J. CSIGAS.

MICROMETER.

APPLICATION FILED AUG. 13, 1913.

1,233,556.

Patented July 17, 1917

2 SHEETS—SHEET 1.

Fig. 1.

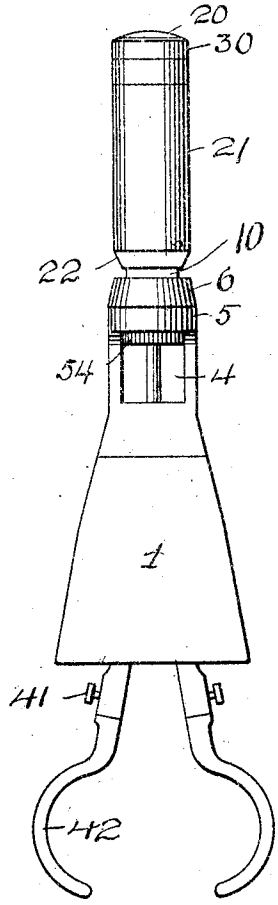


Fig. 2.

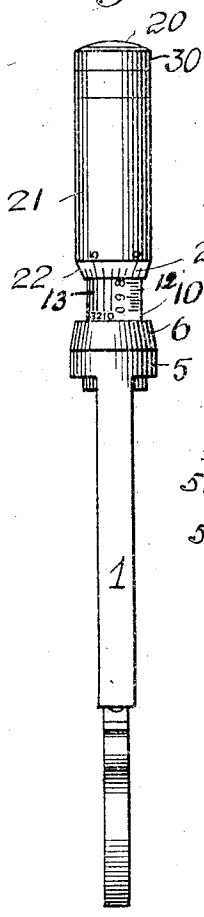


Fig. 3.

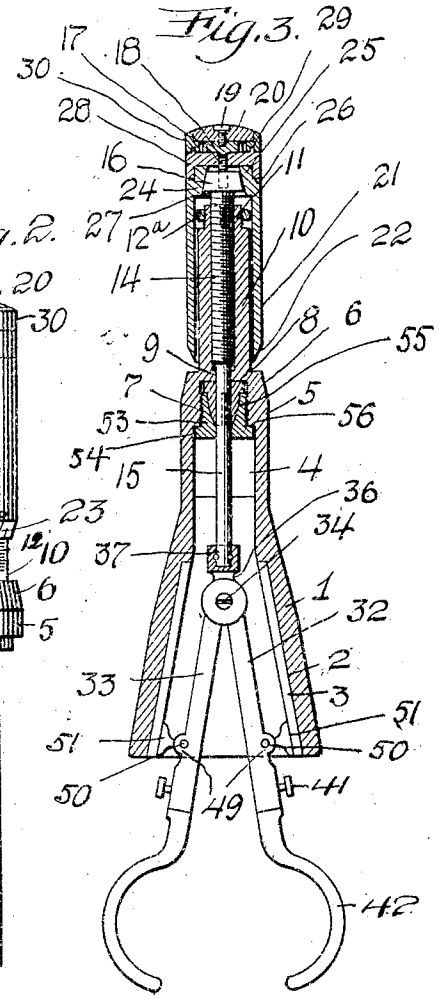
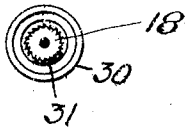


Fig. 4.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 5.

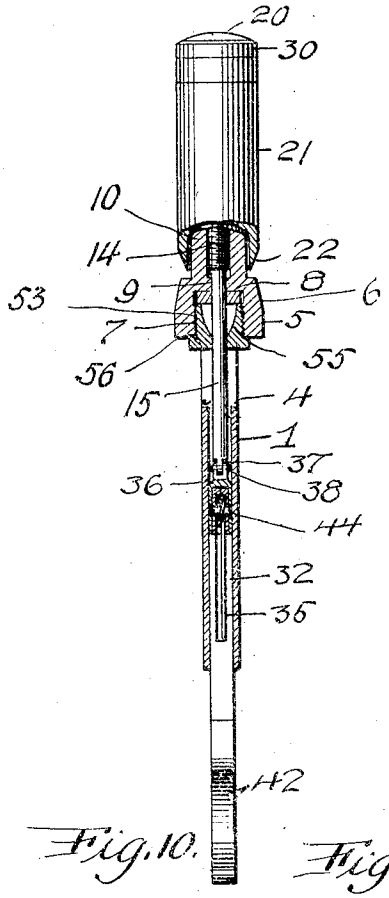


Fig. 6.

