June 30, 1942. J. A. LEGASSEY 2,287,890

ADJUSTMENT FOR DIAL INDICATORS

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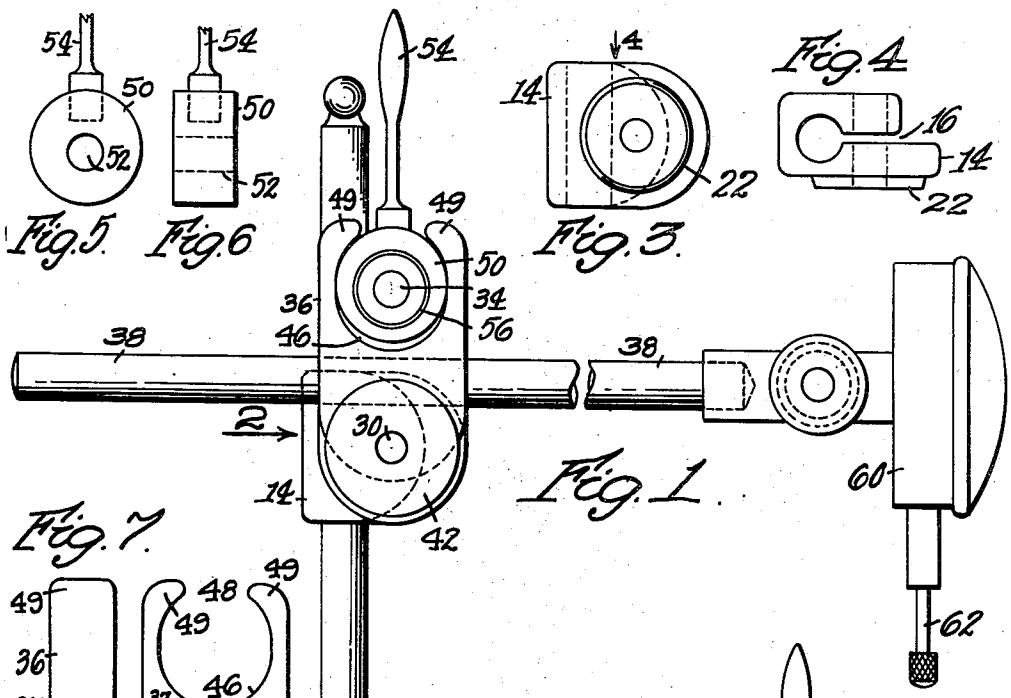


Fig. 5 Fig. 6 Fig. 1

Fig. 3

Fig. 4

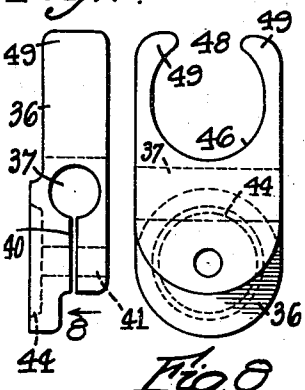
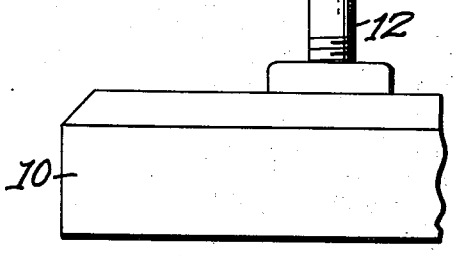


Fig. 7 Fig. 8



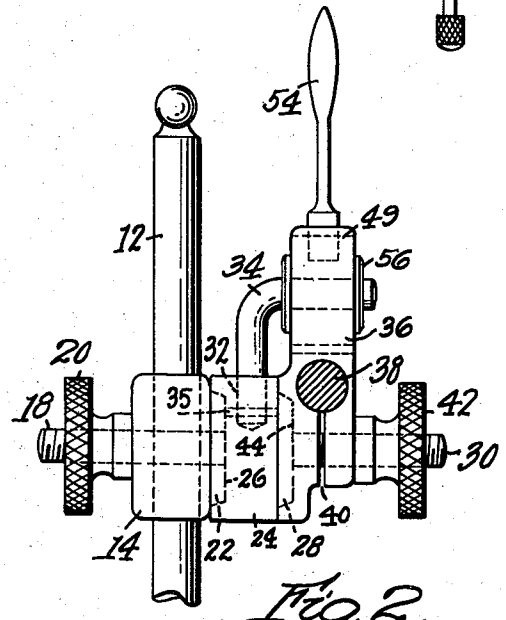


Fig. 2

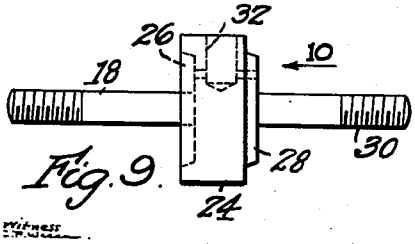


Fig. 9

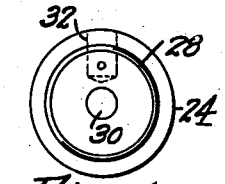


Fig. 10

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ADJUSTMENT FOR DIAL INDICATORS

