(No Model.)

W. & A. W. CROSS.

MICROMETER GAGE.

No. 342,245. Patented May 18, 1886.

Fig. 1.

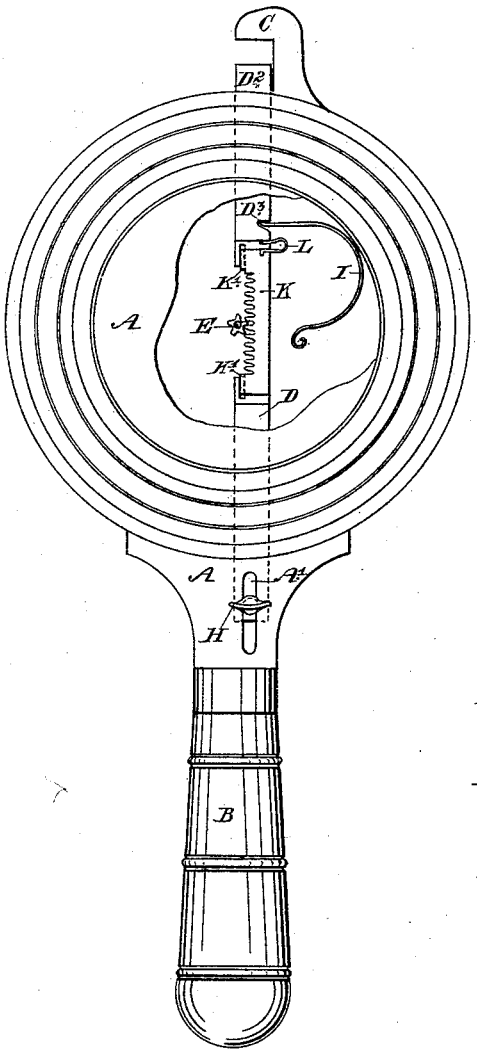


Fig. 2½

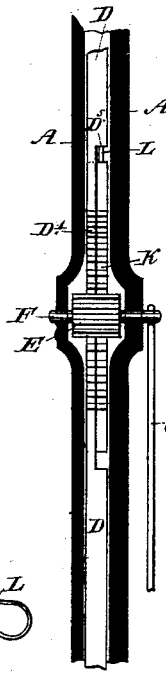
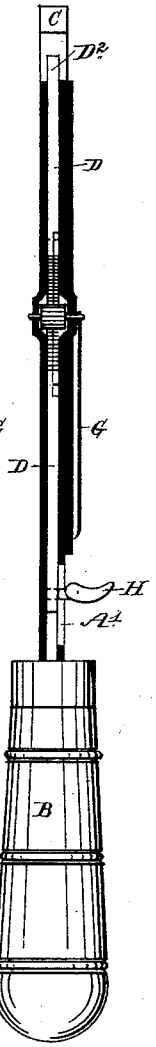


Fig. 2.



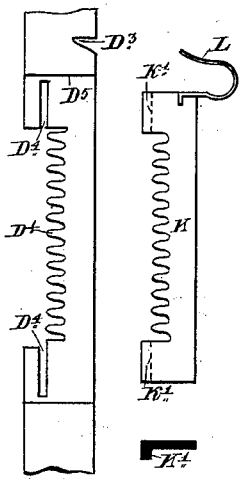


Fig. 3. *Fig. 4.*

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM CROSS AND AMBROSE WOOTTON CROSS, OF LOUGHBOROUGH, COUNTY OF LEICESTER, ENGLAND.

MICROMETER-GAGE.

SPECIFICATION forming part of Letters Patent No. 342,245, dated May 18, 1886.

Application filed December 30, 1885. Serial No. 187,161. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM CROSS and AMBROSE WOOTTON CROSS, subjects of the Queen of England, residing at Loughborough, in the county of Leicester, England, have invented new and useful Improvements in Micrometer-Gages, of which the following is a specification.

The object of our invention is to provide a cheap and efficient micrometer or measuring-instrument that will instantly indicate on a dial the thickness of wires, plates, or other articles in thousandths of an inch, or such other figures or gages as may be required for various purposes or trades.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the complete instrument with part of the dial removed and a portion broken away to show the mechanism. Fig. 2 is a longitudinal section from front to back, and Fig. 2^a is a portion of the same on an enlarged scale. Fig. 3 shows in detail on an enlarged scale the main rack, and Fig. 4 the supplemental rack.

Like letters of reference represent like parts in all the views.

A is the frame-casing, of any suitable shape, but preferably circular, to match the dial, and having the handle B, by which it is held while in use.

C is a fixed jaw, forming part of or carried by the frame A, and made of or faced with hardened steel.

D is a slide reduced at the center of its length to half the thickness, as shown in Fig. 2^a, where it is formed into a toothed rack, D′, which gears with the pinion E, fixed upon the spindle F, which carries the index-hand G. The end D^2 should be of hard steel, as it forms the movable portion of the gaging-jaw, and upon the other end of D is the projection H, passing through the slot A′ in the casing A, by which D is retracted. The spring I, secured at one end in the case A, and at the other entering the niche or slot D^3, serves to keep D always pressed outward and the end D^2 pressed against the jaw C or against the object which is being gaged, and is for that purpose inserted between C and D^2.

The object of the supplemental rack K is to prevent play or backlash between the teeth of the rack D′ and the leaves of the pinion E. The supplemental rack K lies against rack D, and its teeth coincide with those of D′ and engage with the same leaves of pinion E. The projecting faces K′ slide in the slots D^4, and prevent K from slipping back out of gear with E. The spring L, secured in one end of K, fits against the shoulder D^5 and keeps the teeth of K firmly pressed against the teeth of E, which are thus pressed against the teeth of D′, and all chance of looseness or backlash by wear or bad fitting is avoided between E and D′. Consequently the index G can be relied on for a truthful reading. The rack K, being carried entirely by D, moves with it without interfering with its movement.

We claim—

1. The combination, with a suitable frame carrying a dial-plate and a fixed jaw, of a central pin carrying an index-hand and pinion, the movable jaw having rack-teeth, a spring for impelling it toward the fixed jaw, and a supplementary rack having a spring-connection with the movable jaw, the rack on the movable jaw and the supplementary rack both engaging the pinion, for the purposes set forth.

2. In a micrometer-gage, the combination, with a sliding gage, D, pressed by spring I outward toward the fixed jaw C, and having a rack, D′, engaging with the pinion E, of the supplemental rack K, also engaging with said pinion E, against which its teeth press under the influence of spring L, and carried by slide D, substantially as and for the purpose specified.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM CROSS.
AMBROSE WOOTTON CROSS.

Witnesses:
GEO. WM. CLARK,
JAMES F. HODSON.