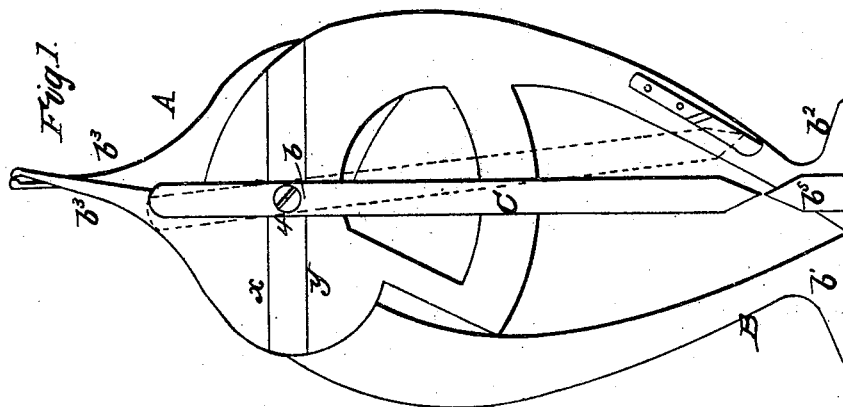
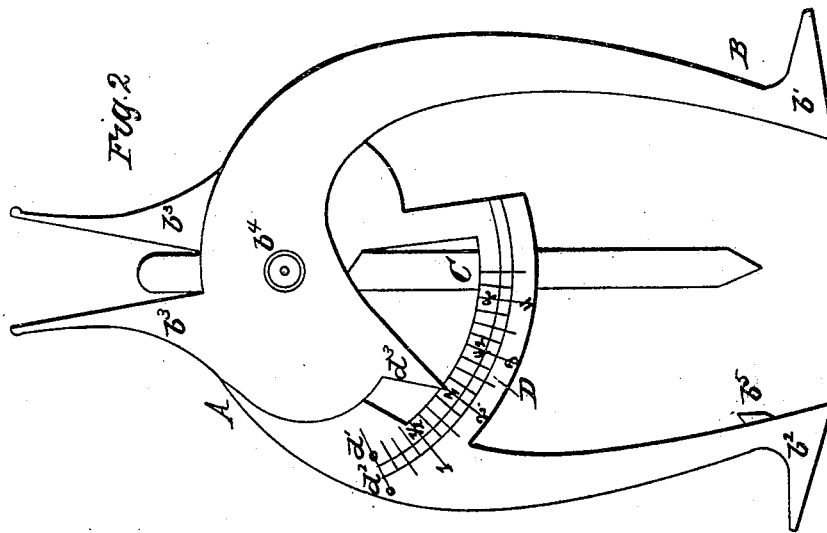


B. G. MARTIN.

Calipers.

No. 51,517.

Patented Dec. 12, 1865.



Witnesses  
Benjamin Martin  
B. F. Shuttuck

Inventor  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN CALIPERS.

Specification forming part of Letters Patent No. 51,517, dated December 12, 1865.

*To all whom it may concern:*

Be it known that I, BENJAMIN G. MARTIN, of the city of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Machinists' Calipers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

The Figures 1 and 2 represent the two opposite sides of the said improved calipers, like letters of reference indicating the same parts when in the different figures.

The nature of my invention consists in the application of a pointed swinging bar to the pivot of a pair of calipers, having the lower edges of its feet constructed so that when the said feet are closed together or have their heels in contact with each other their said lower edges will form a straight line in such relation to the swinging bar that when the calipers, so closed, are held upright with the said edges on a horizontal plane of any kind, the free pointed end of the swinging bar will coincide with another point fixed on one of the feet of the calipers, and thus prove that the supporting-plane is truly horizontal or level.

In the drawings, A B represent the calipers,  $b'$   $b^2$  its feet,  $b^3$   $b^3$  its arms,  $b^4$  its pivot, C the swinging bar, and D the index.

The legs of the calipers A B are constructed and connected together by a pivot-screw,  $b^4$ , in the usual well-known manner, but the feet  $b'$   $b^2$  are made much longer than heretofore, and their bottom edges made so that they will be in a straight line with each other when their heels are in contact, as shown in Fig. 1. The heels serve as the contact-surfaces in calipering by inclosing the object.

The pointed swinging bar C is attached so as to swing freely on the same pivot,  $b^4$ , which unites the legs of the calipers, and fixed to the side of the foot  $b^2$  of one of the legs is a thin plate,  $b^5$ , the upper end of which is pointed and coincides with the point of the swinging bar C when the calipers are held in an upright position with their feet  $b'$   $b^2$  in contact with each other and their lower edges on a horizontal plane of any kind, as shown in Fig. 1.

The arms  $b^3$   $b^3$  are extensions above the pivot  $b^4$  of the upper portions of the two parts of the calipers, A B, and are exactly of half the length of the legs, respectively, and constructed to have outside faces adapted for calipering within or between two surfaces, the said faces being also arranged so as to be touching each other when the heels of the feet  $b'$   $b^2$  are in contact with each other, as shown in the same figure.

The index D is divided by equidistant radial lines, centering in  $b^4$ , and figured in two separate concentric series,  $d'$   $d^2$ , the inner series of figures  $d'$ , indicating, when coinciding with the pointer  $d^3$ , the distances between the faces of the arms  $b^3$   $b^3$ , and the outer series,  $d^2$ , the distances between the heels of the feet  $b'$   $b^2$  in calipering, and, the length of the legs being double that of the arms, the same radial line of the index D will indicate for both ends of the calipers, the numbers in the series  $d'$  being half the value of those in  $d^2$ . In this instance the index is divided and numbered so as to represent inches and parts of inches in the spaces between the respective measuring-faces of the calipers.

It will be seen that these calipers will afford every facility that can be required both in calipering and leveling, that they will serve also to ascertain whether a surface or line is plumb or not, by placing its closed feet  $b'$   $b^2$  against the said surface or line and observing whether the swinging bar C coincides with the lines  $x$   $y$ , which are parallel to the lower edges of the said closed feet, and that they can be constructed at a very trifling increase of cost over the calipers heretofore used by machinists.

Having thus fully described and set forth my improved calipers, what I claim as new therein of my invention, and desire to secure by Letters Patent, is—

The application of a plumbing-bar, C, to a pair of calipers having feet  $b'$   $b^2$ , constructed so as to form a straight line with each other when in contact, as and for the purpose described.

BENJAMIN GREEN MARTIN.

Witnesses:

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