

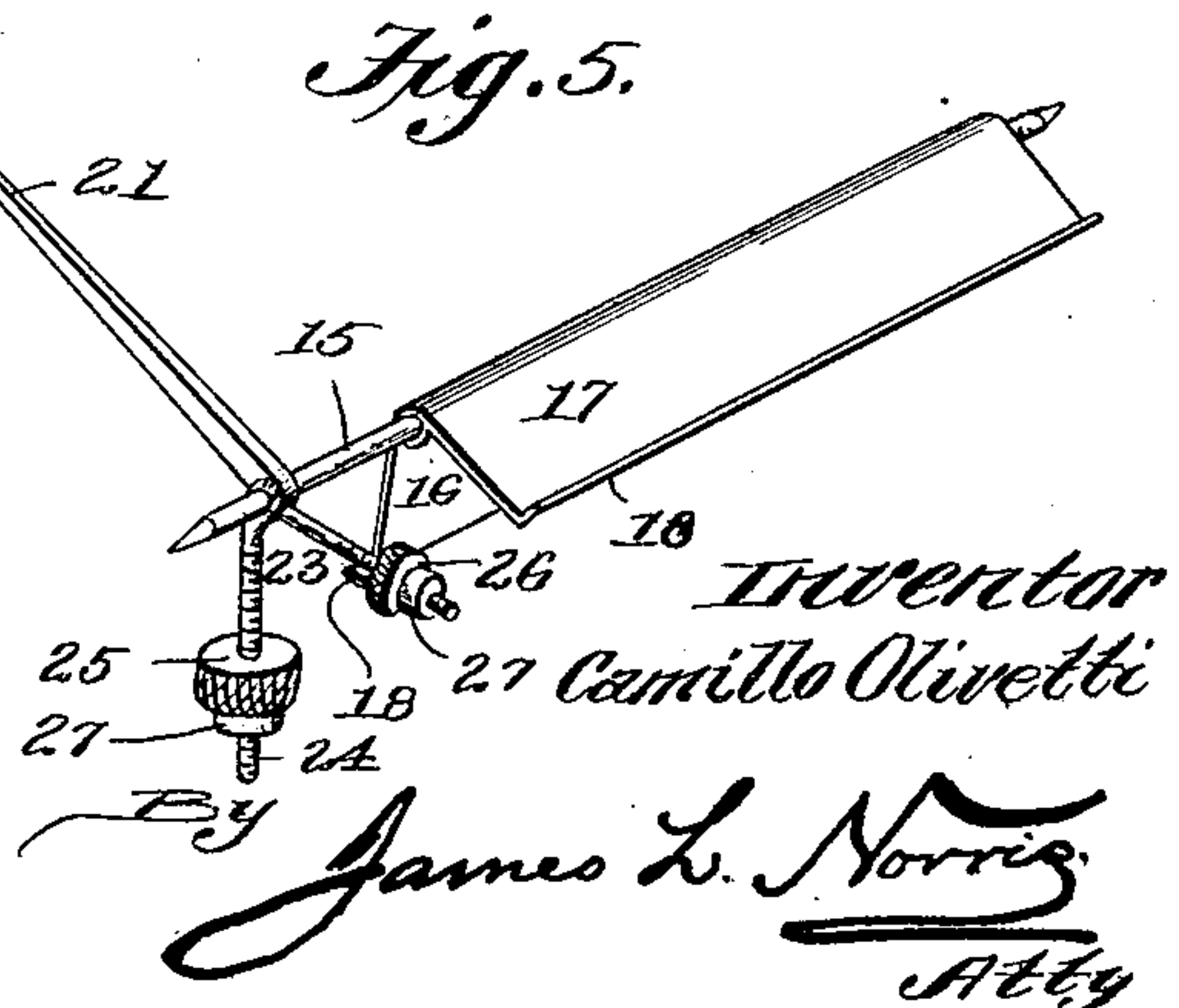
