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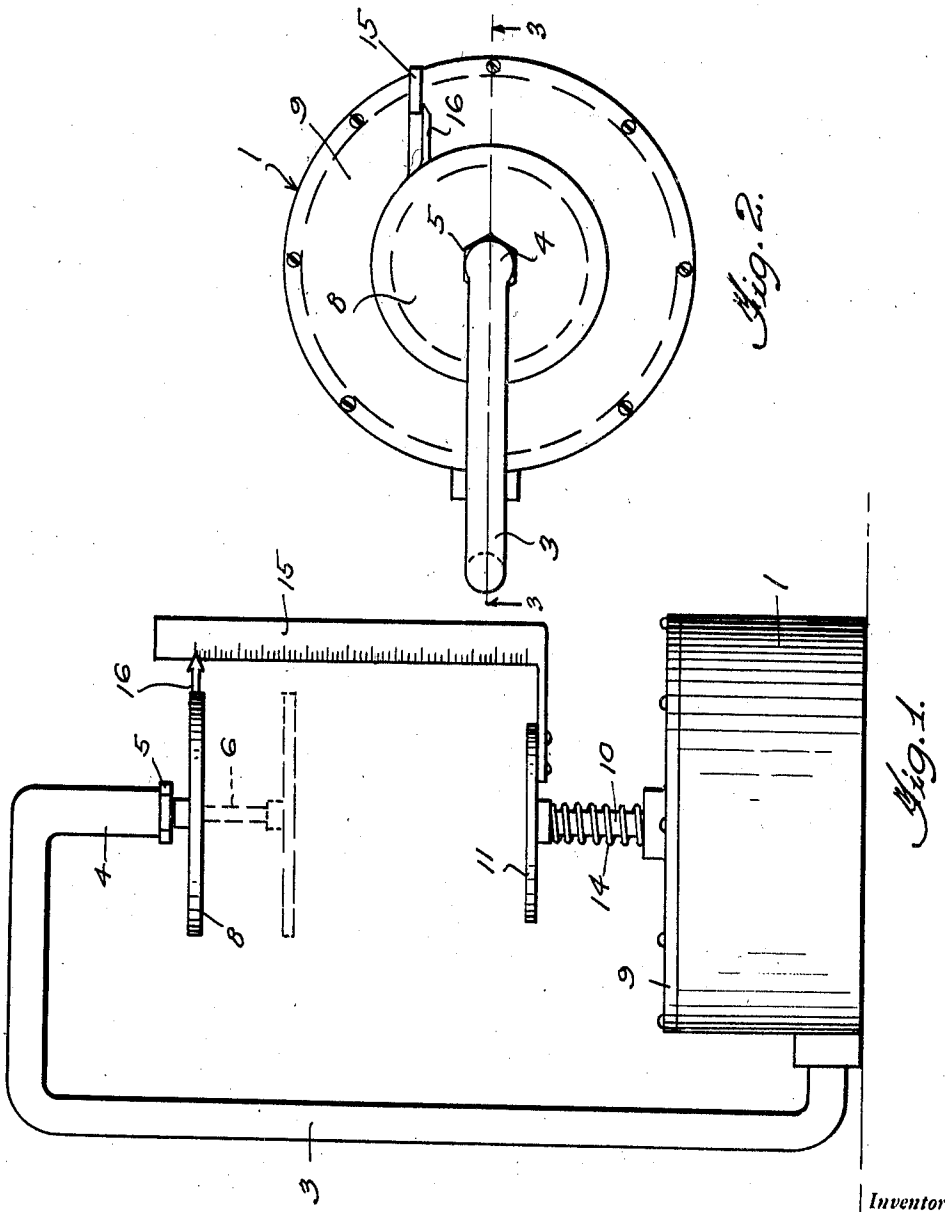
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2,339,031

