March 16, 1937. J. G. SISSON 2,074,279

DIAL INDICATOR

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Fig. 1

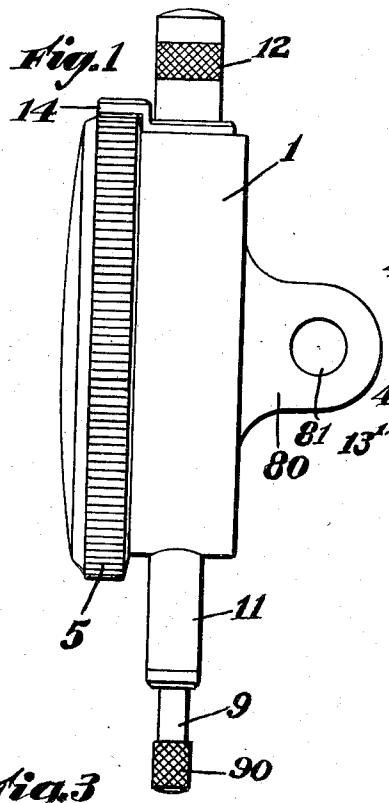


Fig. 2

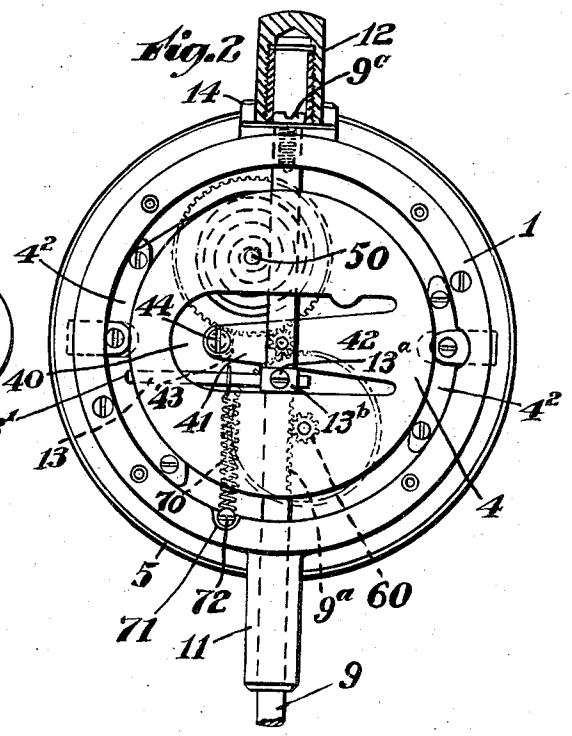


Fig. 3

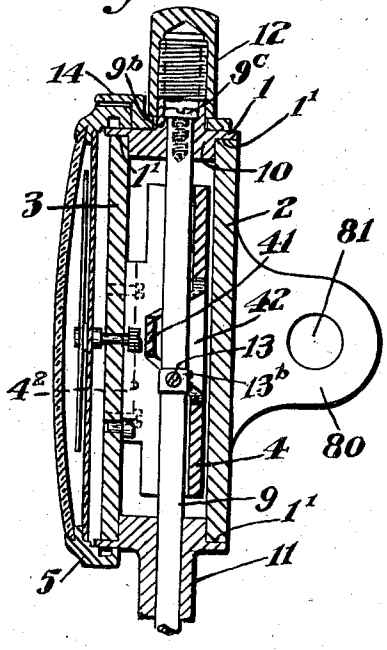
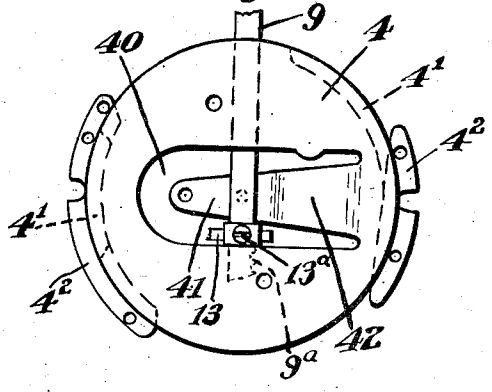


