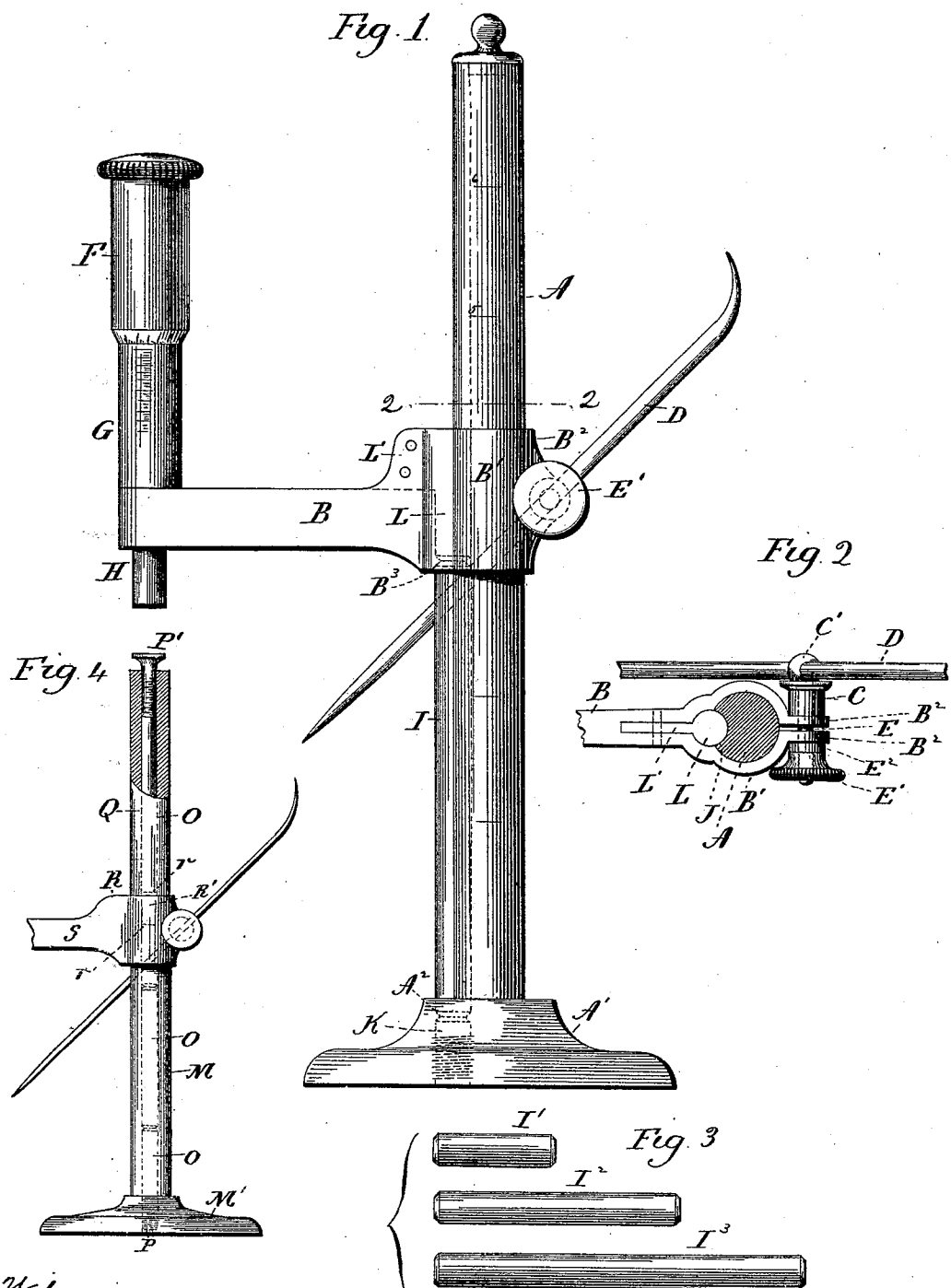


(No Model.)

J. P. LAVIGNE.
MICROMETER SURFACE GAGE.

No. 515,236.

Patented Feb. 20, 1894.



Witness
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JOSEPH P. LAVIGNE, OF NEW HAVEN, CONNECTICUT.

MICROMETER SURFACE-GAGE.

SPECIFICATION forming part of Letters Patent No. 515,236, dated February 20, 1894.

Application filed February 20, 1893. Serial No. 463,038. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. LAVIGNE, of New Haven, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Micrometer-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,
10 and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of one form which a micrometer surface gage constructed in accordance with my invention
15 may assume; Fig. 2, a broken view partly in plan and partly in horizontal section, on the line 2—2 of Fig. 1; Fig. 3, a view showing several measuring-pieces for combination with the beam; Fig. 4, a broken view in side
20 elevation on a reduced scale, of one of the modified forms which the invention may assume.

My invention relates to an improvement in micrometer surface-gages, the object being to
25 produce a simple, convenient and accurate instrument for measuring depth and height, and adapted also to perform the work of what is called "scratch-gage."

With these ends in view my invention consists in certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claim.

