Aug. 9, 1949. W. S. VAN BROCKLIN, JR 2,478,677

MICROMETER SURFACE GAUGE

Filed Oct. 30, 1944

2 Sheets-Sheet 1

Fig. 1.

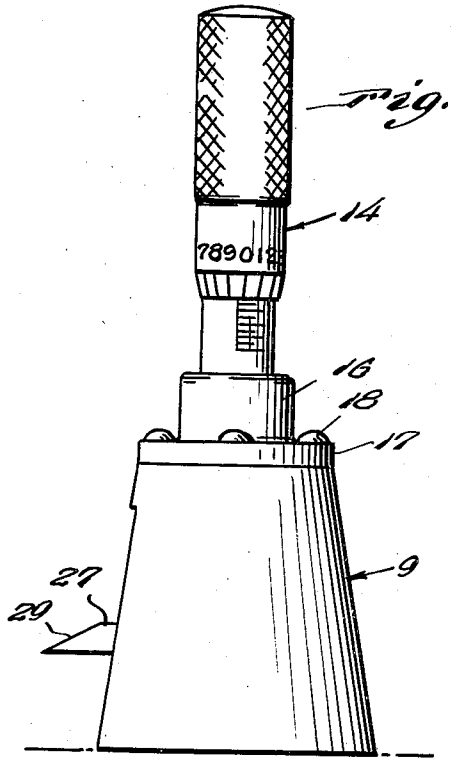


Fig. 2.

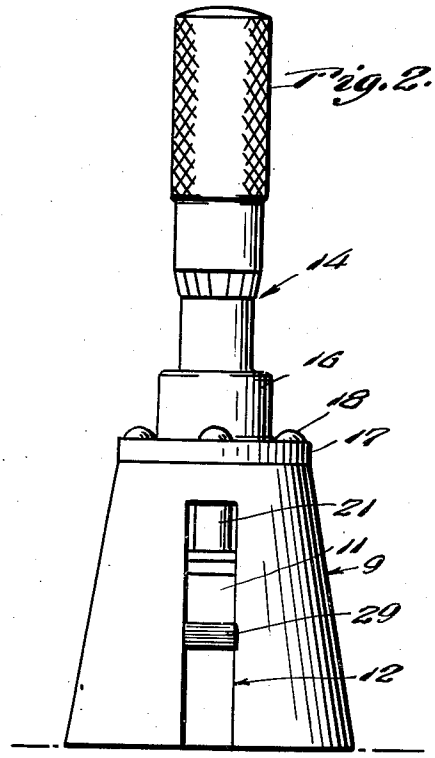
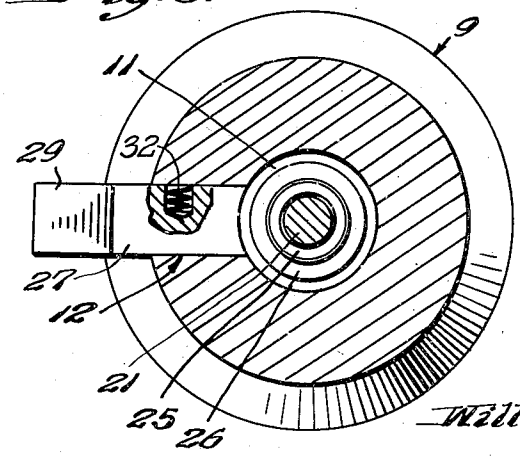


Fig. 5.



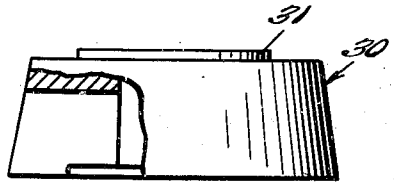


Fig. 8.

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Aug. 9, 1949. W. S. VAN BROCKLIN, JR 2,478,677

MICROMETER SURFACE GAUGE

Filed Oct. 30, 1944

2 Sheets-Sheet 2

Fig. 3.