MICROMETER

Filed Dec. 26, 1942

5 Sheets-Sheet 1



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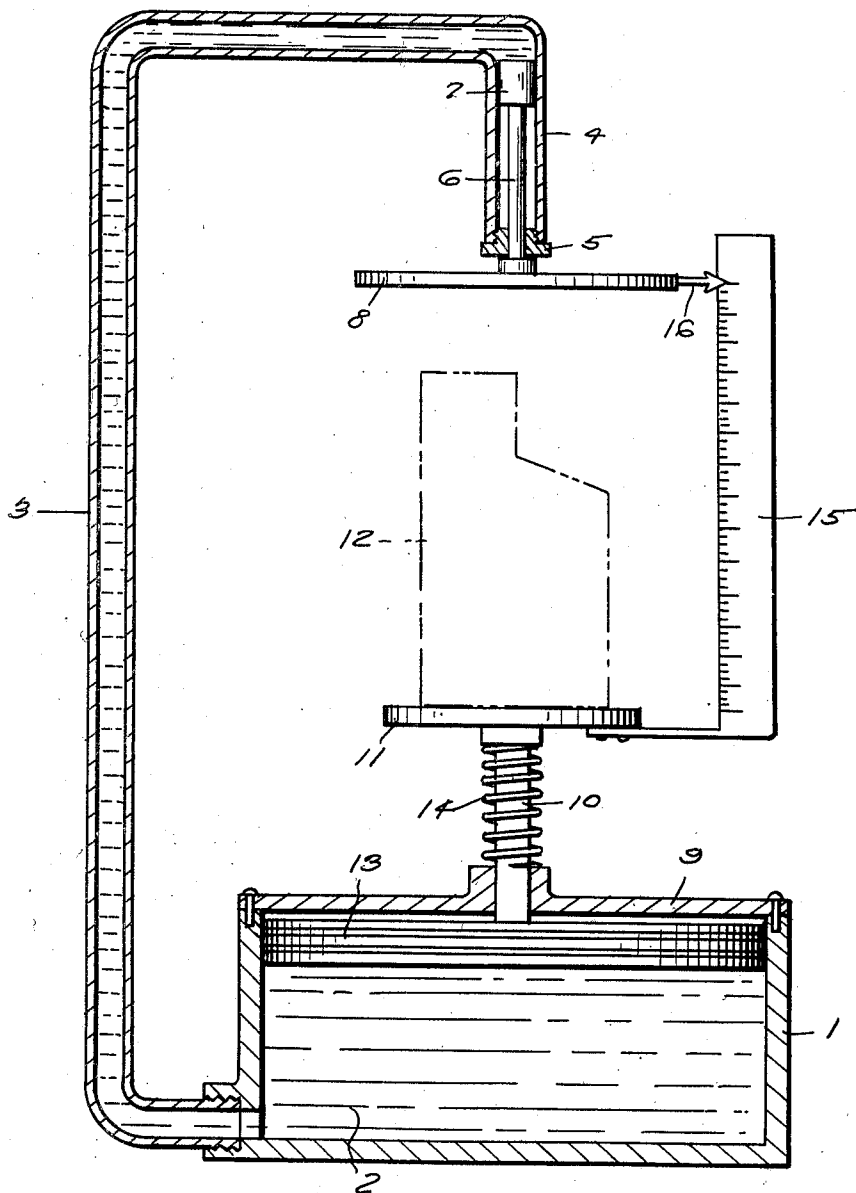


Fig. 3.