Fig. 4



Inventor
James G. Sisson

By Ellis Spear Jr.
Attorney

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Fig. 5

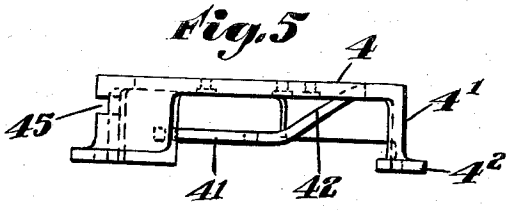


Fig. 6

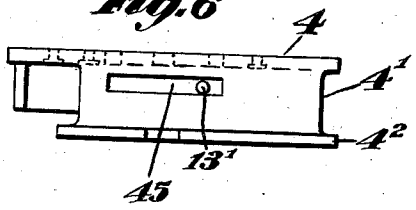


Fig. 7

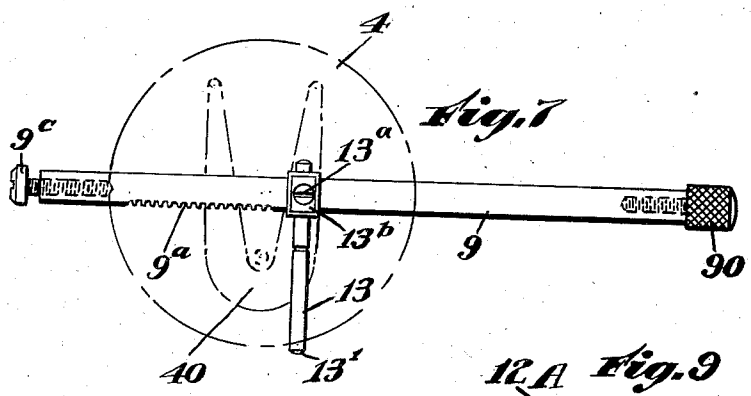
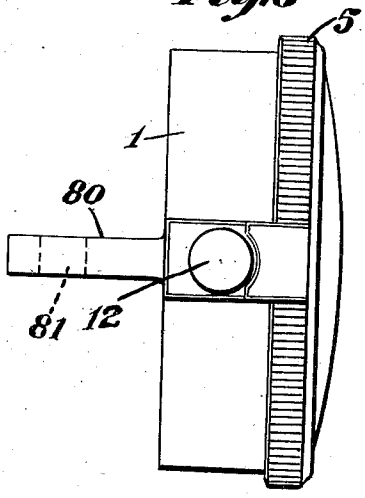
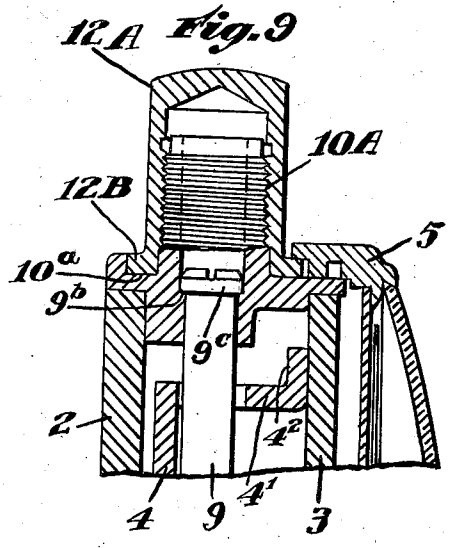


Fig. 8



12A Fig. 9



Inventor
James G. Sisson
Ellis Spear Jr.
By Attorney

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UNITED STATES PATENT OFFICE

2,074,279

DIAL INDICATOR

James G. Sisson, Athol, Mass., assignor to The L. S. Starrett Company, Athol, Mass., a corporation of Massachusetts

Application April 11, 1934, Serial No. 720,093

2 Claims. (Cl. 33—172)

This application relates to further improvements in dial gages or dial indicators or indicator structures.

It has for its purpose to provide a structural basis of great strength and steadiness. It also makes possible refined and economical manufacture on factory production basis, particularly as to the improvement of guiding of the rack and the mounting of the pinions and rack between the bridge and plate.

Throughout the specification and drawings like reference characters are employed to indicate corresponding parts:

Fig. 1 is a side view of the general type of dial gage involved.

Fig. 2 is a rear view with back plate removed.

Fig. 3 is a vertical central section.

Fig. 4 shows an enlarged view in plan of the footed bridge and fragment of rack.

Fig. 5 is a side view of the bridge member.

Fig. 6 is a similar view of the same at a different angle.

Fig. 7 is a view of the rack stem and guide bar.

Fig. 8 is a view looking down on the top bearing, and

Fig. 9 is a fragmentary section showing a modified form of bezel assembly.

