Dec. 14, 1948. J. E. HASTINGS 2,456,505

CLAMPING UNIT FOR SURFACE GAUGES OR THE LIKE

Filed Jan. 5, 1946

Fig. 1.

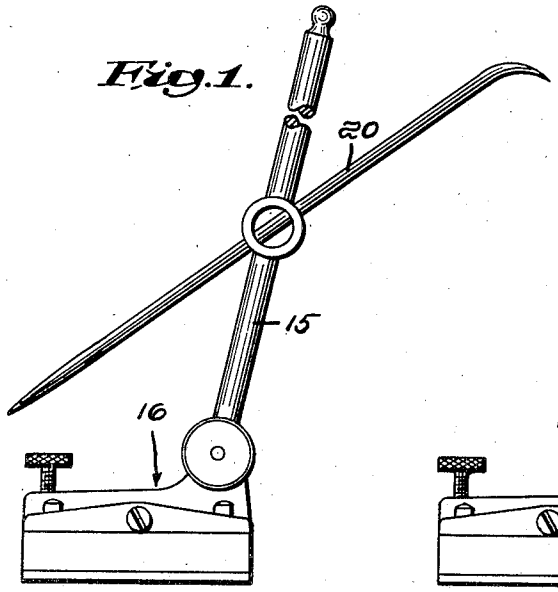


Fig. 2.

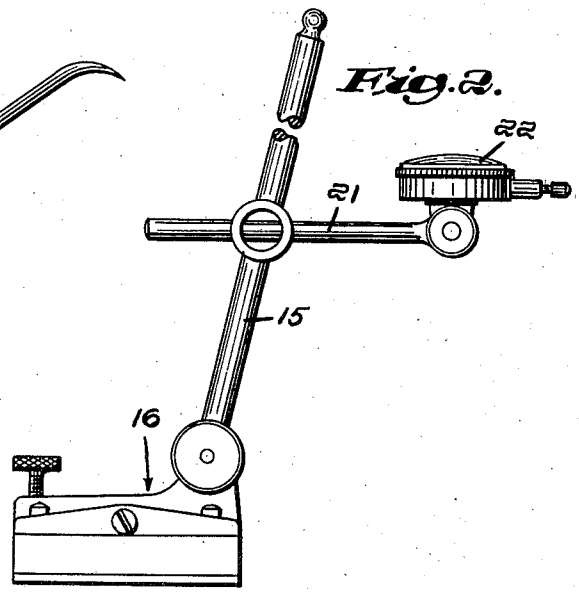


Fig. 3.

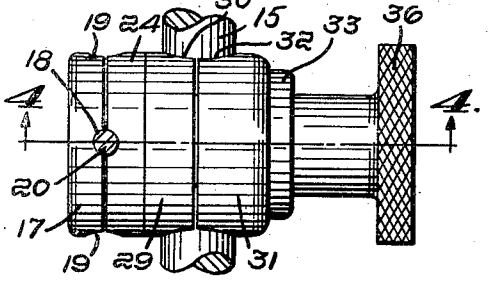


Fig. 4.

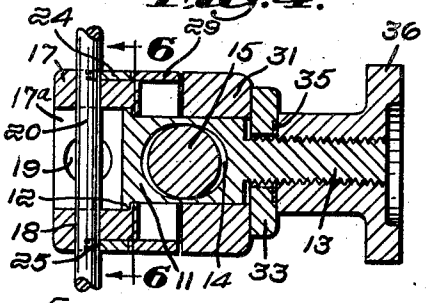


Fig. 5.

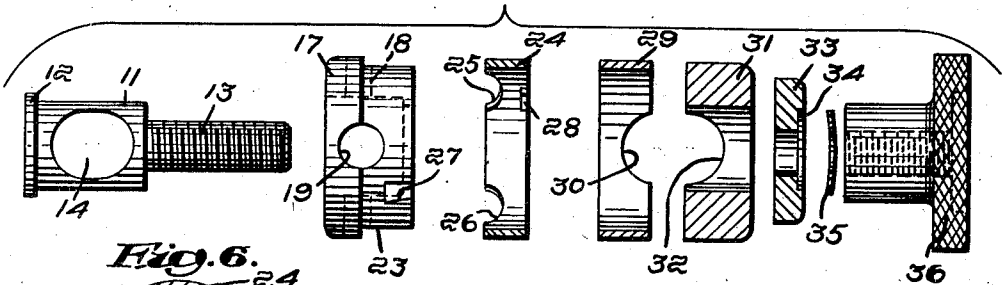
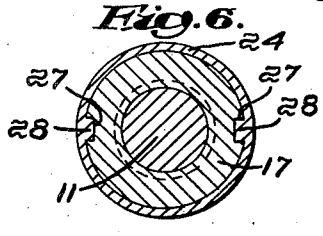


Fig. 6.



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CLAMPING UNIT FOR SURFACE GAUGES OR THE LIKE

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6 Claims. (Cl. 248—124)

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My present invention relates to clamping devices and more particularly to clamping devices or "snugs" adapted for use on surface gages and other precision tools and accessories.