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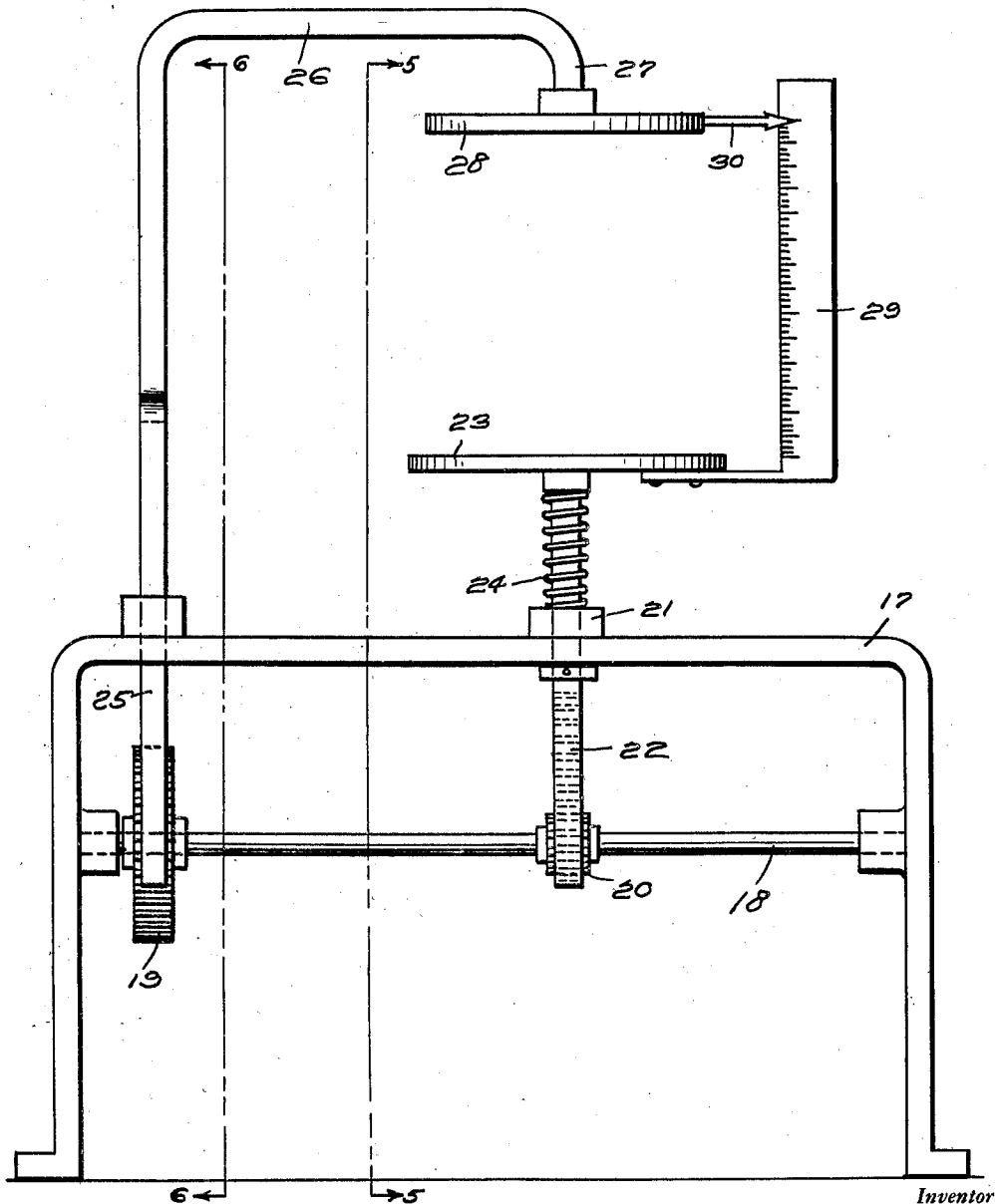


Fig. 4.

