

No. 819,695.

PATENTED MAY 1, 1906.

A. FRICKER.
SPEED CHANGING ATTACHMENT FOR TACHOMETERS.
APPLICATION FILED OCT. 23, 1905.

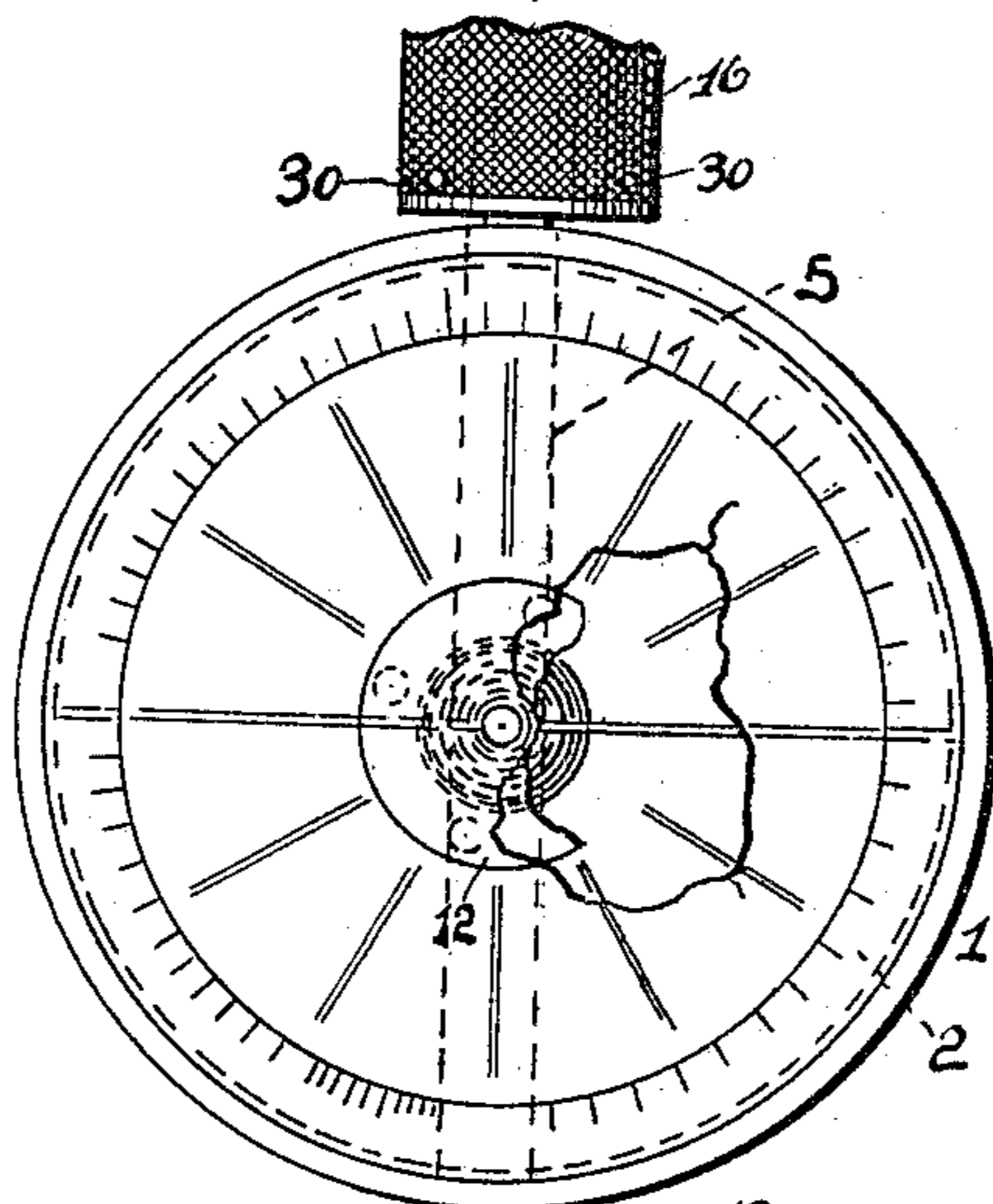


Fig. 1.

