

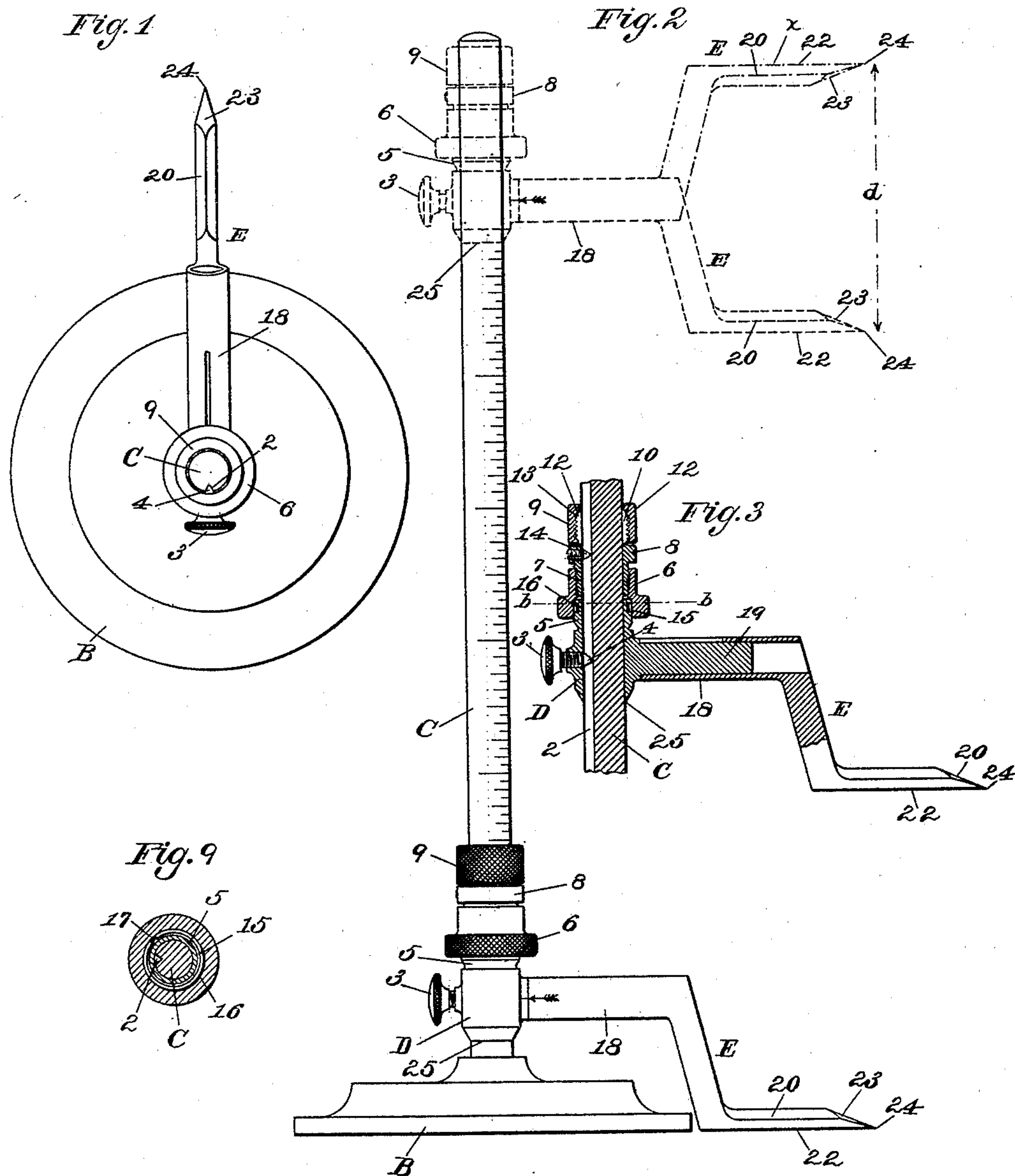
(No Model.)

2 Sheets—Sheet 1.

A. MAUSER.  
SURFACE GAGE.

No. 476,806.

Patented June 14, 1892.



