaw laterally projecting therefrom, and means for adjusting the relative position of the two members and for retaining them in the adjusted position.

The adjusting means frequently comprise a nut rotatably mounted on one of the members and a threaded portion integral with the other member intermeshing therewith, and the nut being preferably provided with a square thread of relatively small pitch.

In other cases one of the members is provided with spaced notches or serrations while the other member is provided with means for engaging said notches or serrations locking the two members in position, said locking means being adapted to be disengaged from the notches or serrations, so as to allow relative adjustment of the two members.

By my present invention I have sought to retain all the advantages of the gradual adjustment obtainable by means of threaded elements, at the same time insuring quick operation of the device when the same is to be adjusted from one position to another.

Furthermore, the nature of my arrangement is such that the elements of which the device is composed can be produced at relatively low cost, so that an inexpensive and at the same time effective construction results.

The main characteristic of my invention resides in the provision of means adapted to become operative at spaced intervals for effecting fractional adjustments of the two clamping members; said means permitting rapid shifting of the two members from one position to another when inoperative and locking the two members in position when said adjusting means are made operative.

By virtue of this arrangement the wrench can therefore be quickly adjusted for major displacements of the two clamping members, and the minor supplementary adjustments thereof may also be instantly effected.

Various representative embodiments of my invention are illustrated in the drawings, in which:

Fig. 1 is a plan view of a wrench embodying my invention;

Fig. 2 is a fragmentary side elevation thereof;

Fig. 3 is a fragmentary longitudinal section thereof;

Fig. 4 is a fragmentary reverse plan view of the same;

Fig. 5 is a cross sectional view in an enlarged scale of the same through line 5—5 of Fig. 2;

Fig. 6 is a detail view in perspective of a movable dog used in the device of Figs. 1 to 5;

Fig 7 is a plan view of a device of somewhat different construction, also embodying my invention;

Fig. 8 is a fragmentary side elevation thereof showing the cam member detached;

Fig. 9 is a cross sectional view of the same through line 9—9 of Fig. 7;

Fig. 10 is a plan view of a device embodying my invention in still another alternative form;

Fig. 11 is a side view in elevation thereof; and

Fig. 12 is an end view in elevation thereof.

Referring to Figs. 1 to 6, it will be observed that the wrench to which this invention refers essentially consists of two clamping members one of which 10 for the sake of clarity I will call the male member and the other 11 I will call the female member. The male member is composed of a shank or stem portion 12 and a jaw portion 13 laterally extending therefrom, and in a similar manner the female member is composed of a shank or stem portion 14 and a jaw portion 15.

The stem portion 12 of the male member is inserted and slidably within the stem portion 14 of the female member, said stem portion 14 being channeled in section. When the two members are thus assembled in telescopic relation to each other, the two jaw portions 13, 15 are opposite to each other and form the clamping portions proper of the wrench.

The inner edges of the laterally projecting ends of said jaw portions are preferably turned at right angles to the body of the device, as shown at 16, 17, forming two parallel clamping surfaces, which may be moved towards or away from each other to fit different sizes of nuts.

The upper surface of the stem portion 14 of the female member is provided with an opening 18 and is also provided in proximity thereof with a cam member 19 rotatably mounted at 20. Said cam member is provided with a notch 21 which registers with opening 18 when the cam member is brought to a predetermined angular position, as shown in Fig. 1, by means of its handle 22.

The stem portion 12 of male member 10 is freely slidable within the channeled stem portion of the female member, and may be quickly brought to any desired position in relation thereto.

Said stem 12 is provided with a series of spaced transversal slots 23 which travel past opening 18 as the male member is made to slide in one direction or the other.

In operation when the surfaces of the two jaws 16, 17 have been brought against the faces of a nut on which the device is to be used, the cam member 19 is brought to the position shown in Fig. 1 where it clears opening 18, and the two clamping members are moved a trifle apart, enough to bring the slot 23 which is nearest the inner edge of opening 18 to an exposed point in close proximity of said edge. When this is done a dog 25 which is formed with two side arms 26, 27 mounted in longitudinal slots 28 provided at the sides of stem portion 14, so as to be tiltable about their pivotal supports 29 entering said slots, and so as to be capable of sliding longitudinally along said slots, is tilted frontwardly and downwardly causing its downwardly projecting lug 30 at the front to enter said slot 23 nearest the inner edge of notch 21.

Lug 30 extends downwardly from a plate 31 which will rest on top of stem portion 12 of the male member when the dog is lowered to its operative position. The outer end of said plate is bent upwardly to form end wall 32 and is then bent inwardly to form a lip 33 spaced from plate 31 a distance 34 sufficient to admit the thickness of cam member 19.

When dog 25 is inserted in position the upper surface of plate 31 remains flush with the upper surface of stem portion 14, so that cam member 19 can be rotated in a clockwise direction to lock dog 25 in position.

