(No Model.)

C. W. MALMQUIST.

MICROMETER SURFACE GAGE.

No. 438,851. Patented Oct. 21, 1890.

Fig. 3

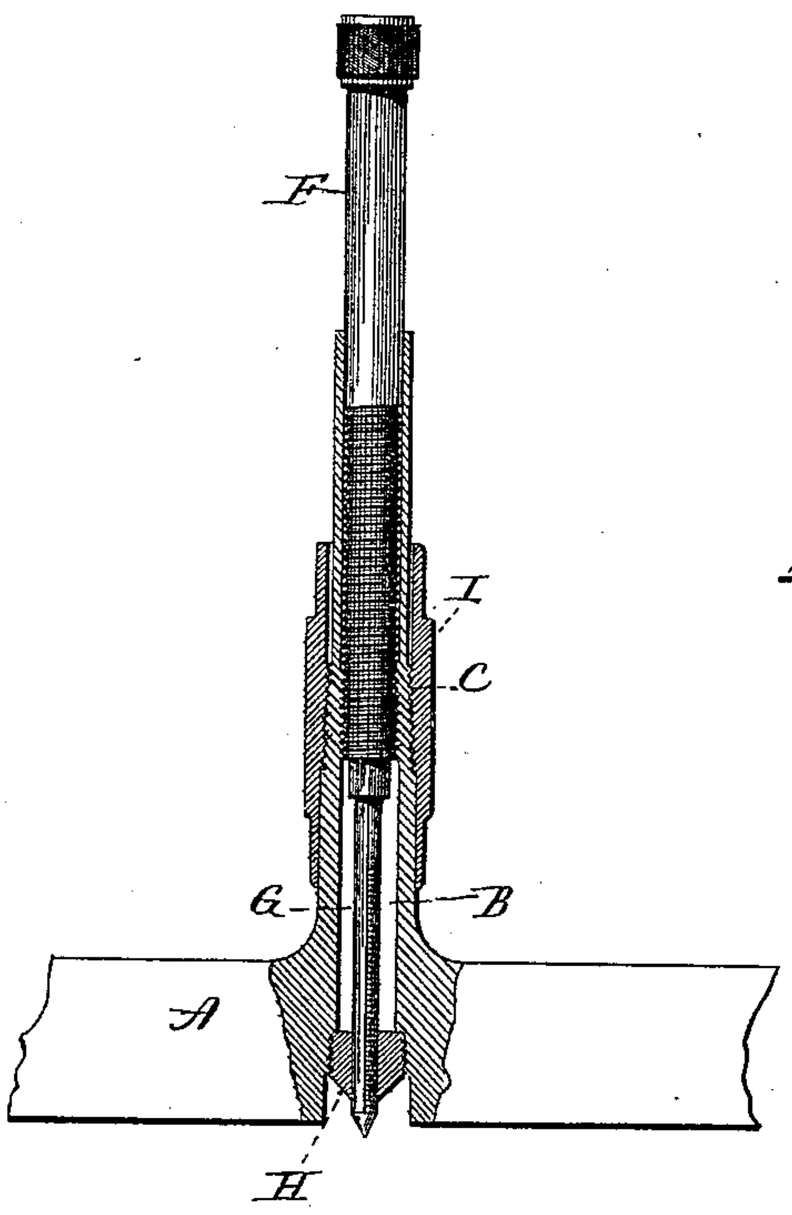


