

Dec. 19, 1939.

S. L. ALEXANDER

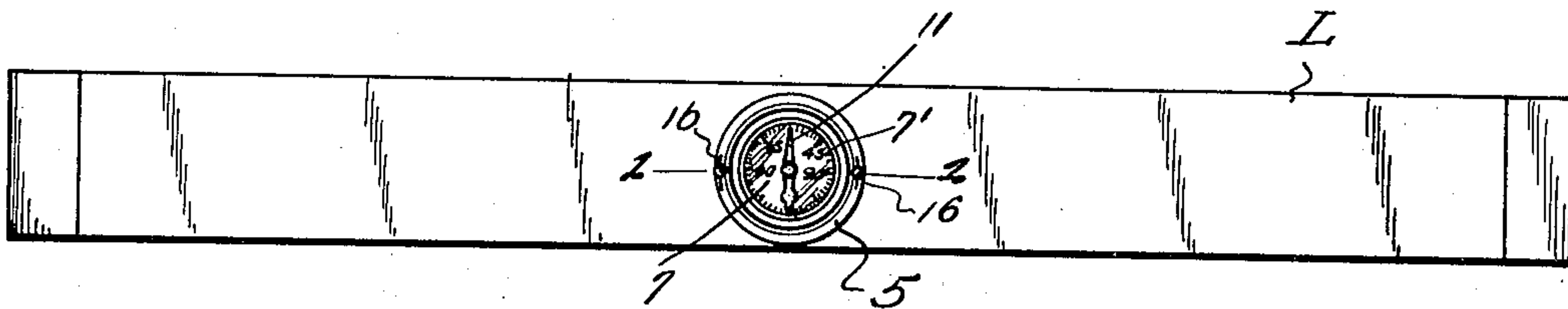
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PITCH DETERMINING DEVICE