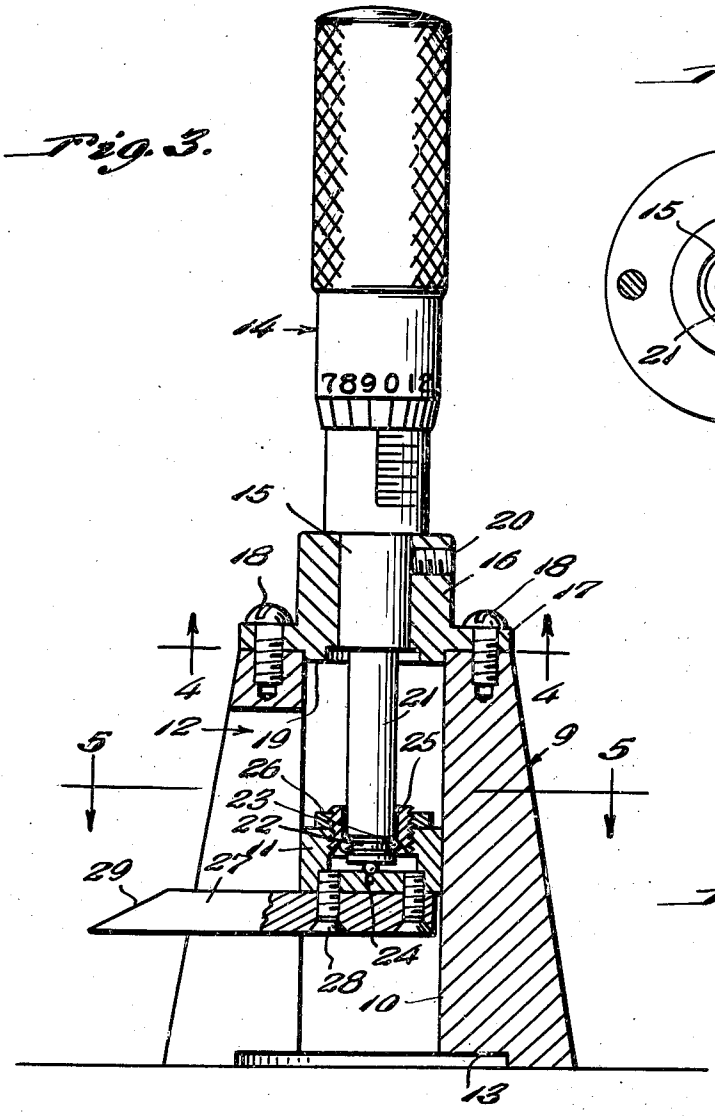
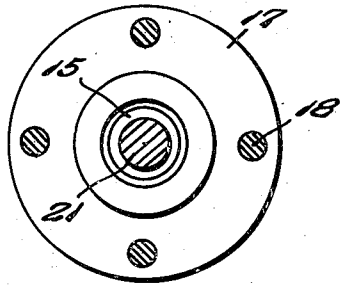


Fig. 4.



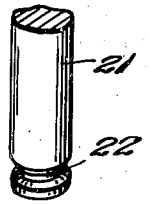


Fig. 6.

Fig. 7.



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MICROMETER SURFACE GAUGE

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Application October 30, 1944, Serial No. 561,037

2 Claims. (Cl. 33—170)

1

The present invention relates to a novel and improved micrometer type surface gauge, a precision instrument through the medium of which a machinist is permitted to lay out lines one-thousandth of an inch apart for such purposes as are intended to be served thereby.

More specifically, I have evolved and produced a simple, practicable and expedient micrometer type height or surface gauge, which is such that it can be set at a direct reading from a blueprint in a manner to minutely gauge lines laid out parallel to the bottom of the work or surface plate, whereby to save time and to give a closer and finer reading than can now be had from present day types of vernier height gauges such as sometimes provide for seemingly negligible errors of determination.

In carrying out the principles of the invention, I employ a precision ground frusto-conical base, this of high grade tool steel, the same having an adapter on its upper end, the latter to accommodate a micrometer, the stem of the micrometer projecting into a precision ground bore in the base where it is swivelly connected with a right angularly disposed bevel-ended scriber, this through the medium of a carefully designed operating connection.

Other and more specific features and advantages of the invention will become more readily apparent from the following description and the acompanying illustrative drawings.

In the drawings, wherein like reference numerals are emp'oyed to designate like structural parts throughout the views;

Figure 1 is a side elevational view of a micrometer type surface gauge constructed in accordance with the structural and functional principles of the instant invention.

Figure 2 is an elevational view, this at right angles to Figure 1, the latter view being observed in a direction from left to right.

Figure 3 is a central vertical sectional and elevational view with all of the essential features shown.

Figures 4 and 5 are horizontal sections on the planes of the lines 4—4 and 5—5 respectively of Figure 3, looking in the direction of the arrows.

Figure 6 is a fragmentary perspective view of the lower grooved end of the micrometer spindle or stem.

Figure 7 is a perspective view of the bevel-ended bit or scriber.

Figure 8 is a view in section and elevation of a range and height increasing block usable between the surface and the aforementioned frusto-conical base.