As shown in Figs. 1 and 2 of the accompanying drawings, I employ a cylindrical
35 beam A, furnished at its lower end with a cylindrical foot A', which adapts it to be supported in a vertical position. As herein shown, the beam is provided upon its exterior face with vertically arranged graduations, which are preferably employed, though
40 their use is not essential. Nor do I confine myself to adapting the beam to be supported in an upright position by means of such a foot A', as I have shown. Upon this beam I
45 mount a vertically adjustable horizontal arm B, the inner end of which has two oppositely bowed spring-arms B' B', terminating at their outer ends in lugs B² B², whereby the arm is adapted to be clamped upon the beam. A
50 clamping-screw C, passing through the said lugs B² B², is furnished at its outer end with

a cylindrical head C', having a transverse opening, through which the scribing instrument D, is passed, the same being cylindrical
in cross-section, and having tapering pointed
55 ends, one of which is curved slightly. In addition to its primary function, this scribing instrument serves also as a means for turning the screw C, and clamping the arm upon the beam, from which the instrument is kept
60 cleared by a wide washer or sleeve interposed between the head C', of the screw and the outer face of the adjacent lug B². The opposite end of the screw is furnished with a thumb-nut E' and a washer E². In adjust-
55 ing the arm B, either the nut E', which turns upon the screw may be used, or the screw itself may be turned by means of the scribing instrument. The outer end of the said
70 arm B, is provided with means for measuring fractions of inches, and consisting as herein shown, of a rotatable sleeve F, having a beveled graduated edge, a fixed sleeve G, having
75 longitudinally arranged graduations, and a plunger H, or measuring member the said sleeve and plunger standing in a plane parallel with the plane of the beam. I do not describe the construction of this mechanism for measuring fractions of inches in detail,
80 because it is a well known construction, and because any suitable device for the same purpose may be used in its place.

I secure what I may term a coarse measurement, by first setting the vertically movable
85 arm upon the beam A, and then effect a close measurement by means of the said mechanism for measuring fractions of inches. I may rely upon the graduations on the beam A, for setting the arm B, but I prefer to employ in
90 connection with the beam A, and for gaging the position of the said arm thereupon, a series of measuring-pieces or plugs, differentiated in length by inches.

I have shown in Figs. 1 and 2 of the drawings my improved device as constructed for
95 the employment of interchangeable cylindrical plugs, one of which is shown in Fig. 1, and lettered I. Other corresponding plugs, but of different length and lettered I' I² and I³, are shown in Fig. 3 of the drawings. These plugs
100 are cylindrical in cross-section, uniform in diameter, and slightly reduced at their ends.

In use they are designed to be set into a groove J, of corresponding curvature, extending throughout the length of the beam, the plugs being retained in place by being set at their lower ends into a socket A², formed in the foot A', and into a socket B³, formed in the under face of the inner end of the arm B, at a point directly opposite the socket A². An adjusting-screw or plug K, located in the foot in line with the socket A², forms a bearing for the lower ends of the plugs, and enables wear to be taken up, if wear occurs. The upper ends of the plugs are abutted against a cylindrical abutment L, formed at the inner end of a hardened block L', which is riveted in place between the inner ends of the spring-arms B³ B³.

If it is desired to take a measurement of between three and four inches, a plug is combined with the beam, which will support the arm B, in a position in which it will stand exactly four inches from the surface upon which the foot A' rests. The mechanism for measuring inches is now manipulated to effect the close measurement, that is, to obtain the fraction between three and four inches, which the thing being measured presents. If the range of measurement fell between five and six inches, a plug raising the arm six inches from the surface on which the device stood, would be employed, &c.

Instead of employing plugs as measuring-pieces in the manner described, I may see fit to locate them entirely within the beam M, as shown in Fig. 4 of the drawings, in which the beam M, having a foot M', is constructed with a central longitudinal bore adapted to receive measuring pieces O, consisting of plugs differentiated in length by inches. The lower plug rests upon an adjusting-screw P located in the foot M' before mentioned, while the whole column of plugs is retained within the beam by means of a screw P', located in the upper end thereof. In this construction the beam is provided throughout its length with a radial slot Q, to receive an abutment-block R, pivoted between the spring-arms at the inner end of the vertically movable arm S, the inner end of the said abutment-block entering into the bore of the beam, and having a cylindrical termination R', a little smaller in diameter than the diameter of the bore, and having projecting bearing faces *r r* for engagement with the plugs. In this construction the plugs are interchanged in accordance with the elevation at which it is desired to support the arm from the surface on which

the foot M' rests. Still other arrangements may also be devised for the combination with the beam of my device of interchangeable measuring-pieces differentiated by inches. I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and variations therein as fairly fall within the spirit and scope of my invention.

I am aware that a micrometer-gage having a foot, an upright beam supported thereby and constructed for measuring inches, and an arm applied to the said beam, vertically adjustable thereon, carrying mechanism for measuring fractions of inches, and a scribing-tool is old, and I do not claim such a construction broadly. Nor do I claim herein the combination with a beam and a movable arm, of measuring pieces differentiated in length by inches and adapted to be combined with the beam to gage the position of the arm thereupon, and means for compensating for the wear of the said pieces, such a combination having been shown in my prior patent granted December 20, 1892, No. 488,280.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a micrometer surface-gage, the combination with a beam constructed at its lower end with a foot which supports it in an upright position, of a single horizontal arm mounted directly upon the said beam and vertically adjustable thereon, means for measuring fractions of inches arranged vertically in the outer end of the said arm, and including a measuring member which extends below the said arm and between the lower end of which and the surface on which the device rests there is no obstruction, measuring-pieces differentiated in length by inches, and adapted to be combined with the beam to gage the position of the arm below which they are located, thereupon, means located in the said foot for supporting the said measuring-pieces and adjustable to compensate for wear, and a scribing instrument combined with the inner end of the said arm and moving up and down therewith, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH P. LAVIGNE.

Witnesses:

WILBUR F. DAY, Jr.,
CALIX J. DEMERS.