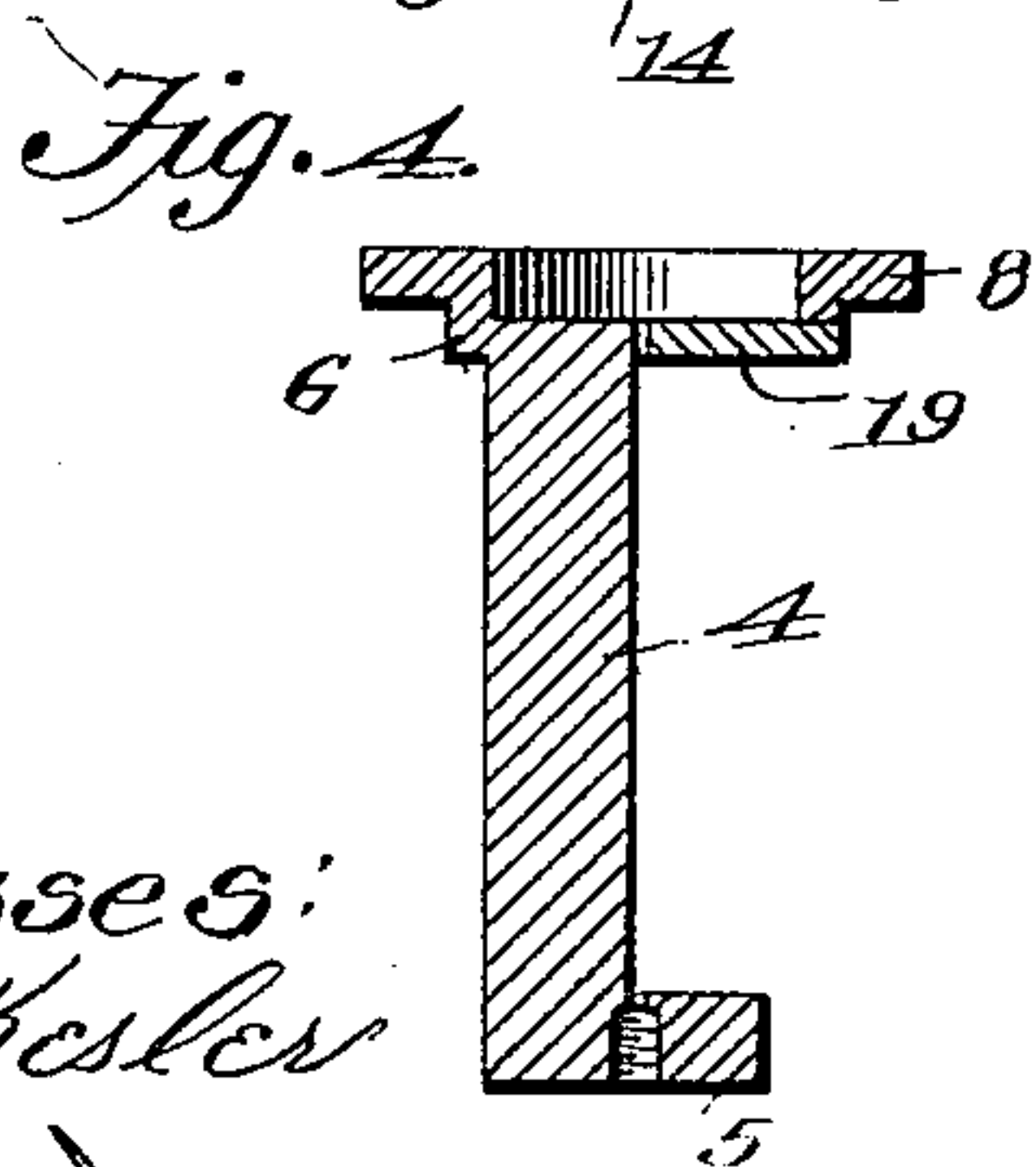
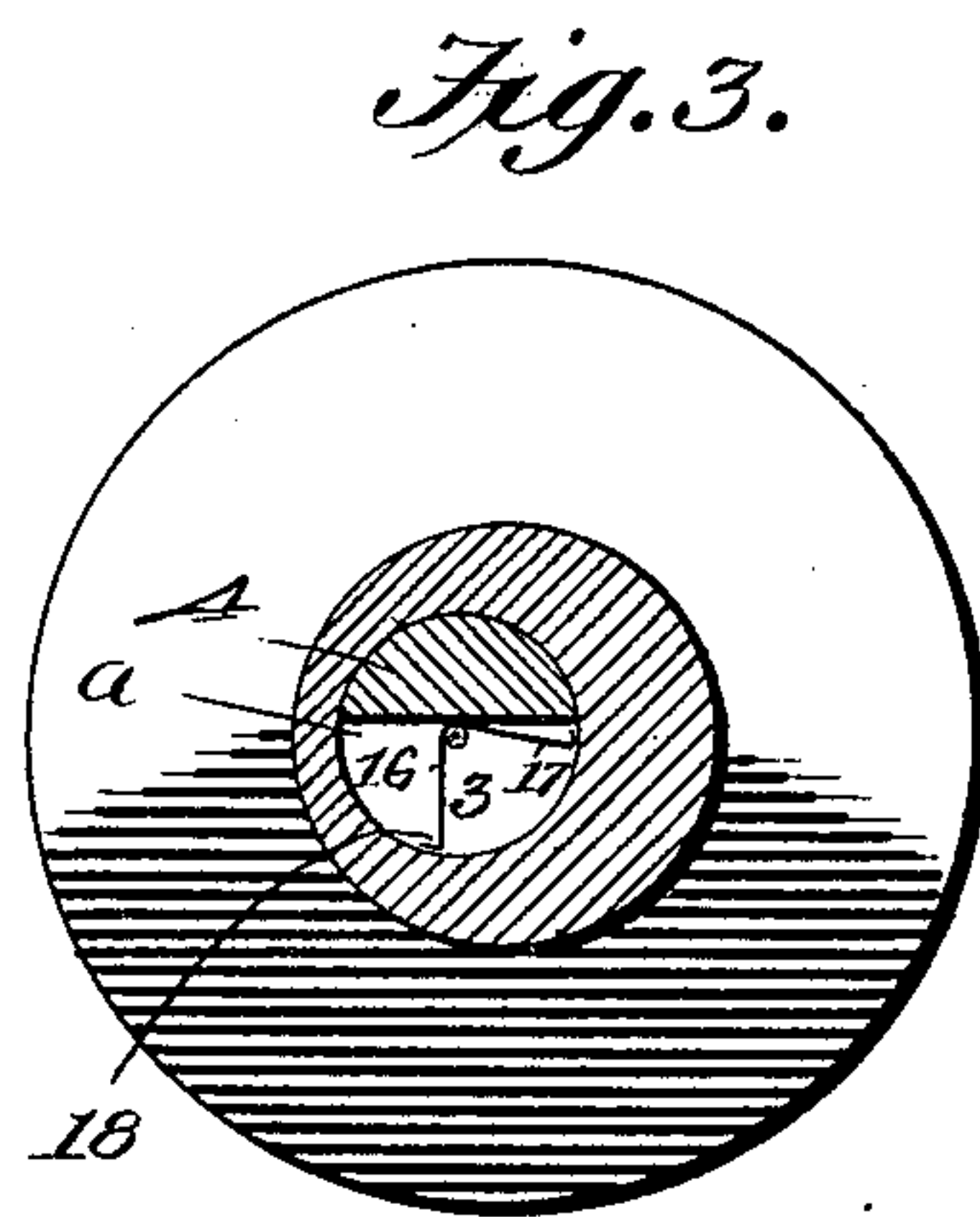
