March 20, 1928.

1,663,217

E. J. RYAN

CALIPER AND DEPTH GAUGE

Filed Jan. 19, 1927

Fig. 1.

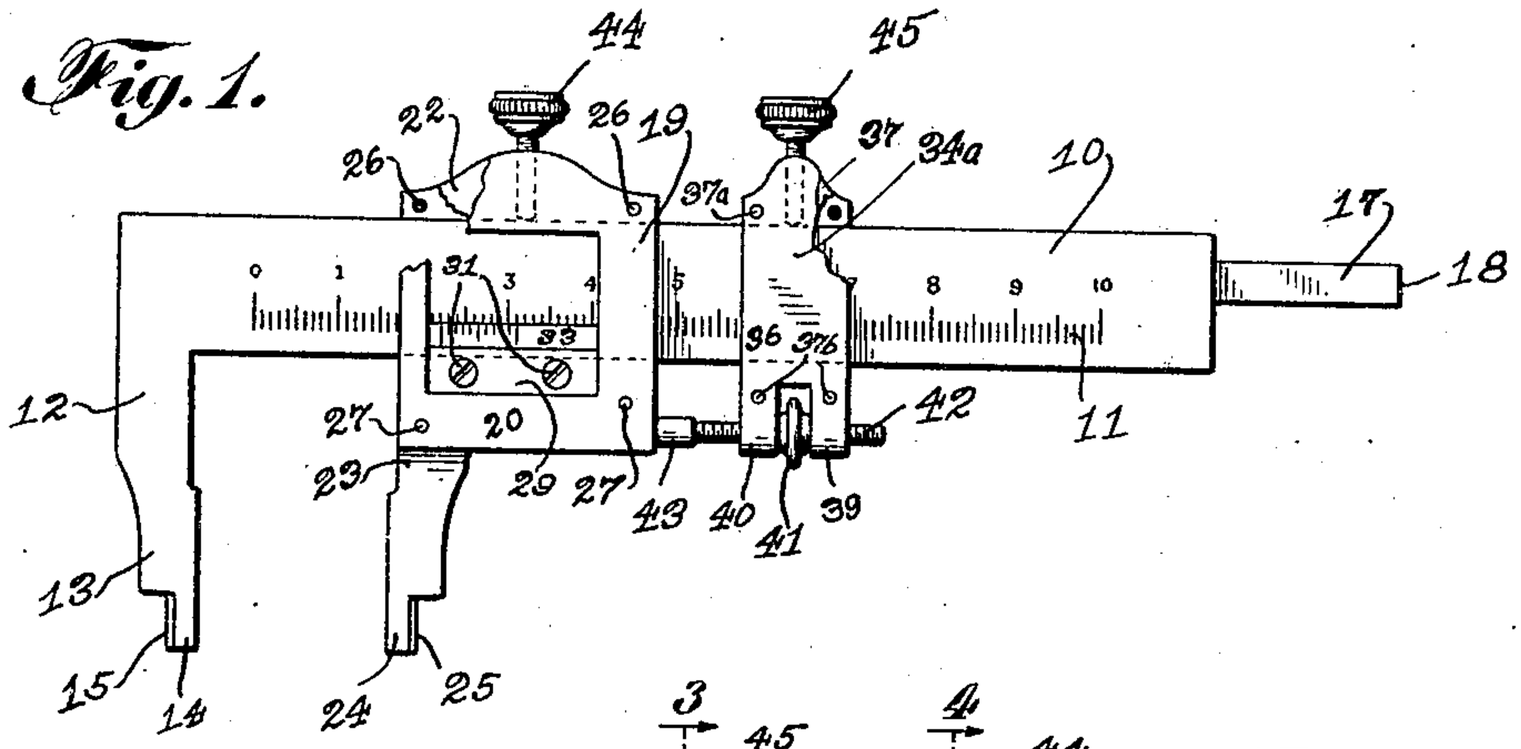


Fig. 2.