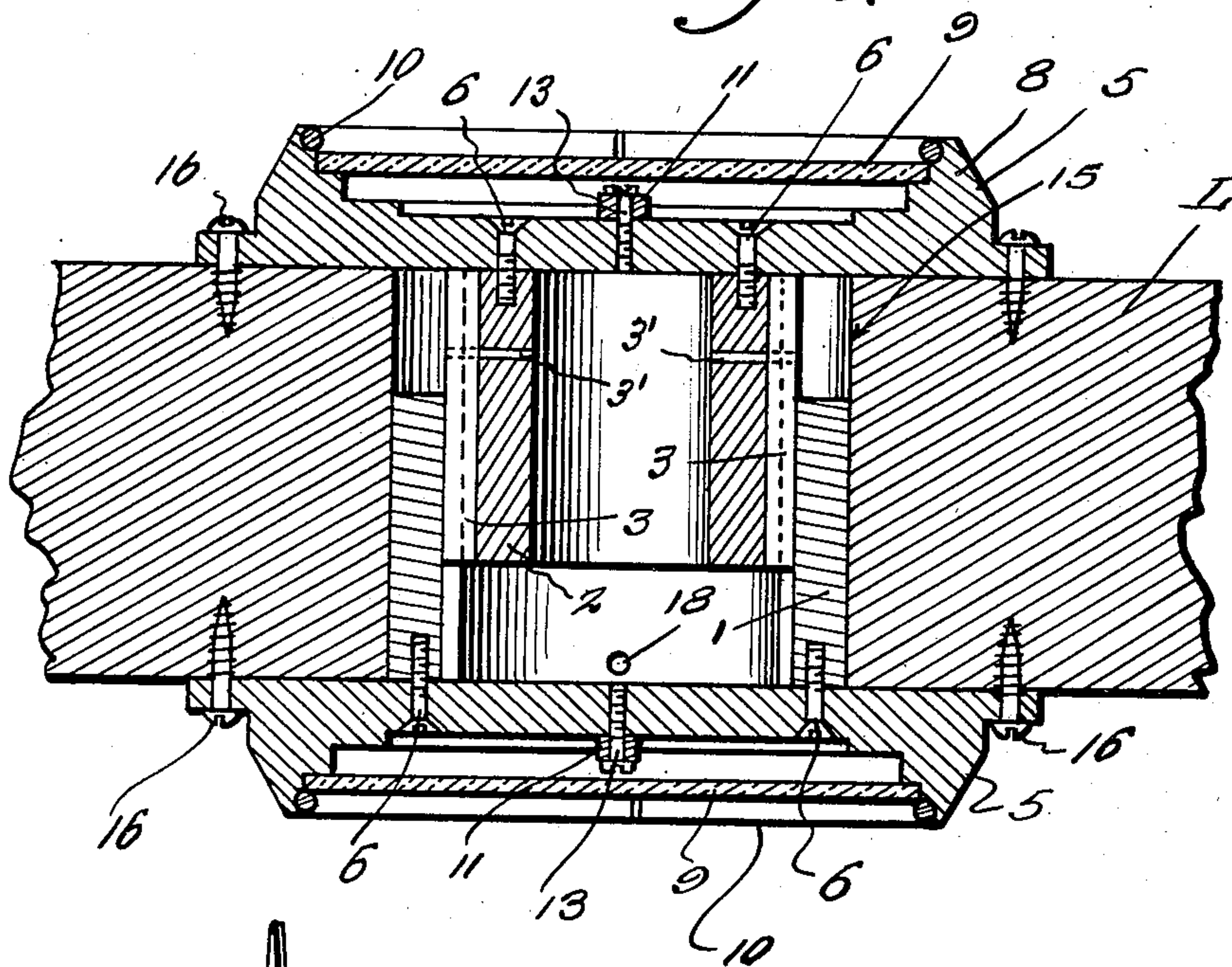
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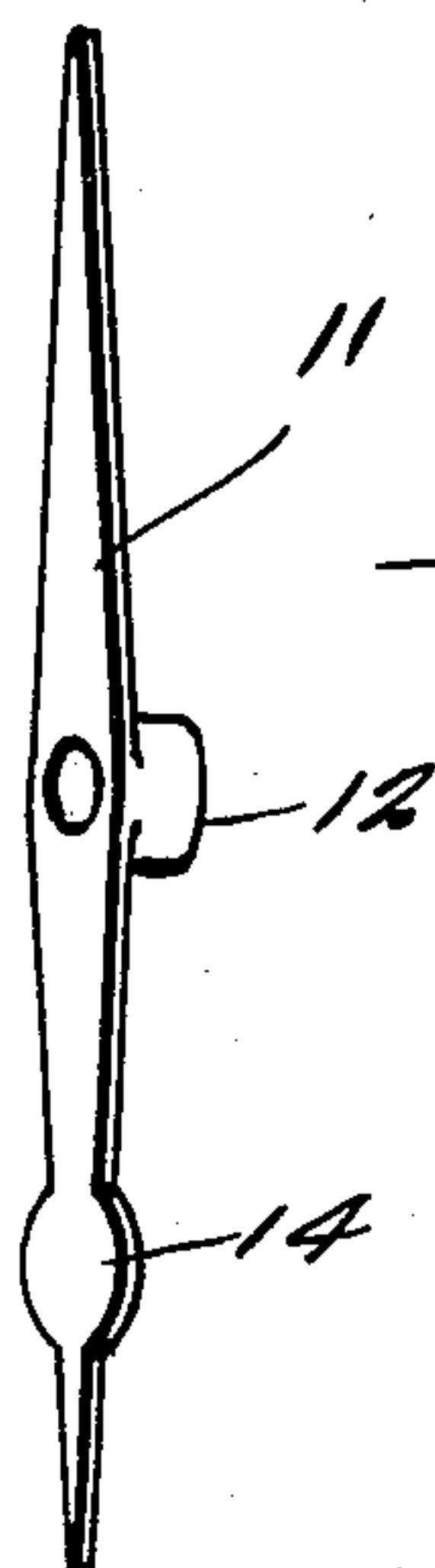
*Fig. 1.*



