(No Model.)

J. BATH.

MICROMETER INDICATOR.

No. 526,960. Patented Oct. 2, 1894.

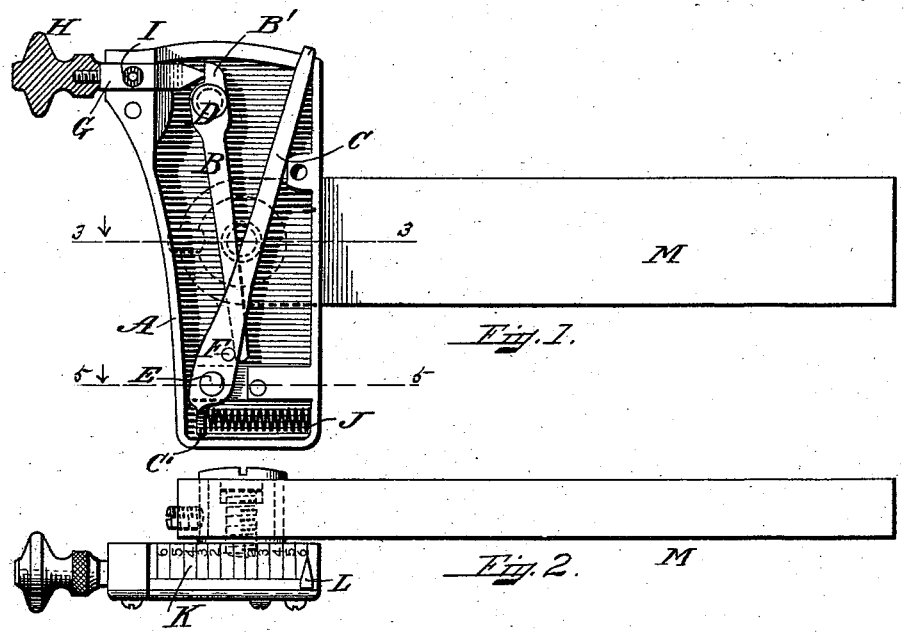

Fig. 1.

Fig. 2.

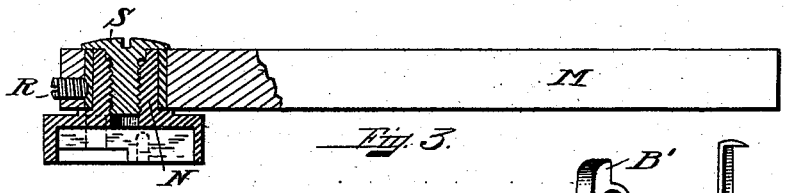

Fig. 3.

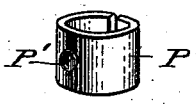

Fig. 4.

Fig. 5.

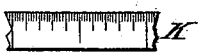

Fig. 8.

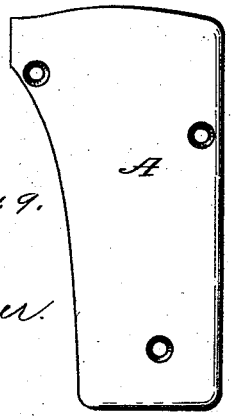

Fig. 9.

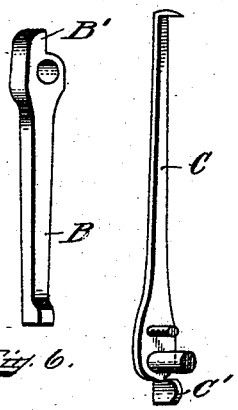

Fig. 6.

Fig. 7.

Witnesses.
Ralph W. E. Hopper.
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UNITED STATES PATENT OFFICE.

JOHN BATH, OF HYDE PARK, MASSACHUSETTS.

MICROMETER-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 526,960, dated October 2, 1894.

Application filed May 2, 1894. Serial No. 509,789. (No model.)

To all whom it may concern:

Be it known that I, JOHN BATH, of Hyde Park, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Micrometer-Indicators, which will, in connection with the accompanying drawings, be hereinafter fully described, and specifically defined in the appended claims.

My present invention is an improvement upon the micrometer indicator described in my application filed June 10, 1893, Serial No. 477,157, and allowed December 20, 1893, and consists chiefly in pivotally attaching the indicating mechanism to the shank by which the tool is held in the tool-post of a lathe, and in improvements of details of construction, all as hereinafter fully described and pointed out in the appended claims.

In the drawings: Figure 1 is a side elevation of my improved indicator with the face plate removed to show the interior construction, and showing the detached central piece in section. Fig. 2 is a top view of the indicator. Fig. 3 is a sectional top view taken as on line 3—3, Fig. 1, showing the construction of the joint which connects the shank and head. Fig. 4 is a perspective view of the split ring or bushing which surrounds the hub on the indicator head. Fig. 5 is a section taken as on line 5—5, Fig. 1, and viewed from above said line. Figs. 6 and 7 are perspective views of the multiplying levers detached from the head. Fig. 8 is a top view of the scale of the indicator showing the finer subdivisions of the scale. Fig. 9 is an elevation of the face plate removed from Fig. 1.