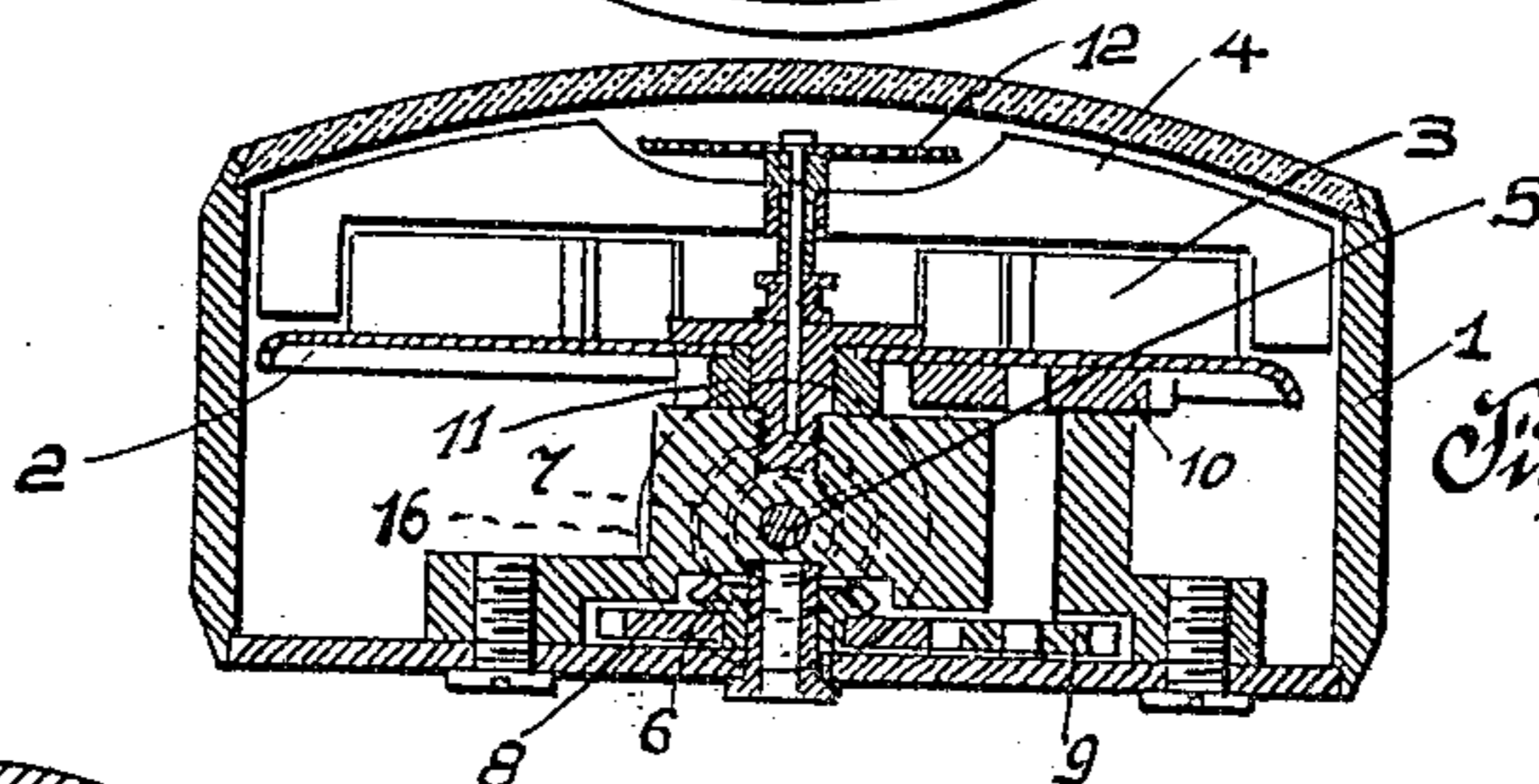


Fig. 2.