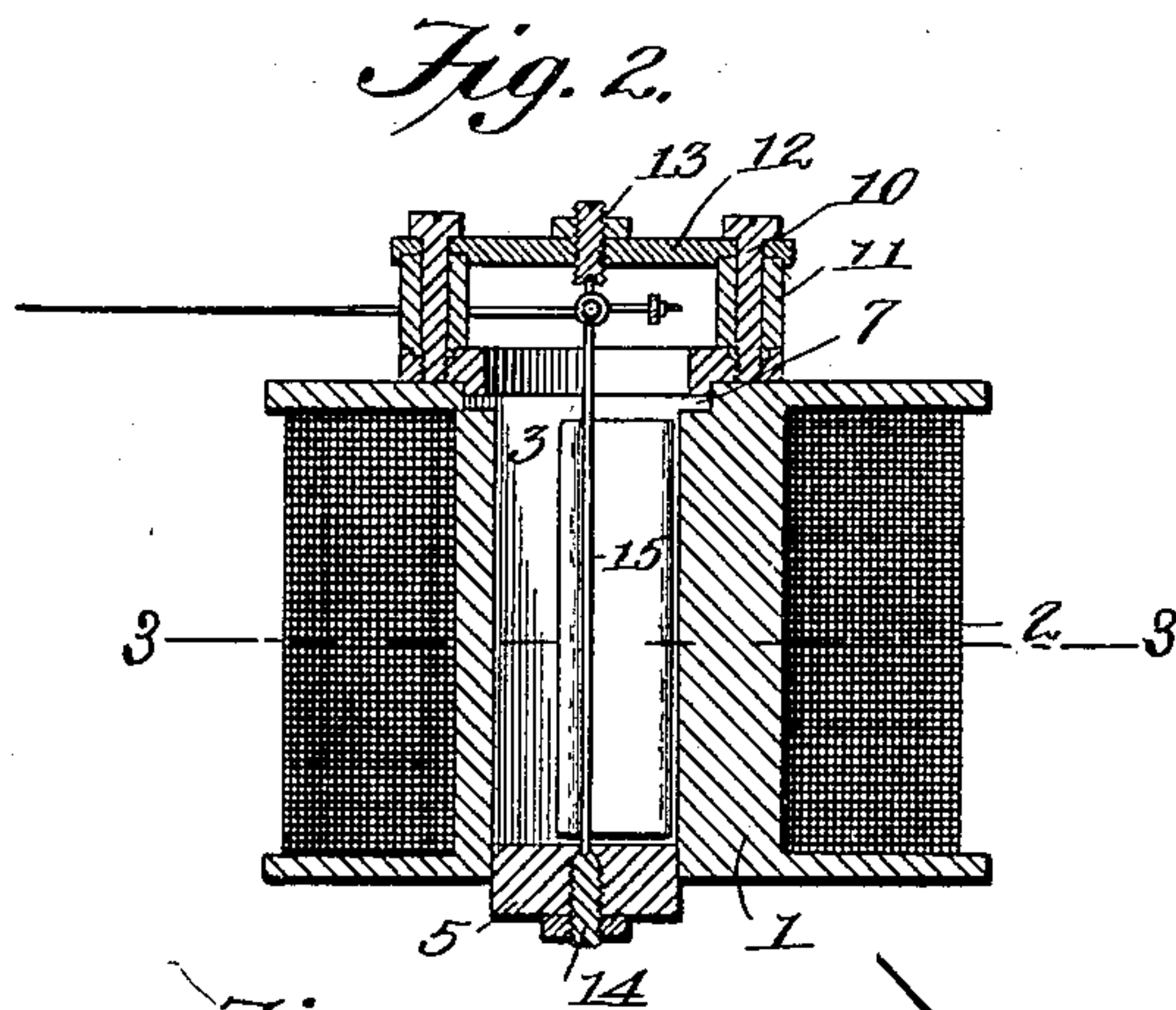
