(No Model.) 2 Sheets—Sheet 1.

M. M. BARNES.

MICROMETER CALIPERS.

No. 324,804. Patented Aug. 25, 1885.

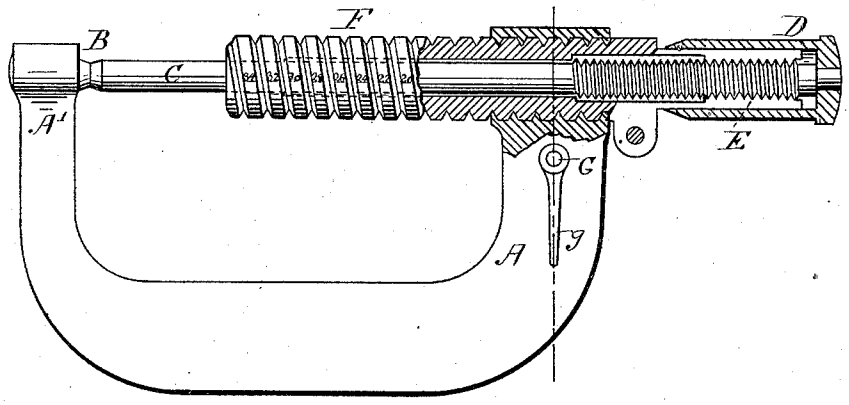


Fig. 1.

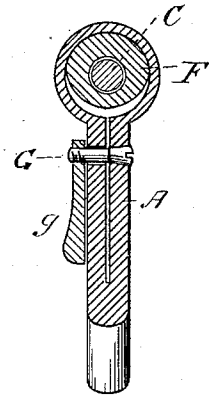


Fig. 2.

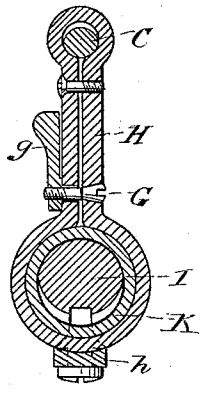


Fig. 4.

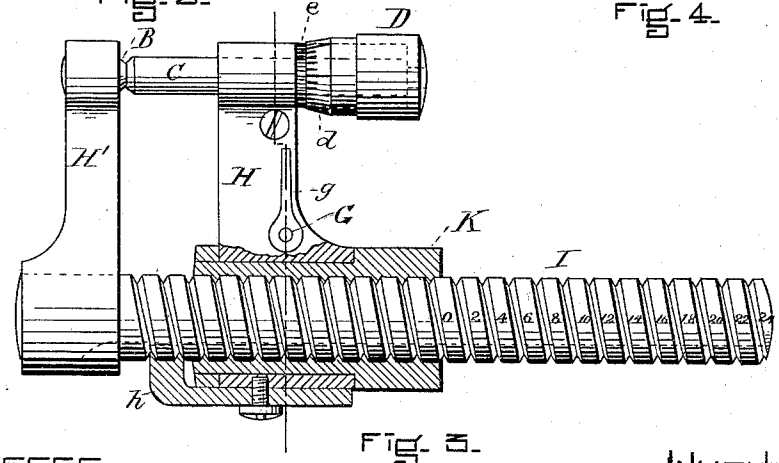


Fig. 5.

WITNESSES.

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(No Model.) 2 Sheets—Sheet 2.

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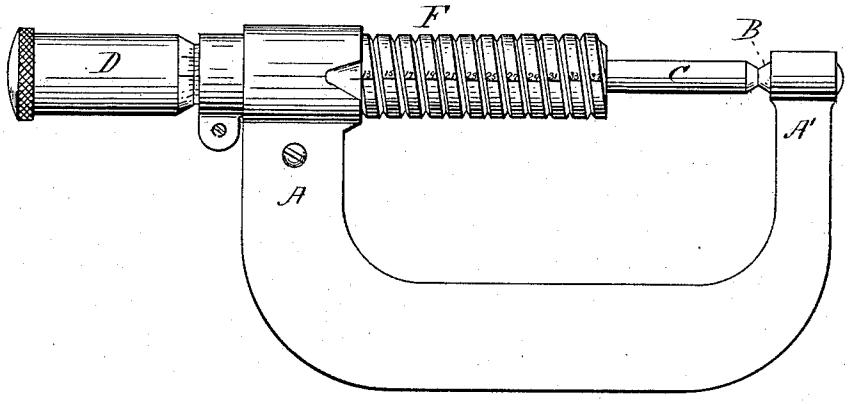


Fig. 5.

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UNITED STATES PATENT OFFICE.

MERRICK M. BARNES, OF BOSTON, MASSACHUSETTS.

MICROMETER-CALIPERS.

SPECIFICATION forming part of Letters Patent No. 324,804, dated August 25, 1885.

Application filed October 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, MERRICK M. BARNES, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented certain new and useful Improvements in Micrometer-Calipers, of which the following is a specification.

My present invention relates to micrometer-calipers substantially of the character represented in previous Letters Patent of mine, Nos. 271,401 and 280,339; and it has for its object to provide a micrometer caliper or gage of improved construction and capacity of adjustment.