*Fig. 2.*



*Fig. 5.*



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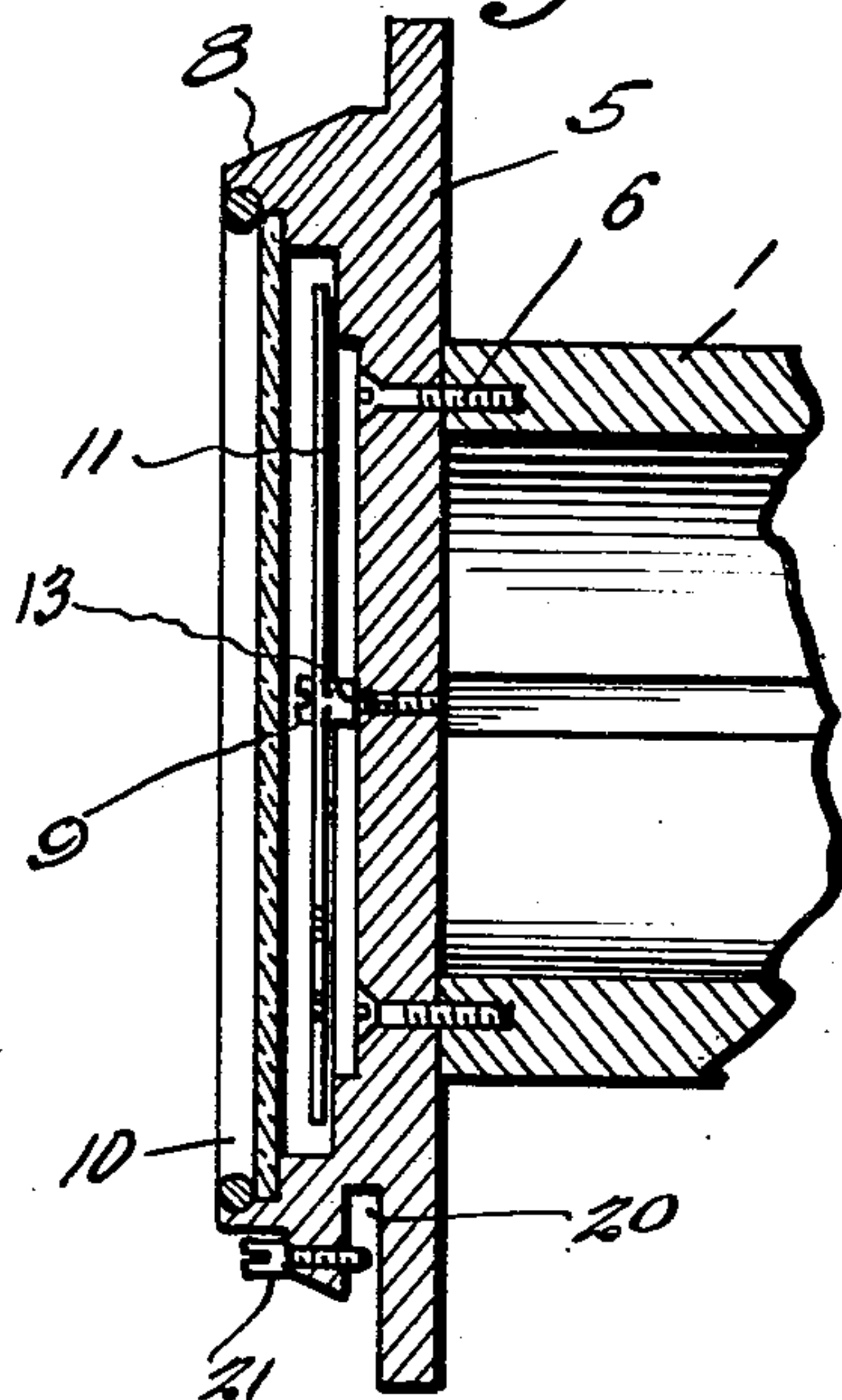
