Nov. 21, 1950 G. L. McFARLAND 2,531,147

CLAMPING DEVICE

Filed April 24, 1947

Fig.1.

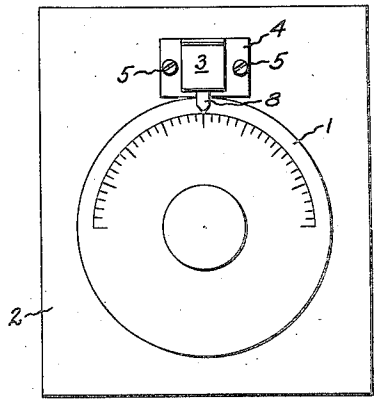


Fig.2.

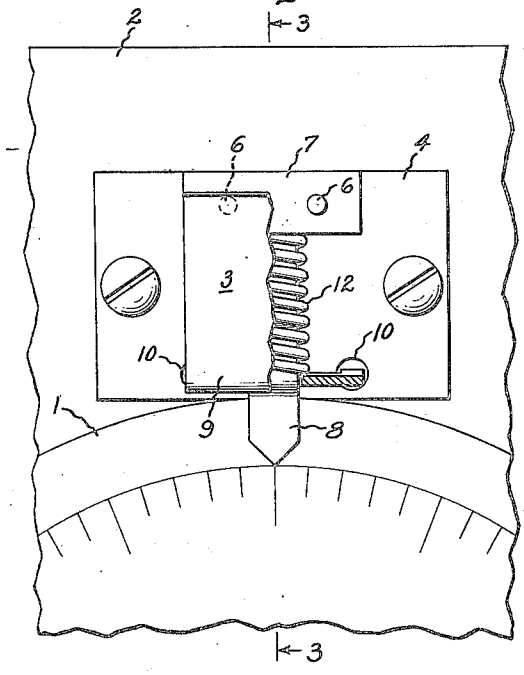


Fig.3.

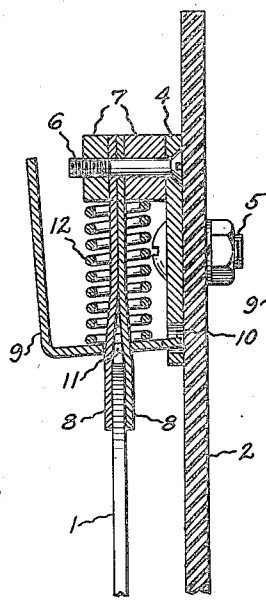
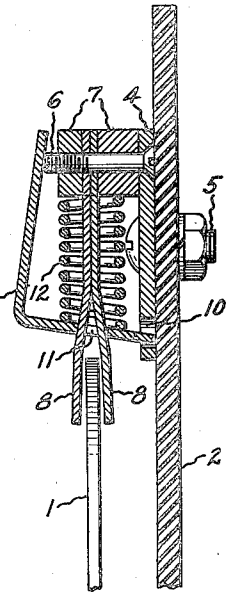


Fig.4.



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CLAMPING DEVICE

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3 Claims. (Cl. 188—166)

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My invention relates to clamping devices, and more particularly to automatically operable, manually releasable clamping means for control apparatus of the type including an adjustable disk or dial, or the like.

The invention has for its principal object the provision of a new and improved clamping device of the above type which, while simple and inexpensive to manufacture, is positive and reliable in operation and not subject to slippage under shock or severe vibration.

My invention itself will be more fully understood and its various objects and advantages further appreciated by referring now to the following detailed specification, taken in conjunction with the accompanying drawing, in which Fig. 1 is a front view of a rotatable dial and clamping mechanism embodying my invention; Fig. 2 is an enlarged fragmentary view similar to Fig. 1 but showing the clamping mechanism partly in section; and Figs. 3 and 4 are cross-sectional views taken along the line 3—3 of Fig. 2 and showing the clamping mechanism in its clamped and unclamped positions, respectively.

Referring now to the drawing, I have shown my clamping device applied to a rotatable disk or indicating plate 1, which may, for example, be the adjustable dial of a potentiometer, a variable capacitor or other suitable control apparatus. The dial 1 is positioned in substantially parallel spaced relation with respect to a stationary supporting panel 2 upon which is mounted a clamping device 3 arranged to engage the dial in clamping relation.

The clamping device 3 is mounted upon a base plate 4 fixed to the panel 2, as by a pair of bolts 5. Bolted to the upper end of the base plate 4, as by a pair of bolts 6, are two clamping blocks 7, between which are firmly and fixedly clamped two flat, elongated resilient clamping members 8. The clamping members 8 are mounted contiguously in cantilever fashion between the blocks 7 and extend downwardly in substantially parallel spaced relation with the panel 2. In the illustrated embodiment of the invention the members 8 extend downwardly in flatwise engaging relation with each other for the greater portion of their length, though such engagement is not essential. The lower or free ends of the elongated clamping members 8 diverge slightly and are biased apart, the dial 1 being positioned between the diverging ends of the clamping members.