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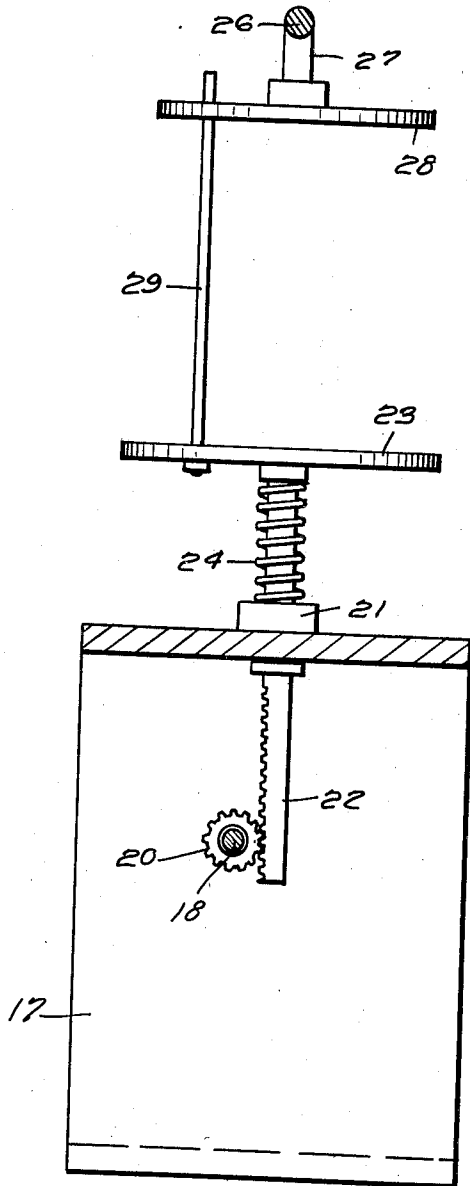


Fig. 5.

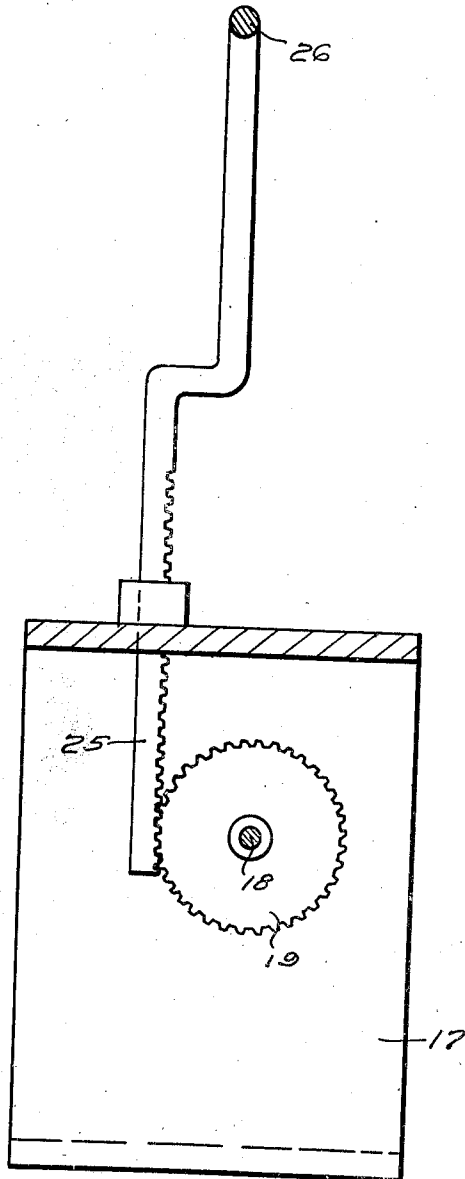


Fig. 6.

