No. 682,450. Patented Sept. 10, 1901.

J. BOULET.

MICROMETER INDICATOR.

(Application filed June 7, 1901.)

(No Model.)

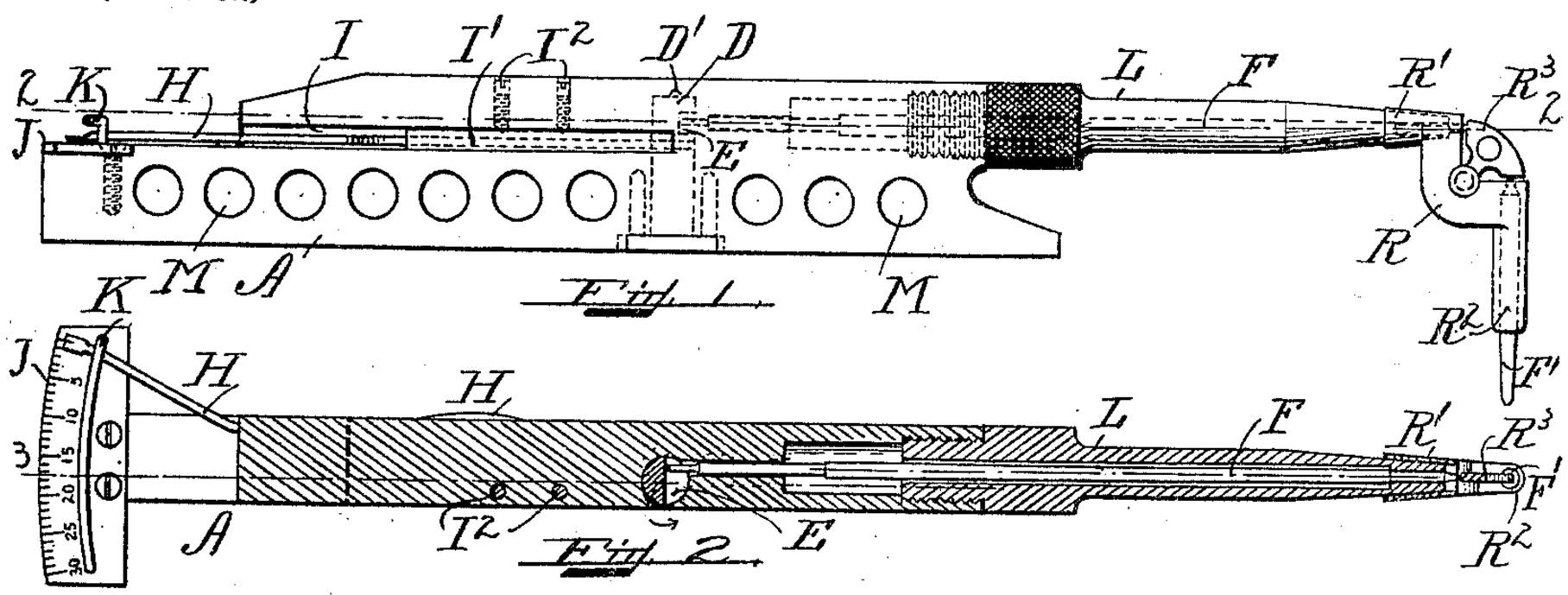

Fig. 1.

Fig. 2.

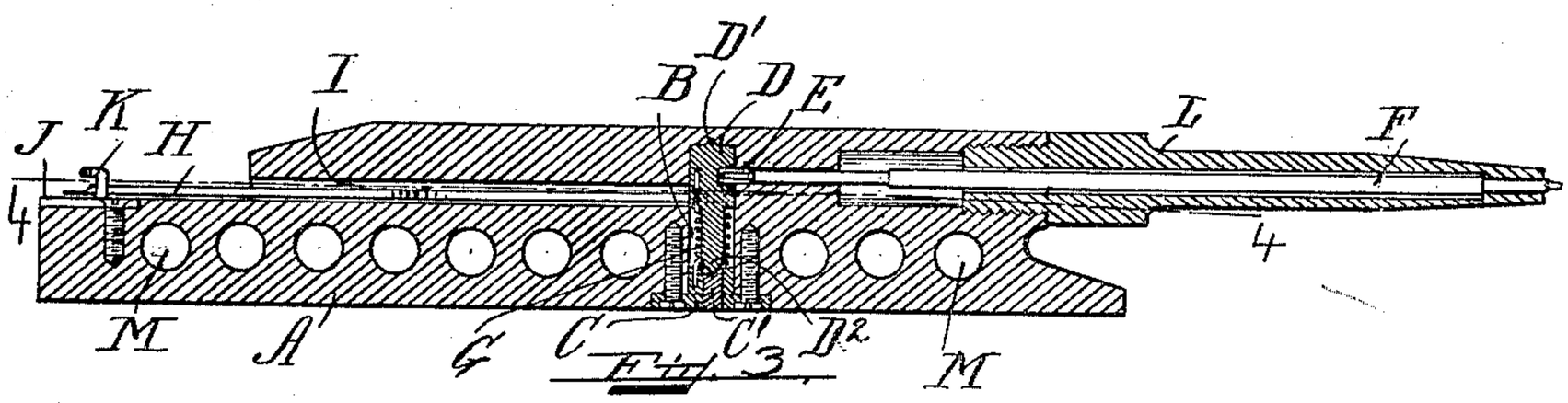

Fig. 3.