As before indicated, the base 9 is of appropriate height and cross-sectional dimensions and is preferably frusto-conical in form. It is provided centrally with a precision ground bore 10 forming an accommodation slide-way for a snug fitting precision finished slide 11. Also, in one side it is formed with a vertical slot 12. In its bottom it is provided with a recess 13 which serves in a manner to be hereinafter described.

2

The micrometer 14 is a conventional instrument and its barrel 15 is mounted in an adapter comprising a collar 16 having an outstanding flange 17 bolted or otherwise secured as at 18 to the top of the base. The central under side of the collar is provided with a depending annulus 19 which fits telescopically into the upper end of the bore and centers and effectively mounts the adapter in place. A set-screw 20 is provided in the collar and this engages the barrel to hold the parts assembled. The stem or spindle 21 of the micrometer depends concentrically into the bore 10. As shown in Figure 6 the lower end of said spindle is carefully grooved as at 22 to function as a seat or race-way for the anti-friction balls 23. The aforementioned slide 11 is in the form of a hollow cylindrical block and the ball-equipped end of the spindle depends into the socket therein. An end thrust ball 24 is interposed between the spindle and the interior of the bottom portion of the slide and the coacting balls 23 are assembled and held in place by a screw-threaded bushing 25 which is threaded into said block. The bushing is secured in place by a suitable lock-nut 26. The scriber 27 is in the form of a bit and has its inner end extending into the bore and underlying and separably fastened to the bottom of said guide or slide-block as at 28. The other end projects and is bevelled to knife-edge form, as denoted at 29. The extending portion obviously projects through and beyond the accommodation slot 12.

In Figure 8 I have shown an elevating or height increasing block 30 wich is adapted to be interposed between the supporting surface and the bottom of the base, the same having an upstanding circular projection 31 which fits into the socket 13 in the bottom of the base, whereby to elevate said base an inch or more from the supporting surface. The blocks 30 can be of 1, 2, 3 and 4 inches in height, as is obvious. They serve in conjunction with the base 9 to increase the range of utility.

Through the medium of this instrument I am able to provide a structure which is characterized by simplicity and convenience and which is capable of being easily and economically produced, the same enabling fine measurements of extreme accuracy to be obtained such as are not possible, so far as I have been able to ascertain, by using vernier height gauges of commonly known types.

It can be aptly and effectively employed for scribing horizontal lines on objects at desired vertical positions relative to a stationary base,

whereby to aptly fulfill the requirements of manufacturers, machinists and other users.

It is not considered essential in a presentation such as is here given to illustrate concrete examples, or to attempt to explain all methods and modes of usage, since as machinists and skilled craftsmen know, precision instruments serve best depending on work to be performed and experience of the users.

At this point I desire to direct attention to an optional feature which may perhaps be of sufficient importance to justify its inclusion. I have reference to the tension spring 32 which is fitted in an accommodation socket in one longitudinal edge portion at the intermediate part of the scriber 27. The spring engages the wall of the slot 12 on one side as shown for example in Figure 5 and thus compensates for play and maintains an effective association of parts.

It is thought that the persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

1. In a micrometer type surface gauge of the class described, a frusto-conical base provided with a centrally positioned precision ground bore opening through opposite ends of said base, a precision ground guide-block mounted and slidable in said bore, said guide-block being of hollow form, a micrometer mounted on said base and having a spindle depending concentrically into the bore, and extending into the block, an end thrust bearing interposed between an end of said spindle and an interior surface of said block, the stated end of said spindle being provided with a circumferential groove, anti-friction balls surrounding and mounted in said groove, a screw-threaded bushing, said bushing being threaded into a screw-threaded hole in said block and snugly surrounding the grooved end of the spindle and having a beveled edge embracing the balls to hold said balls and grooved end of said spindle in place in said guide block.

2. In a micrometer type surface gauge of the class described, a frusto-conical base provided with a centrally positioned cylindrical precision ground bore opening through opposite ends of said base, a precision ground guide-block of hollow cylindrical form fitting slidably in said bore, a micrometer removably mounted atop said base and having a spindle depending concentrically into the bore, the depending lower end of the spindle extending centrally into the block, said spindle being provided on said lower end with a circumferential groove, the latter located in said block, antifriction balls assembled in said groove, a screw-threaded bushing, said bushing being threaded into a screw-threaded hole in said guide-block and snugly surrounding the spindle and having a beveled surface embracing the grooved end of said spindle and balls to hold said balls operatively in place in said block, said base being provided in one side with a slot, a horizontal scriber mounted for reciprocation in said slot, the inner end of said scriber projecting into said bore and being detachably fastened beneath the bottom of said guide-block.

WILLIAM S. VAN BROCKLIN, JR.

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