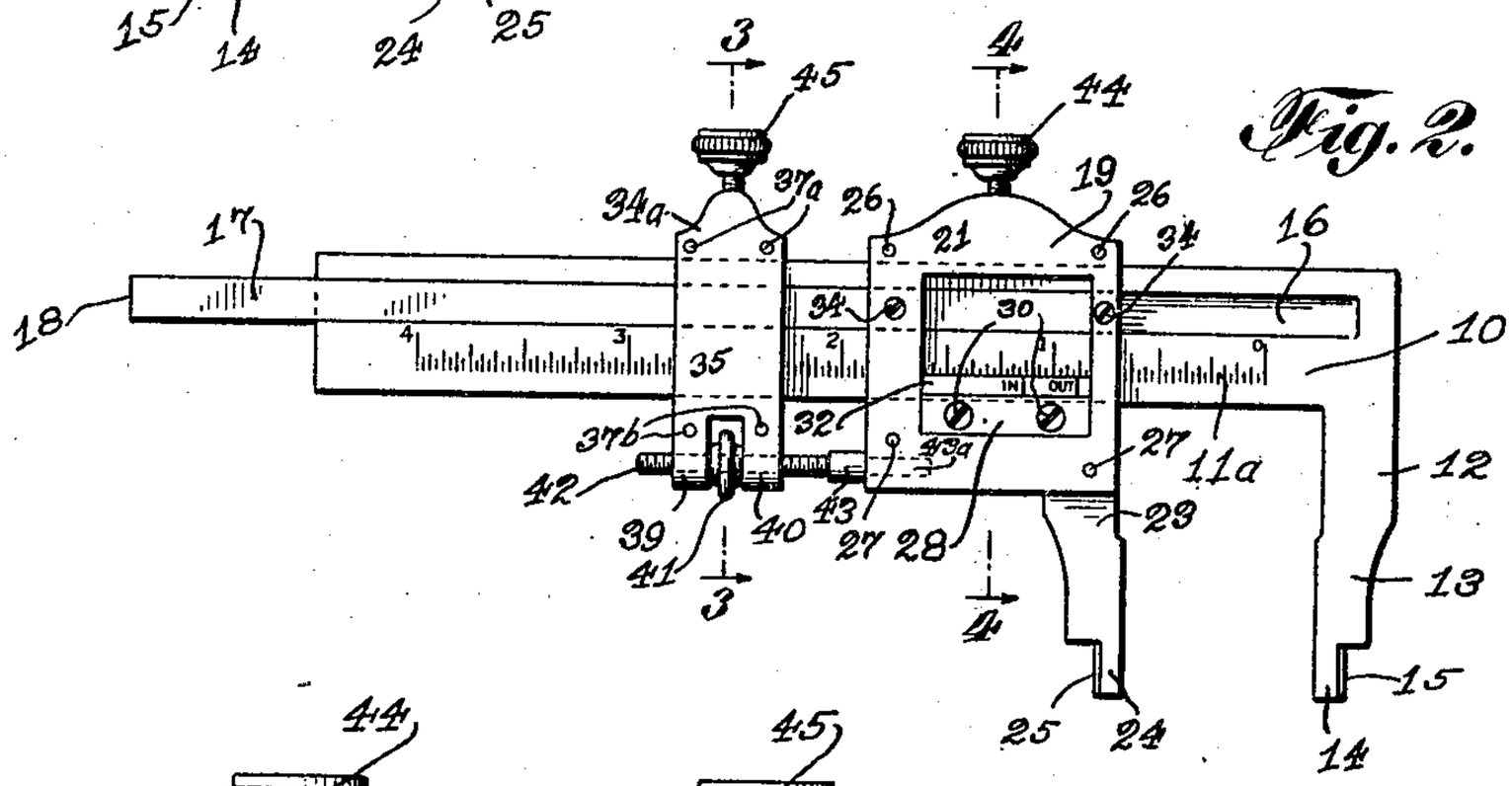


Fig. 3.