Fig. 4

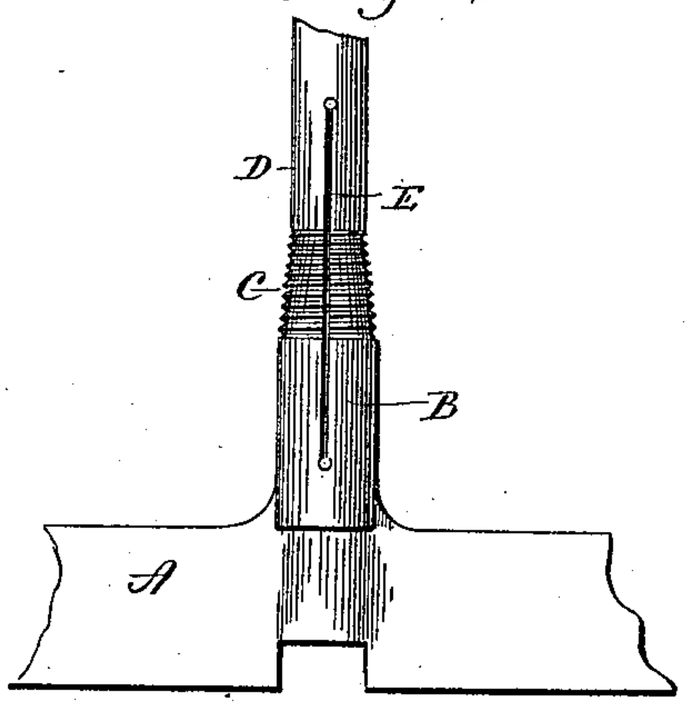


Fig. 1

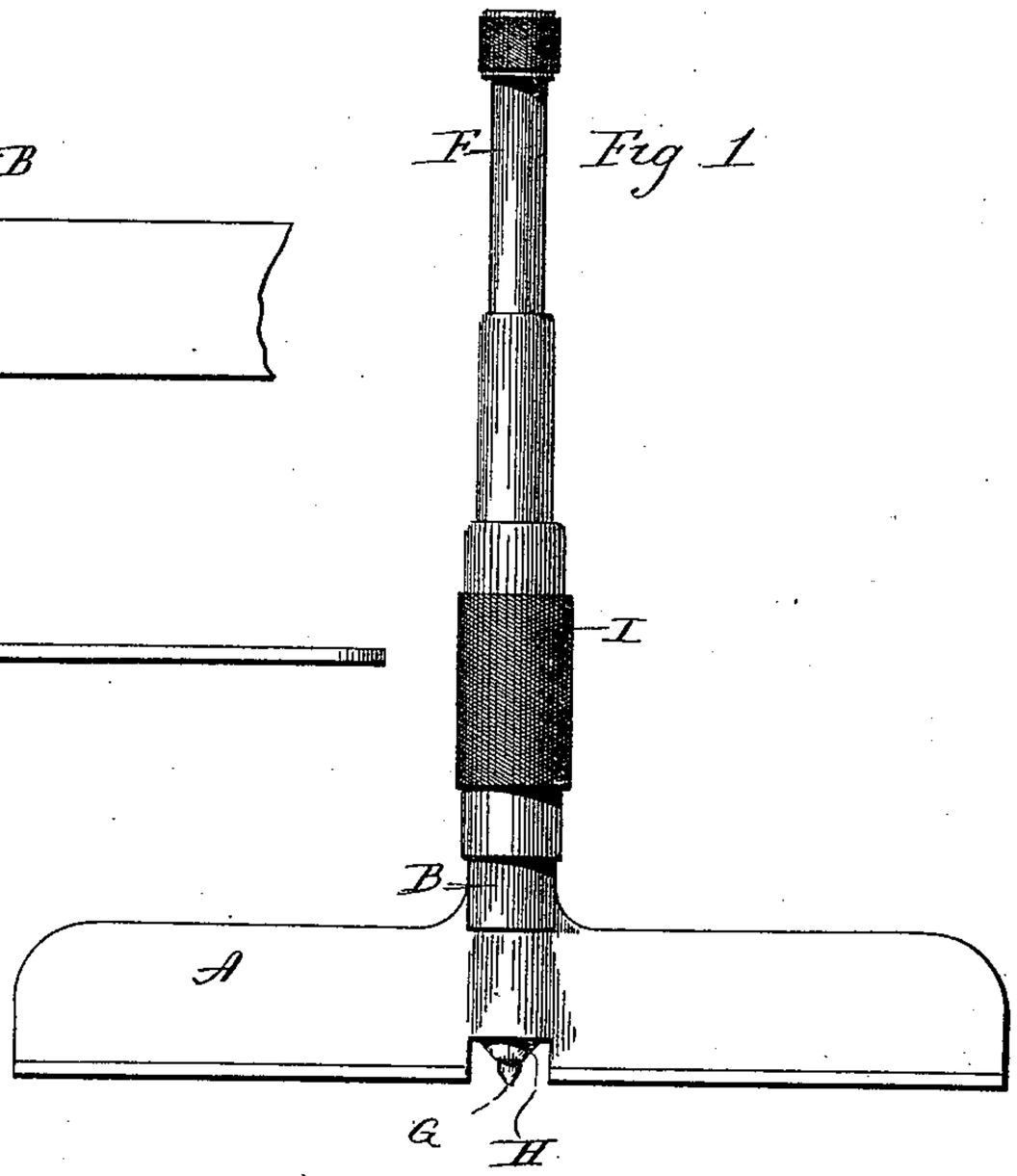
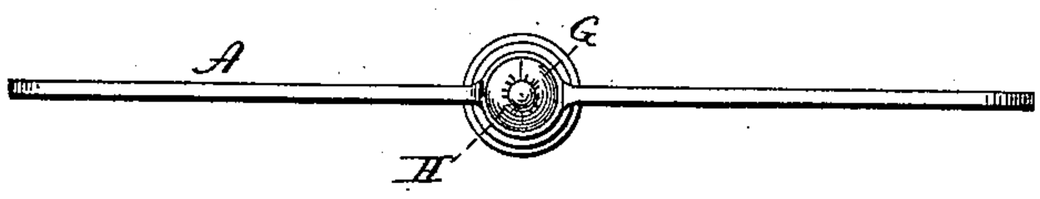