The type of clamp usually employed for this purpose comprises substantially a U-shaped body having passages arranged therethrough at right angles to enable the device to be supported on a standard or spindle and to support a tool or other instrumentality. Such a clamp, while in the main satisfactory, does not always remain in adjusted position on the standard or spindle of a surface gage or the like, nor does it hold the tool or other instrumentality in fixed, adjusted position, without the exertion of considerable clamping force.

In my present invention, prior defects have been obviated, and I have devised a structure easily adjusted and readjusted on the standard or spindle of a surface gage or the like, and in which but a single clamping screw is employed both to hold the device on the standard or spindle of the surface gage, and to hold the tool to be used on the clamp itself.

An object of my invention therefore, is an improved clamping device or "snug."

Another object of my invention is an improved clamping device or "snug" having a plurality of clamping elements operated by a single clamping screw.

A further object is an improved clamping device or "snug" having a plurality of clamping elements mounted on a single clamping screw and rotatable thereon to adjust the clamping elements relative to each other.

In the accompanying drawings wherein I have illustrated a preferred embodiment of my invention:

Figure 1 is a side elevation of a surface gage of conventional type showing my improved "snug" applied to the standard or spindle thereof and showing such snug holding a scriber.

Figure 2 is a view similar to Fig. 1 but showing a conventional dial indicator and its mounting supported on the standard or spindle of the surface gage by my "snug."

Figure 3 is a side elevation of my snug in clamped position.

Figure 4 is a horizontal section on the line 4—4 of Fig. 3.

Figure 5 is an exploded view of my "snug", and

Figure 6 is a cross section on the line 6—6 of Figure 4.

Referring to the drawings, and particularly to Figs. 3, 4, and 5, there is shown a clamping bolt

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comprising a body 11 having at one end an enlarged head 12 and at the other end a screw-threaded stem 13. Extending diametrically through the body 11 is an oval opening 14 of a size to slip easily onto a standard or other support, as the standard or spindle 15 of a surface gage, designated generally by the reference character 16 in Figs. 1 and 2.

The clamping bolt 11 extends axially into and through, as a slidable and rotatable fit, a cylindrical member 17, and the rear end of such member is bored out to provide a cylindrical cavity 17a in which is housed the head 12 of the clamping bolt. The member 17 has drilled therein at least two pairs of diametrically opposite holes 18 and 19. Holes 18 and 19 are arranged at right angles to each other, and one pair of said holes, as 18, may be of a size to receive as a slidable and rotatable fit a scriber 20 (see Fig. 1), while the other pair 19 may be of a size to receive in like manner the mounting bar 21 of a dial indicator 22 (see Fig. 2). The scriber 20 and mounting bar 21 of dial indicator 22 are merely indicative of what may be placed in the pairs of holes 18 and 19.

The outer, or right hand end, of the cylindrical member 17 is reduced in diameter as indicated at 23, such portion of reduced diameter extending to the left, as viewed in Figs. 3, 4, and 5, to the center lines of the pairs of holes 18 and 19. On such portion 23 of reduced diameter is slidably mounted a sleeve 24 of an outside diameter equal to the outside diameter of the cylindrical member 17 and of a width slightly less than the width of the portion 23 of reduced diameter. The left hand edge of the sleeve 24 is provided with pairs of diametrically arranged semi-circular grooves 25 and 26 which coact with the semi-circular grooves left by the holes 18 and 19 in the outer part of the cylindrical member 17 when such member had its right hand end reduced in diameter. Movement to the left, as viewed in Figs. 3 and 4, of the sleeve 24, results in the grooves 25 and 26 of the said sleeve clamping the devices that may have been inserted in one or the other of pairs of holes 18 and 19.

In order to ensure proper registry of the semi-circular grooves 25 and 26 with their mating pairs of holes in the cylindrical member 17, I preferably provide a longitudinal groove or grooves or keyways 27 in the reduced portion 23 of member 17 and a mating projection or projections or keys 28 on the inner face of the sleeve 24. This construction prevents rotary movement of the sleeve 24 while permitting axial movement thereof.

Rotatably mounted on that part of the reduced portion 23 of member 17 not covered by sleeve 24 is a sleeve 29 of the same diameter as sleeve 24. Sleeve 29 at its left hand end abuts against the right end of sleeve 24 and is rotatable relative thereto. The right end of sleeve 29 has formed therein two diametrically opposite semi-circular grooves 30, the diameter of which is equal substantially to the width of the oval opening 14 of the clamping bolt.

Rotatably mounted on the body 11 of the clamping bolt and movable axially relative thereto is a cylindrical member 31 of substantially the same diameter as sleeves 24 and 29. Member 31 is provided with semi-circular grooves 32 which are the complement of the grooves 30 in sleeve 29 and define therewith and with the hole 14 through said bolt a passage to receive the standard 15 of the surface gage 16 shown in Figs. 1 and 2.

Slidable on the threaded portion 13 of the clamping screw and with its left face abutting against the adjacent end of the cylindrical member 31, is a washer 33. Washer 33 has a cylindrical depression 34 formed on its right face of a diameter and depth sufficient to receive and house a spring washer 35.