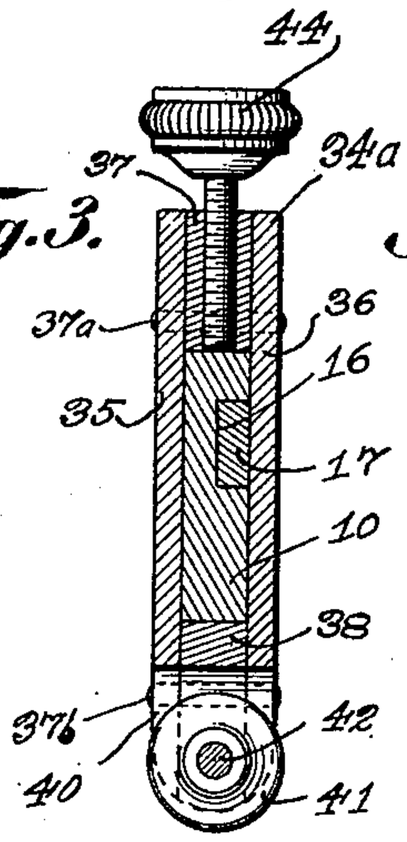


Fig. 4.

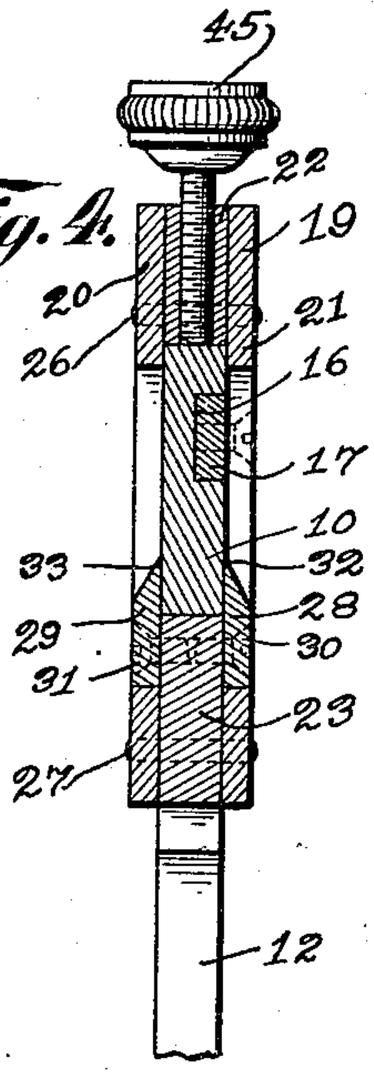
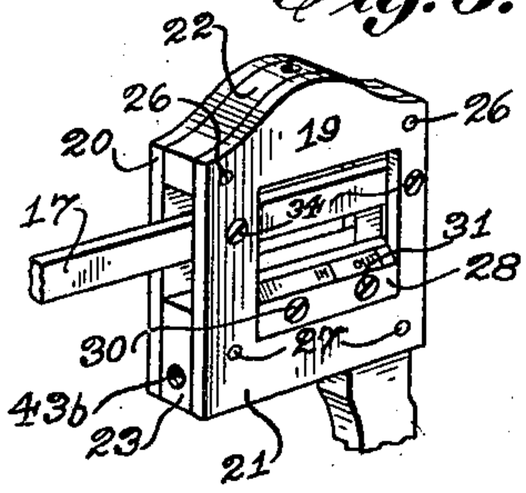


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CALIPER AND DEPTH GAUGE.

Application filed January 19, 1927. Serial No. 162,057.

This invention relates to measuring instruments, and more particularly to a combination calipers and depth gauge.

One object of this invention is to provide a device of the above nature capable of measuring the outside dimensions of a solid body and the inside dimensions of hollow bodies.

A further object is to provide a device of the above nature which may be "roughly" adjusted by a slide mechanism and accurately and "finely" adjusted by an auxiliary slide having a vernier attachment.

A further object is to provide an instrument of the above nature in which both the outside and inside measurements may be read upon a single scale.

A still further object is to provide a device of the above nature which will be simple in construction, inexpensive to manufacture, easy to manipulate, compact, ornamental in appearance, and very efficient and durable in use.

With these and other objects in view there has been illustrated on the accompanying drawings one form in which the invention may be conveniently embodied in practice.

Fig. 1 represents a fragmentary view of one side of the instrument.

Fig. 2 is a view of the other side thereof.

Fig. 3 is a sectional view of the instrument, on an enlarged scale, the section being taken along the line 3—3 of Fig. 2, looking in the direction of the arrows.

Fig. 4 is an enlarged sectional view of the instrument, taken along the line 4—4 of Fig. 2, looking in the direction of the arrows.