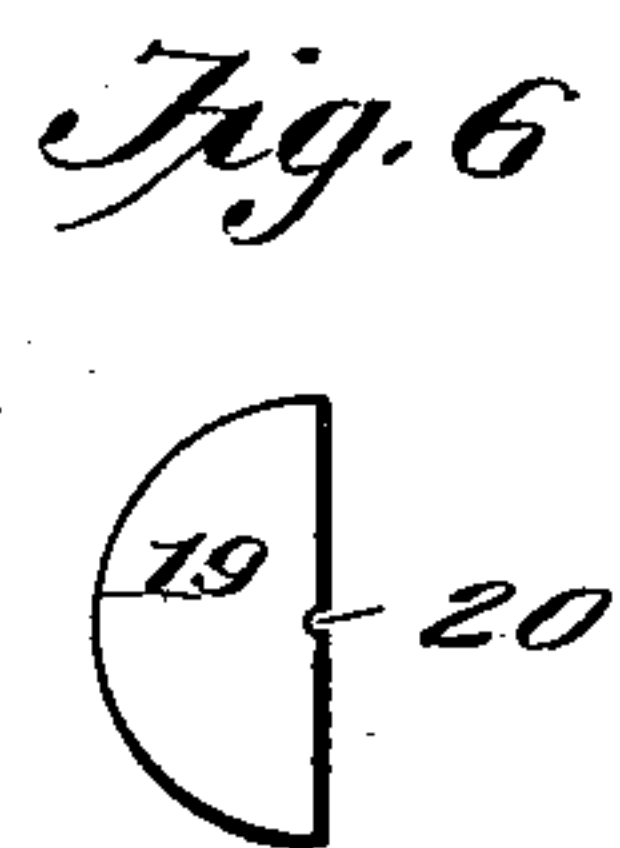
