June 16, 1931. P. PASZKOWSKI 1,810,028

INDUCTION METER

Filed Jan. 22, 1925

Fig. 1.

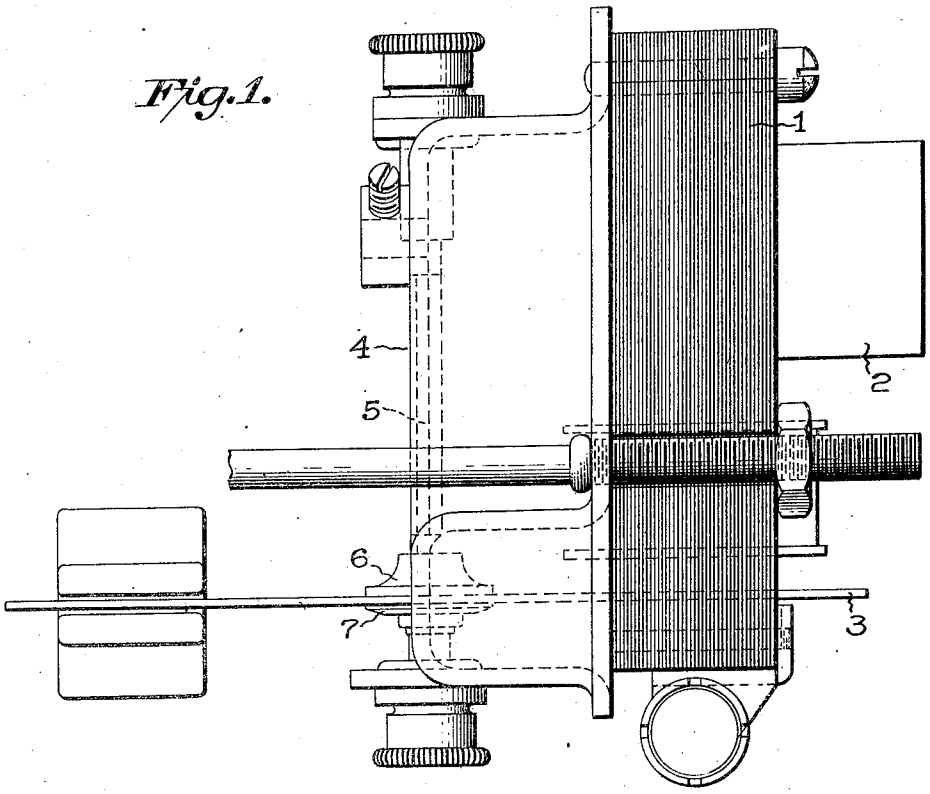


Fig. 2.

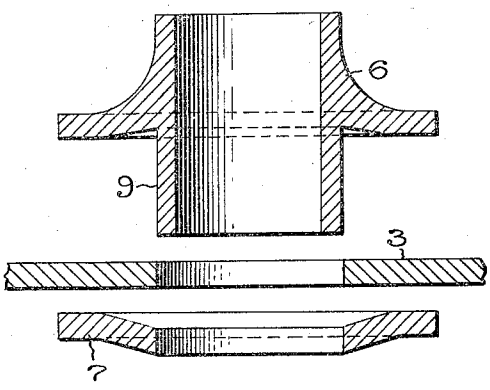
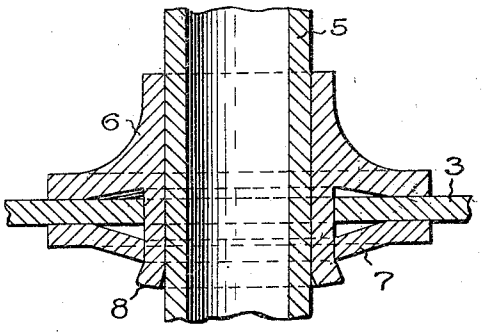


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE

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INDUCTION METER

Application filed January 22, 1925. Serial No. 4,026.

My invention relates to alternating-current induction meters and particularly to the disc armature and rotating shaft of such instruments.

The object of my invention is to provide an improved means for securing the disc armature of an alternating-current induction meter to the rotating shaft.

The ordinary alternating-current induction meter is provided with a flat disc armature cooperating with an electromagnet. The disc armature is ordinarily clamped to a pivoted shaft by means of washers upon the shaft that are pressed into engagement with the disc. It is essential that the disc armature be exactly true if the instrument is to function accurately. It has been found that the compression of the disc by the washers employed heretofore resulted in a bending or flexure of the disc which, although not of great extent, necessitated considerable adjustment in order to straighten the armature so that is could be used in an instrument.