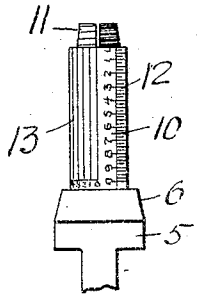


Fig. 8.

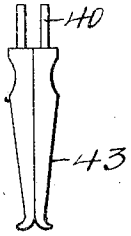


Fig. 7.

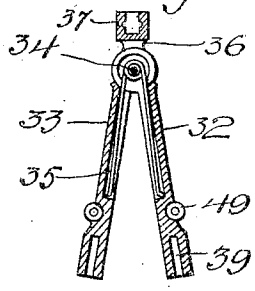


Fig. 9.

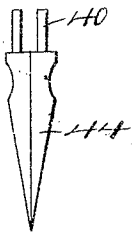


Fig. 10.

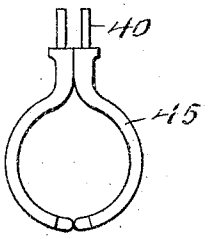


Fig. 11.

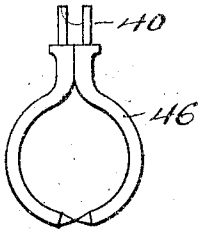


Fig. 12.

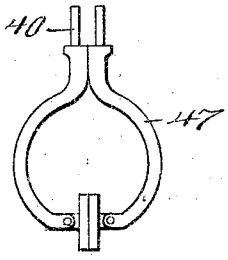
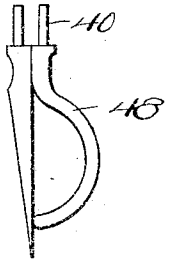


Fig. 13.



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MICROMETER.

1,233,556. Specification of Letters Patent. Patented July 17, 1917.

Application filed August 13, 1913. Serial No. 784,630.

To all whom it may concern:

Be it known that I, JOHN CSIGAS, a subject of the King of Hungary, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Micrometers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to micrometers, and has for its object to provide a device of such class, in a manner as hereinafter set forth, with a pair of arms capable of being conveniently adjusted to a desired distance for measuring work and further capable of being conveniently locked when adjusted to the desired position.

A further object of the invention is to provide a device of such class which is comparatively simple in its construction and arrangement, strong, durable, accurate in measurement, conveniently operated and inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein an embodiment of the invention is shown, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings, wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a front elevation of a micrometer in accordance with this invention,

Fig. 2 is a side elevation,

Fig. 3 is a vertical sectional view,

Fig. 4 is a top plan of a detail,

Fig. 5 is a sectional side elevation,

Fig. 6 is an elevation of a detail illustrating a graduation,

Fig. 7 is a sectional detail of the inner sections of the caliper arms, and

Figs. 8, 9, 10, 11, 12 and 13 are modified forms of outer sections of the caliper arms.

Referring to the drawings in detail 1 denotes an inverted Y-shaped relatively narrow casing having the inner face of each side thereof provided with a pocket 2, in which is secured an inclined guide rail 3. The rails 3 extend at an inclination and in an opposite direction with respect to each other, the inclination being downwardly and outwardly. The casing 1 in proximity to its upper end is provided with an opening 4 for a purpose to be presently referred to and formed integral with the upper end of the casing is an annular member 5 having the upper portion 6 of its periphery beveled. The annular member 5 has its inner face threaded, as at 7 and said annular member 5 is closed at its top by a disk 8 formed with a centrally disposed opening 9. Projecting upwardly from the disk 8 is an interiorly threaded cylindrical sleeve 10 having its upper end provided with a reduced tapering peripheral threaded extension 11 carrying a nut 12^a for adjusting and taking up any wear. The extension 11 is split as clearly illustrated in Fig. 6 and said sleeve 10 has its periphery provided with two sets of graduations 12, 13, the former being disposed longitudinally and the latter circumferentially of said sleeve 10.