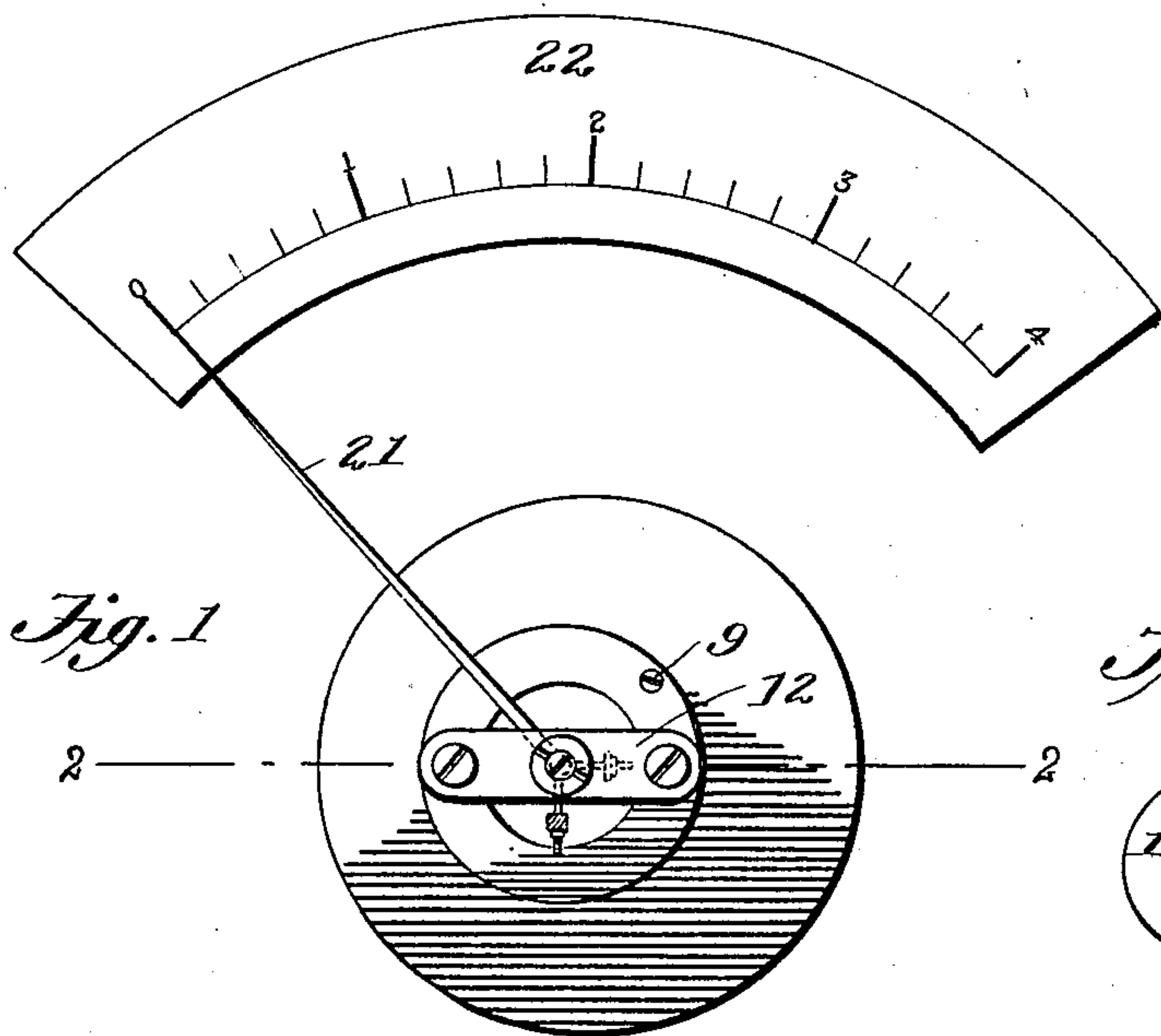
No. 665,798.