In order to press the clamping members 8 into clamping engagement with the dial 1, I provide an L-shaped clamping plate or slider 9. The

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L-shaped plate 9 is rockably or pivotally mounted in spaced apertures 10 in the base plate 4, and is disposed with one leg substantially perpendicular to the panel 2, the other operating leg being in substantially parallel spaced relation with the panel 2 and in front of the elongated clamping members 8, said operating leg providing a surface substantially parallel to said dial and adapted to receive pressure in a direction substantially perpendicular to said surface from an operating outside source on the indicating side of said dial. The lower leg of the L-shaped plate 9 is apertured or slotted, as at 11, and fits over the diverging end portions of the elongated clamping members 8. Thus, as pressure is applied to said operating leg, the clamping plate 9 is rocked on the base plate 4 between the positions shown at Figs. 3 and 4, the apertured lower leg of the plate sliding along the clamping members 8. The width of the aperture or slot 11 in the plate 9 is such that, when the clamping plate is moved upward toward the fixed ends of the clamping members 8, it fits loosely over the members 8, whereas when it is moved downward toward the diverging ends of the clamping members 8, it presses the members 8 together and into clamping engagement with the dial 1 positioned therebetween.

The clamping members 8 are normally held in clamping position against the dial 1 by a compression spring 12 which encircles the clamping members 8 and is disposed between the fixed blocks 7 at one end and the movable slider or plate 9 at the opposite end. The spring 12 normally presses the plate 9 downwardly, thereby to hold the clamping members 8 in clamping position. If it is desired to release the dial 1, the upwardly extending front operating leg of the plate 9 is pressed inwardly, as at Fig. 4, thereby to slide the lower leg of the plate 9 upwardly and to release the clamping pressure on the dial.

It may now be noted that my improved clamping device is normally biased into clamping position, so that in order to move the dial, it is only necessary to release the clamp, as shown at Fig. 4, and adjust the dial as desired. When the operator removes applied pressure from the clamping plate 9, the spring 12 automatically reclamps the dial at the desired position. Moreover, it is an outstanding feature of my invention that shock or vibration not only has no tendency to loosen or release the clamping force, but actually permits the clamp to tighten its hold upon the dial 1. This effect is due to the fact that the slight relative motion of the parts due to vibra-

tion allows the spring 12 to become more effective to push the slider 9 farther down on the clamping members and thereby tighten their grip upon the dial 1.

While I have described and illustrated only a preferred embodiment of my invention by way of example, many modifications will occur to those skilled in the art, and I therefore wish to have it understood that I intend in the appended claims to cover all such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a clamping device for a rotatable dial, a supporting panel disposed in substantially parallel spaced relation with said dial, a pair of elongated resilient clamping members mounted upon said panel at one end in substantially parallel contiguous relation and having their opposite ends adapted to be disposed on opposite sides of said dial and biased apart in slightly diverging relation, an L-shaped clamping plate having one leg apertured and fitting over the diverging portions of said clamping members and the other serving as an operating leg extending along said clamping members in substantially parallel spaced relation, means for pivotally mounting said clamping plate upon a portion of said panel acting as a fulcrum at the end of said apertured leg to provide for sliding movement of said apertured leg along the diverging portions of said clamping members as said operating leg of said plate is moved toward and away from said panel, said plate fitting loosely over said clamping members when at one end of said diverging portions and pressing said clamping members into clamping relation with said dial when moved toward the diverging ends of said clamping members, and a compression spring encircling said clamping members and disposed between a fixed seat at one end and said clamping plate at the other end, thereby to bias said clamping plate to hold said clamping members in clamping position.

2. In a clamping device for a rotatable indicating disk, a base, a pair of elongated clamping members mounted upon said base in substantially parallel contiguous relation and having slightly diverging end portions adapted to embrace said disk, a clamping plate having an apertured leg substantially perpendicularly connected to an operating leg providing a surface substantially parallel to said disk and adapted to receive operating pressure in a direction substantially perpendicular to said surface from an operating source on said indicating side of said disk, said

apertured leg fitting over said diverging portions of said clamping members and rockably mounted at one end upon a portion of said base acting as a fulcrum thereby to permit sliding movement of said plate along said diverging portions, the aperture in said plate being of such width that said plate fits loosely over said clamping members when at one end of said diverging portions and presses said clamping members into clamping relation with said disk when moved toward the other end of said diverging portions, and a compression spring encircling said clamping member and disposed between said base at one end and said apertured leg at the other end, thereby to bias said plate to a position to hold said clamping members in clamping position, said clamping members releasing said disk only when said operating pressure is applied to said surface of said operating leg.

3. In a clamping device for an adjustable indicating plate, a base, a pair of elongated clamping members mounted upon said base in substantially parallel contiguous relation and having slightly diverging end portions adapted to embrace said indicating plate, an apertured clamping plate fitting over the diverging portions of said clamping members and rockably mounted at one end upon a portion of said base acting as a fulcrum thereby to permit sliding movement of said clamping plate along said diverging portions, the aperture in said clamping plate being of such width that said clamping plate fits loosely over said clamping members when at one end of said diverging portions and presses said clamping members into clamping relation with said indicating plate when moved toward the other end of said diverging portions, and a compression spring encircling said clamping member and disposed between said base at one end and said clamping plate at the other end, thereby to bias said clamping plate to a position to hold said clamping members in clamping position.

GEORGE L. McFARLAND.

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