Mounted in the sleeve 10 as well as projecting therefrom is an adjusting member consisting of a stem portion 14 with threads on the exterior surface and which engages with the threads of the sleeve 10. The adjusting member further includes a depending extension 15 which is integral with the stem portion 14 and extends through the disk 8 and into the casing 1. Formed integral with the stem portion 14 at the top thereof is a conical shaped head 16 having connected thereto a vertically disposed screw 17 carrying a ratchet 18. Connected to the ratchet 18 by the hold fast device 19 is a cap piece 20. The adjusting member further includes a cylindrical housing 21 which incloses the sleeve 10 and which has its lower end beveled, as at 22 and provided with a graduated scale 23, the latter associating with the graduations 13. The edge of the beveled end 22 associates with the graduations 12. The housing 21 at its top is inset, as at 24 and further formed with a flange 25 which provides a shoulder 26. The inset portion 24 in connection with the flange 25 forms what may be termed a conical pocket 27 for the reception of the head 16, which is forced into this pocket by sufficient pressure to prevent its turning therein.

Mounted upon the shoulder 26 and surrounding the flange 25 is a flanged disk 28 upon which is mounted the ratchet 18 and engaging with the disk 28, by a tongue and groove connection 29 is a collar 30 to which is connected a spring 31 adapted to engage

the ratchet 18 for clicking purposes when the caliper arms, which will be hereinafter referred to, have engaged the work. When the inset portion of the housing 21 is rotated by the workman the stem 14 is of course raised or lowered. At the same time the caliper arms are closed or opened depending upon the direction of movement of the stem 14. In order to make the tension or pressure of the arms on the work always the same the operator while rotating the housing 21 grasps the collar 30 to which the spring 31 is secured. The other end of the spring will then snap from one tooth to the next after the caliper arms engage the work, thus limiting the pressure of the arms on the work. It is to be understood that the ratchet disk 18 is turned by the stem 14 since the screw 17 is connected to the disk and turns with the head 16 and housing 21. This screw also serves the purpose of drawing the cone-shaped head 16 tightly into the part 24 with sufficient pressure to cause the head 16 to move with the housing 21 and the head 16 in turn operates the friction disk 18.

The manner of setting up the head 16 with respect to the housing 21 is such that when the housing 21 or collar 30 is revolved, a like movement will be imparted to the screw 17, under such circumstances elevating or lowering the stem 15 relative to the sleeve 10 depending upon which direction the housing 21 or collar 30 is turned, and, at the same time rotating the stem 14 and raising or lowering the same to cause the arms 32 to be opened more or less.

The reference characters 32 and 33 denote the inner sections of a pair of caliper or measuring arms, and said sections are pivotally connected together, as at 34 and are constantly forced apart through the medium of the spring 35. The section 33 is provided with an extension 36 carrying a swivel joint 37 with which the extension 15 is connected for connecting said joint 37 to the lower end of the extension 15, whereby when the adjusting member 14 is rotated sections 32 and 33 will be carried therewith up or down within the casing 1. The stem 15 is retained in place by means of pins 37'. Each of the sections 32, 33 has its lower end formed with a socket 39, into which is adapted to extend the shank 40 of the outer section of the caliper or measuring arm. The shank 40 is held in position by a set screw 41.

In Figs. 1, 2, 3 and 5 the outer section of each caliper or measuring arm is indicated by the reference character 42, while in Figs. 8 to 13 inclusive, the said outer sections are indicated by the reference characters 43 to 48 both inclusive.

The section 32 as well as the section 33, is provided in proximity to its respective socket 39, with an eye 49, to which is pivotally connected, by a pin 50 a guide block 51, which slides upon the rail 3, as clearly illustrated in Fig. 3.

