

(No Model.)

A. H. EMERY.

MICROMETER GAGE FOR INTERNAL AND EXTERNAL MEASUREMENTS.

No. 361,056.

Patented Apr. 12, 1887.

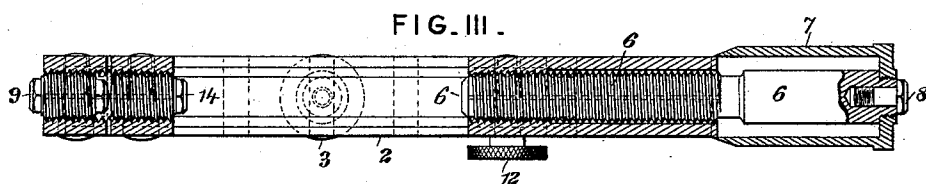
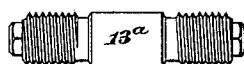
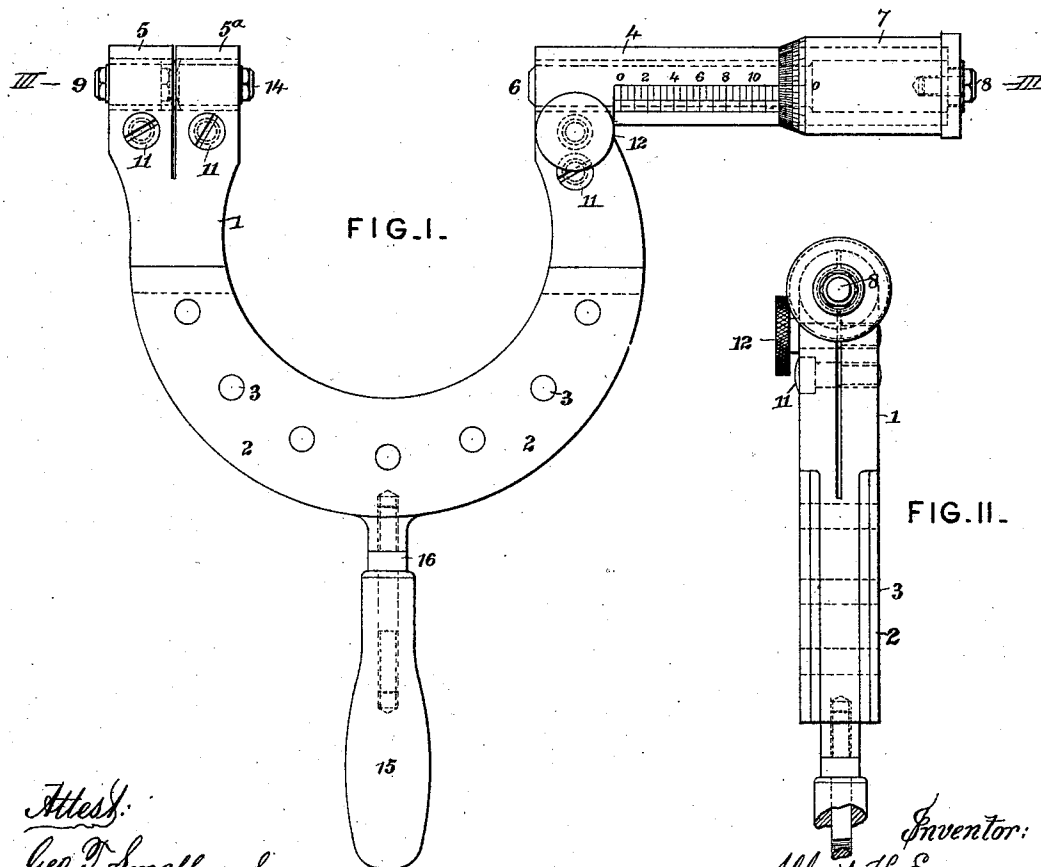
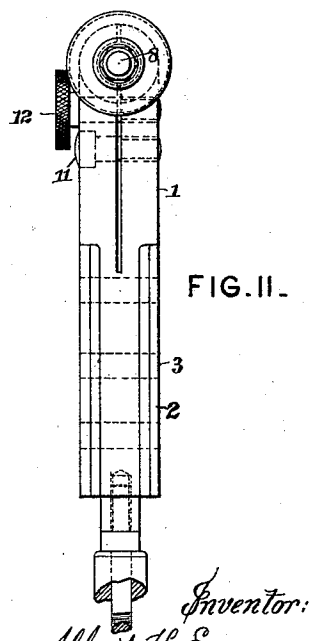


FIG. IV.



FIG. V.



Attest:
Geo. T. Smallwood
F. A. Soper

Inventor:
Albert H. Emery
By Knight Bros. Atty.

UNITED STATES PATENT OFFICE.

ALBERT H. EMERY, OF STAMFORD, CONNECTICUT.

MICROMETER-GAGE FOR INTERNAL AND EXTERNAL MEASUREMENTS.

SPECIFICATION forming part of Letters Patent No. 361,056, dated April 12, 1887.

Application filed April 20, 1886. Serial No. 199,546. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. EMERY, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Micrometer-Gages, of which the following is a specification.