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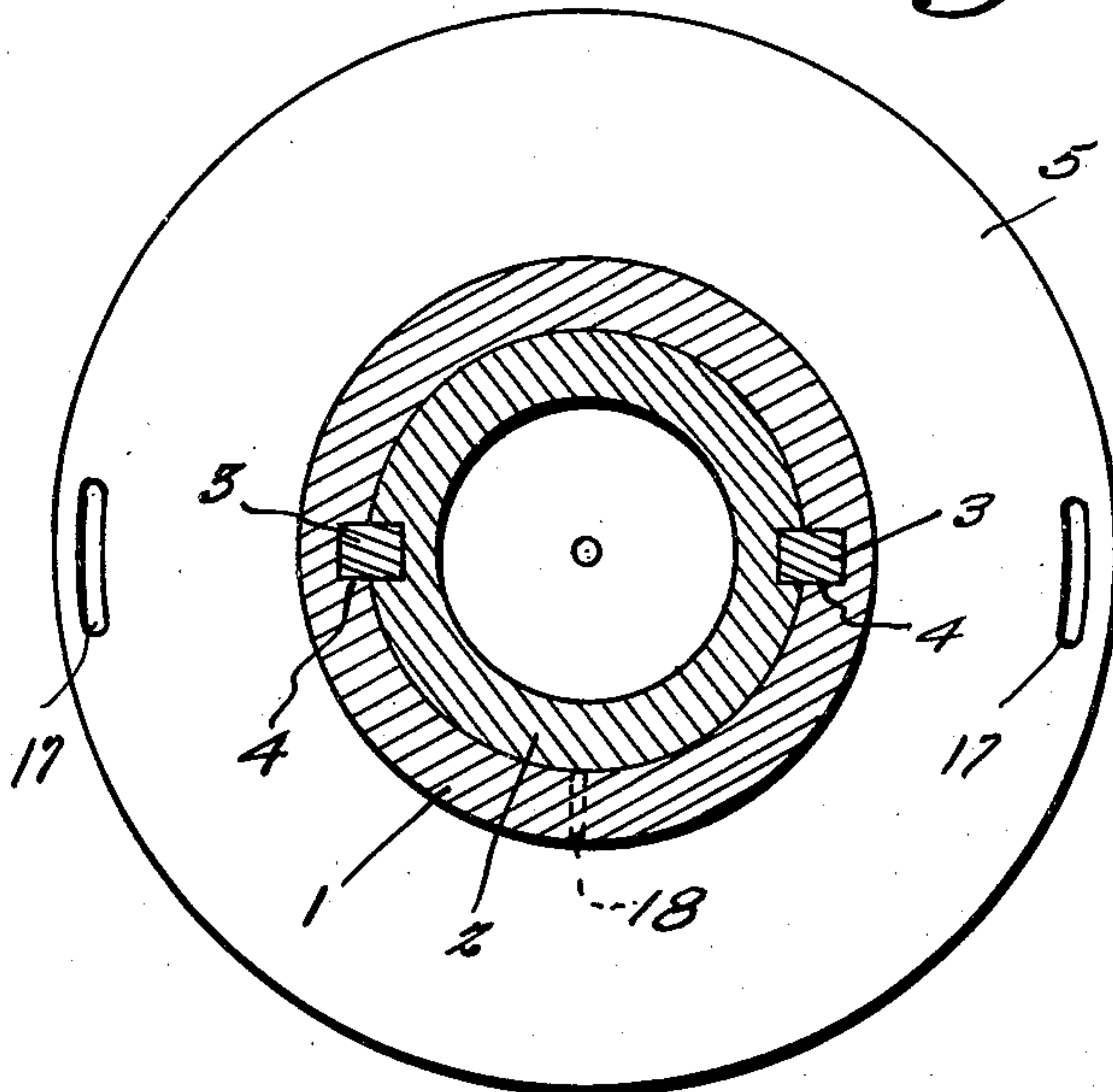
