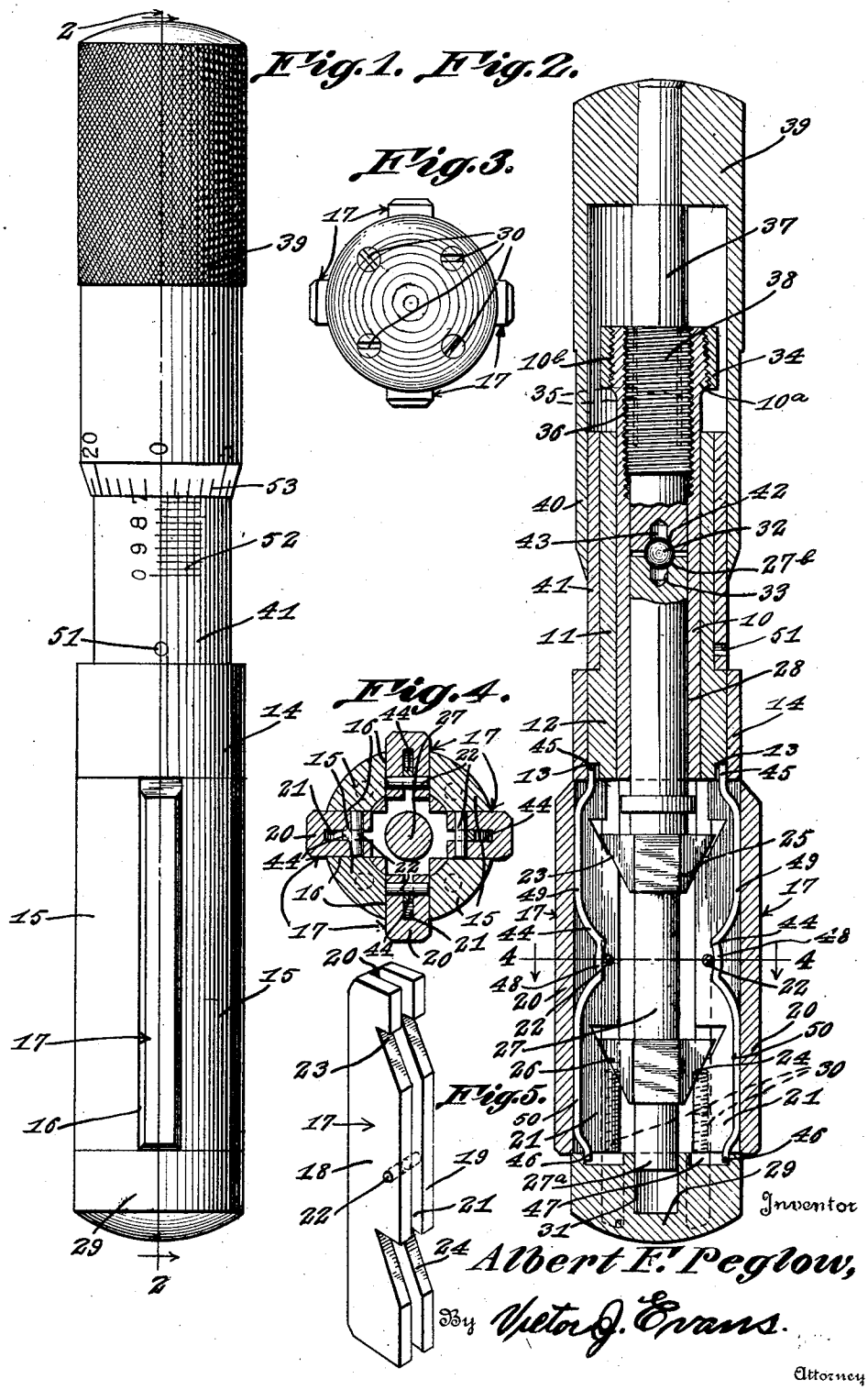
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GAUGE

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GAUGE

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The present invention relates to micrometer gauges for measuring the internal diameters of holes and bores in metallic tubes or the like.

Objects of the invention are to provide an instrument of this character which is simple in construction and effective in use and which can be simply adjusted to various bores, and which will give an accurate reading of the diameters of the bores to which the instrument is applied.

Other objects and advantages will appear from the following description and will be set forth in the subjoined claims, and I do not wish to be limited in the scope of my invention except as I shall be limited by said claims.

In the drawings:

Figure 1 shows the gauge in elevation.

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

Figure 3 is a view of one end thereof.

Figure 4 is a section on the line 4—4 of Figure 2.

Figure 5 is a detail of one of the radially movable plungers.

Referring to the drawings in detail, 10 designates a tubular sleeve to which is connected a second sleeve 11 which may be considered the body of the device and on the end of which is a head 12 having notches 13 formed therein lying in spaced relation to each other and defining a circle around the periphery of the head 12, for a purpose which will presently appear. Surrounding the head 12 is a ring 14 which may be connected with the head by swaging or in any other suitable manner to prevent relative movement of the head and ring. Projecting from the head 12 are members 15 sector shaped in cross section and spaced from each other to provide slideways 16 for the plungers 17 which when retracted form with the sector members 15 a cylinder. The plungers 17 comprise side members 18 and 19 connected by the web 20 and forming a slot 21 therebetween. Between the side members 18 and 19 are mounted pins 22, extending transversely of the slots for a purpose which will presently appear, and the side members are notched at 23 and 24 to receive the wedge shaped cams 25 and 26 which are rigidly mounted on a sliding rod 27 having sliding connection with the bore 28 of the sleeve 10.