Witnesses:

Henry L. Rickard.  
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Inventor:

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By his Attorney,

J. H. Richards

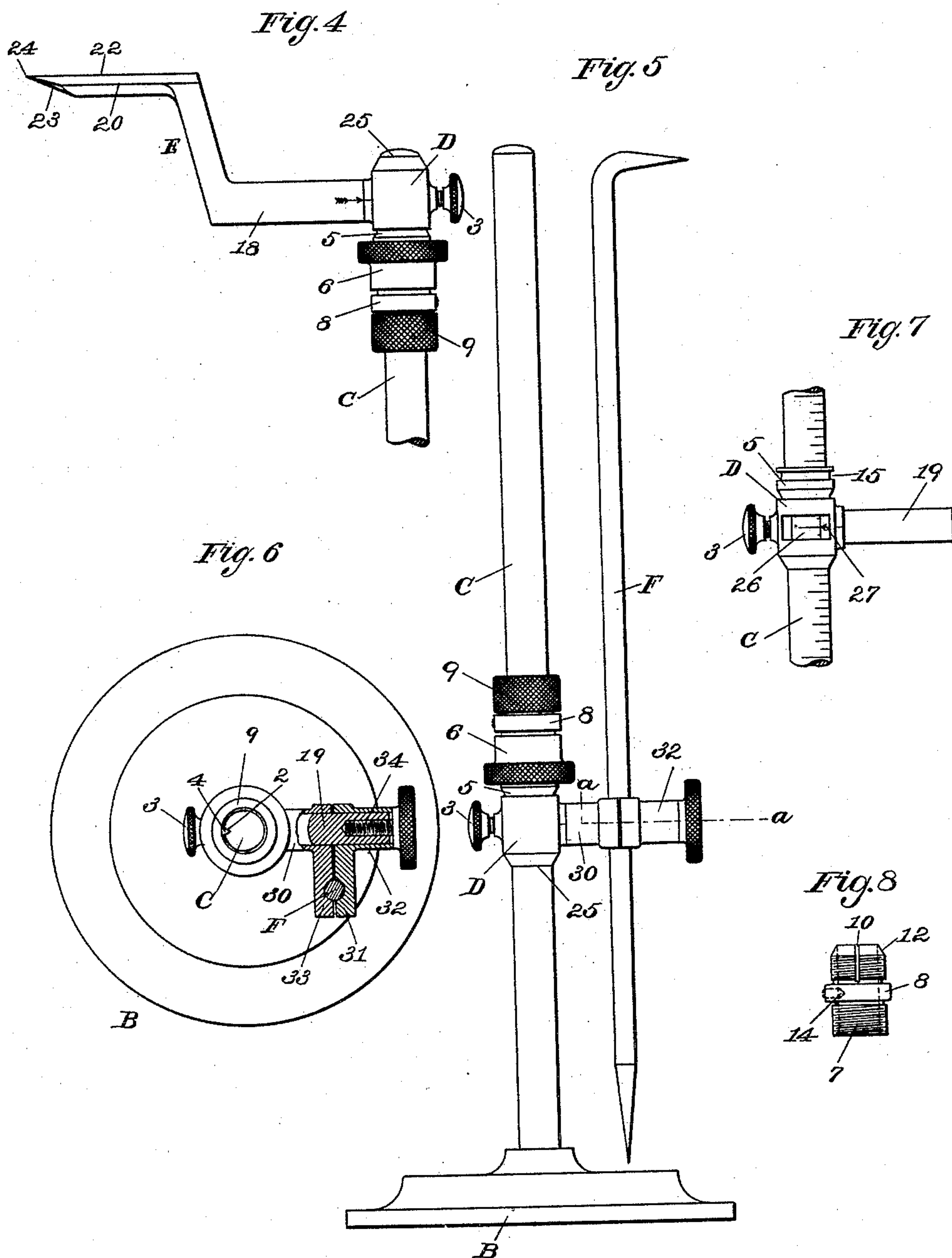
(No Model.)

2 Sheets—Sheet 2.

A. MAUSER.  
SURFACE GAGE.

No. 476,806.

Patented June 14, 1892.



Witnesses:

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# UNITED STATES PATENT OFFICE.

ALFONS MAUSER, OF OBERNDORF, GERMANY.

## SURFACE-GAGE.

SPECIFICATION forming part of Letters Patent No. 476,806, dated June 14, 1892.

Application filed March 16, 1892. Serial No. 425,103. (No model.)

*To all whom it may concern:*

Be it known that I, ALFONS MAUSER, residing at Oberndorf, Württemberg, Germany, have invented certain new and useful Improvements in Surface-Gages, of which the following is a specification.