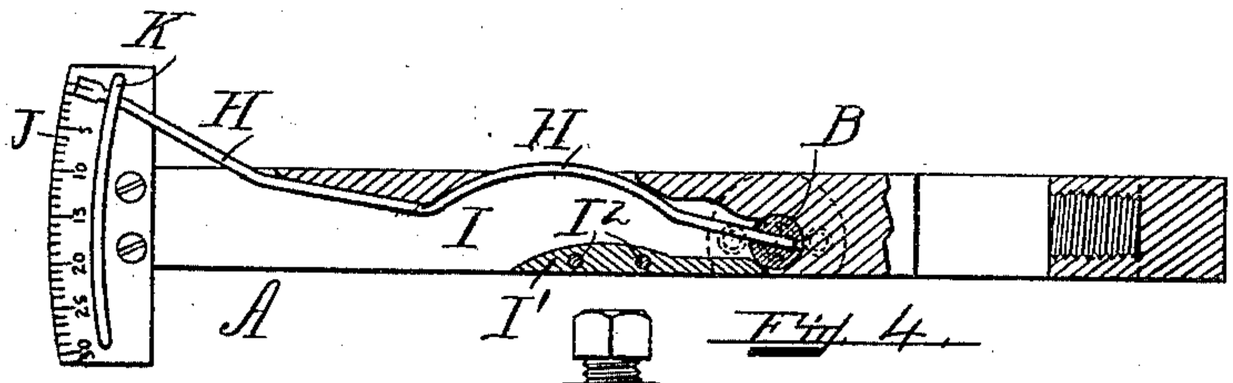

Fig. 4.

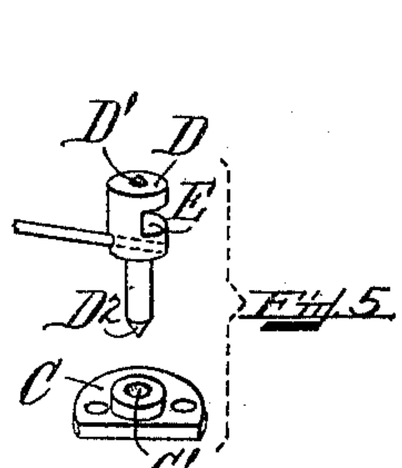

Fig. 5.

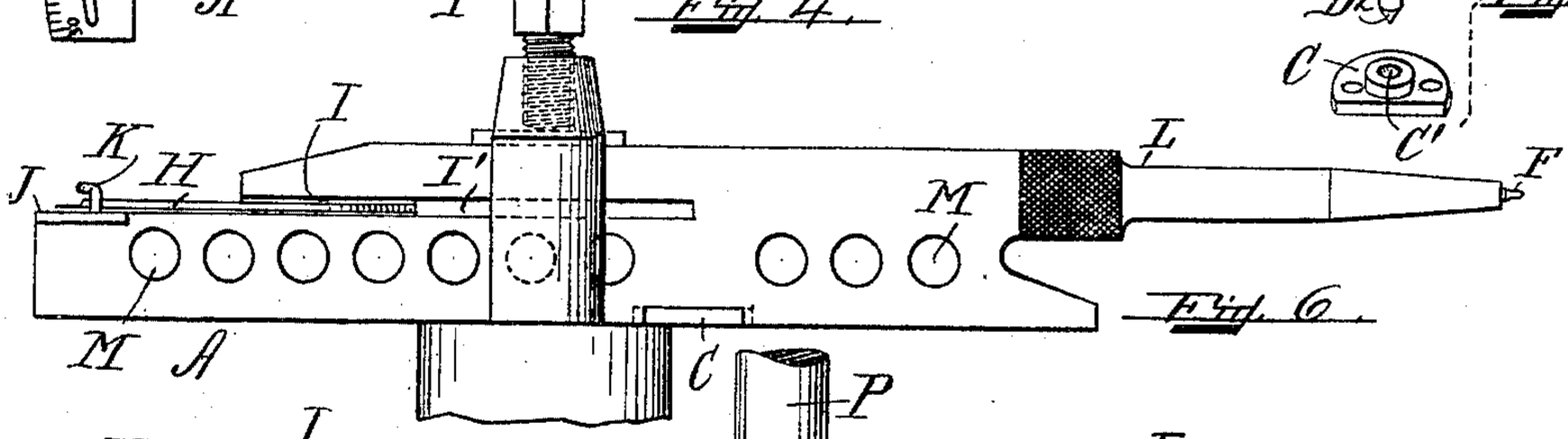

Fig. 6.