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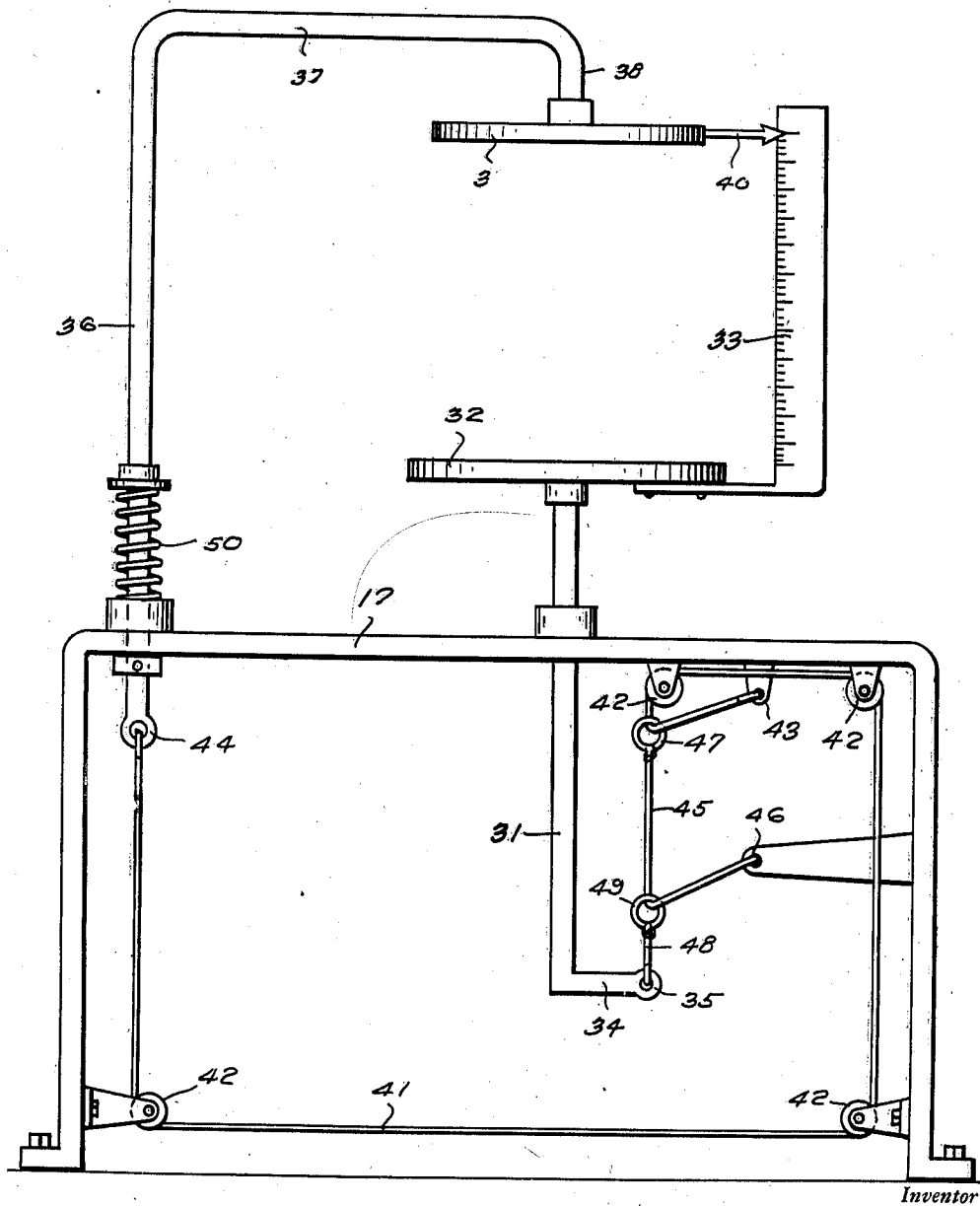
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UNITED STATES PATENT OFFICE

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MICROMETER

Irving David Rosenberg, Orange, N. J.

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5 Claims. (Cl. 33-143)

The present invention relates to new and useful improvements in micrometers, and has for its primary object to provide, in a manner as hereinafter set forth, a device of this character which is adapted to be conveniently used with one hand and which embodies unique means for rapidly and accurately measuring various objects.

Another very important object of the invention is to provide a measuring device of the aforementioned character comprising a movable work contact or anvil which is operable in a novel manner by the object being measured.

Other objects of the invention are to provide a micrometer of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in front elevation of an embodiment of the device.

Figure 2 is a top plan view.

Figure 3 is a vertical sectional view, taken substantially on the line 3-3 of Figure 2.

Figure 4 is a view in front elevation of another form of the invention.

Figures 5 and 6 are views in vertical section, taken substantially on the lines 5-5 and 6-6, respectively, of Figure 4.

