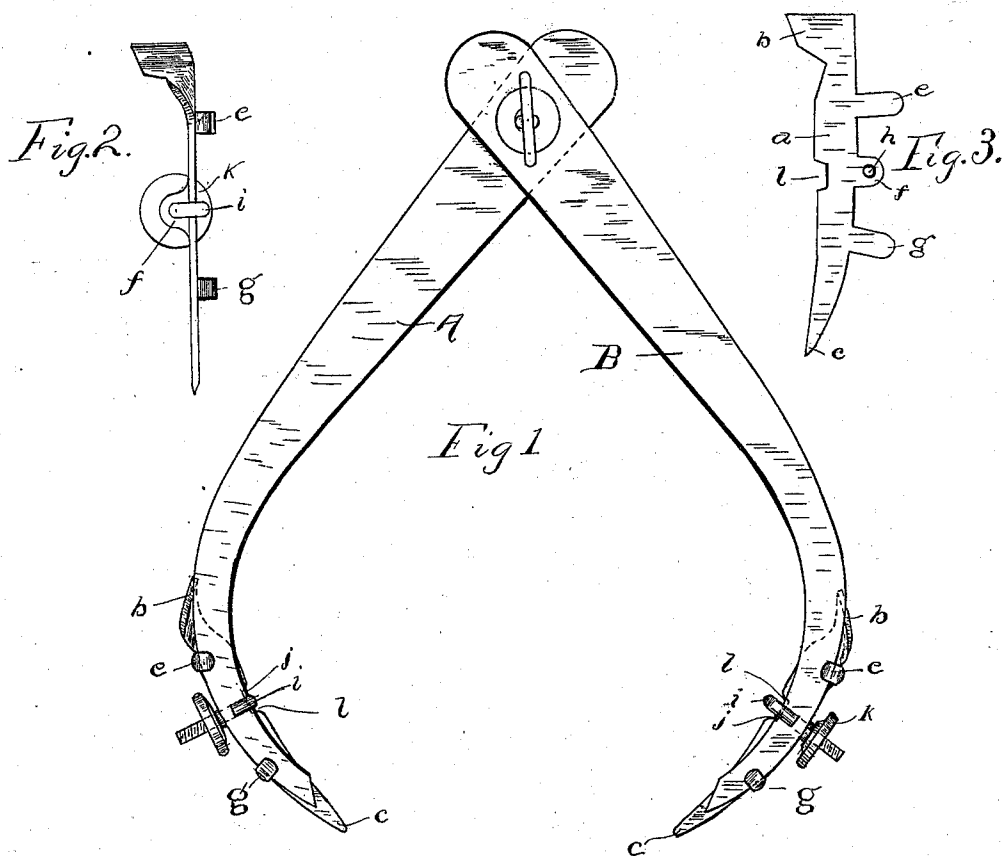


(No Model.)

D. S. BYER.
ATTACHMENT FOR CALIPERS.

No. 558,773.

Patented Apr. 21, 1896.



Witnesses

J. A. Saul
Elizabeth S. Poole

Inventor

David S. Byer

Charles Chandler

UNITED STATES PATENT OFFICE.

DAVID STONER BYER, OF ROADSIDE, PENNSYLVANIA.

ATTACHMENT FOR CALIPERS.

SPECIFICATION forming part of Letters Patent No. 558,773, dated April 21, 1896.

Application filed June 25, 1895. Serial No. 554,033. (No model.)

To all whom it may concern:

Be it known that I, DAVID STONER BYER, a citizen of the United States, residing at Roadside, in the county of Franklin, State of Pennsylvania, have invented certain new and useful Improvements in Attachments for Calipers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to calipers in general, and more particularly to attachments therefor, the object being to provide means for enabling the ordinary external flat-ended caliper which is ordinarily employed in lathe-work, or in fact in calipers not adapted for measuring between the threads or the shank of a screw, to be used for gaging the shank as well as the thread of a screw or bolt.

With this object in view my invention consists in forming a tip provided with clips, which take over a leg of the calipers and, in conjunction with a hook manipulated by a thumb-nut, exert a gripping action upon the leg and hold the tip in place. One end of the tip is brought to a point to enter the groove between the threads of the article to be gaged, while the other end is twisted at right angles to the body of the blank and is extended laterally to form a square end of a sufficient extent to prevent wobble and thus accurately gage the diameter of the bolt-shank or other piece of cylindrical material. For the second leg of the calipers a similar attachment is made, the only difference in construction being that the projections are arranged oppositely to those of the former. It will thus be seen that an ordinary pair of calipers may be employed for the purpose designed, and may also be supplied with means for enabling them to determine the diameter between the threads of a screw, and also accurately gage the diameter of the shank.

