Sept. 3, 1963 E. G. VAUDREUIL 3,102,723

C-CLAMP

Filed Oct. 7, 1960

FIG. 1

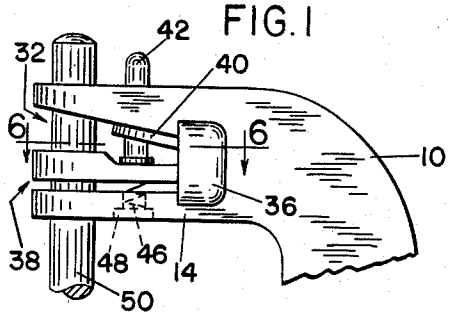


FIG. 2

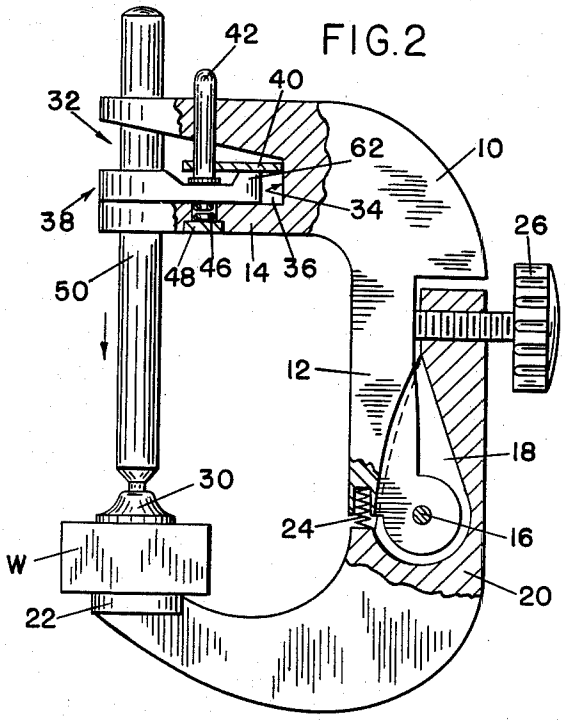


FIG. 3

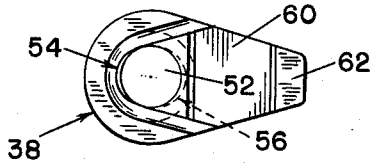
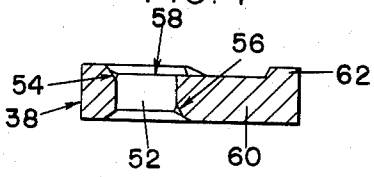


FIG. 4



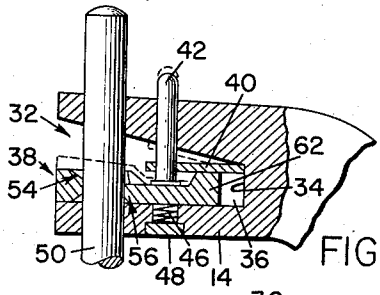


FIG. 8

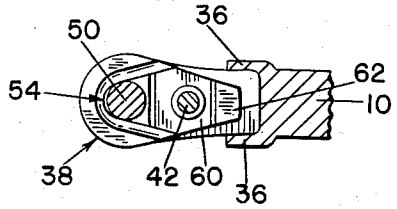
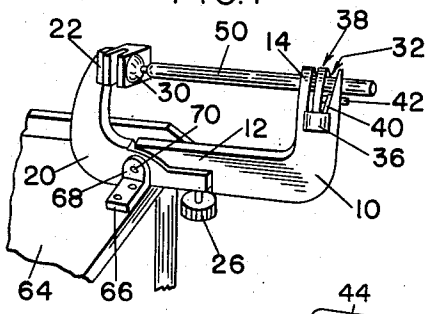


FIG. 6

FIG. 7



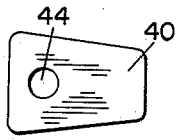


FIG. 5

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C-CLAMP

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2 Claims. (Cl. 269—101)

This invention relates to a new and improved fast-action C-clamp and it represents improvements over United States Patent No. 2,947,333 issued August 2, 1960, and is a continuation-in-part of Serial No. 41,426, filed July 7, 1960, and now abandoned.