Figure 7 is a view in front elevation of another modification.

Referring now to the drawings in detail, and to Figures 1, 2 and 3 thereof in particular, it will be seen that reference numeral 1 designates a vertical cylinder constituting what may be considered a flat, circular base. The cylinder 1 is for the reception of a suitable fluid, as at 2.

Communicating with the cylinder 1 and extending upwardly therefrom is a conduit 3. The conduit 3 terminates in a downturned upper end portion constituting what may be considered a cylinder 4 having threaded into its lower end portion a closure 5.

Extending slidably into the cylinder 4 through the closure 5 is a rod 6. A fluid actuated piston 7 on the upper end of the rod 6 is operable in the cylinder 4. Mounted on the lower end of the rod 6 is a vertically movable work engaging contact or anvil 8 in the form of a disc. As illus-

trated to advantage in Figure 2 of the drawings, the contact or anvil 8 is vertically aligned with the cylinder 1.

Extending slidably through the top 9 of the cylinder 1 is a rod 10. Mounted on the upper end portion of the rod 10 is a depressible platform or the like 11. The platform 11 is to receive the object to be measured, as at 12. Mounted on the lower end of the rod 10 and operable in the cylinder 1 is a comparatively large piston 13. A coil spring 14 elevates the platform 11 and the piston 13.

Fixed vertically on the platform 11 is a scale 15. An indicator 16 on the contact or anvil 8 is movable vertically along the scale 15.

It is thought that the operation of the device will be readily apparent from a consideration of the foregoing. Briefly, the object to be measured, as at 12, is mounted on the platform 11 which moves downwardly under the weight of said object against the tension of the spring 14, thus forcing the piston 13 downwardly in the cylinder 1. In this manner the fluid 2 is forced upwardly through the conduit 3 for moving the piston 7 with the anvil 8 downwardly into engagement with the work. The measurement is then read by simply observing the indicator 16 on the scale 15. The object 12 is then removed and the members 11 and 13 are returned to raised position by the spring 14, the fluid returning to the cylinder 1, thus drawing the piston 7 upwardly in the cylinder 4 for again raising the anvil 8. If desired, one or more return springs may be connected to the anvil 8.

Referring now to Figures 4 to 6, inclusive, of the drawings, it will be observed that reference numeral 17 designates a substantially U-shaped base. Journaled in the base 17 is a horizontal shaft 18. Comparatively large and small gears 19 and 20, respectively, are fixed on the shaft 18.

Extending slidably through a bearing 21 which is provided therefor on the base 17 is a vertical rack bar 22 which is in mesh with the gear 20. A depressible platform 23 is mounted on the upper end of the rack bar 22. A coil spring 24 yieldingly supports the platform 23 and returns same to elevated position.

Also mounted for vertical sliding movement in the base 17 is a rack bar 25 which is in mesh with the large gear 19. Formed integrally with the upper end of the rack bar 25 is an angular arm 26 which terminates in a downturned free end portion 27. A work engaging contact or anvil 28 is fixed on the end portion 27 of the arm 26 in

vertically spaced, opposed relation to the depressible platform 23.

A scale 29 is mounted vertically on the platform 23. An indicator 30 on the contact or anvil 28 is cooperable with the scale 29.

In the operation of this embodiment, the object to be measured is placed on the depressible platform 23. The platform 23 moves downwardly under the weight of the object placed thereon, thus compressing the coil spring 24. In this manner the shaft 18 is rotated in a direction to move the elements 25 and 26 downwardly through the gear 19, thus lowering the anvil 28 into engagement with the object on the platform 23. The measurement is then read by observing the indicator 30 on the scale 29. When the object is removed, the coil spring 24 returns the moving parts to their former positions.

In the modification shown in Figure 7 of the drawings, a rod 31 is mounted for vertical sliding movement in the base 17. Mounted on the upper end portion of the rod 31 is a platform 32. A scale 33 is mounted vertically on the platform 32. On its lower end, the rod 31 is provided with a horizontal arm 34 which terminates in an eye 35.