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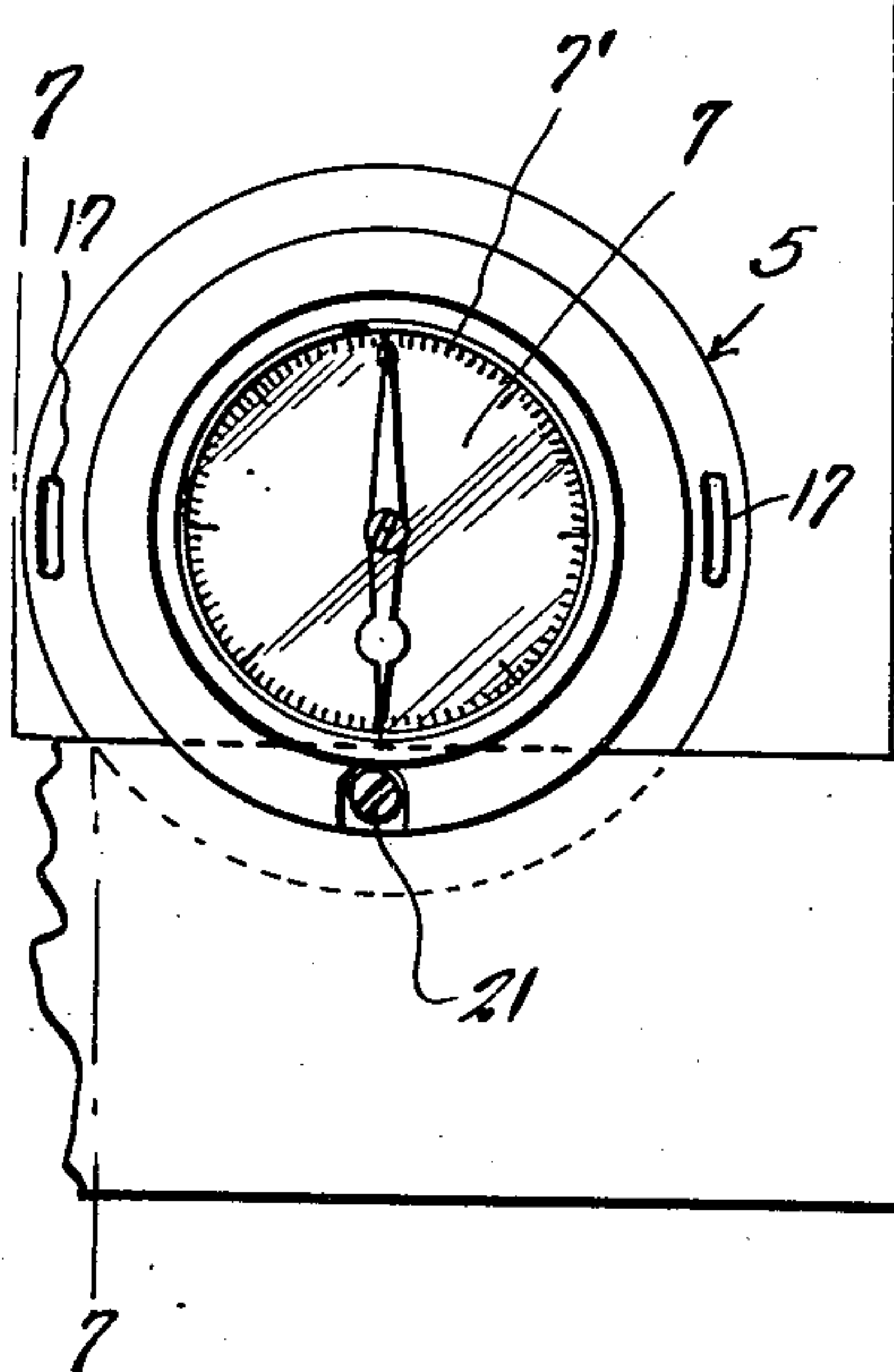
*Fig. 3.*



