

July 13, 1926.

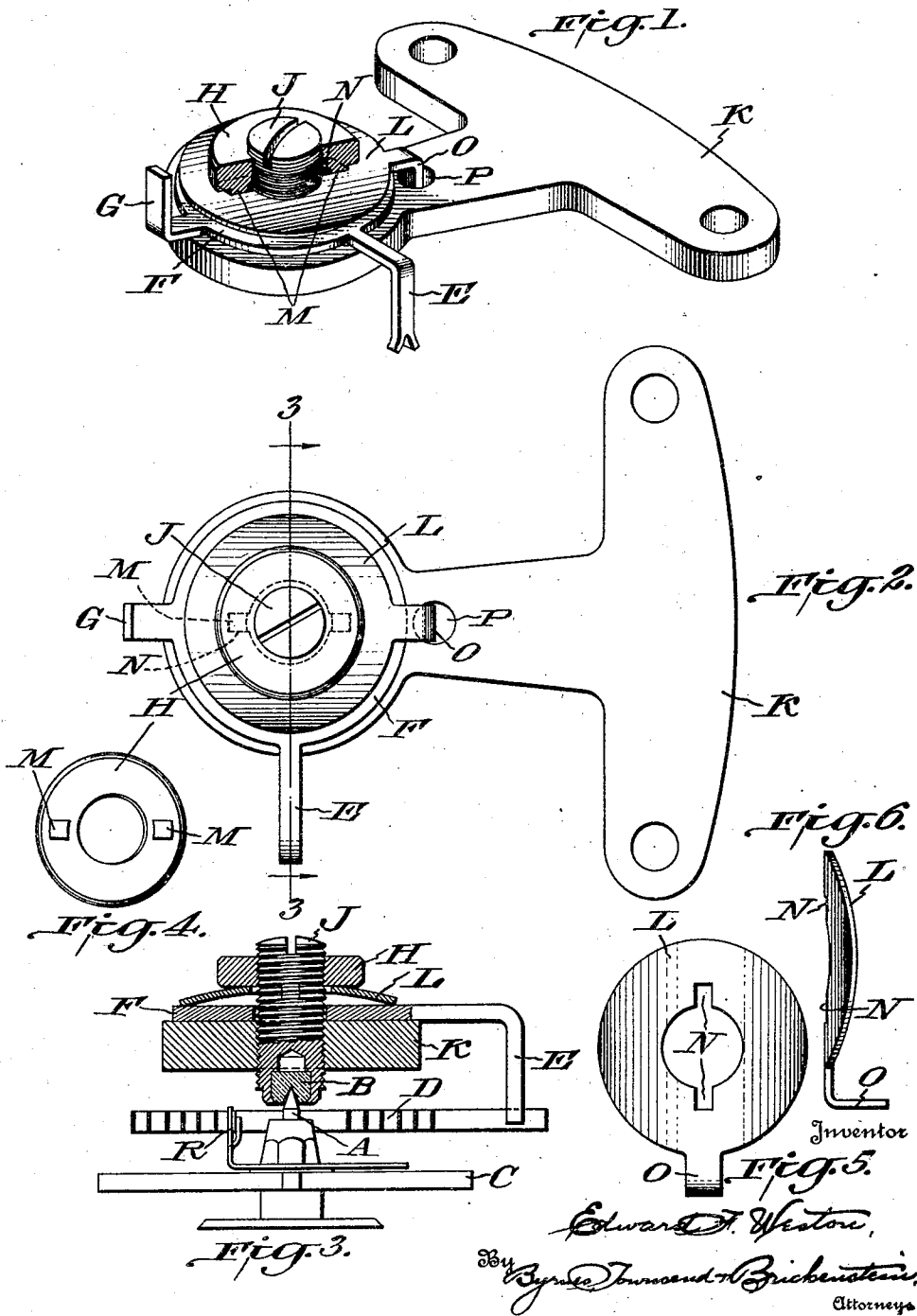
1,592,020

E. F. WESTON

INSTRUMENT BEARING

Filed August 11, 1925

2 Sheets-Sheet 1



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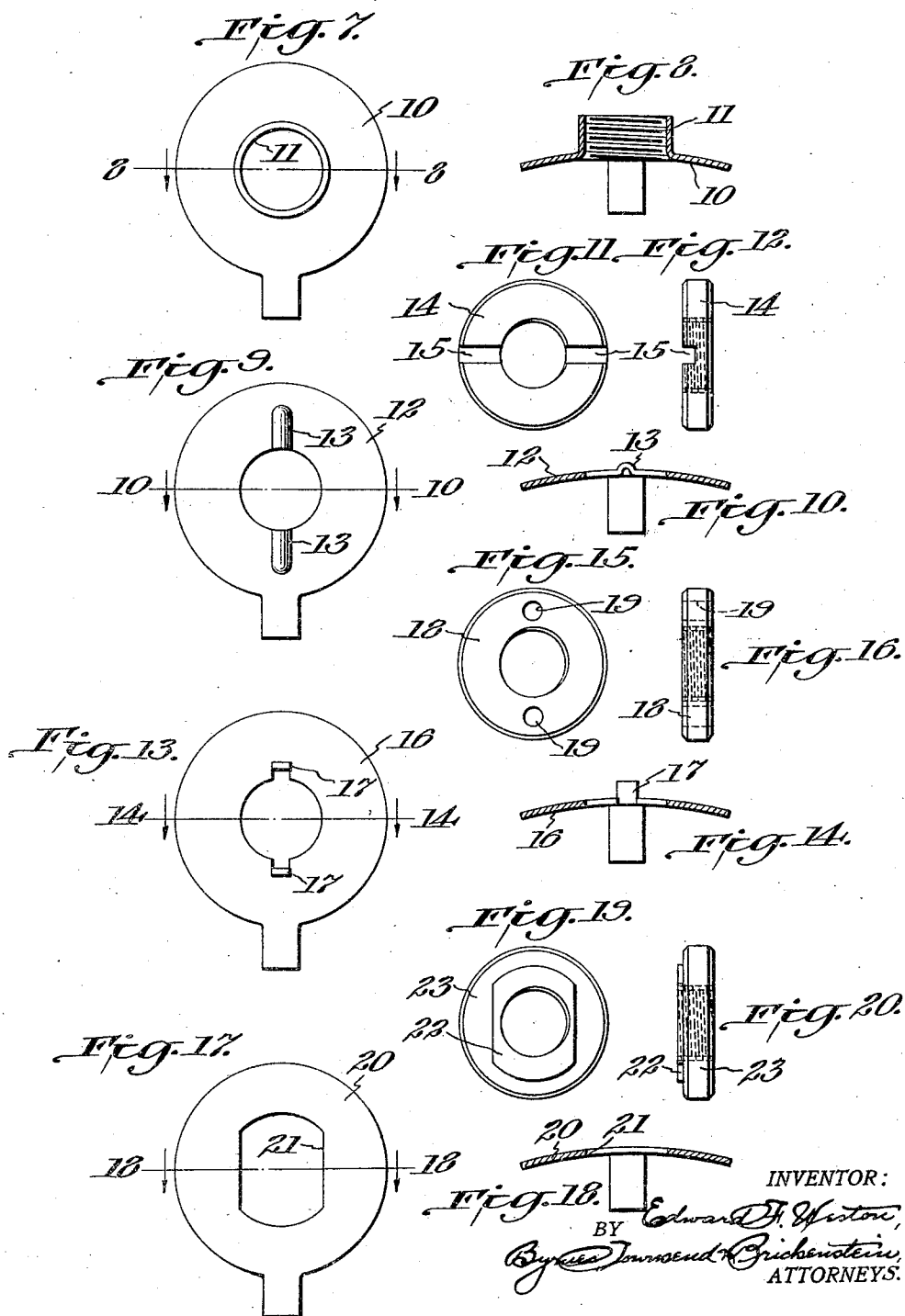
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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INSTRUMENT BEARING.

Application filed August 11, 1925. Serial No. 49,603.

This invention relates to instrument bearings and particularly to devices for taking up back lash from the bearing screws which may be jewel screws such as are used to support the movable parts in electrical measuring instruments.

The invention consists in mounting the jewel screw directly in the support, providing such screw with a nut between which and the support is a spring washer which serves to take up the back lash in the screw threads and also to lock the screw, the nut being anchored to the washer and the washer to the support. A further feature of the invention is the interposition between the spring washer and the support of a plate carrying an abutment to which is secured an end of the spiral spring connected to the moving coil or other part of the instrument. The invention will readily be understood from the accompanying drawings in which:

Fig. 1 is a perspective view;

Fig. 2 is a plan of Fig. 1;

Fig. 3 is a section on plane 3—3 of Fig. 2;

Figs. 4, 5 and 6 are details of the nut and washer illustrated in Figs. 1 to 3;

Figs. 7 and 8 are, respectively, a plan of and a central section through a combined nut and washer;

Figs. 9, 10, 11 and 12 illustrate a modified nut and washer construction and are respectively, a plan and a cross section of the washer, a plan and a side elevation of the nut;

Figs. 13, 14, 15 and 16 illustrate a further modification, the views being, respectively a plan and a cross section of the washer; a plan and a side elevation of the nut; and

Figs. 17, 18, 19 and 20 illustrate another modification, the views being, respectively, a plan and section of the washer, and a plan and side elevation of the nut.