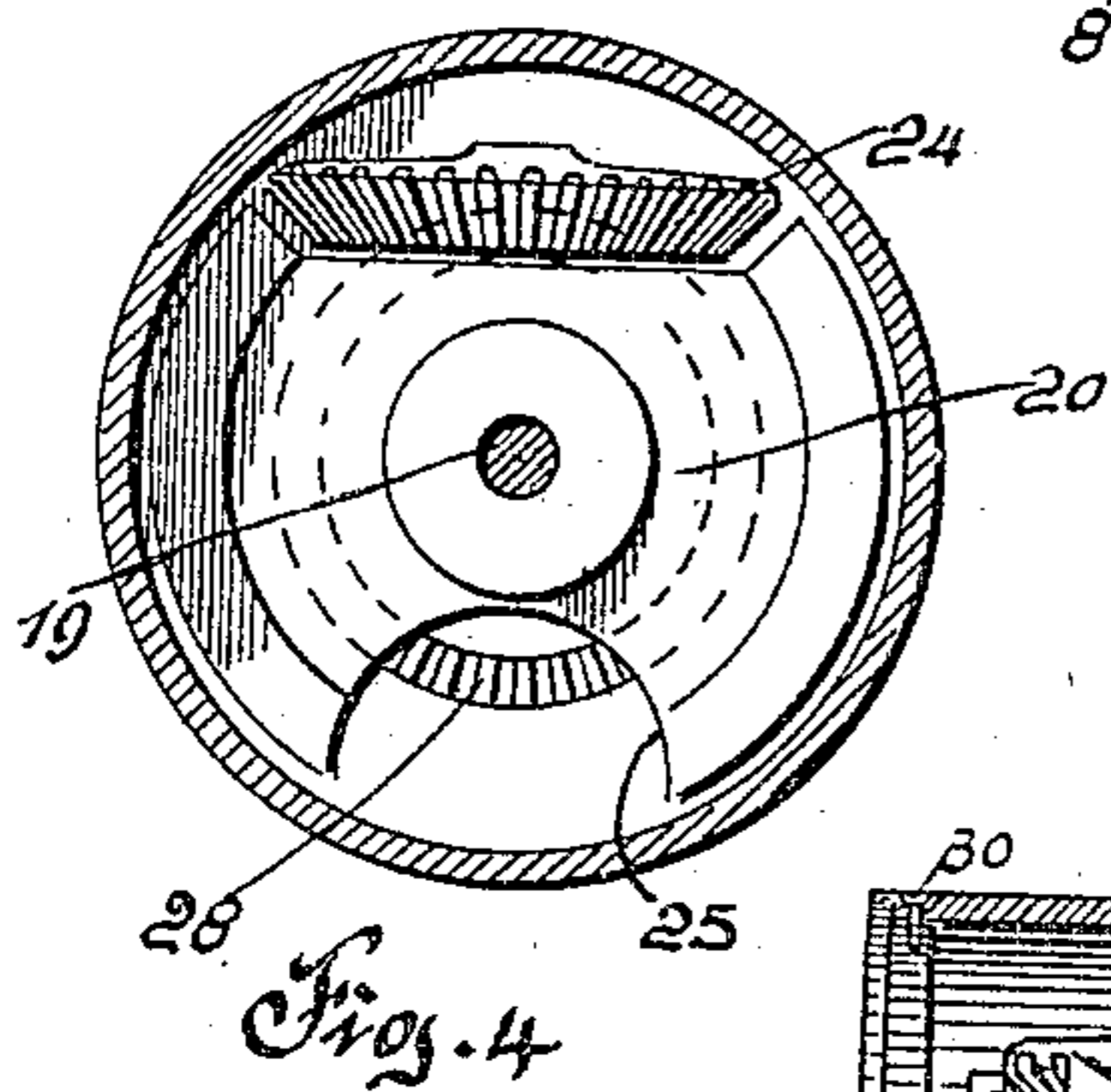


Fig. 3.