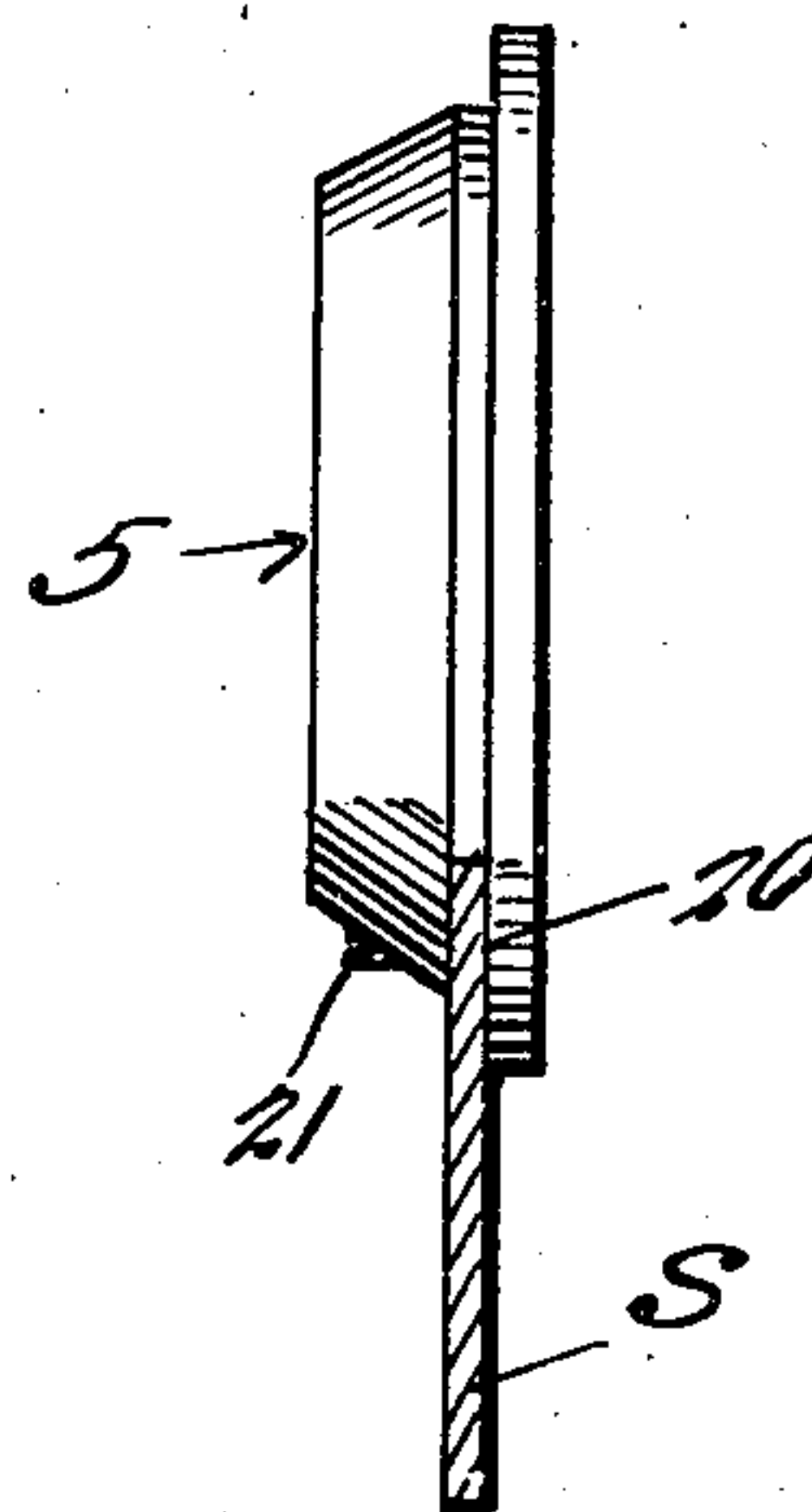
*Fig. 4.*



*Fig. 6.*



*Fig. 7.*



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## UNITED STATES PATENT OFFICE

2,183,902

## PITCH DETERMINING DEVICE

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Application April 25, 1939, Serial No. 269,956

2 Claims. (Cl. 33—215)

This invention relates to a device which can be used for leveling, plumbing and determining pitch, the general object of the invention being to provide a pair of telescopic cylinders each having a face plate connected to its outer end so that the device can be attached to different thicknesses of supports by forming a hole in the support to receive the cylinders and attaching the face plate to opposite sides of the support, with a scale and indicator carried by each face plate, the indicator key weighted at one end.