This invention relates to that class of surface-gages which have a column rising from a base and have a horizontally-projecting arm or pointer adjustable vertically of the column, the object of the invention being to furnish a surface-gage of that class having an improved reversible pointer or scratch-blade and improved means for effecting the adjustment of the same.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a surface-gage embodying my present improvements. Fig. 2 is a side elevation of the surface-gage. Fig. 3 is a partial sectional side elevation similar to a portion of Fig. 2 for showing the construction of the improved means for effecting the vertical adjustment of the pointer or scratch-blade. Fig. 4 is a view similar to a portion of Fig. 2, showing the upper portion of the column or standard with the scratch-blade and its bracket reversed and in their uppermost position. Fig. 5 is a side elevation similar to Fig. 2, showing the preferred form of scratch-blade removed from the vertically-adjustable bracket and an ordinary wire pointer adjustably mounted on said bracket. Fig. 6 is a plan view of the form of gage shown in Fig. 5, drawn partially in section, on the line *a a*, Fig. 5. Fig. 7 is a view similar to a portion of Fig. 2 for illustrating the use of the graduations on the standard of the instrument. Fig. 8 is a side view of the split sleeve forming a part of the pointer-elevating device. Fig. 9 is a sectional view in line *b b*, Fig. 3.

Similar characters designate like parts in all the figures.

The standard of my improved surface-gage comprises a suitable base—as, for instance, the circular base B—and a vertical rod or column C, in which I form the groove 2 and which I graduate with units of measurement and subdivisions thereof, after the manner illustrated, for instance, in Figs. 2 and 7. The first unit of graduation, which in the drawings is supposed to be one inch, I make

to coincide with the reading edge or line of the vertically-adjustable part of the implement when the point of the scratch-blade is in the plane of the lower side of the base of the standard.

The pointer-carrying bracket D is fitted to slide closely yet freely on the rod C of the standard and is provided with means for setting the same at any desired point on said rod. Said means consist of an elevating device and in the present instance of a clamp-screw 3, carried in the bracket D and having its point 4 fitting the aforesaid groove 2, which is formed in the rod C, as will be understood by comparison of Figs. 1, 3, and 6.

For the purpose of effecting the required fine adjustment of the bracket D vertically of the standard-rod C the projecting tubular end 5 of said bracket is connected by means of an adjusting-nut 6 with the threaded lower end 7 of the split sleeve 8, whose upper end is adapted to be clamped by means of the clamp-nut 9 onto said rod C. Said sleeve 8 (shown in side view in Fig. 8) is slotted, as at 10, so as to be clampable upon said rod, and is formed conical at 12 to engage in the corresponding cone 13, Fig. 3, within said clamping-nut 9. This clamping device operates after the manner of the so-called "split chuck" to clamp and unclamp the sleeve 8 from the rod C, as may be required. For preventing the rotation of said sleeve 8 on said rod the sleeve is or may be furnished with the point 14, entering said slot 2 of the standard-rod C, as will be understood from Fig. 3.

For connecting the elevating-nut 6 with the bracket D one end of this bracket is formed to fit within one end of said nut and has formed therein the groove 15 (see Fig. 7) for receiving the bearing-ring 16. (Shown in Figs. 3 and 9.) This ring, being divided at 17 on one side thereof, may be sprung into the groove 15 of the bracket D and is constructed when closed to its normal diameter to fit freely within said groove and to fit firmly within said nut 6. By means of this construction the said parts may be assembled by first springing the ring 16 into place in the groove 15 and then forcing the elevating-nut 6 down into place on the said bearing-ring over the end of the bracket, as shown in Fig. 3. By this means a connection is made



between the elevating device and the bracket of sufficient power for the purpose for which said device is intended, and at the same time the two portions of the apparatus are readily separated whenever required.

The pointer-carrying bracket D has a laterally-projecting arm 19, to which is removably fixed the reversible scratch-blade E. (Shown in Figs. 1 to 4, inclusive.) The shank 18 of said blade is bored to fit closely on said arm 19 and at the outer end thereof has the downwardly-extending arm carrying the pointer 20, whose under or working side 22, Fig. 2, is shown coinciding with the line of the lower surface of the base B of the instrument.

For the purpose of keeping scratch-point E of the blade sharpened for use the pointer 20 of the blade is ground away only on the inclined face 23 thereof, so that the working point 24 is always at said working side 22 and always in the same horizontal plane relatively to the axis on which the scratch-blade is reversible.

The arm 19 of the pointer-carrying bracket D is preferably of cylindrical form and in order to secure all the desired features of operation should stand exactly at right angles to the column C. When thus constructed, the scratch-blade E may be reversed by turning the shank thereof on said arm to stand in the position shown by dotted lines at *x* in Fig. 2. In order to make the described graduations available with the pointer in either of its said positions on the arm 19, the face-line 22 of the point E is made parallel with the axis of the shank 19 and exactly the distance from said axis of some one of the graduations, preferably one of the units thereof. By this means the distance *d*, Fig. 2, between the working point in its lower and in its uppermost position (while the arm 19 stands in the same position) will be equal to two of said graduations or units thereof.

When it is desired to use the point of the blade E at an elevation greater than the height of the standard, the bracket D, together with its elevating device, may be reversed from the position shown in Figs. 2 and 3 to the position shown in Fig. 4. Of course the operation of the device is not materially altered by such reversal.