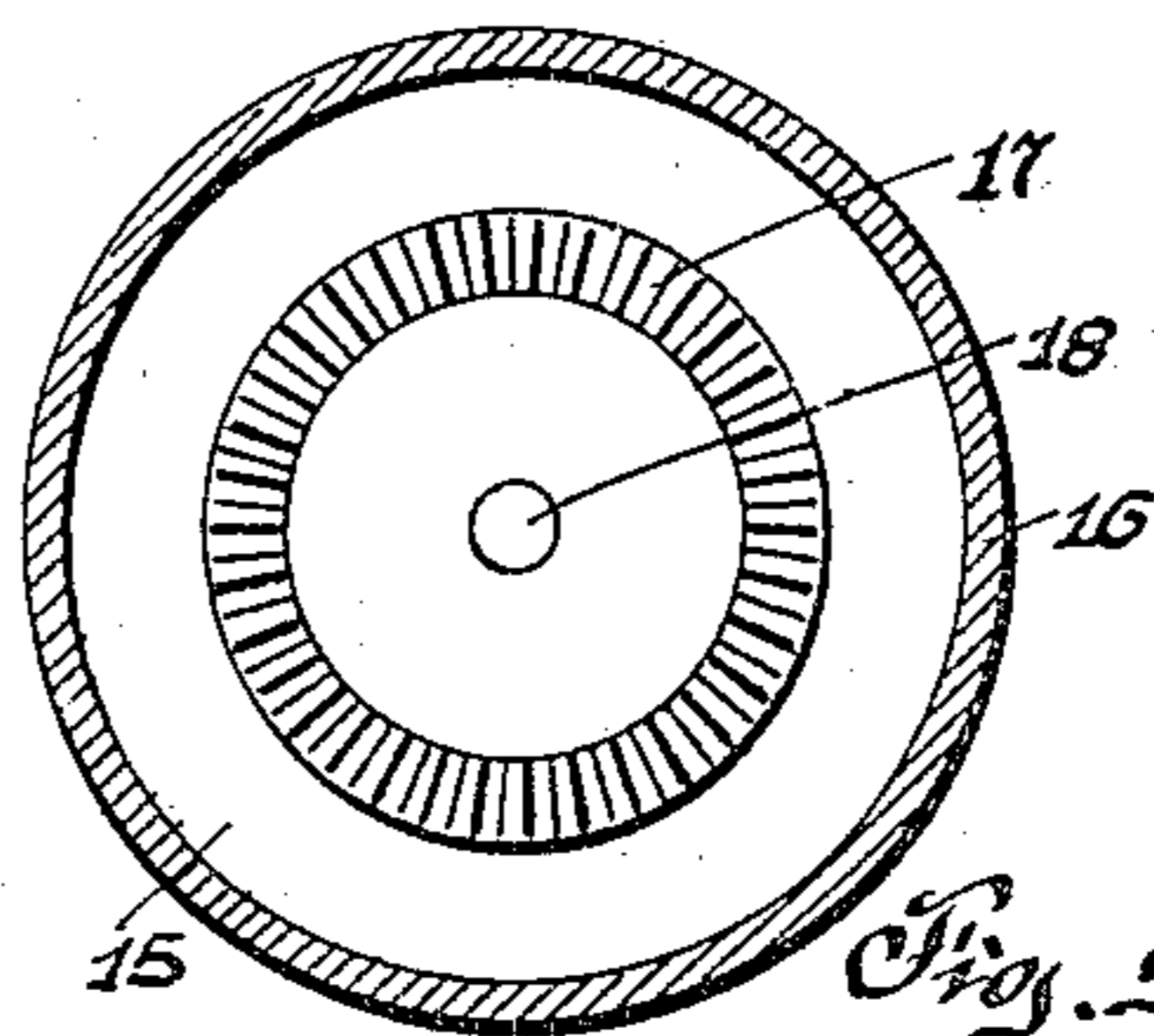


Fig. 4.