Fig. 5 is a fragmentary perspective view of the main slide member.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates an L-shaped main frame or bar having graduated scales 11 and 11^a on opposite side of its longer arm thereof respectively. The shorter arm 12 of the bar 10 comprises the stationary jaw of the calipers and has its free extremity 13 tapered and reduced in width at 14, the outer side of said reduced extremity 14 having a curved edge 15 adapted to engage one edge of the interior of a hollow article being measured.

The face of the bar 10 having the scale 11^a is provided with a longitudinal groove 16, within which is fitted a slidable bar 17 adapted to be used as a depth gauge. The bar 17 is rectangular in cross-section and has a flat outer extremity 18 for engaging the bottom of a hole or socket, the depth of which is desired.

The bar 17 is held in its groove by a box-like main slide member 19, which preferably comprises two side plates 20 and 21 having open sides and curved arched tops. The side plates 20 and 21 are spaced apart at the top by a filler block 22 and at the bottom by an angular jaw member 23, the latter having a reduced tapered extremity 24 and a curved edge 25 for cooperating with the reduced extremity 14 of the stationary jaw 12 already described. The inside faces of the reduced extremities 14 and 24 are made flat and are adapted to be employed in the measurement of outside diameters of solid bodies. The outer curved edges 15 and 25 are adapted for use in the measurement of internal diameters.

The side plates 20 and 21 may be secured to the filler block 22 in any suitable manner, as by rivets 26, and to the angular member 23, as by rivets 27. Suitable indicating scales 28 and 29 are secured within the open sides of the plates 20 and 21 on opposite faces of the angular jaw member 23, as by screws 30 and 31. The scale 29 has vernier graduations, the scale 28 being provided with a pair of indicating marks and the words "In" and "Out" for permitting the instrument to be used in factory inspection for determining oversize and undersize articles. The scales 28 and 29 also preferably have beveled edges 32 and 33. The slide 19 is secured, as by screws 34, to the inner end of the depth gauge bar 17.

It will be clear from the above construction that a "rough" or approximate adjustment of the caliper jaw 23 and the depth gauge bar 17 may be obtained by moving the main slide member 19 back and forth along the longer arm of the L-shaped frame.

In order to permit a more accurate or "fine" measurement to be produced, provision is made of a small auxiliary slide member 34^a, said auxiliary member surrounding the longer arm of the L-shaped bar 10, and preferably being constructed from two parallel plate members 35 and 36, the latter being spaced apart by filler blocks 37 and 38. The plate members 35 and 36 and filler blocks 37 and 38 are secured together by rivets 37^a and 37^b.

As most clearly shown in Figs. 1 and 2, the auxiliary slide member 34ª is bifurcated at its lower end so as to form arms 39 and 40 which are adapted to embrace a micrometer nut 41 rotatably mounted on a screw 42. The screw 42 is adapted to engage in alined tapped holes in the lower ends of the filler block 38 and has a flange 43 beyond which is a threaded extremity 43ª adapted to be permanently screwed into a tapped hole 43ᵇ in the angular jaw member 23.

In order to lock the main auxiliary slides 19 and 34ª in any desired positions, provision is made of a pair of set screws 44 and 45 which are threaded into the tops of the filler blocks 22 and 37 respectively.

In operation, when it is desired to obtain the outside dimensions of a solid article, the main slide 19 and the auxiliary slide 34ª will be moved as a unit toward the stationary jaw 12 until the movable jaw extremity 24 is roughly adjusted to approximately correct position. The operator will then turn the set screw 45 inwardly so as to lock the auxiliary slide 34ª to the main frame 10. The fine adjustment may then be obtained by rotating the nut 41 which by means of the screw 42 will cause the main slide 19 to move accurately to the desired point. The operator will then read the dimension by referring to the vernier scale on the frame 10. The measurements of interior dimensions and depths are obtained in a similar manner.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claim.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

In a vernier caliper, a graduated bar provided at one end with an integral caliper jaw, a sliding member embracing said bar and carrying a movable caliper jaw, and an auxiliary sliding member embracing said bar, screw means for connecting said sliding members, means for locking said auxiliary sliding member to said graduated bar, each of said sliding members comprising a pair of side plates, and filler blocks for spacing said side plates apart.

In testimony whereof, I have affixed my signature to this specification.

EDWARD J. RYAN.