In the form of the bracket D shown in Figs. 2, 3, 4, and 5 the lower edge 25 of the bracket constitutes the reading-line from which to read the graduations of the standard. In the form of bracket shown in Fig. 7 this part has a mortise 26, on one side of which is made the reading-line 27, whereby to read off the graduations after the manner substantially commonly used in connection with the ordinary "Vernier" calipers. Otherwise than in the respect just stated the form of the bracket shown in Fig. 7 is or may be the same as that shown in the other figures of the drawings.

When it is desired to substitute for the improved scratch-blade E a pointer of the ordinary construction, said blade E is removed

from the arm 19 and a suitable pointer-holding clamp substituted therefor. Such a clamp is illustrated in Figs. 5 and 6 in side and sectional plan views, respectively. Said clamp consists of the two thimbles 30 and 32, having the corresponding clamp-jaws 31 and 33, constructed for grasping between them the pointer F. For clamping said pointer between said jaws the bracket-arm 19 is bored and threaded in the outer end thereof to receive the clamp-screw 34, whose head bears against the outer end of the thimble 32, as will be understood from the sectional portion of Fig. 6. In connection with this form of pointer and pointer-clamping device I have shown in Figs. 5 and 6 the same bracket-elevating device hereinbefore described in connection with Figs. 1, 2, and 3.

An important advantage of the means shown and described for effecting the fine adjustment of the pointer on the standard is that the force is applied throughout the periphery of the projecting tubular end of the bracket and in a line concentric with the standard, thereby avoiding all tendency to vary the alignment of the sliding bracket and tending, on the contrary, to maintain the perfect alignment of the parts during the adjustment thereof. It will be understood that this feature of my improvement is designed to bring the accuracy of the instrument to a high degree of perfection and that my improved surface-gage is designed for use in connection with the finer grades of tool and machine making.

Having thus described my invention, I claim—

1. In a surface-gage, the combination, with the graduated standard, of the blade-carrying bracket movable on the standard and a reversible blade carried on said bracket, with its axis crosswise to the standard and having its working point offset from its axis by a distance equal to a graduation, whereby the blade may be used in reversed positions, substantially as described.

2. In a surface-gage, the combination, with the graduated standard, of the blade-carrying bracket movable on the standard and having a horizontal arm crosswise to the standard and a reversible blade revolvably supported on said arm and having its working point offset from its axis by a distance equal to a graduation, substantially as described, and for the purpose specified.

3. In a surface-gage, the combination, with the standard, of the blade-carrying bracket movable on the standard and having a horizontal arm crosswise to the standard and a scratch-blade reversibly supported on said arm and having an offset pointer whose working side is parallel with the axis on which the blade is reversible, said pointer terminating in a working point at said parallel side thereof, substantially as described, and for the purpose specified.

4. In a surface-gage, the combination, with



the standard, of the pointer-carrying bracket fitted to slide on said standard and having the groove 2, an elevating device, substantially as described, fixable on the standard independently of the bracket and having an adjusting-nut extending over the grooved end of the bracket, and the ring fitting freely in said groove and closely in the adjusting-nut, whereby the bracket may be actuated for the fine adjustment thereof and the elevating device made separable from the bracket, substantially as described.

5. In a surface-gage, the combination, with the standard and a bracket, substantially as described, of the sleeve 8, a clamp-nut, substantially as described, fitting the threaded split end of said sleeve for clamping the same to the standard, the adjusting-nut fitting the other threaded end of said sleeve, and means connecting the adjusting-nut with the bracket, all substantially as described, and for the purpose specified.

6. In a surface-gage of the class specified, the combination, with the standard, of the bracket movable thereon and having the cylindrical arm 19 crosswise of the standard and bored to receive a clamp-screw, whereby said arm is adapted to receive an offset scratch-

blade, substantially as described, or the pointer-carrying clamps and clamp-screws, substantially as set forth.

7. In a surface-gage, the combination, with the base and the standard, of the bracket fitted to slide on the standard and furnished with means for clamping the same thereto and the pointer consisting of a shank attachable to the standard and having the depending arm terminating in the horizontal pointer 20, substantially as described.

8. In a surface-gage, the combination of the standard, the bracket fitted to slide on the standard and carrying the pointer, the tubular sleeve 8, means, substantially as described, for clamping and unclamping the same to and from the standard, and the adjusting-nut fitting said sleeve and operatively connected with the bracket throughout the periphery thereof, whereby the bracket may be adjusted vertically of the standard by force applied throughout the periphery of the tube in a line concentric with the standard, substantially as described.

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Witnesses:

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