Screwing onto the threaded portion 13 of the clamping screw is a knurled thumb nut 36, which acts to clamp the structure onto the standard 15 of the surface gage 16 and to clamp a scriber 20 or a dial indicator mounting bar 21 in fixed relation to the standard 15.

In using my improved clamping device, the thumb nut 36 is backed off along the threaded portion 13 of the clamping bolt. This provides space for the separation of the various members mounted thereon and permits the aligned grooves 30 and 32 and the oval opening 14 to have the standard 15 of a tool, such as a surface gage, inserted through the oval opening 14, and with the aligned grooves in registry with the standard. The backing off of the thumb screw 36 also allows the element 24 to move away slightly from the end of the member 14 and readily permits the insertion of a scriber 20 (see Fig. 1) in the holes 18, or the mounting bar 21 (see Fig. 2) of a dial indicator 22 to be inserted in the holes 19. By screwing the thumb nut 36 up along the threaded portion 13 of the clamping bolt, the various elements mounted on the clamping bolt will be clamped closely together, the members 29 and 31 firmly gripping the standard 15 at a desired height therealong, and the members 24 and 17 firmly gripping the scriber 30 or the mounting bar 21, as the case may be, at the desired length therealong. Members 24 and 17, however may be rotated as a unit relative to the other parts to permit the scriber, or dial indicator, to be adjusted through various angular positions with respect to the standard 15.

Very little force is required to firmly clamp the "snug" onto the standard 15, or the scriber 20 or mounting bar 21 against accidental displacement. A slight backing off of the thumb nut 36 allows the resilient washer 35 to yieldingly hold the various parts in position on the standard 15, and yet permits certain of the devices to be moved individually without disturbing the remaining devices.

While I have discussed my clamping unit in its application to a surface gage, it will be understood that such treatment is illustrative and not limiting, and that my "snug" may be used upon a wide variety of gages, indicators, and other precision instruments.

Similarly, while I have shown and described herein a preferred embodiment of my invention, I recognize that the construction and relationship of parts may be modified in many minor respects to adapt the device to the particular application in which it is to be used. All such changes are to be regarded as within the purview of my invention if within the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A clamping device adapted for use on a tool, such as a surface gage having a standard as an integral part thereof, said clamping device comprising a clamping bolt provided with a body portion having a hole therethrough and a threaded portion, a thumb screw on the threaded portion, and a plurality of pairs of gripping elements rotatably mounted on said bolt and slidable by the thumb screw axially along said bolt into engagement with each other, one pair of such gripping elements firmly gripping a standard inserted through said hole in the bolt and the other pair of said gripping elements simultaneously gripping a scriber or other instrumentality inserted therebetween and wherein one of the pair of gripping elements which grips the scriber or other instrumentality has a pair of circular holes therethrough and the cooperating gripping element of said pair has a pair of diametrically opposite semi-circular grooves therein which register with said pair of holes.

2. The structure of claim 1 in which one of the pair of gripping elements which grips the scriber or other instrumentality has a longitudinal keyway and the cooperating gripping element of said pair is slidable on the other and has a longitudinal key to be received in said keyway and lock the parts against independent relative rotation on said bolt.

3. A clamping device comprising a clamping bolt provided with a body portion and a threaded portion and with a passage extending through and transversely of the body portion, a member mounted at one end of said bolt and having a plurality of passages extending therethrough and adapted to receive various rods, a second member rotatably and slidably mounted on the first member and coacting with said first member to clamp the various tools in position, a third member rotatably and slidably mounted on the first member and provided with transversely arranged grooves in operative relation to the transverse passage in the body portion, a fourth member rotatably and slidably mounted on the body portion and having transversely arranged grooves in one end thereof in operative relation to the transverse passage in the body portion and to the transverse grooves in the third member, and a thumb nut mounted on the threaded portion of said bolt and acting to move the various members axially therealong into a compact mass.

4. The structure of claim 3 wherein the first member has a longitudinal keyway and the second member has a longitudinal key fitting said keyway to lock said two members against independent relative rotation on said bolt.

5. A clamping device comprising a clamping bolt having a body portion and a head of greater diameter than the body portion and having a transversely arranged passage extending through the body portion, a member slidably mounted on the body portion and provided at one end with a recess in which the head of the clamping bolt

is housed, said member having a plurality of tool receiving passages extending diametrically therethrough, a second member slidably mounted on said first member and cooperating with the said member to hold a tool inserted through any of said passages in adjusted position, means on said pair of members for preventing rotary movement of the members with respect to each other, a third member mounted on and rotatable with respect to said second member, a fourth member mounted for rotary movement on the body portion of said bolt, said third and fourth members being provided with cooperating gripping means to hold the clamping device on the standard of a tool, such as a surface gage inserted through the passage in said bolt, and said first and second members being rotatable as a unit relative to the third and fourth members as a unit, whereby the tool carried by the first and second members may be adjusted relatively

to the standard passing between the third and fourth members and through the passage in the body portion of the clamping bolt.

6. The structure of claim 5, and a thumb nut threaded on the clamping bolt for sliding the several members axially along the bolt.

JAMES E. HASTINGS.

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The following references are of record in the file of this patent:

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