The end of the device adjacent the cams 26 is closed by a cap 29 secured to the members 15 by machine screws 30. The cap 29 is provided centrally with a bore 31 with which the adjacent end 27^a of the rod 27 has sliding connection. The opposite end of the rod 27 is provided with a depression at 27^b which is substantially semi-spherical in shape to receive therein a metallic ball 32, the depression having communicating therewith a recess 33 adapted to hold a small amount of lubricant.

The upper end of the sleeve 10 is enlarged at 10^a and the enlarged portion has an upward taper threaded as at 10^b to receive the collar 34 thereon, the end of the sleeve having radial cuts 35 formed therein whereby in connection with the ring 34 the enlarged end 10^a may be adjusted for purposes which will presently appear.

The sleeve 10 is internally threaded at 36 adjacent the adjustable end and has received therein a rod 37 having threads 38 in cooperation with the threads 36, the outer end of the rod 37 having rigidly connected therewith a cap 39 which extends downwardly over the sleeve 11 and lies in spaced relation thereto to receive between its walls 40 and the body 11 a sleeve 41. The sleeve 41 has a snug fit upon the body 11 and is normally held against rotation thereon, but may be manually rotated for a purpose to be later explained. The opposite end of the rod 37 has a semi-spherical depression 42 formed therein with an oil receiving recess 43 communicating therewith, the semi-spherical depression being in alignment with the depression 27^b and forming a bearing for the ball 32. Located within the slots of the plungers 17 are spring members 44 having ends 45 projecting into the notches 13 and held therein by the ring 14, the opposite ends 46 resting in an annular groove 47 in the head 29 and having portions 48 slightly bowed and fitting against the pins 22 bridging the space between the sides 18 and 19 of the plunger. The portions of the springs lying between the member 48 and the ends thereof are bowed outwardly, as shown

at 49 and 50. The springs, it will appear from the above description, serve to hold the plungers from displacement from their slideways.

The sleeve 41 is provided with a scale 52 and the lower end of the cap 39 is likewise provided with a scale 53, the two scales cooperating in the usual micrometric manner. The sleeve 41 is provided with an aperture 51 adapted to receive a lug on a wrench or like tool for adjusting the sleeve to bring the scale thereon into proper adjustment, and to compensate for wear of the micrometer parts.

In operation, the cap 39 is rotated on the sleeve 11 which carries the sleeve 41 until the plunger 17 has been projected into contact with the bore in which the opposite end of the instrument has been placed, whereupon the reading may be made and the instrument withdrawn. As the cap rotates the rod 37 will rotate therewith and will be fed inwardly by the threads 36 on the inside of the bore of the member 10, the rod 28 being pushed downward and carrying the cam shaped members 25 therewith, which press the plungers 17 radially outward against the influence of the springs 44. After each operation, the rod 27 is returned to its normal position through the instrumentality of the springs 44.

Having described my invention, what I claim is:

1. A micrometer gauge for measuring the diameter of cylindrical holes and the like, comprising a hollow body, a sleeve surrounding said body and having a scale thereon, a head at one end of said body, a plurality of elongated sector shaped members fixed at one end to said head and projecting therefrom with their curved surfaces lying in circumferentially spaced relation to each other to provide slideways between said members, plungers mounted in said slideways, a cap secured to the free ends of said sector shaped members and having an annular groove therein, said head member having apertures therein, said plungers having longitudinal slots therein, resilient members lying in said slots and having their opposite ends respectively arranged in said apertures and in said annular groove, a bushing arranged within the body, a second cap on the opposite end of the gauge, a rod connected with said second mentioned cap and having threaded connection with said bushing and having longitudinal movement relative to the latter, a second rod having cams thereon adjacent one end and having sliding connection with the said body, a single metallic ball centrally disposed and lying between the adjacent ends of said rods, said plungers having cam surfaces in operative relation with said cams, and said second mentioned cap having a circumferential scale on the lower end thereof adapted to cooperate with the scale on the first mentioned sleeve to indicate the diameter measured by said plungers.

2. In a gauge for measuring the diameters of apertures, bores and the like, comprising a hollow body, a sleeve arranged thereon and having a scale, a head at one end of said body and having slideways formed therein, plungers in the slideways and having cam surfaces formed thereon, means yieldably supporting said plungers, a longitudinally slidable rod in said body having cams thereon in cooperative relationship with said cam surfaces, a second rod threadedly connected with the bore of said body for rotary and longitudinal movement relative thereto, and a metallic ball centrally located between said rods.

3. In a gauge for measuring the diameters of circular apertures, comprising an elongated hollow body, a sleeve therein and having one end thereof internally and externally threaded, and provided with radial cuts, a ring threaded to said end about said cuts, said end and ring having conforming tapers respectively on the outside and inside thereof, plungers at one end of said body having cam shaped surfaces, a rod movable longitudinally of said plungers and having cam shaped members cooperating with said cam surfaces, a threaded rod for imparting longitudinal movement to said first named rod and the threads thereof being adapted to cooperate with the internal threads of said sleeves.

In testimony whereof I affix my signature.

ALBERT F. PEGLOW.