Fig. 2



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MICROMETER SURFACE-GAGE.

SPECIFICATION forming part of Letters Patent No. 438,851, dated October 21, 1890.

Application filed May 5, 1890. Serial No. 350,556. (No model.)

To all whom it may concern:

Be it known that I, CARL WILLIAM MALMQUIST, of New Haven, in the county of New Haven and State of Connecticut, have invented new Improvements in Depth-Gages; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the gage complete; Fig. 2, under edge view looking upward; Fig. 3, vertical central section through the spindle looking against the side of the base; Fig. 4, side view of the T-shaped base with the sleeve and spindle removed.

This invention relates to an improvement in the device used by machinists and others to gage the depth of holes in boring or otherwise, commonly called "depth-gage." The depth-gage consists of an inverted-T-shaped bar, the cross of the T serving as the base, while through the tail of the T a screw-spindle is arranged, so that by turning the spindle the point of the gage may be projected beyond the lower edge of the cross to any desirable extent, and so that, the cross resting upon the surface surrounding the hole, the spindle may be run down into the hole, and so that, the spindle being set with the requisite projection and the hole bored, the gage placed over the hole will indicate when the proper depth is attained, the gage being adapted for various purposes where depth of holes or cuts in machinists' work is required to be gaged, the object being a simple construction, and whereby a micrometer adjustment may be attained; and it consists in the construction as hereinafter described and particularly recited in the claims.