Once this is done the two clamping members are once more shifted towards each other until the inner surface of wall 32 strikes the edge of cam member 19. Opening 18 is longer than the distance between the front and rear walls of the dog, so that if the dog is made to slide along slots 28 when it is in its downward position with its plate 31 inserted within opening 18 said plate may travel a distance not less than that separating slots 23 from one another; so that if the dog becomes connected to the stem portion 12 of the male clamping member in the manner described, said male clamping member may be displaced longitudinally of the female member within the limits stated.

The clamping members are now once more inserted over the nut and cam member 19 is rotated in a clockwise direction thereby gradually forcing the male clamping member inwardly. As soon as the two clamping surfaces abut against the faces of the nut the wrench may be used in the ordinary manner, the two clamping members being securely locked against moving apart by the action of the cam member.

The eccentricity of the cam member is such as to effect a displacement of the male member corresponding to not less than the distance separating slots 23 from each other, when said cam member is rotated from one of its extreme positions to the other; so that a full adjustment of the two clamping members may be obtained for the entire range of displacement allowed by the slots 23, the large adjustments being readily effected when dog 25 is tilted outwardly to its inoperative position and the small adjustments being effected when the dog 25 is lowered to its operative position. The usefulness of the device as a household appliance can be considerably increased if the outer end of the male member is provided with a flange 35 formed with two spaced downwardly directed prongs 36 formed with a sharp inner edge 37 and if the female member is similarly provided near its clamping end with another flange such as 38, said flange being formed with two downwardly directed prongs 39 provided with a sharp inner edge 40.

The prongs are so shaped that they can firmly grip the crown of an ordinary preserve jar cap when the wrench is operated in the manner described.

In Figs. 7 to 9, I illustrate an alternative embodiment of my invention. In the same, 40 designates the male clamping member, formed with a male stem portion 41 which is slidably inserted through channeled stem portion 42 of the female clamping member 43.

At a point along its stem portion the male member carries a cam member 44 pivotally mounted at 45, said cam member projecting above and across the surface of female stem portion 42. Said cam member is provided with a downwardly extending segmental cam shaped rim portion 46 which extends below the level of the surface of female stem portion 42. However, when the cam member is in a certain position as shown in Fig. 7, said rim portion entirely clears stem portion 42, and, therefore, it is possible to freely cause sliding movement of the male member in one or the other direction.

The surface of the female stem portion 42 directly underneath the cam member is formed with a number of spaced indentations or notches

47, shaped to permit the rim portion 46 of the cam member to enter and slide therethrough when the cam member is rotated.

The cam member may be turned around its pivot by means of two diametrically opposed wings 49, 50 upwardly projecting therefrom, and rotation of the cam member may be effected at any time the inner end 51 of rim portion 46 registers with one of the notches 47. The eccentricity of rim portion 46 is such as to cause an inward displacement of the male member in relation to the female member of not less than the distance separating notches 47 from one another when the cam member is displaced from one of its extreme operative positions to the other.

The device is used in the following manner: the two jaws of the clamping member are rapidly brought against the faces of the nut to be inserted in position or removed therefrom, while the cam member is left in its inoperative position shown in Fig. 7. This being done the two jaws are moved slightly apart enough to cause end 51 of rim portion 46 to register with the nearest notch 47, and the same member is rotated in a clockwise direction causing the two clamping members to become locked against relative longitudinal movement except for the small gradual inward displacements of the male member which take place as the cam member is rotated with its rim portion through the notch 47 and its corresponding notch 48.

In this manner the two jaws of the clamping members may again be brought to the proper distance for embracing the nut, and when this position is reached the movement of the cam member will be terminated and the device is ready for use.

This type of construction has the advantage over the one previously described of requiring only three main parts instead of four; on the other hand its eccentricity is limited to possibly a 120° arc while in the previous case the same amount of eccentricity may be distributed along an arc of possibly 330°; therefore, in this case a much smaller cam is needed for the same amount of longitudinal displacement of the male member.

Also in this case both the male and the female member can be provided with downwardly directed prongs such as shown at 52, 53 in order to extend the usefulness of the device to the opening of jars and similar receptacles.

In Figs. 10 to 12 I illustrate a preferred embodiment of my invention, also requiring only three main parts. In the same 54 designates the male clamping member formed with a male stem portion 55, which is slidably inserted through channeled stem portion 56 of the female clamping member 57.

The upper part of the female clamping member is embossed to form a central longitudinal ridge 58, and the male clamping member is similarly embossed to form a central longitudinal ridge 59, nesting within ridge 58 when the stem 55 of the male member is inserted through the longitudinal opening formed by the female member.

At a point along its ridge 58 the female member carries a cam member 60, pivotally mounted at 61, said cam member being similar to the one described in connection with the device of Figs. 7 to 9, that is, being in the form of a flat disk provided with a downwardly extending segmental cam shaped rim portion 62, which extends below the level of the surface of ridge 59 of the male member, said ridge rising above the level of the top surface of the sides of the female member, as Fig. 12 clearly shows.