The indicating mechanism consists of a hollow case A; two multiplying levers B and C, lever B being pivoted at D, and lever C at E, the latter carrying a pin F which projects inward and bears against the long arm of lever B near its end as shown. There is a groove in the front edge of the upper and thicker portion of case A in which a block G is fitted to slide, and the inner end of which is tapered to a thin edge which bears against the short arm B′ of lever B, while its outer end is reduced and threaded to receive the contact piece H, as shown. A small retaining pin I secured in case A projects into the groove and into a larger hole in block G and serves to prevent the block from slipping out of the groove endwise when the tool is tipped so as to favor such a movement. The short arm C′ of lever C is twisted to present its broad face to a spring J which is deposited in a recess in the case and is compressed between the wall of the case and said twisted arm. On the top of the case is an arched measuring scale K over which sweeps a pointer L attached to lever C. This scale is divided into tenths of an inch, each of said divisions representing a movement of one thousandth of an inch of block G and its contact piece H, which is thus registered on the scale by said multiplying levers, and the scale may be subdivided into fiftieths of an inch as represented in Fig. 8, and thus legibly register with the pointer and clearly indicate a movement of the contact piece of one-fifth of one-thousandth of an inch.

When the contact piece H is caused to bear against a piece of work which is revolving in a lathe, if the irregularity of the work imparts a movement to the piece H and its sliding block G, the block will impart that movement to lever B, and through it to lever C, thus multiplying the movement along the scale K one hundred times, the levers being proportioned to give that result. It is not deemed necessary to explain further in detail the operations and uses of the device which is so well known and understood.

The indicating mechanism above described is pivotally attached to a shank M which serves to hold the indicator in the tool-post of a lathe, and, by its capability of being turned on its pivotal connection, to present its contact piece to the work to be tested thereby at varying heights and angles, without change of position of the shank, and to get under such conditions a proper registration and indication of the extent of the variations in the work on scale K. For the purpose of making such a connection with the shank, a hub N is formed on the back side of case A, as clearly shown in Fig. 3. When the shank and indicator are jointed together this hub extends through a hole in the shank. The hole is larger than the hub to receive a bushing P. Shown in Fig. 4. This bushing is

open on one side so that it may be compressed upon the hub by means of a screw R threaded into the end of the shank so as to reach a cavity P′ in the bushing, and thus to act against the elastic bushing to tighten it upon the hub and by its frictional contact therewith to prevent the indicator from being turned relatively to the shank by pressure upon the contact piece when operating the multiplying levers, the friction thus secured between the hub and bushing being always sufficient to resist the tendency of the indicator to turn in the shank in thus actuating the levers when its contact piece is pressed against the work, in whatever position the indicator may be relatively to the shank. The parts are secured together by means of a broad-headed screw S, threaded into the hub with its head bearing against the shank on the side opposite the indicator, as shown. By thus jointing the indicating mechanism to the shank, I am enabled to conveniently bring the contact point of the indicator into contact with a piece of work in a lathe which may be opposite, or above, or below, the shank without raising or lowering the latter, by simply turning the indicator about the axis of its hub. This greatly facilitates the use of the tool and broadens its practical application.

The numbering of the scale from the center is for convenience, so that the tool may be applied to the work in such manner as to give the pointer free play both ways, and its movement be read on the scale both ways. In some cases the movement one way will indicate the true variation of the work; in others the movements both ways of the center taken together indicate the true variation, according to the application of the tool.

I claim—

1. An indicating mechanism consisting of a hollow case A; a block G fitted to slide in a groove in the upper end of the case, and adapted to carry a detachable contact piece H on its outer end and to bear against a lever at its inner end, and secured with a retaining pin I; a lever B pivoted in the upper end of the case; a lever C pivoted in the lower end of the case, the two levers being arranged to cross and act upon each other as described; a spring J deposited in a recess in the case and arranged to bear at one end against the wall of the case and at the other end against the short arm of lever C; and an arched scale K arranged on the top of the case and adapted to register with a pointer carried on the long arm of lever C; all as and for the purposes specified.

2. An indicating mechanism comprising a system of multiplying levers; a contact slide through which said levers are moved; a scale on which such movement is indicated and measured; and a shank to which such indicating mechanism is pivotally attached; all substantially as specified.

3. In combination, case A; levers B and C arranged therein as described; slide G; spring J; scale K; hub N; elastic bushing P; screw R; shank M; and screw S; all substantially as and for the purposes specified.

JOHN BATH.

Witnesses:
JOHN Q. ADAMS,
EUGENE HUMPHREY.