A represents the cross of the inverted-T-shaped base, B representing the upwardly-projecting tail. The tail is of cylindrical shape for a portion of its length from the base upward, as seen in Fig. 4, and from the upper end of this cylindrical portion the tail is gradually contracted in diameter, this contracted portion being screw-threaded, as at C, Fig. 4, and from this screw-threaded portion C the remainder of the tail D is cylindrical. The tail is tubular in form, as seen in Fig. 3, and it is split vertically through the contracted or conical portion C, the slit E running up into the part D and down into the part B, and so that the screw-threaded portion C is adapted to be contracted in diameter, it being naturally elastic, so that if contracted it will resume its former shape when the force which contracted it is removed. Through the tail a spindle F extends, it projecting some distance above the upper end of the tail. The spindle is screw-threaded and the contracted portion C is correspondingly internally screw-threaded, as seen in Fig. 3, the portion C serving as a nut for the spindle, so that the spindle, being rotated, will be forced downward or upward, according to the direction of rotation. The lower end of the spindle is preferably contracted or reduced in diameter, so as to form a stem G, this stem being adapted to pass through the base or cross A, the cross being provided near its lower edge with a collar H, through which the stem G may pass, as seen in Fig. 3, the stem working freely up and down under the rotation of the spindle. On the tail a sleeve I is arranged, which is internally screw-threaded corresponding to the conical threaded portion C of the tail. This sleeve extends onto the cylindrical portion both above and below the threaded portion and so as to be freely rotated, the sleeve being constructed with a roughened surface, so that the operator may conveniently turn the same by grasping it between his thumb and finger. The sleeve I operates as a nut upon the threaded portion C, so that if it be screwed downward it will contract that screw-threaded portion C, or, if in the opposite direction, will permit the return or expansion of that portion C of the tail. Consequently if the sleeve I be adjusted so as to leave the screw-threaded portion C of the tail in its normal condition the screw-threaded spindle F may be rotated and therefore forced downward or upward, according to the direction of rotation, and when the desired position is attained the sleeve I may be turned upon the conical threaded portion C, so as to contract that portion and clamp the spindle, so as to hold it firmly set whenever so grasped. The stem G is graduated corresponding to the threads of the screw of the spindle—say fortieths of an

inch—and as seen in Fig. 3, and so that the number of rotations of the spindle will be indicated on the stem below the coliar H. Around the hole through the collar H graduations are made—say in twenty-fifths of the circumference—the spindle being provided with a vertical line, as seen in Fig. 3. The graduations on the collar H will indicate the portion of the rotation which may be imparted to the spindle, a full rotation making one-fortieth of an inch, and the fractions of such rotation, indicated by the graduations on the collar, will indicate a movement of the spindle of forty by twenty-five—that is, thousandths. Each of the graduations on the collar indicates one one-thousandth of an inch in vertical or longitudinal movement of the spindle, the zero-point being when the lower end of the stem G is on a line with the lower edge of the cross or base A.

From this construction it will be seen that the base resting upon the surface surrounding the hole and the spindle run down until the bottom of the hole is reached the depth of that hole may be ascertained in thousandths of an inch. As a gage to govern the depth of a hole to be made the spindle may be adjusted with relation to the edge of the base to the required depth for the hole, this depth under the arrangement shown being easily ascertained within thousandths of an inch, and when the gage is once set the clamping device described serves to hold the parts in that position, so as to prevent accidental displacement.

From the foregoing it will be understood that I do not claim, broadly, an inverted-T-shaped base for a depth-gage, combined with an adjustable spindle through the tail of said gage; but

What I do claim is—

1. In a depth-gage, the inverted-T-shaped base constructed with a tubular tail, the outer surface of the tail being cylindrical through its portion adjacent to the cross, thence gradually reduced in diameter, and from this reduced diameter continuing in cylindrical shape, the said reduced portion being of conical shape and screw-threaded upon its outer surface and also screw-threaded upon its inner surface, the tail slit in the direction of its length, the slit running through the said conical portion and so as to permit the contraction of the tail, combined with a spindle through said tail screw-threaded corresponding to the interior of the said conical portion, and a sleeve around the said tail and over said conical portion, the said sleeve being internally screw-threaded corresponding to the screw-thread of the said conical portion, whereby under the rotation of the said sleeve the tail may be contracted in diameter to clamp the spindle, the spindle extending in the form of a stem through the base, substantially as described.

2. A depth-gage consisting of a base, a tail projecting therefrom, the said tail tubular and of cylindrical shape from the base upward, thence contracting in conical shape and continuing from the smaller diameter in cylindrical shape, the said conical portion screw-threaded upon its outside and also screw-threaded upon its inside, combined with a spindle through the tail screw-threaded corresponding to internal screw-thread of the said conical portion, its lower end forming a stem extending down through the base, a collar in the base, through which said stem passes, the stem graduated corresponding to the screw-thread of the spindle and the collar graduated around the opening through which the stem passes to indicate fractions of revolution, and a sleeve around said conical portion of the tail, the sleeve internally screw-threaded corresponding to the screw-thread of the said conical portion, substantially as and for the purpose described.

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