The principal object of the present invention resides in the provision of a two-part C-clamp having means for instantaneous and long-range adjustment of a movable initial clamping member, together with means for locking the same automatically by means of a cockable washer, said cockable washer being improved so as to operate smoothly, quickly and efficiently without damage to the parts, said cockable washer being provided with an aperture through it to accommodate a sliding clamping rod on one part of the clamp with relation to an anvil on the other part and including new and improved means comprising an additional washer in association with a finger-operated cockable washer releasing device for the smooth and instant operation of the same to release the clamping member; and the provision of certain specific details of the invention including new and improved means for holding the cockable washer and the additional washer in place in a recess in the main frame of the C-clamp.

Another object of the invention resides in the provision of a base adapted for mounting the new and improved C-clamp in position on a bench so that both hands of the operator may be free to set for instance several small pieces with relation thereto, the body of the operator then being utilized to move the clamping member into clamping relation with respect to said pieces against the anvil of the device, whereupon the pieces are held in such a manner that the operator can release the pieces and the C-clamp tightening member may then be utilized to clamp the pieces tighter if this should be desired or convenient.

The invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly set forth in the appended claims.

Reference is to be had to the accompanying drawings, in which

FIG. 1 is a view in side elevation illustrating the invention, the cockable washer being held out of cocked position due to the pin 42;

FIG. 2 is a similar view with parts in section;

FIG. 3 is a plan view of the new cockable washer;

FIG. 4 is a sectional view thereof;

FIG. 5 is a plan view of the additional washer;

FIG. 6 is a sectional view on line 6—6 of FIG. 1;

FIG. 7 is a perspective view showing a support for the clamp, and FIG. 8 is a fragmentary sectional view showing the action of the washer.

In carrying out the present invention, there is provided a main frame member which is indicated by the reference numeral 10 and this includes a relatively elongated member 12 and a transverse or end member 14. The elongated member 12 is a part of the frame of the C-clamp, being pivoted as for instance by a pin indicated at 16 which extends through a central thinner portion of member 12, the latter extending down into a corresponding recess 18 in the other clamp member part 20 which includes the anvil 22. The members 10 and 20 are thus pivoted relative to each other and a small spring 24 is utilized to urge the members in a non-clamping direction, there being a relatively large thumbscrew or

the like 26 threadedly associated with member 12 and bearing on the reduced portion of member 12 in order to move the anvil 22 and the adjustable clamping foot at 30 relatively closer to each other for additional clamping purposes.

The transverse portion 14 of the main frame member 10 is transversely slotted as indicated at 32. This slot is tapered as shown in FIGS. 1 and 2, and at the small end thereof which is located inwardly from the open end or larger end of the slot, there is a recess 34 and integral side members 36, 36 are provided to close this recess at the side surfaces.

The recess holds therein a cockable washer generally indicated at 38 and an additional washer 40. Since the frame members may be made of cast aluminum, and the cockable washer 38 is steel, it has been found that simply by inserting an additional loose washer 40 made of steel in the recess and holding the same by a headed thumb-operated pin 42 which extends through a hole 44 therein, damage is prevented to the wall of the recess 32. The washer 40 impinges on the wall flatly, but washer 38 impinges at an angle at portion 62 thereof, under influence of a small spring 46. Otherwise, the washer 38 at portion 62 would cause pitting of the aluminum frame member to such a degree as to cause the device to become generally inoperative because the cockable washer would tend to stick to the frame member where it impinges it, causing nicks. The pin 42 is assembled by dropping it, with the clamp inverted, through a hole in the frame 14, which hole is later plugged as at 48. The head of the pin rests on the cockable washer which is held in position by rod 32.