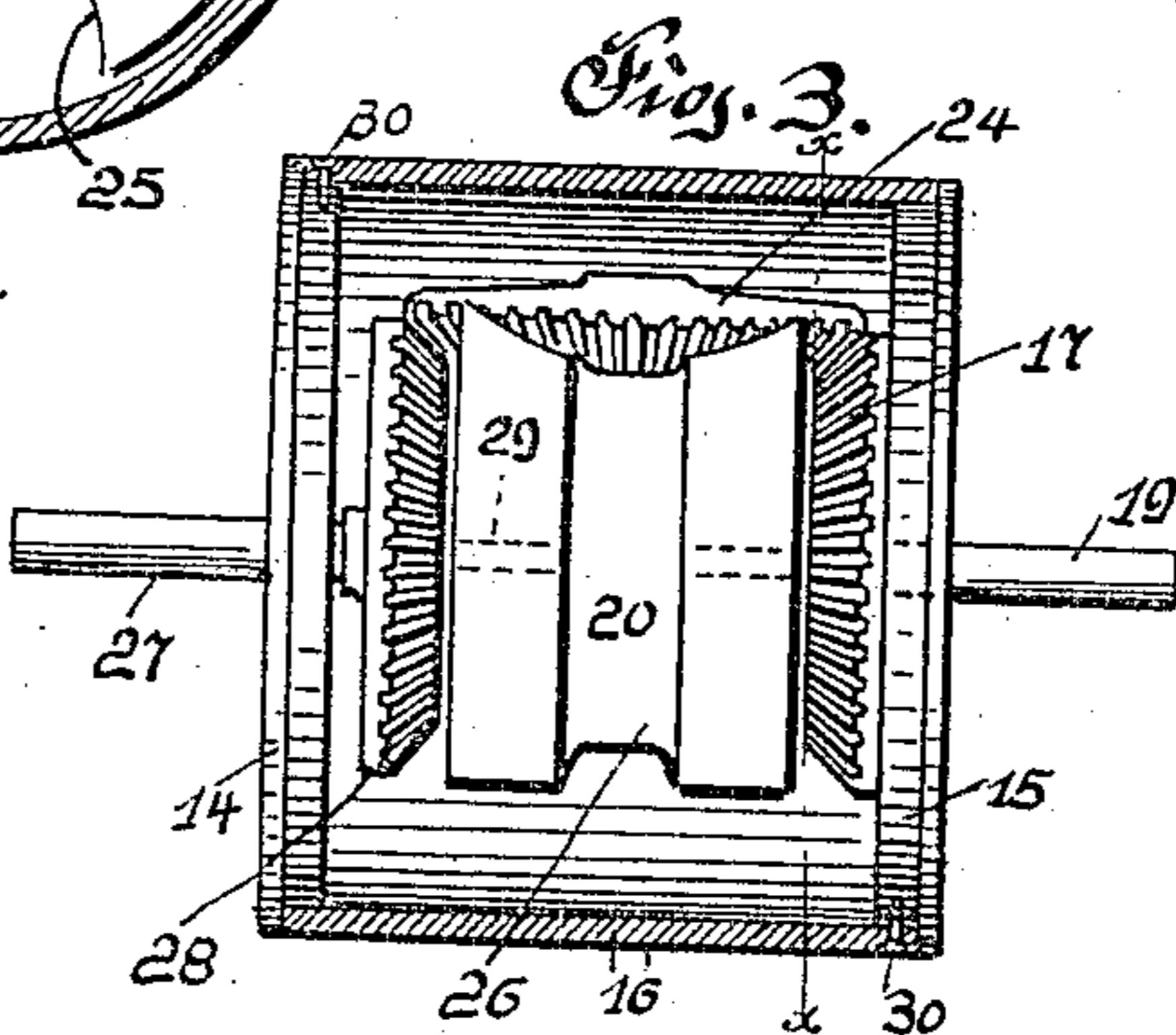


Fig. 5.