The subject of this invention is a gage for measuring either internal or external dimensions. It has some features in common with the instrument described in my application of even date herewith, designated "Case A," Serial No. 199,545. It is constructed with caliper-legs, the extremities of which constitute, respectively, the head and foot of the gage, and one of which extremities is provided with a micrometer-screw. In the head of the micrometer-screw is a removable screw ground to provide a gage-face and adapted to be removed and replaced when worn. The foot of the gage is constructed with independently-adjustable screw-sockets containing separate gage-screws, the said gage-screws being thus adapted to be set and locked or released independently of one another. A series of screw-legs are provided adjustable relatively to each other and to the interior and exterior ends of the micrometer-screw, so that their opposite faces can be set at a gage distance asunder and from the head or foot of the micrometer-screw.

In the accompanying drawings, Figure I is a side or front view of a gage illustrating the invention. Fig. II is an end view of the same. Fig. III is a longitudinal section on the line III III, Fig. I. Figs. IV and V are views of removable extension screw-legs.

The body 1 of the gage is provided with holding-pieces 2, secured thereto by pins 3, the said holding-pieces and pins being of wood or other suitable material which will not freely conduct heat from the hand of the user to the body of the gage. It also has a handle, 15, of wood or like material, secured to the body by a screw-tang, 16. The body is formed, as shown, in crescent or caliper shape, of suitable size to cover the external dimensions to be gaged and to give the desired range of adjustment. It is provided at one end with a screw-socket, 4, for the micrometer-screw 6, and at the other extremity with separate screw-

sockets 5 5^a, receiving the adjustable and movable gage-screws 9 14, for use in measuring inside and outside dimensions. In the head of the micrometer-screw 6 is a removable screw, 8, forming the gaging-face of the head for inside dimensions, and adapted to be replaced when worn or to be set up by placing a washer under its head, and then regrinding the surface of the said screw-head 8, so as to give to the micrometer-screw a fixed gage length. The several sockets 4 5 5^a are split longitudinally, as indicated in Figs. II and III, and are adjustable in relation to the screws 6, 9, and 14 by means of set-screws 11, so as to hold the screws firmly in the position to which they are set in the case of the screws 9 and 14, and in the case of the micrometer-screw 6 to regulate its nut or screw-socket to fit the said screw, so that it may work accurately therein.

12 represents a locking-screw by which the micrometer-screw may be locked to any position in which it is set.

13 13^a represent extension screw-legs reversible end for end and adapted to be used in place of either of the gage-screws 9 14, to adapt the instrument for gaging larger internal dimensions or smaller external dimensions, in connection with the micrometer-screw 6.

In operation, the screw 13 or 13^a, when put in place of the screw 14, is adjusted and secured by a set-screw, 11, to a fixed or standard initial distance from the end of the micrometer-screw 6 while the indicator of the latter is at zero. This initial distance is then increased, as required, by the movement of the micrometer-screw in the use of the instrument. After the screw 14, or other screw used instead of it, is thus fixed at some standard distance from the end of the micrometer-screw 6, the screw 9, or a screw, 13 or 13^a, which may be used in place of it, is adjusted relatively thereto so that the exterior and interior faces of the said screws are fixed at a standard distance asunder. By this means the same gage, being provided with a number of long and short legs, may have a very large range of accurate measurements.

The principle of constructing a micrometer-gage for delicate measurements with a handle or holding-piece of wood or like material to prevent injurious conduction of heat to the

body of the gage from the hand of the user; also, the use of set-screws to adjust the screw-sockets or nut accurately to the micrometer-screw and a locking-screw to fix the micrometer-screw at at any point to which it is set without interfering with the adjustment of the screw-socket or nut; also, the use of interchangeable and adjustable screw-legs in the foot of the gage to give any desired gage length with the indicator at zero, I have described and claimed in another application of even date herewith, designated "Case A," and numbered 199,545.

As in Case A, a cap, 7, is permanently secured to the head of the micrometer-screw 6, and has a beveled end on which the micrometer-scale is engraved, the said scale being read in customary manner with an indicator-mark on the body of the gage for fractional measurements, the primary scale on the body of the gage (also represented in Fig. I) being read by the extremity of said cap 7.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A micrometer-gage having a gaging-face, 9, a micrometer-screw, 6, working relatively

to the said face for internal measurements, and a removable screw, 8, in the head of the micrometer-screw 6, for accurately fixing and preserving the gage length of the latter, as explained.

2. A micrometer-gage having two gage-screws mounted in the foot of the frame and independently adjustable, so that their opposite faces can be set at a gage distance asunder and from the end of the micrometer-screw.

3. A gage for external and internal dimensions having a micrometer-screw in its head, independently-adjustable screw-sockets in its foot, separate gage-screws in said sockets, and set-screws by means of which the said gage-screws can be locked or released independently, as explained.

4. The combination of the gage-frame 1, micrometer-screw 6, removable face-screw 8, and the independently-adjustable gage-screws 9 and 14, substantially as and for the purposes set forth.

ALBERT H. EMERY.

Witnesses:

OCTAVIUS KNIGHT,
F. A. HOPKINS.