Special attention is directed to the cockable washer 38, the details of which are best shown in FIGS. 3 and 4. This cockable washer is in a kind of key-hole shape having an enlarged portion at one end, this enlarged portion being apertured for the reception of the clamping rod 50, the aperture in the cockable washer being indicated at 52. This aperture is not strictly a straight-through aperture but is chamfered as at 54 and 56. The chamfer 54 is in the top forward edge thereof so that when the cockable washer is in its uppermost position as in FIG. 1, i.e., the clamping position thereof, no such sharp edges as are indicated at 58 impinge upon the clamping rod 50 to pit it. It has been discovered by the present inventor that by chamfering the edges of the aperture 52 at the approximate locations 54 and 56 making the same generally parallel, and generally parallel to the rod 50 when in clamping position of the washer, a much better holding action is accomplished because of broader gripping surfaces than the mere edges of the aperture. Also, the rod either is gouged by the sharp edges, or if the aperture be made large enough to avoid gouging the cockable washer does not actually hold the clamping rod and the clamping action thereof is lost. In FIG. 2 the washer would be up, in locking condition but is shown as down and unlocked, as is the case when the operator pushes down on pin 42.

In addition the cockable washer 38 is provided with a reduced portion at 60 and a correspondingly raised portion at the narrow end thereof at 62. This raised portion at 62 forms a support for the additional washer 40, see FIG. 2, and supports the same in the position shown when the pin 42 is in the down position as in FIG. 2, releasing the rod 50 which then may be easily pushed downwardly to clamp the work W as will be clear to those skilled in the art.

By providing the new cockable washer as stated, the device is found to operate freely and quickly without frictional sticking and without injury to any of the parts as described.

Referring now to FIG. 7 there is shown a workbench **64** and on this workbench are a pair of brackets **66** having ears **68** supporting a pin **70** which replaces the pin **16**. The entire clamp is then usable horizontally as shown in the figure and the anvil and clamping foot **30** may be used to hold small parts, the operator using both hands to hold the parts therein while he pushes with his chest against the end of the rod **50** so as to complete the clamping action. Then with the pieces in this position, the operator can hold the pieces with one hand and release rod **50** by pushing pin **42** with the other hand to free the work.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A clamp comprising a generally C-shaped frame including two interpivoted parts, one part being apertured, an anvil on the other part and a slidable rod in the aperture to clamp a piece to the anvil, means moving said parts for a relatively slight motion toward and from each other, the part having the rod being slotted, a cockable washer to latch the rod at any point in its motion, resilient means normally holding the washer cocked in rod-latched position, and means to momentarily release the washer from cocked rod-latching position at the will of the operator to free the rod, said means to move the parts being operable to clamp the workpiece, said cockable washer being apertured to slidingly receive the rod and the aperture in the washer having its edges chamfered to provide substantially parallel surfaces for latching contact with the rod, one chamfer being at one side of the washer and one side of the aperture in the washer and the other chamfer being located at the opposite side

of the washer and the aperture in the washer, the cockable washer being located in the slot, and an additional washer interposed between the cockable washer and a wall of the slot, said additional washer acting as a protective buffer.

2. A C-clamp comprising a generally C-shaped frame including two parts each having a portion thereof facing the other in spaced relation, means pivoting said parts for a relatively slight motion of said facing portions toward and from each other, means to positively pivotally move one portion toward the other portion, means on the latter for slidably supporting a rod for relatively great motion toward and from the said one portion, a cockable washer to latch the rod at any point in its motion, means to momentarily release the washer at the will of the operator to free the rod, said means to pivotally move the one portion being operable to clamp the workpiece, said pivoting means for said parts comprising a pin and a bracket member for mounting said pin on a support in generally fixed position, one clamp part resting on said support and the C-clamp being located in upright horizontal position thereon by the bracket.

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