The upper part of the female member is also provided with an opening 63, spaced from the pivot 61 of the cam a distance permitting free play of the rim portion 62 of the cam when the cam is rotated in a clockwise direction from its normal inoperative position shown in Fig. 10. The stem of the male member is correspondingly provided along its ridge 59 with a series of transversal slots 64, adapted to be engaged by the rim portion 62 of the cam and co-act therewith in producing fractional displacements of the male member in the clamping direction. It will be understood that also in this case the eccentricity of the rim portion 62 of the cam is sufficient to cause an inward displacement of the male member in relation to the female member of not less that the distance separating slots 64 from one another.

The male and female member forming part of the device can be provided with any type of jaws suitable for the work for which the device is intended. In the drawings, the device is illustrated in the form of a jar opener, the forward end of the male member being bent downwardly, as shown at 65, and then inwardly to form a jaw 66 having a serrated edge 67, said jaw being vertically spaced from the stem 55.

The bottom part of the female member similarly has its front end bent downwardly as shown at 67 and then inwardly to form a jaw 68 having a serrated edge 69, said jaw 68 being level with the jaw 66 of the male member.

The two jaws 66, 68 are so shaped as to be adapted to firmly clamp the threaded top of a jar therebetween and owing to their shape, when set at the proper distance from each other, they can also be used to remove the cap from a beer bottle in a well known manner.

If desired, the device can also be equipped with a pointed prong 70 forwardly extending from the front end of the male member and a cutting blade 71, downwardly extending from the front end of the female member. When thus equipped the device can also be used to open ordinary cans by puncturing and inserting the prong 70 through the center of the top of the can and by using it as a pivot to rotate the device after the blade 71 has been forced through the top in proximity of the periphery thereof in a well known manner.

It will be observed that by providing suitable graduations on the male member and on the cam, the constructions herein illustrated can also be applied for producing calipers and kindred devices.

The specific details of construction of my device may be modified in other ways without departing from the inventive idea. The drawings will, therefore, be understood as being intended for illustrative purposes only and not in a limiting sense.

I accordingly reserve the right to carry my invention into practice in all those ways and manners which may enter, fairly, into the scope of the appended claims.

This application is a substitute for my abandoned application Serial No. 424,201, filed Jan. 29, 1930.

I claim:

1. A device of the class described comprising a sheet metal male clamping member having a relatively wide and thin shank portion, a sheet metal female clamping member formed with a

shank portion having its edges bent inwardly to form a channeled structure slidably embracing the shank portion of said male clamping member for substantially the full length thereof, said female shank portion acting as a handle for the device, one of said members being fixed and the other being longitudinally shiftable with relation thereto, a disc shaped cam member pivotally mounted on and abutting the outer surface of said fixed clamping member, said cam member being rotatable in a plane parallel to the plane of said clamping member, said cam member having a peripheral cam acting rib portion bent inwardly substantially at right angles to the plane thereof, and cam engaging means including perforations through the body of the movable clamping member, cooperating with said cam member in effecting relative fractional adjustments of said two clamping members.

2. A device of the class described comprising a sheet metal male clamping member having an elongated shank portion, a sheet metal female clamping member comprising an elongated shank portion having its edges reflexed inwardly and forming a channeled structure slidably embracing said shank portion of the male clamping member for substantially the full length thereof, one of said members being fixed and the other being longitudinally shiftable with relation thereto, a sheet metal cam member pivotally mounted on and abutting the outer surface of said fixed clamping member, said cam member being rotatable in a plane parallel to the plane of said clamping members, said cam member having a peripheral cam acting rib portion inwardly bent substantially at right angles to the body thereof and having two diametrically opposite radially directed lugs offset from and bent outwardly of the body thereof, and cam engaging means including perforations through the body of the movable clamping member, cooperating with said cam member in effecting relative fractional adjustments of said two clamping members.

3. A device of the class described comprising a male clamping member having a relatively wide and thin shank portion, a female clamping member having a shank portion slidably embracing the shank portion of said male clamping member, said female shank portion having an opening uncovering part of the surface of the male shank portion, said male shank portion having a series of longitudinally spaced perforations and a disc shaped cam member, pivotally mounted on and abutting the outer surface of said female member, rotatable in a plane parallel to the plane thereof, said cam member having a peripheral cam acting rib portion inwardly bent substantially at right angles to the body thereof, engageable with said perforations through said opening to effect relative fractional adjustments of said two clamping members.

4. A device of the class described comprising a sheet metal male clamping member, a sheet metal female clamping member having its edges reflexed inwardly and forming a channeled structure slidably embracing said male clamping member, said female member having a shank portion embossed to form a central longitudinal ridge, said male clamping member having a shank portion similarly embossed to form a central longitudinal ridge nesting within the ridge of the female member, said female shank portion having an opening through said ridge uncovering part of the surface of the ridge of the male shank portion, said male shank portion having a series of longitudinally spaced perforations through its ridge, and a rotary cam member, pivotally mounted on said female shank portion and engageable with said perforations through said opening to effect relative fractional adjustments of said two clamping members.

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