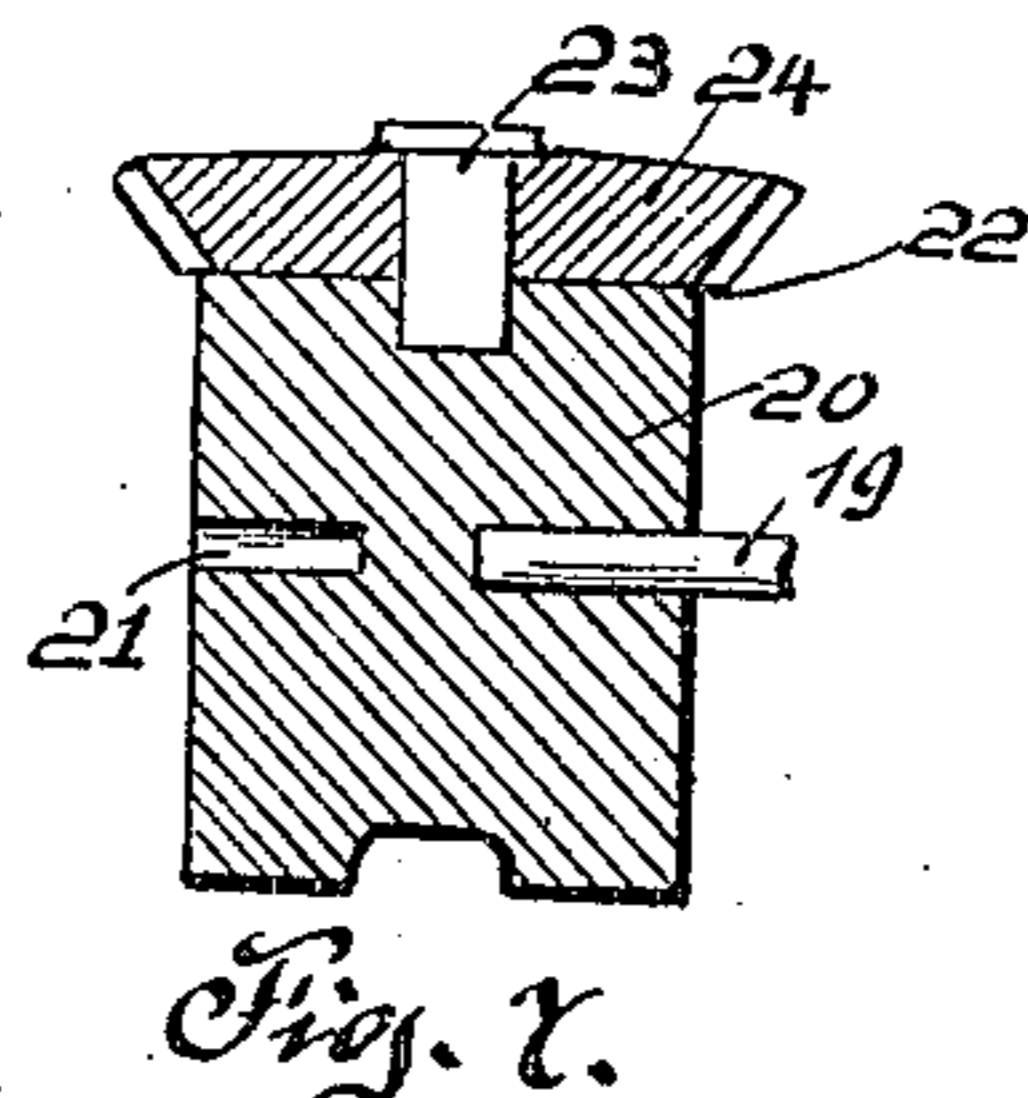


Fig. 6.