In the dial indicators according to my invention as shown, the casing consists of a stout tubular shell 1 recessed at its front and rear edges at 1^1 and firmly fitted on its front by the dial plate 3 and on its rear by a solid inset back 2. The casing is therefore essentially a stout drum screwed together and having its inner mechanism rigidly mounted on its interior.

The bridge piece 4 is supported by the plate 3 each bracing the other and mutually cooperative to provide opposed bearings for various pinion or like elements supported by them as indicated herein.

The plate 3 is a rigid metal disc drilled for bearings for the hair spring gear shaft 50 and for that of the rack pinion 60. At their other ends these parts journal in aligned bearings in the bridge piece 4 mentioned above. This bridge piece is flanged as at 4^1 and footed as at 4^2.

Centrally of its flat top portion which is supported parallel to the piece 4 the bridge is opened up by a somewhat U-shaped cut 40 leaving a tongue 41. As seen best in Fig. 4, this tongue 41 is bent downwardly as at 42 (see Fig. 5) until its end portion lies parallel to the plane of the piece 4 from which it was struck. Its tip is spaced from the plate 3 by a collar 43 and held fixed to it by the screw 44. The feet 4^2 of the bridge piece 4 are secured to this same plate 3 so that the bridge piece 4 is both internally and externally braced.

The bridge flange 4^1 is slotted at 45 to receive the end 13^1 of the rack guide 13 of the rack spindle 9. The guide 13 is clamped by a set screw 13^a in a clip block 13^b which spans the stem 9. The rack is thus guided within the bridge as well as at the upper and lower bearings 10 and 11. These are carried by the casing and are axially aligned and afford a new rack guide combination with the intermediate bridge piece 4 and its parts as before described.

Referring to Figs. 2 and 3, it will be seen that the bridge piece 4 interlocks in the assembly (see Fig. 7). The rack bar spindle 9 is guided in the opposed axial bearings 10 and 11. These are the usual bearings for this old type of dial gage. They assure complete alignment axially of the bridge piece 4. The rack bar spindle 9 carries the usual rack 9^a which meshes with the pinion 60.

The upper bearing has been heretofore used as a dust cap clamp basis. This has some advantage and my invention utilizes it as a reasonable modification (see Fig. 9). The dust cap 12 of Figs. 1 to 3 acts simply as a set screw as the obvious form of clamp is one of direct action as on the block or lock piece 14. This has usually been radially of the bezel ring. Figs. 1 to 3 show this old block form of outside clamp. Fig. 9 shows a new bezel assembly including an internal locking feature. In both instances the form shown is rigid but might be slightly resilient to yieldingly engage the knurled edge of the bezel ring 5.

In the form shown in Fig. 9 the dust cap 12A common to this radial clamp type is made with a surrounding flange 12B. This cap is threaded on the upper bearing 10A which is surrounded as shown in Fig. 9 by a countersunk recess or lockway 10^a. The bezel ring 5 is locked or unlocked by simply screwing up on or unscrewing the dust cap lock member 12A.

This cap member lock 12A and the cooperating thread of the upper external spindle guide 10A are preferably made left handed according to my concept to make practically possible the ready adoption and use by mechanics already habituated to a right hand twist of the locking means in tightening as above described. I therefore provide it for them in my structure by making the screw left handed. Otherwise, the dust caps 12 or 12A perform their usual duty in excluding dirt from the bearing for the upper end of the

spindle 9 which is normally positioned with its stop screw 9c against the shoulder 9b. This acts as an extra seal when not in operation as the spring 70 draws down on the guide 13 to which it is attached at one end. At its other end it is anchored to the casing 1 in a scallop like recess 71 in the inner side of the casing wall, where it is held by the screw 72.

The opposite end of the rack stem 9 carries the threaded anvil 90 which makes contact with the work in the usual manner but is interchangeable and replaceable.

My dial gages may be supported in any usual way as by the ear 80 pierced for clamping as at 81 in any clamp or bracket.

What I therefore claim and desire to secure by Letters Patent is:—

1. In a dial indicator, a casing having opposed bearings and front and back plates, a footed bridge piece mounted within said casing between said plates, said bridge piece having a depressed tongue reactive against one of said plates for securing the bridge piece therebetween and also having a peripheral slot, a rack rod mounted in said bearings, and a rack guide fastened at one end to said rack rod and having its other end guided in said slot.

2. The dial indicator of claim 1, said tongue being severed from said bridge piece by a U-shaped cut.

JAMES G. SISSON.