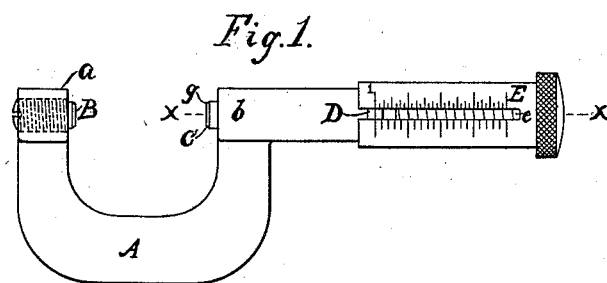
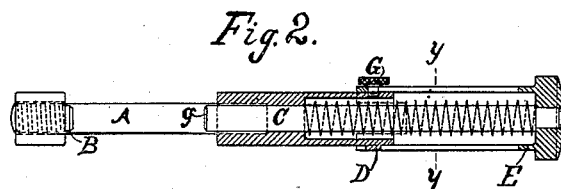


(No Model.)

M. F. SMITH.
SLIDE CALIPERS.

No. 423,284.

Patented Mar. 11, 1890.



WITNESSES:

F. L. Mackintosh.
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UNITED STATES PATENT OFFICE.

MORRIS F. SMITH, OF NEW HAVEN, CONNECTICUT.

SLIDE-CALIPERS.

SPECIFICATION forming part of Letters Patent No. 423,284, dated March 11, 1890.

Application filed July 13, 1889. Serial No. 317,382. (No model.)

To all whom it may concern:

Be it known that I, MORRIS F. SMITH, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Slide-Calipers, of which the following is a specification.

Figure 1 is a side view of my improved slide-calipers. Fig. 2 is a view, partly in section, of the same, the section being taken on line *x*, Fig. 1; and Fig. 3 is a section on line *y*, Fig. 2.

My invention relates to slide-calipers which in outline and general appearance are like the well-known micrometer-calipers.

The object of my invention is an instrument of convenient form which may be quickly applied to measure the outside of work to the ordinary divisions of the unit of measure.

To enable others to make and use my improved calipers, I will give a description of the same, reference being had to the drawings hereto annexed.

The frame A is U-shaped, one arm terminating in a cylindrical foot *a*, the other joined to a lateral cylindrical beam *b*, which is a part of the frame, the axes of the foot and beam being coincident. The foot *a* is tapped to receive the screw B, one end of which is reduced in size and chamfered, and is one of the caliper-points. The screw B may be adjusted to rectify the wear. The beam *b* has a round hole throughout its length, in which slides the bar C, and is counterbored in the end farthest from the frame to receive the coil-spring I. On the side of the beam near the outer extremity, and in a convenient place to be seen, a projection D is raised to the height of the thickness of the sleeve E, on which a line is drawn, which is used in connection with the graduations on the sleeve E to read the distance measured. Diametrically opposite the projection D the beam is tapped to receive the thumb-screw G. The sleeve E is a hollow cylinder with one end enlarged and closed. The bore of the sleeve is of sufficient size to slide freely over the beam. The bar C is riveted into the closed

end, and the enlarged part of the sleeve may be knurled. The sleeve is slotted longitudinally on one side, so that it may slide by the projection D on the beam, and in the opposite side is a longitudinal aperture, through which the thumb-screw G passes to hold the sleeve from being entirely drawn off from the beam. The screw G is also used to hold the sleeve at any desired point, thereby making a set-gage. The sleeve is cut away on the under or rearward side, as shown by the dotted lines in Fig. 2, so that in the endwise movement of the sleeve the U part of the frame will not interfere with it. The sleeve is graduated on each side of the slot to any divisions desired. The cylindrical bar C fits and slides in the hole in the beam, and is chamfered at the protruding end *g*, which is the movable caliper-point. A coil-spring I encircles the bar C, one end of it resting in the counterbore in the beam *b*, the other coming against the closed end of the sleeve, so that when the sleeve is released it returns with the bar C to the unit-mark, its motion there being arrested by the thumb-screw G in the long aperture.

The operation is too obvious to need further description.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Calipers consisting of a frame having a suitable caliper-point, a beam, a graduated sleeve arranged to slide on said beam, and a caliper-bar having a caliper-point and arranged to slide in the bore of the beam, substantially as described.

2. In calipers, the combination of a frame having a suitable caliper-point, a lateral beam, a graduated sleeve arranged to slide over said beam, a caliper-bar secured to said sleeve and sliding in the bore of the beam, and a set-screw for locking said caliper-bar and sleeve at any desired point, in the manner and for the purpose described.

3. The herein-described slide-calipers, consisting, essentially, of a frame A and beam *b*, made in one piece, an adjustable caliper-point B, and a sliding caliper-bar C, carried by a graduated sleeve E, the beam *b* adapted

to receive in its bore the bar C and on its outside the sleeve E, substantially as set forth.

4. In slide-calipers, the combination, with the frame A, having an adjustable caliper-point B and adapted to receive a sliding caliper-bar C, of graduated sleeve E, with the coil-spring I and thumb-screw G, as and for the purpose set forth.

Signed at New Haven, in the county of New Haven and State of Connecticut, this 6th day 10 of July, A. D. 1889.

MORRIS F. SMITH.

Witnesses:

SAML. O. WARNER,
JOSEPH KEGELMEYER.