Witnesses:
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E. E. Potter

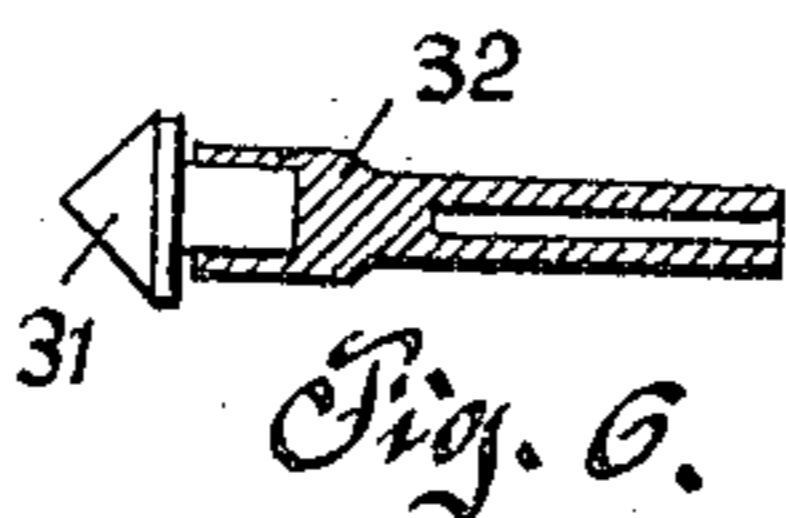


Fig. 7.

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UNITED STATES PATENT OFFICE.

ANTHONY FRICKER, OF PITTSBURG, PENNSYLVANIA.

SPEED-CHANGING ATTACHMENT FOR TACHOMETERS.

No. 819,695.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed October 23, 1905. Serial No. 284,085.

To all whom it may concern:

Be it known that I, ANTHONY FRICKER, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Speed-Changing Attachments for Tachometers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in speed-changing attachments for tachometers; and the invention has for its primary object to increase the efficiency of a tachometer.

The invention aims to provide a novel attachment for tachometers which will increase or decrease the different speeds to be determined by the tachometer. To this end I have devised an attachment embodying a casing in which a loose hub is mounted, and pivotally mounted upon the hub is a beveled gear-wheel adapted to mesh with a fixed beveled gear and a loose beveled gear carried by a shaft that extends out of the casing.

The above construction will be hereinafter more fully described and claimed, and, referring to the drawings accompanying this application, like numerals of reference designating corresponding parts throughout the several views, in which—

Figure 1 is a plan of a tachometer, partly broken away. Fig. 2 is a central vertical section of the same, illustrating my improved attachment in connection therewith. Fig. 3 is a longitudinal sectional view of the attachment. Fig. 4 is a cross-sectional view taken on the line $x x$ of Fig. 3 looking in the direction of the loose hub. Fig. 5 is a similar view taken on the same line of Fig. 3 looking in the direction of the fixed beveled gear. Fig. 6 is a longitudinal sectional view of a friction-wheel used in connection with the attachment. Fig. 7 is a vertical sectional view of the loose hub.

In the accompanying drawings I have illustrated my improved attachment as used in connection with a conventional form of tachometer, such as illustrated, described, and claimed in Patent No. 728,529, under date of May 19, 1903.

The essential features of the tachometer consist of a casing 1, in which is mounted a graduated dial 2. Revolvably mounted above said dial is a rotary fan-wheel 3, and spanning said wheel is a pointer-vane 4, which is adapt-

ed to indicate upon the graduated dial 2 the speed at which the rotary fan-wheel revolves. In the side of the casing 1 is mounted a tubular stub-shaft 5, which when revolved is adapted to impart a rotary movement to the fan-wheel 3 through the medium of gears 6 and 7 and pinions 8, 9, 10, and 11. In connection with the rotary fan 2 an inertia-brake 12 is used, and it is thought from the above description, in connection with the drawings, that the operation of the tachometer will be apparent without further description.

My invention resides in the attachment illustrated in Figs. 2 to 7, inclusive, and in Fig. 2 of the drawings I have illustrated the attachment in position to actuate the tachometer. The attachment embodies two heads 14 and 15, the head 15 being formed integral with or carrying a cylindrical exteriorly-knurled casing 16. The interior wall of the head 15 is provided with a fixed beveled gear 17, and centrally of said gear and the head 15 is formed an aperture or opening 18. Extending through said opening or aperture is a stub-shaft 19, upon which is fixed a hub 20, and the opposite face of the hub is provided with a cylindrical recess 21, adapted to horizontally aline with the shaft 19 of said hub.