Permanently engaging with the threads 7 of the member 5, is a peripherally threaded clamping member 53 having its lower end provided with a flange 54. The member 53 supports a split tapering locking collar 55, which is adapted, when the clamping member 53 is screwed home, to grip the extension 15 and securely lock the adjusting member from movement. The opening 4 provides for convenient access to the flange 54 to enable the turning of the member 53 to release or clamp the collar 55. The disk 8 arrests the upward movement of the collar 55, while the lower edge 56 of the member 5 arrests upward movement of the clamping member 53.

The outer sections 43 of the caliper or measuring arms are employed as an inside caliper, the outer sections 44 as a divider, the outer sections 45 and 46 as an outside caliper, the outer sections 47 as a paper gage, and the outer sections 48 as a key-hole caliper.

When the adjusting member is shifted in one direction the adjusting member 14 and the extension 15 are moved downwardly, moving the caliper arms toward each other against the action of the spring 35 and when the adjusting member is moved in the opposite direction, the member 14 and extension 15 are moved upwardly, and the spring 35 separates the caliper arms. When the desired adjustment is had, which can be ascertained by the graduations, the adjusting member is locked by the clamping member 53 and locking collar 55.

What I claim is:—

1. A measuring instrument comprising a casing, a pair of normally extended arms arranged therein and engaged thereby, an adjusting member for shifting said arms to decrease or increase the space between said arms, and a clamping member for locking said arms from movement.

2. A measuring instrument comprising a casing having a threaded extension provided with sets of graduations, a pair of spring controlled normally separated arms arranged within and engaged by said casing, an adjusting member connected with said arms and engaging said extension for moving the arms to increase or decrease the space between said arms, and being provided with graduations associating with the graduations upon the extension.

3. A measuring instrument comprising a casing having a threaded extension provided with sets of graduations, a pair of spring controlled normally separated arms arranged within and engaged by said casing, an adjusting member connected with said arms and engaging said extension for

moving the arms to increase or decrease the space between said arms, and being provided with graduations associating with the graduations upon the extension, and a clamping member in said casing and engaging with said adjusting member for locking the said arms from movement.

4. A measuring instrument comprising in combination, an inclosing casing the lower portion of which is formed with inclined surfaces, the upper portion of which is made barrel-shaped and with an opening therethrough that is threaded, a threaded stem passing through the threaded opening of the barrel portion, said stem being pivotally connected to a pair of measuring caliper arms, said arms being normally retained in separated position against the inner surface of the inclosing casing, means for rotating the threaded stem for causing the same to move in one or two opposite directions through the casing for varying the opening of the caliper arms, and means including a cup-shaped member for locking the stem to the casing as described.

5. A measuring instrument comprising an inclosing casing the lower portion of which is substantially inverted Y shaped, pivotally connected calipering arms located in said end portion, a spring for normally holding the arms extended and in contact with the inner surface of the casing, means for operating the arms comprising a housing connected with the arms by means of a stem, tension means for making the pressure of the arms the same on the work that is being measured, and means for locking the stem comprising a clamping member having a conical recess therein and having threaded connection with the casing, a locking collar having a conical portion located in the recess of the sleeve and having an opening therethrough to receive said stem which is attached to the measuring arms, the casing having openings to permit access to the locking means, as described.

6. In a measuring instrument, the combination with an inclosing casing one end of which is formed with inclined sides the opposite end of which is formed with a barrel portion having a threaded opening therethrough, a threaded stem engaging the opening the lower end of which stem is pivotally connected to a pair of measuring arms, a spring for normally separating the arms and forcing the same into engagement with the inclined surfaces of the casing, means for rotating the stem for reciprocating the arms in the casing, whereby the extent of the opening of the arms may be varied and means for locking the stem when the arms have been moved into the desired position of adjustment.

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

JOHN CSIGAS.

Witnesses:
STEPHEN S. TAFT,
SIMPSON CLARK.