As is well known, in order to accurately measure a cylindrical surface, side wobble of the calipers must be prevented, and in order to accomplish this the tips of the calipers must be extended in the direction of the axis of the cylinder. To measure between the threads of a screw, it is necessary that the caliper-tips be pointed. It being impossible

to provide the legs of calipers with both sharp points and lateral extensions, I have provided the herein-described attachments, one end of each of which is pointed and the other extended laterally for the purposes above mentioned. Thus may a single pair of calipers be used upon irregular forms and be adapted for measuring both the shank and the minor diameter of a bolt or other form of screw.

Referring now to the drawings forming a part of this specification, and in which like letters of reference indicate similar parts in the several views, Figure 1 is a plan view of a pair of calipers provided with my invention, the attachment being placed in position for gaging the thread. Fig. 2 is a view of one of the attachments, taken at right angles to Fig. 1; and Fig. 3 is a plan view of a blank from which my invention is formed.

Referring now to the drawings, *a* represents the body of a blank from which my tip is formed, said blank having an angular extension *b* at one end and formed at its opposite extremity to a point *c*. This blank is substantially arc-shaped, and at its exterior edge is provided with three ears *e*, *f*, and *g*, of which *e* and *g* are adapted to be bent rearwardly to lie parallel with the body *a* of the attachment and form clips to receive a leg of a pair of calipers, after the manner shown in Fig. 1 of the drawings, in which *A* represents one leg of a pair of calipers, and *B* a second leg.

The ear *f* is provided with a perforation *h* and is adapted to be bent at right angles to the body *a* and to receive in its perforation the screw-threaded stem of a hook *i*, which passes around and grips the inner edge *j* of the caliper-leg. The end *b* of the blank is turned at right angles to the body *a* and is designed for use in caliper-ing an extended surface.

The method of attachment and operation of this device is as follows: It being desired to caliper the diameter of a bolt between the threads, the nut *k* on the screw-shank of the hook *i* is turned up and the tip is slipped over the extremity of one leg of the calipers, the latter taking between the clips *e* and *g* and the hook *i*. When the tip is slid to the proper position, the nut *k* is turned down, so that it impinges the upper face of the ear *h*, after which time, as the nut is further turned,

the hook *i* is drawn upwardly and grips tightly the leg of the calipers. A portion is cut away from the body of the tip at *l* to allow entrance of the hook to secure proper gripping of the leg. A similar tip or attachment is placed upon the second leg, B, of the calipers, the clips, and the ear *h*, together with the end *b*, being turned in opposite directions from those of the tip just described. In the position thus described the legs of the calipers are drawn together and the points of the tips are caused to enter the grooves between the threads of a screw, the diameter of which can be thus accurately obtained.

It being desired to caliper the body or shank of a bolt, the nut *k* is loosened and the position of the tip reversed, bringing the broad end *b* of the tip into operative position. The thumb-nut is then screwed down and the attachment is clamped firmly. In this position the ends of the calipers are caused to be very broad, and thus is side wobble entirely prevented, and in consequence an accurate measure of the diameter of the shank of a bolt or other cylindrical body may be determined.

It will be readily understood that I may vary the particular forms of the different elements of my device without departing from the spirit of my invention, and also that the attachments are readily applicable to any form of bow or straight-legged calipers.

Having now described my invention, what I claim is—

1. In a device of the class described, a removable tip having a narrowed and a broadened extremity, the latter being twisted to cause its edge to lie at an angle to the plane of the body of the tip.

2. In a device of the class described, a removable tip having one extremity formed at an angle to the common plane of the legs of the calipers, said tip having clips and an adjustable hook adapted to conjunctively grip a caliper-leg to retain the device in position.

3. In a device of the class described, a removable tip having clips, and a laterally-extended perforated ear adapted to receive an adjustable hook to coöperate with the clips to grip the caliper-leg.

4. In a device of the class described, a tip formed from a metal blank having one extremity turned at an angle thereto, clips, and an ear having a perforation adapted to receive an adjustable hook arranged to exert gripping action in conjunction with the clips.

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

DAVID STONER BYER.

Witnesses:

S. W. CUNNINGHAM,
T. S. CUNNINGHAM.