The one face of the hub is cut away, as at 22, and pivotally mounted upon the face of the hub by a pin or stub shaft 23 is a beveled gear-wheel 24. The hub diametrically opposite the beveled gear-wheel is recessed, as at 25, to counterbalance the beveled gear-wheel 24. The hub is provided with a peripheral groove 26 to facilitate a lubricant placed within the casing 16 in reaching the beveled gear-wheel 24.

The head 14 is provided with a central opening, through which extends a shaft 27, and carried by said shaft within the casing 16 is a beveled gear-wheel 28. The one end of the shaft 27 is contracted, as at 29, to extend into the cylindrical recess 21 of the hub and assist in supporting the hub in the casing 16. The head 14 is secured to the cylindrical casing 16 by screws 30. In Fig. 6 of the drawings the cone-shaped friction-wheel 31 is carried by a sleeve 32, and this sleeve is adapted to fit over either one of the stub-shafts 27 or 19 when it is desired to use the attachment in connection with a tachometer.

When it is desired to use the attachment, the sleeve 32 is placed upon one of the shafts 27 or 19 and the other of said shafts inserted

in the tubular stub-shaft 5 of the tachometer. (Illustrated in Figs. 1 and 2 of the drawings.) The cone-shaped friction-wheel 31 is then placed in engagement with the center of the end of a shaft or axle the speed of which is to be ascertained by the tachometer. When the wheel 31 and the shaft 27 revolve, the shaft 19, which is connected to the tachometer, will revolve one-half as fast as the shaft 27, the revolutions of the shaft 19 being reduced through the medium of the beveled gears 28 and 17 and the beveled gear-wheel 24. Consequently one-half the number of revolutions made by the shaft or axle being tested will be indicated upon the dial 2 of the tachometer. By reversing the tachometer and placing the shaft 27 in the cylindrical stub-shaft 5 and placing the sleeve 32 upon the shaft 19 and holding it in engagement with the shaft or axle to be tested twice the number of revolutions of said shaft or axle will be indicated by the pointer-vane 4 upon the dial 2.

It is thought from the foregoing that the construction, operation, and advantages of the herein-described speed-changing attachment will be apparent without further description, and various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

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

1. The combination in a tachometer, of a reversible attachment comprising a casing, beveled gears mounted in said casing, one gear being attached to the casing and the other free to revolve therein, independent shafts projecting from opposite ends of the casing, a rotating and revolving beveled gear-wheel engaging said first-named gears, substantially as described.

2. The combination with a tachometer, of

a detachable casing, shafts carried by the casing and projecting respectively from opposite ends of the casing, and adapted to impart movement to the mechanism of the tachometer, means carried within said casing for communicating motion from one of said shafts to the other of said shafts, said means being adapted to change the rate of motion transmitted from one of said shafts to the other of said shafts and thereby providing means for changing the rate of motion of the tachometer accordingly as one or the other of said shafts is connected with the tachometer.

3. An attachment for tachometers, comprising a detachable and reversible casing, two revoluble shafts journaled in said casing and projecting respectively from opposite ends of the casing and means carried within said casing for imparting motion from one of said shafts to the other of said shafts, said means being adapted to change the speed of the motion so imparted.

4. The combination with a tachometer, of a casing detachable from and reversible relatively to the tachometer, revoluble shafts carried by said casing, said shafts being adapted to be alternatively inserted into the tachometer and connected with the mechanism thereof, means mounted within said casing for communicating motion from one of the shafts therein to the other of said shafts, said last-named means being adapted to change the speed of the motion so communicated and thereby increase or decrease the rate of motion of the tachometer mechanism, accordingly as one or the other of said shafts is connected with the tachometer.

In testimony whereof I affix my signature in the presence of two witnesses.

ANTHONY FRICKER.

Witnesses:

E. E. POTTER,
M. E. LAWSON.