Patented Jan. 8, 1901.

C. OLIVETTI.
ELECTRICAL MEASURING INSTRUMENT.

(Application filed Aug. 9, 1900.)

(No Model.)



Witnesses:
C. D. Kessler
J. B. Kessler

Inventor
Camillo Olivetti
By James L. Norris
Atty

UNITED STATES PATENT OFFICE.

CAMILLO OLIVETTI, OF IVREA, ITALY.

ELECTRICAL MEASURING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 665,798, dated January 8, 1901.

Application filed August 9, 1900 Serial No. 26,421. (No model.)

To all whom it may concern:

Be it known that I, CAMILLO OLIVETTI, a subject of the King of Italy, residing at Ivrea, Italy, have invented certain new and useful
5 Improvements in Electrical Measuring Instruments, of which the following is a specification.

This invention relates to an electrical measuring instrument, and has for its object to
10 provide a device of the character described by means of which the strength or potential of an electric current may be measured with accuracy and exactness.

To this end my invention consists in the
15 features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings,
20 forming a part of this specification, wherein—

Figure 1 is a view in front elevation of my improved instrument. Fig. 2 is a section taken on the line 2 2 of Fig. 1. Fig. 3 is a section taken on the line 3 3 of Fig. 2. Fig.
25 4 is a detail sectional view of the segmental plug arranged within the core and its segmental washer. Fig. 5 is a detail perspective view illustrating the operation of the index or pointer, and Fig. 6 is a detail view of the
30 segmental washer.

Referring to the drawings, the numeral 1 indicates a hollow core, about which is coiled the line-wire 2. The core 1 is provided with a longitudinal perforation or channel 3,
35 formed eccentrically to the axial center of said core, and in said channel is fitted a segmental or semicylindrical plug 4. One end of said plug is provided with an integral disk 5, that fits one end of the channel 3 air-tight,
40 and the other end of the plug is provided with an annular enlargement 6, slightly greater in diameter than the channel 3, which tightly fits in an annular groove 7, formed in the end of the core concentrically with the said channel.
45 The enlargement 6 is formed with an annular flange 8, that rests on the extreme end of the core and may be conveniently attached thereto by a screw 9. Attached to the flange 8 by screws 10 and sleeves 11 is
50 a bracket-arm 12, having centrally inserted therein a jewel or journal 13, and a corre-

sponding jewel or journal 14 is fixed centrally in the disk 5.

Disposed centrally in the channel 3 is a shaft 15, the opposite ends of which are re- 55 spectively stepped in the jewels or journals 13 and 14. On the shaft 15 is fixed an armature comprising two flat wings 16 and 17 of sheet-iron or other material of good magnet- 60 ical permeability, each of said wings at its outer edge being bent outward, as most clearly shown at 18 in Figs. 3 and 5 of the drawings. Said bent edges in the present instance are shown as being bent in the form of short arcs 65 of a circle to conform to the walls of the channel 3; but they may also be bent on straight lines or on other lines, all that is essential being that they must lie in close proximity to the wall of the cylindrical channel 3. The enlargement 6, immediately opposite the cut- 70 away portion of the plug 4, is provided with a semicircular aperture to permit of the ready insertion and removal of the shaft 15 and wings 16 and 17, and after the latter have been inserted in place the aperture is closed 75 by a segmental or semicircular washer 19, that fits in the groove 7, and together with the plug 4 and its enlargement 6 closes the corresponding end of the channel 3 in the core, a notch 80 20 being formed centrally in the straight side of the washer for the passage therethrough of the shaft. On one end of the shaft 15 is fixed an index-hand or pointer 21, arranged at its free end to travel over a graduated scale 22. On the shaft 15 is also fixed a bell-crank lever 85 23, one end 24 of which normally hangs suspended in a vertical position and has threaded thereon a weight 25, while the other end has threaded thereon a counterbalance-weight 26. By adjusting the weights on the arms of the 90 bell-crank lever the hand or index may be caused to normally indicate zero on the graduated scale with certainty and accuracy. Each of the nuts or weights 25 and 26 is provided with a reduced and threaded extension 27, 95 which is structurally weak or thin, so that after the nuts or weights have been finally adjusted they may be permanently fixed in their adjusted positions by squeezing said extensions 27 on their arms, so as to cause them 100 to bind on the latter.