These drawings illustrate the invention as applied to the pivot supports for the moving coil of a voltmeter, one pivot pin being at the top and the other (not shown) at the bottom. The pointed pivot pins such as A each rest on a jewel B, which is carried on a support, in this instance a screw, which must be capable of adjustment and be permanently held in adjusted position. To the movable coil which carries the pointer, part

of which is shown at C, are secured at top and bottom spiral springs in order to control the movement of the coil in the magnetic field. One end of each coil such as D is secured to the pivot pin, at R, Fig. 3, while the other is secured to an abutment E formed as part of a plate F, which has an upstanding arm or handle G. By movement of the plate, the position of the pointer can be adjusted. This plate must be held under frictional pressure to keep it in adjusted position, which is effected by a spring washer held in position by a lock-nut H on the jewel-carrying screw J, which in turn passes through the bridge or support K. The construction thus far described is, in general, well known and this invention consists in an improvement over this prior construction. According to the present invention, the jewel screw is screw-threaded directly into the bridge K, the abutment-carrying plate F rests on the bridge piece K, against which it is pressed by a spring washer L, held in adjusted compression by a lock-nut H. This nut H has two downwardly extending lugs M which extend into slots N in the spring washer which itself has an arm O, which extends downwardly into an opening P in the bridge piece, so that both the lock-nut and washer are held against rotation. The spring washer thus acts as an anchorage for the lock-nut. The primary purpose of this arrangement is to take up the back lash in the jewel screw, and secondarily to use the spring device which performs this function to frictionally hold the abutment-carrying plate.

To assemble the device, the bridge piece K, plate F, spring washer L and nut H are arranged in the proper relative positions in a fixture or forming device which compresses the spring washer L to the required amount. While the parts are held in this position the jewel screw J is inserted by simply screwing it down through the nut and bridge piece, the assembling fixture being constructed to permit such slight adjustment as may be required to allow the jewel screw to pick up the thread of the bridge.

With the parts assembled as shown in Fig. 3, the exact adjustment of the pivot pin in the jewel can be obtained by simple rotation

of the screw J. Any back lash in the screw is taken up by the spring washer, while at the same time the jewel screw is practically locked and the abutment plate is held under sufficient frictional engagement with the bridge to permit its rotation.

Other forms of nut and washer elements which may be employed are illustrated in Figs. 7 to 20, inclusive.

As shown in Figs. 7 and 8, the spring washer 10 and nut 11 may comprise an integral assembly which may be shaped from a piece of sheet metal.

The washer 12 which is illustrated in Fig. 9 is provided with radially extending lugs 13 pressed in the upper surface thereof, which lugs 13 lock the washer to the nut 14 by engagement within the walls of the slot 15 which is formed in the lower face thereof.

The washer 16 of Fig. 13 is provided with lugs 17 which are turned up from the body of the washer. This form of spring washer may be used with the nut shown in Figs. 11 and 12, or with the nut 18 which is provided with apertures 19 therethrough.

The washer 20 of Fig. 17 is provided with a non-circular central aperture 21 therethrough for engagement with a similarly shaped extension 22 on the nut 23.

It will be understood that the parts shown and described are in actual practice very

small in size, the drawings being on the scale of about 7 to 1.

I claim:

1. In a device of the class described, a support having a screw-threaded opening therethrough, a pivot screw extending therethrough, a nut on said screw, a spring washer between said support and said nut, and means preventing relative rotation of said washer and said support and of said washer and said nut.

2. In a device of the kind described a support having a screw-threaded opening, a screw extending through said opening, a nut on said screw, a spring washer between the nut and the support, said washer and support having interengaging means for anchoring the washer to the support, and said nut and washer having interengaging means for anchoring the nut to the washer.

3. In a device as claimed in claim 1 an abutment plate located between the spring washer and the support.

4. The invention as claimed in claim 1, wherein said spring washer is provided with a tongue extending into a hole in said support, and said nut and washer are provided with cooperating lugs and recesses.

In testimony whereof, I affix my signature.

EDWARD F. WESTON.