In the drawings, Figure 1 represents in elevation and partial section an application of my invention to a micrometer-caliper having a fixed arm, and Fig. 3 represents an application of it to a micrometer-caliper having a movable arm. Figs. 2 and 4 represent the construction and mode of application of a device for setting the calipering apparatus at any desired point. Fig. 5 represents the obverse of Fig. 1, and illustrates more fully the method of graduating the screw F.

I will now proceed to describe in detail the apparatus shown at Fig. 1.

A represents the caliper-arm, provided at one end, A′, with the usual adjustable screw or anvil, B.

C is a micrometer calipering-screw, to the shank of which is secured an index-cylinder, D, provided with a graded scale, *d*. This detail is shown at Fig. 3, the parts referred to being sectioned in Fig. 1 to show the interior construction.

E is a nut, also provided with a scale, and threaded to receive the micrometer-screw C.

Thus far the apparatus closely resembles that shown in my Patent No. 280,339, except that the distance between the two arms of the standard or caliper A is greater than the range of calipering motion of the micrometer-screw C. This calipering-screw C and its attachments I make laterally movable within the arm A, so that by shifting the position of the calipering-screw within the arm A toward or away from the anvil B, I may vary the position and the distance relatively to the anvil B at which the calipering-screw C operates. This motion of the calipering-screw by the arm A may be obtained by simply sliding the screw and its attachments through the arm A and securing it at the desired point. Such a construction will form the subject of a separate application of mine for Letters Patent. In the present instance I shift the calipering-screw by means of a screw-connection between it and the arm. This screw is of a predetermined pitch, and marked at regular intervals to indicate predetermined distances of movement. By bringing any one of these marks opposite a standard mark upon the arm A (see Fig. 5) I am enabled to obtain an adjustment of the position relatively to the anvil B of the micrometer calipering-screw C. The shifting-screw (shown in the drawings at F) may be constructed of a comparatively quick pitch—as, for example, from five to ten threads to the inch where the calipering-screw is threaded fifty to the inch. Furthermore, such turn of the screw F may be marked and numbered as shown, and may be subdivided to measure fractions of a turn.

A convenient means of locking the calipering device in place after it has been shifted to any desired point is illustrated in Figs. 2 and 4. Through the arm A, which is saw-kerfed, as shown, passes a binding-screw, G. The head of this screw is tapering in form, to fit a tapered aperture in the kerfed arm. Upon the projecting or point end of the screw G, I provide a nut, *g*, this nut having an extension, as shown, whereby it may be conveniently turned by the hand. The position of the screw G being properly regulated, it will hold its position by reason of the friction between its tapered head and seat, and by turning the nut *g* the screw F may be firmly clamped at any position within the arm A.

By means of my present improvement I am enabled not only to caliper through any multiple of the distance actually traversed by the micrometer-screw C in the act of calipering, but I am also enabled to determine the accuracy of the caliper for any distance without the use of a test-piece. If it be, for example, assumed that the screw F has been turned so as to remove the face of the micrometer-screw C approximately one inch from the anvil B

when the graduation *d e* stands at zero, I am enabled to determine with precision the precise amount of this distance by the reading of the screw F, which is itself suitably graduated for this purpose.

In Fig. 3 is represented the application of my present invention to a micrometer-caliper substantially such as is shown in my Patent No. 271,401, one arm, H, which carries a micrometer-caliper, being so arranged that it may be moved toward or away from another arm, H′, carrying the anvil. This construction will form the subject of a separate application of mine for Letters Patent.

The same method of clamping or setting the arm H at any desired point may be adopted as has been described in connection with the form of apparatus shown in Fig. 1, the detail of its application being shown at Fig. 4.

I have described herein but one form of the calipering-screw C; but it is obvious that other forms of calipering-screw may be substituted for it. I have also shown and described the graduated shifting-screw only as moving the calipering-screw relatively to an anvil not so moved. It is obvious that the same screw might be arranged to move the anvil relatively to the calipering-screw which remained stationary, and such a construction, though practically defective and undesirable, would embody my present invention to the extent of employing a graduated shifting-screw as the means of altering the field of action of the calipering-screw relatively to the anvil.

I claim—

1. In a micrometer-caliper of the character herein described, the combination, with the calipering device and its anvil, of a graduated shifting-screw adapted to alter at pleasure the field of action of the calipering-screw relatively to the opposed calipering-anvil, as set forth.

2. A micrometer-caliper having fixed arms, one carrying a micrometer calipering device, and the other a calipering-anvil, (the distance between the arms being greater than the calipering movement of the micrometer calipering device,) and provided with a graduated shifting-screw, whereby the position of the calipering device may be shifted relatively to that of its opposed calipering-anvil, all substantially as herein set forth.

3. In a micrometer-caliper, the combination of a frame or yoke having arms A A′, a calipering-screw, C, a graduated shifting-screw, F, and an anvil, B, all substantially as herein set forth.

In testimony whereof I have hereunto subscribed my name this 10th day of October, A. D. 1884.

MERRICK M. BARNES.

Witnesses:

ALEX. P. BROWNE,

J. HENRY TAYLOR.