F. A. GUSTAVSON.

MICROMETER CALIPER ATTACHMENT.

APPLICATION FILED NOV. 10, 1917.

1,370,310. Patented Mar. 1, 1921.

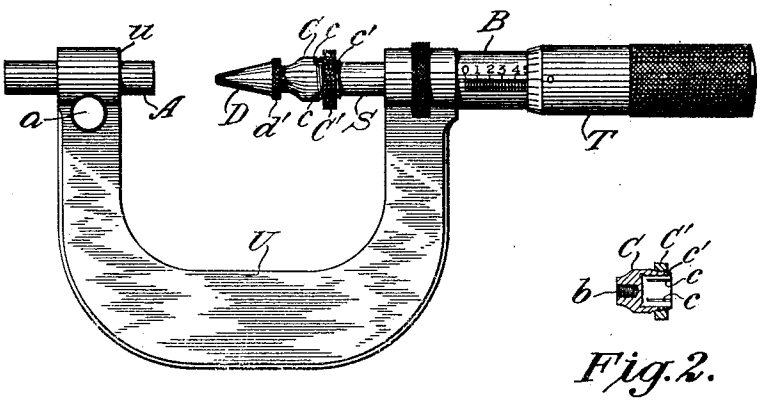


Fig. 1.

Fig. 2.

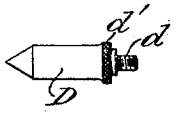


Fig. 3.

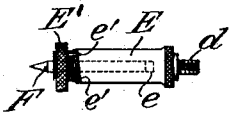


Fig. 4.

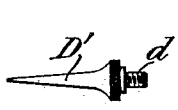


Fig. 5.

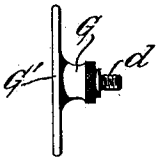


Fig. 6.

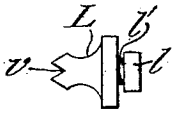


Fig. 9.

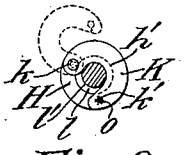


Fig. 8.

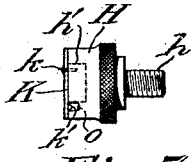


Fig. 7.

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MICROMETER-CALIPER ATTACHMENT.

1,370,310. Specification of Letters Patent. Patented Mar. 1, 1921.

Application filed November 10, 1917. Serial No. 201,375.

To all whom it may concern:

Be it known that I, FRANK A. GUSTAVSON, a subject of the King of Sweden, residing at Seekonk, in the county of Bristol, State of Massachusetts, have invented certain new and useful Improvements in Micrometer-Caliper Attachments, of which the following is a specification.

My invention relates to micrometer-calipers and consists of an improved attachment adapted to be applied thereto for measuring and gaging the depth of hollow articles, dies, screw-threads or the like, and for calipering irregular surfaces. The object of my improvement is to provide a device which may be applied directly to the adjustable spindle of the caliper, and to its fixed anvil, if required, for holding interchangeable points or tools which are formed for measuring and gaging different shapes and conformations of the piece to be calipered. A particular feature of the improvement consists in the construction of the attaching-means whereby the tools may be quickly and easily applied and removed to render them more conveniently interchangeable.

The invention is fully set forth in the following specification, illustrated by the accompanying drawings, in which like reference characters designate like parts. In the drawings:—

Figure 1 is a side view of a usual form of micrometer-caliper showing my improved attachment applied thereto;

Fig. 2, an axial, sectional view of the sleeve or thimble adapted for attachment to the end of the adjustable-spindle of the caliper or to the fixed anvil thereof;

Fig. 3, illustrates one form of point or tool for attachment to the thimble;

Fig. 4, another style of attachable tool having its point adapted for longitudinal adjustment therein;

Fig. 5, a view showing another modification of the tool or point;

Fig. 6, a view illustrating still another form of tool for use on the caliper;

Fig. 7, an enlarged view of a quick-attachment holding-device for the tools which is adapted to be carried by the sleeve on the spindle;

Fig. 8, an end view of the same; and

Fig. 9, a view showing a form of tool adapted to fit the holding-device illustrated in Figs. 7 and 8.

Referring first to Fig. 1, the caliper here shown is of usual construction comprising a U-shaped frame U having an anvil A held in one of its branches; a barrel B attached to the other branch of the frame; a spindle S threaded through the barrel to adapt it for axial adjustment toward and away from the anvil; and a sleeve or thimble T for operating the adjustable spindle by a turning movement of the hand. The anvil A extends through a split bearing u on the frame U and is secured in position by a thumb-screw a. Through this arrangement it may be adjusted longitudinally in relation to the spindle S to provide for measuring larger or smaller pieces.

My present, improved device comprises essentially a sleeve or thimble C adapted to fit over the end of the adjustable spindle S, with means for securing it thereon, and also provided with means for holding the various tools of different shapes, one of which D is shown in Fig. 3. The sleeve C is bored axially to receive the end of the spindle S, and is split longitudinally of the bore at c, c at its inner end. Its periphery is tapered slightly and threaded at c' to receive a knurled nut or washer C'. After the sleeve C has been slipped onto the spindle S, with the end of its bore abutting the end of the spindle, the nut C' is screwed up on the threads c' to bind the split end of the sleeve securely in place. At its forward end the sleeve C has a threaded bore b adapted to receive the screw-threaded end d of the tool or point D. The tool or point D is screwed into the sleeve C with its shoulder abutting the end thereof, and preferably the periphery of the tool is formed with a knurled portion d' for convenience in adjusting it in position.