Also mounted for vertical sliding movement in the base 17 is a rod 36. Projecting from the upper end of the rod 36 is a horizontal arm 37 which terminates in a downturned free end portion 38 having mounted thereon, in vertically spaced, opposed relation to the platform 32, an object engaging contact or anvil 39. An indicator 40 on the anvil 39 is cooperable with the scale 33.

A cable 41 is trained around the pulleys 42 in the base 17 and has one end anchored to said base, as at 43. The other end of the cable 41 is connected at 44 to the lower end of the rod 36. A cord or the like 45 has one end anchored at 46 to the base 17. The other end of the cord 45 is slidably connected to the cable 41 adjacent the anchor 43 of said cable by a ring 47. A cord or the like 48 is connected at one end to the eye 35 on the arm 34. The other end of the cord 48 is slidably connected to the cord 45 by a ring 49. A coil spring 50 elevates the members 36, 37, 38 and 39.

In operation, the object to be measured is mounted on the platform 32. The platform 32 moves downwardly under the weight of the object thereon. The construction and arrangement of the various cords, pulleys, the cable, et cetera, is such that downward movement of the rod 31 pulls the rod 36 downwardly against the tension of the coil spring 50. Thus, the anvil 39 is lowered into engagement with the object on the platform 32 and the measurement is read by observing the indicator 40 on the scale 33.

It is believed that the many advantages of a micrometer constructed in accordance with the present invention will be readily understood, and although preferred embodiments of the device are as illustrated and described, it is to be understood that further modifications and changes in the details of construction may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A micrometer comprising a vertically mov-

able platform for supporting an object to be measured and operable downwardly thereby, an anvil engageable with an object on the platform, coating measurement indicating means on the platform and the anvil, and means operatively connecting the anvil to the platform for actuation thereby into engagement with the object.

2. A micrometer comprising a base, a depressible platform mounted for vertical movement on said base, said platform for receiving and supporting an object to be measured and being movable downwardly thereby, a vertical scale fixed on the platform, a vertically movable anvil above the platform and engageable with the object thereon, an indicator on said anvil cooperable with the scale, means operatively connecting the anvil to the platform for actuation thereby into engagement with the object upon downward movement of said platform, and resilient means operatively connected to the platform for returning said platform to elevated position.

3. A micrometer comprising a vertical cylinder, said cylinder for the reception of a fluid, a piston operable in the cylinder, a depressible platform, for receiving and supporting an object to be measured, mounted on the piston above the cylinder, a conduit communicating with the cylinder for receiving fluid therefrom and extending upwardly from said cylinder, said conduit including, on its upper end, a depending cylinder in vertical alignment with the platform, a fluid actuated piston in the second-named cylinder, an anvil connected to the second-named piston and movable downwardly thereby for engagement with the object on the platform, coating measurement indicating means on the platform and anvil, and means for returning the platform to raised position.

4. A micrometer comprising a base, rack bars mounted for vertical sliding movement on said base, a shaft journaled on the base, gears fixed on the shaft and meshed with the rack bars, a vertically movable platform, for receiving and supporting an object to be measured, mounted on the upper end of one of the rack bars, an anvil on the other rack bar engageable with the object on the platform, coating measurement indicating means on the platform and anvil, and means for returning the platform to raised position.

5. A micrometer comprising a base, a pair of rods mounted for vertical sliding movement on said base, a depressible platform, for receiving and supporting an object to be measured, mounted on one of the rods, said platform being movable downwardly under the weight of the object thereon, flexible means on the base connecting the other rod to said one rod for downward actuation thereby in unison therewith, an arm on the upper end of said other rod, an anvil on the arm in vertically spaced, opposed relation to the platform and engageable with the object thereon, coating measurement indicating means on the platform and the anvil, and a coil spring operatively connected to said other rod for elevating the anvil and for returning the platform to raised position.

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