In accordance with my invention, the disc armature is clamped to the shaft between two oppositely-disposed dished or cup-shaped washers, which engage the disc on each side at narrow areas of contact removed from the center of the disc. It is a comparatively simple matter to provide washers of accurate dimensions that will cooperate to produce an area of contact on the disc armature that is uniform in its circumference. It has been found that the use of these washers having a uniform contact area of ring shape has entirely obviated the necessity for straightening the disc armature after assembling on the shaft, inasmuch as no curling or flexure of the disc is produced.

In the accompanying drawings, Fig. 1 is a side view of an electromagnet and armature of an alternating-current induction meter or relay embodying my invention; and

Figs. 2 and 3 are detailed views to an enlarged scale of the clamping washers in the exploded and assembled relations respectively.

Referring to Fig. 1, an electromagnet 1 is shown having windings 2 thereon and a flat disc armature 3 pivotally supported on a frame member 4 to be actuated in accordance with the energization of the electromagnet 1. The construction of the electromagnet and the relation of the windings 2 and armature 3 may be the same as in any ordinary induction meter and hence, are not shown in detail in the drawings.

The disc armature 3 is mounted on a shaft 5 by means of two clamping washers 6 and 7. As shown in Figs. 2 and 3, the clamping portions of the washers 6 and 7 are dished or cup-shaped. In assembling the disc on the shaft, a collar or shank 9 which is integral with the washer 6 is pressed into any desired position on the shaft 5. Then the disc 3 and the washer 7 are placed upon the shank or collar 9 of the washer 6 and the end 8 of the shank 9 is spun over to hold the parts in assembled relation.

The area of contact between the washers 6 and 7 and the disc 3 is a narrow ring removed from the center of the disc, as shown in Fig. 3. Since the washers 6 and 7 are accurately machined and the assembling operation does not distort the washers where they engage the disc 3, there is no tendency to bend or flex the disc 3 and the disc and shaft may be employed in an instrument in cooperation with the electromagnet 1 without further adjustment or straightening.

I claim as my invention:

1. In an electrical instrument, the combination with a pivoted shaft and a single flexible disc having a hole therein, of means for mounting securely, without deformation, said shaft normal to said disc in said hole comprising a hub mounted on said shaft, said hub having a dished clamping portion and a dished clamping member secured thereto, said dished clamping portion and member having opposite flat surfaces cooperating with the opposite sides of said disc in a ring-like region surrounding, but removed from, said hole.

2. In an electrical instrument, the combination with a pivoted shaft and a single flexible disc, of means for mounting securely, without deformation, said disc to said shaft, comprising a hub mounted on said shaft, said hub having a dished washer-like por-

tion for cooperation with one of the surfaces of said disc and a dished washer mounted on said hub for cooperation with the other surface of said disc, said disc being clamped between said dished washer and the dished washer-like portion of said hub.

3. In an induction-type meter, the combination with a pivoted spindle and a single disc, of means for mounting securely said disc on said spindle without bending or flexure of said disc or said spindle by said mounting means comprising a hub mounted on said spindle, said hub having a dished washer-like portion having an outer flat-surfaced area for cooperation with one of the flat surfaces of said disc, a dished washer mounted on said hub opposite the dished portion thereof, said washer having an outer flat-surfaced area for cooperation with the other of the flat surfaces of said disc, said disc being clamped between the flat surfaces of the dished portion of said hub and said dished washer.

4. Means for positioning a flexible disc member on a rotatable spindle, comprising a hub member mounted on said spindle and having a dished clamping portion and a dished clamping member secured to said hub member, said dished clamping portion and said member having opposite flat surfaces cooperating respectively with the opposite sides of said disc in a ring-like region removed from the periphery of said hub member.

5. Means for positioning a flexible disc member on a rotatable spindle comprising a hub member mounted securely on said spindle at a position removed from the ends thereof, and having a dished clamping portion and a dished clamping member secured to said hub member, said dished clamping portion and said clamping member having opposite flat surfaces adapted to cooperate respectively with the opposite sides of a portion of said disc removed from the periphery of said spindle in such manner that the inner portion of said disc is not clamped by said clamping portion and clamping member.

In testimony whereof, I have hereunto subscribed my name this 18 day of December, 1924.

PAUL PASZKOWSKI.