The operation of my improved device is as

follows: The instrument is supported in place in the position shown in Fig. 1 of the drawings and the electrical current to be measured is passed over the line-wire 2, coiled about the core. The current when sufficiently strong to overcome the balanced index-hand obviously attracts the wing 16 of the armature toward the point marked *a* in Fig. 3, and said wing in its movement about its axis produces a damping action by compressing the air between its face and the corresponding face of the plug 4, and as the air can only escape slowly about the edge of the wing or through the contracted space between said edge and the cylindrical wall of the channel 3 the index-hand or pointer is caused to move slowly or gradually over the graduated scale and is prevented from indicating an undue or excessive amount of current by being suddenly actuated or given a rotation by a sudden impulse. The wing 17 will obviously act in the same manner when the intensity of the current diminishes and the index-hand returns to zero by gravity. The wings act as diaphragms, between which and the face of the plug the air is confined, and the air thus acts as a cushion not only to prevent the pointer from being thrown or forced beyond the point it should assume, but also to maintain said hand or pointer in its true indicating position. It will of course be understood that the extent of movement of the hand or pointer will be proportionate to the intensity of the electrical current passing over the line-wire. Having described my invention, what I claim is—

1. In an electrical measuring instrument, the combination with a core wound by the line-wire and provided with a cylindrical channel disposed eccentrically to the axis of the core, of a radial armature pivoted centrally within said channel, and an index or pointer arranged to move with said armature, substantially as described.

2. In an electrical measuring instrument, the combination with a core wound by the line-wire and provided with a cylindrical channel formed eccentrically to the axis of the core, of a radial armature pivoted centrally within said channel and a partition arranged in the said channel on the side opposite to the axis of the armature, substantially as described.

3. In an electrical measuring instrument, the combination with a core wound by the line-wire and provided with a cylindrical channel formed eccentrically to the axis of the core, of an armature centrally pivoted within the channel and comprising two radial magnetic wings divergently bent at their outward ends to conform to the curvature of the channel within which they are disposed, and a pointer or index actuated by said armature, substantially as described.

4. In an electrical measuring instrument, the combination with a core wound by the line-wire and provided with a cylindrical channel formed eccentrically to the axis of the core, of a radial armature pivoted centrally within said channel and comprising two radial magnetic wings projecting at suitable angles to one another from their axes, a semicircular plug fitted in said channel to one side of the axis of the armature, a pointer or index actuated by the armature, and means for returning the pointer or index to normal position, substantially as described.

5. In an electrical measuring instrument, the combination with a core wound by the line-wire and provided with a cylindrical channel formed eccentrically to the axis of the core, of a rotatable shaft arranged centrally within said channel and having fixed thereon two radial magnetic wings that project at their outer edges into close proximity to the cylindrical wall of the channel, a semicircular plug disposed in said channel to one side of said shaft, and provided at one end with a disk fitted air-tight in one end of the channel and at its other end with an annular enlargement fitted air-tight to the end of the core and provided with a semicircular aperture, a semicircular washer closing said aperture, a pointer or index fitted to rotate with the shaft, and means for returning the pointer or index to normal position, substantially as described.

6. In an electrical measuring instrument, the combination with a core wound by the line-wire and provided with a cylindrical channel formed eccentrically to the axis of the core, of a semicircular plug disposed in said channel and provided at one end with a disk tightly fitted in one end of the channel, and at its other end with an annular enlargement fitted in a correspondingly-shaped groove formed in the end of the core, said enlargement being provided with a semicircular aperture closed by a correspondingly-shaped washer, a bracket-arm fitted on the end of the plug, bearings in said bracket-arm and disk, a shaft journaled at its ends in said bearings and disposed in close proximity to the flat face of the disk, two radial magnetic wings fixed on said shaft and projecting at their outer ends into close proximity to the cylindrical wall of the channel, a pointer or index-hand arranged to rotate with said shaft, and means for returning the shaft and pointer or index to normal position, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CAMILLO OLIVETTI.

Witnesses:

RAFFAELE ROSSE,
ROSSO CARLO.