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8 Claims. (Cl. 248—124)

This invention relates to a fine adjustment device for dial indicators of the type mounted on a pair of crossed rods, and the objects of the invention include the provision of adjustment means for a measuring instrument as recited whereby the old method of tapping the dial rod to bring the dial spindle into contact with the work may be obviated; the provision of an adjustment mechanism for a dial indicator which is made up as a part of the dial rod clamp thereby avoiding any locks or further clamps for the adjustment and providing pressure on the clamp parts to insure an accurate and fine adjustment for the purpose described; the provision of a cam actuated adjustment for a dial rod, in which the adjustment is accomplished while the rod is frictionally clamped in approximate position, thus affording a positive and smooth movement of the dial rod; and an adjustment for the dial rod of a dial indicator of comparatively simple and inexpensive manufacture.

Other objects and advantages of the invention will appear hereinafter.

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

Fig. 1 is a view in front elevation of a device embodying the present invention;

Fig. 2 is a view in end elevation of the device of Fig. 1, with parts broken away, and looking in the direction of arrow 2 in Fig. 1;

Fig. 3 is a detail view of the base rod clamp;

Fig. 4 is a view of the base rod clamp looking in the direction of arrow 4 in Fig. 3;

Figs. 5 and 6 are detail front and side views of the cam, respectively;

Fig. 7 is a detail view of the dial rod clamp;

Fig. 8 is a view of the dial rod clamp looking in the direction of arrow 8 in Fig. 7;

Fig. 9 is a detail view of the connector element; and

Fig. 10 is a view of the connector element, looking in the direction of arrow 10 in Fig. 9.

Referring to the drawing in detail, the numeral 10 indicates a base of any desired or convenient type for the support of an upright rod 12 which may be detachably secured to base 10 as by screw threads, bolts, etc. The upright rod is of normal length and provides a support and guide for a slidable rod clamp 14, Figs. 3 and 4, which is split as at 16 to form a pair of clamping arms, which are transversely apertured for the reception of a threaded shaft 18. A thumb nut 20 cooperating with shaft 18 will be effective to tightly press the arms at either side of the split to firmly grasp the rod 12. One arm of the clamp is provided with a circular projecting boss 22 having beveled edges to form a clamping surface, this boss being concentric with the apertures in the arms.

Shaft 18 extends from one lateral face of a circular holder or clamp connector element 24, there being a circular recess 26 having beveled edges formed to fit boss 22, so that the turning up of nut 20 will frictionally lock the element 24 rigidly with the upright rod, as will be understood from Fig. 2. Clearly, clamp 14 may be adjusted to any desired vertical position on the rod. A circular boss 28 similar to boss 22 extends from the other lateral face of element 24 and centrally of this boss there is a second screw shaft 30, axially aligned with shaft 18 for a purpose to be described. The element 24 is bored at 32 for the reception of a 90° elbow 34 adapted to be press-fitted thereinto, and a pin 35 may be used to insure retention of the elbow and to prevent turning thereof.

A clamp 36 having a thru bore 37 to receive the horizontal dial rod 38 is split to one side of the bore as at 40, thus providing a pair of clamp arms for the rod. The legs are transversely apertured at 41 to receive screw shaft 30 which has a nut 42 cooperating therewith. A circular beveled recess 44 in one leg of the clamp 36 fits the boss 28 and provides a seat therefor.

Oppositely from the split, the clamp extends upwardly and is formed with a large generally circular-ended opening 46 having an open top side 48 providing a pair of opposed overhung arms 49. Opening 46 is not precisely circular but may have its upper and lower curved surfaces or edges struck off different vertically spaced centers. In any case, the arms 49 are desirably curved on their under sides as shown, and these curved surfaces or edges are utilized as cam bearing surfaces, as will be explained. The horizontal arm of elbow 34 is designed to pass thru the opening 46 when the device is assembled, see Figs. 1 and 2.

A circular cam element 50, Figs. 5 and 6, is eccentrically bored at 52 to have a running fit on the horizontal arm of elbow 34 in position directly between arms 49. A handle 54 is made rigid with the element 50 and is arranged to extend upwardly between the ends of arms 49. The cam element is designed to contact both arms 49 on their inside curved surfaces as shown in Fig. 1, and the cam may be fixed against axial movement on the elbow by any desired means

such as washers 56 as shown, or by pins, keys, etc.