The tools D are made in various styles with their points shaped to gage threads as shown in Fig. 3, or in accordance with other requirements as illustrated in the other views. For instance, Fig. 5 shows a tool D' having a relatively long tapering point adapted to measure the depth of hollow articles, or for insertion into bores or other openings.

Fig. 4 shows a cylindrical form of tool E having an axial bore e adapted to receive a needle-point F. The outer end of the tool E is split longitudinally at e' with its periphery tapered and threaded to receive a knurled nut E'. When the nut E' is adjusted along the threaded portion of the tool it will bind

the needle-point F in the bore *e*. Through this arrangement provision is made for longitudinal adjustment of the needle-point to adapt it to be used as a depth gage.

Fig. 6 shows a tool G formed with a circular disk G′ at its end, this type of attachment being employed for gaging the thickness of paper, sheet-metal or other articles having a relatively broad, flat surface.

In the several modifications of the attachable element shown in Figs. 3, 4, 5 and 6 the tool screws into the end of the sleeve C, being formed with a threaded shank for this purpose. Fig. 7 shows a further modification of the device whereby the several attachable tools or points may be slipped into position without screwing them into the sleeve C. For this purpose I provide an additional holding-member H having a threaded shank *h* which screws into the end of the sleeve C, this part being shown approximately double size in Fig. 7. The outer end of the member H is counterbored at *h′*, and pivoted on its front face is a locking-ring or latch-member K. As shown in Fig. 8 the latch-member K is of substantially crescent-shape, having one of its ends pivoted on a pin *k* driven into the end of the member H. A relatively small teat or rounded projection *k′* protrudes from the inner face of the latch K and is adapted to spring into a hole or opening *o* drilled into the face of the member H to serve as a spring-detent. With this arrangement the tool L has its butt end formed with a cylindrical shank *l* adapted to fit the counter-bore *h′* in the member H and provided with a circumferential groove *l′*. In this modification of the tool its point is formed with a V-slot *v* for gaging screw-threads.

In applying the tool L to position the locking-ring or latch K is swung back as illustrated by the dotted lines in Fig. 8, and the shank *l* of the tool L is inserted in the bore *h* of the member H. After the shank has been seated against the end of the bore *h* the latch K is swung around into the position shown by full lines in Fig. 8 to engage with the groove *l′* whereby to hold the tool in place. As the latch K is swung into locking relation with the tool L the point or detent *k′* springs into the opening *o* to hold it from unwarranted movement and to provide a secure fastening between the parts. With this latter arrangement the interchangeable tools or points can be quickly slipped into position on the member H and are held in place by the latch K. When a different shape of tool is to be used, it is only necessary to swing back the latch K to remove the one in place and substitute another, this operation being performed very quickly and expeditiously without requiring any screwing together of the parts. If preferred, the sleeve C itself could be formed with the counterbore for the tool and provided with the latch-member for engaging its groove, thereby eliminating one extra element.

It is also to be understood that my improved attachment may be applied to both the fixed anvil A and the adjustable spindle S of the micrometer so that the threads on opposite sides of a bolt or screw may be gaged, and also to provide for measuring the thickness of the web in a part recessed on both sides.

Various other types and forms of tools may be employed with the device, the particular object of the improvement being to provide means for a quick and easy method of attaching the tools in position and for securing them in place on the micrometer without mutilating or damaging the parts thereof.

I am aware that it is old in the art to provide means for attaching different tools to the end of the spindle of a micrometer, and I do not claim this feature broadly. What I do claim is:—

1. In an attachment for micrometer-calipers, the combination with the spindle thereof, of a member adapted to be permanently clamped to the end of the spindle, said member formed with a bore at its outer end, a tool-holder having a shank fitted to the bore in the end of the first member and provided with an axial bore at its end, a tool having a shank fitted to the bore in the tool-holder and formed with an annular groove on its periphery, and a latch pivoted to the end of the tool-holder to adapt it to engage the groove in the shank of the tool to retain the latter in position in axial alinement with the caliper-spindle.

2. An improved auxiliary gaging-device for micrometer-calipers comprising a sleeve-member adapted to be slipped onto the end of the spindle of the caliper and formed with a threaded bore at its end, of means to clamp said member permanently in place on the spindle, a second attaching-member having a shank adapted to be screwed into the bore on the first member and provided with a socket at its outer end, a tool having a shank adapted to be seated in the socket of the attaching-member and formed with a circumferential groove, a latch pivoted at one end to the outer face of the attaching-member to adapt it to swing into engagement with the groove in the tool, and a detent for holding the latch in engaging relation with the tool to secure the latter in place on the attaching-member.

In testimony whereof I affix my signature.

FRANK A. GUSTAVSON.