Another object of the invention is to provide a groove on one face plate whereby the said face plate can be used with a carpenter's square or the like.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which—

Figure 1 is a view showing the device carried by a wood level.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a sectional view through a face plate and portions of one of the cylinders.

Figure 4 is a transverse sectional view through the two cylinders and showing the rear side of a face plate.

Figure 5 is a view of the finger or pointer.

Figure 6 is a view of one of the face plates used with a carpenter's square.

Figure 7 is a section on the line 7—7 of Figure 6.

In these views the numerals 1 and 2 indicate a pair of cylinders which telescope each other and the cylinders are held against relative rotation by the keys 3 fitting in the keyways 4. Face plates 5 are fastened to the other ends of the cylinders by the screws 6 and each plate is formed with a dial carrying surface 7 surrounded by an annular portion 8 which has a shoulder intermediate its end to receive a transparent member 9 which is held in place by a spring ring 10 fitting in a groove in the outer part of the portion 8. A finger or pointer 11 has a centrally arranged hub 12 through which a screw 13 passes, the screw being threaded in a centrally arranged hole in each plate 5. An en-

largement 14 is formed adjacent one end of the finger and acts as a weight to cause the finger or pointer to assume a certain position under the action of gravity so that when the parts are in normal position this pointer will point to zero on the scale on the dial 7'. Figures 1 and 2 show the device carried by a wood level L and in attaching the device to such a level a hole 15 is formed in the central part of the level to receive the telescopic cylinders and by placing the cylinders in the hole, one from each side or end thereof and then pushing the cylinders toward each other the face plates will engage the opposite faces of the level and then the plates are fastened to the level by the screws 16 passed through slots 17 in the edges of the face plates, the slots permitting the face plate to be adjusted on the level. In order to permit the escape of air from the cylinders while they are being moved toward each other a hole 18 is formed in one cylinder adjacent its outer end as shown in Figure 2 and this figure shows the keys 3 as being held to the inner cylinder 2 by the pins 3'.

In order to permit a face plate to be used with a carpenter's square S shown in Figure 6, I form a slot or groove 20 in the face plate to receive a portion of the square and the said portion of the square clamped in the groove by a set screw 21 carried by the face plate. This groove is arranged at right angles to the pointer when the same is in vertical position as shown in Figure 6.

I prefer to make the scale 7' with a zero at the top and bottom of vertical line and from zero right to left the scale should be marked from 10 to 90, 90 appearing on the horizontal line.

This device can be used as a level, as in Figure 1, and it can be also used in finding pitch in degrees or angles and it can also be used as a plumb. When attached to a carpenter's scale as in Figure 6 it can be used for plumbing and leveling purposes.

It is thought from the foregoing description that the advantages and novel features of the invention will be apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A device of the class described comprising a pair of telescopic cylinders for insertion in a

hole in a supporting member, a face plate detachably connected to the outer end of each cylinder, means for detachably connecting the face plate to the supporting member, each face plate 5 having a recess in its outer face, a dial in the recess, a weighted finger located in the recess and pivoted to each face plate and movable over the dial.

2. A device of the class described comprising 10 a pair of telescopic cylinders, one cylinder having a keyway therein, a key on the other cylinder

for engaging the keyway, a face plate detachably connected to the outer end of each cylinder, a scale on the outer part of the face plate, a weighted pointer pivotally connected to each face plate and operating over the scale, said cylinders being adapted to be inserted in a hole in a supporting member with the face plates connected to opposite faces of said supporting member. 5

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