The assembled device is best shown in Fig. 2, wherein it will be seen that the rod clamp 14 is mounted for vertical sliding adjustment on rod 12, and shaft 18 of element 24 in cooperation with nut 20 will secure the element to the clamp, the projection and recess 22, 26 forming a rotary bearing and clamping surface. Clamp 36 is secured in a similar manner to the element 24, at the same time clamping rod 38, and the arms 49 are positioned upwards to receive the cam 50 between them.

The horizontal dial arm 38 carries a dial tester element 60 at one end, and it will be seen that the dial tester may be approximately vertically and angularly set by proper manipulation of nut 20. In the conventional testers, these two adjustments are all that are provided, and if a closer approach of the spindle 62 to the work is desired, the conventional mode of operation is to tap the rod 38, which is obviously inaccurate and time-wasting. However, with the present invention, it is only necessary to clamp the parts in approximate position with nut 42 turned up to frictionally secure clamp 36 to the holder element 24 and then turn handle 54 clockwise to depress the dial or counterclockwise to elevate it.

Since the nuts 20, 42 will be tightly turned up, it will be seen that considerable pressure is exerted to hold the clamp 36 against element 24, and as the cam is always in contact with the curved surfaces of arms 49, it is clear that the cam and other elements will be frictionally held wherever turned, as upon projections 28 and 22, and therefore a positive and gradual rotary adjustment of rod 38 is achieved, with no lock or further clamping being necessary to hold it. Also, it is convenient to attach the handle 54 to the high point of the cam whereby the structure of Fig. 1 shows a horizontal position of rod 38, and the opening 46 being curved on offset centers, an ample space between the low point of the cam and the lowest part of the opening surface is provided.

It will be clear from the above description that this invention provides an exact and sure adjustment for a dial tester, which is easy and quick of manipulation; and the mechanism is detachable so that it can be used on any machine or fixture using or requiring dial indicators, such as milling, boring, shaping, planing machines and the like, in the shop or inspection room. Also, the mechanism can be made and sold as a unit to be attached to any indicator base already in use.

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. In an adjusting device for a dial indicator, a holder adapted to be secured to a support, a dial indicator holding clamp adapted to be rotatably secured to said holder, means to frictionally secure said holder to said support in approximate desired position, a pair of arms on said clamp, said arms having opposed bearing surfaces facing each other, an eccentric located between said arms and adapted to contact said bearing surfaces, and means on said holder supporting said eccentric.

2. In an adjusting device for a dial indicator, a support, a clamp on said support, a holder mounted on said clamp for rotary movement with respect thereto, a second clamp for holding a dial indicator mounted on said holder for angular adjustment thereon, means to frictionally secure said second clamp to said holder, a shaft on said holder, an eccentric mounted to rotate on said shaft, a pair of spaced arms on said second clamp, curved bearing surfaces on said arms adapted to cooperate with said eccentric, and means to turn said eccentric on said shaft.

3. In an adjusting device for a dial indicator, a rod, a clamp on the rod, a rotary bearing surface on the clamp, a holder mounted on said clamp for rotary motion on the surface, means to hold the holder to the clamp, a rotary bearing surface on the holder, a holding clamp mounted on the holder for rotary motion on the latter's bearing surface, means to frictionally secure the holding clamp to the holder, a shaft on the holder, an eccentric rotatably mounted on the shaft, a pair of opposed arms on the holding clamp having facing curved cam surfaces contacting the eccentric, a handle on the eccentric disposed parallel to and between said arms, and a dial rod adapted to be held in said holding clamp.

4. In an apparatus of the class described, a supporting member, a supported member, means mounting the latter for adjustment angularly with respect to the former, means to accomplish said adjustment comprising a rotatable element mounted on one of said members, an element fixed to the other of said members and cooperatively inter-engaged with said rotatable element, rotary movement of said rotatable element being effective to cause a corresponding proportional movement of said second named element and therefore of said supported element relative to said supporting element, means to impart rotary movement to said rotatable element, and said supported element being adapted to carry a dial indicator or the like.

5. An apparatus as recited in claim 4 wherein said supporting and supported members comprise rods.

6. An apparatus as recited in claim 4 wherein said first named means comprises a friction clamp.

7. An apparatus as recited in claim 4 wherein said rotatable element comprises an eccentric cam and said second named element includes a bearing surface forming a cam follower.

8. In an apparatus of the class described, a supporting rod, a supported rod, means to mount the latter on the former for relative angular adjustment thereof, said means including a rotatable element on the supporting rod, an element fixed to the supported rod and engaged with said rotatable element, said rotatable element being effective to cause a lesser rotational movement of said second named element upon itself being rotated, means to rotate said rotatable element, and means adapted to mount a dial indicator on said supported rod.

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