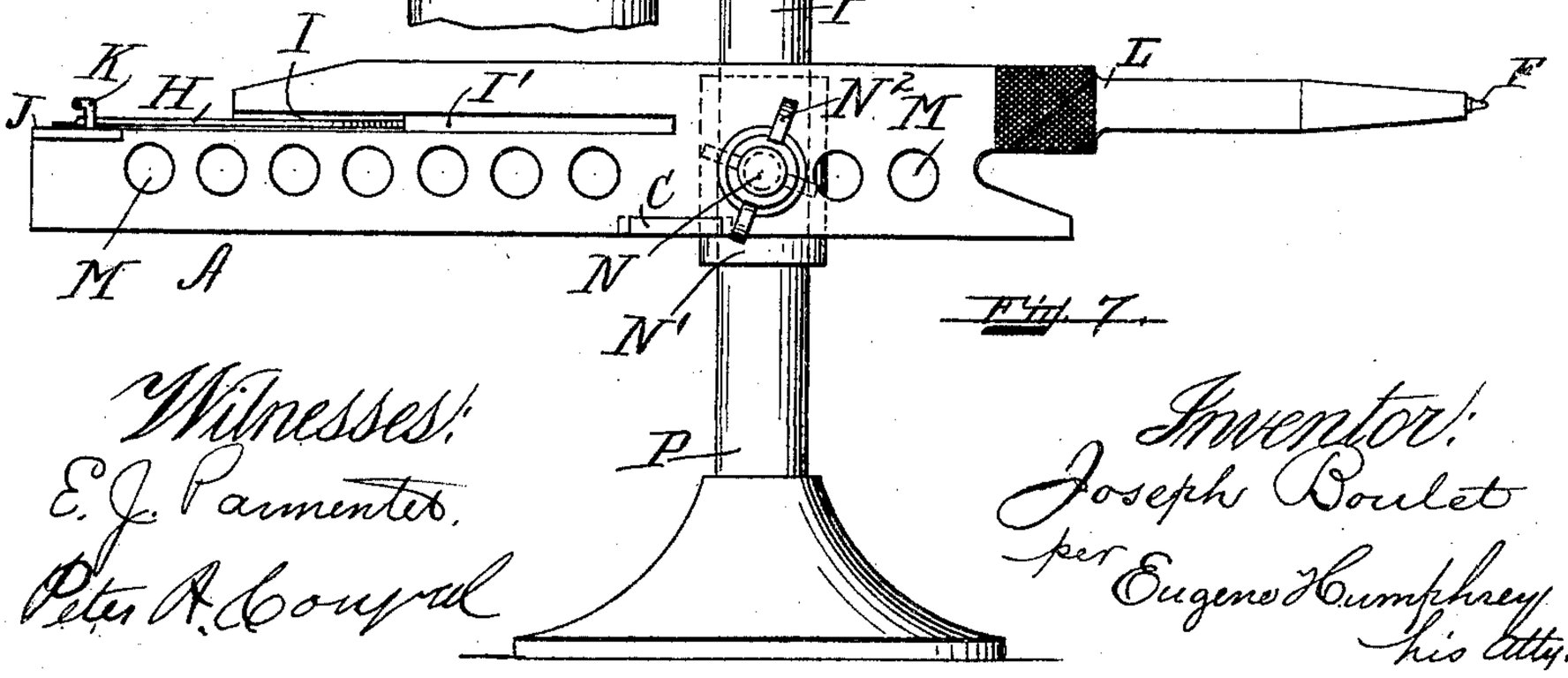

Fig. 7.

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UNITED STATES PATENT OFFICE.

JOSEPH BOULET, OF BEVERLY, MASSACHUSETTS.

MICROMETER-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 682,450, dated September 10, 1901.

Application filed June 7, 1901. Serial No. 63,503. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BOULET, a citizen of Canada, and a subject of the King of Great Britain, residing at Beverly, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Micrometer-Indicators, of which the following is a specification.

My invention relates to improvements in micrometer-indicators for machinists' use, and has for its object to improve the indicator described in Letters Patent of the United States No. 659,048, issued to me October 2, 1900, in details of construction and to increase its usefulness and reliability, which object I attain by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a tool embodying my invention. Fig. 2 is a top view, partly in section, as on line 2 2, Fig. 1. Fig. 3 is a longitudinal section taken vertically as on line 3 3, Fig. 2. Fig. 4 is a sectional plan of a portion of the tool as on line 4, Fig. 3. Fig. 5 is a perspective of the pivot-block detached and of the index-arm inserted therein and of the upholding-plug in which the pivot of the block is seated. Fig. 6 is an illustrative drawing showing the tool as held in the tool-post of a lathe, and Fig. 7 is an illustrative drawing showing the tool as when attached to the vertically-adjustable sliding block on the standard of a surface-gage.

A is the body of the tool; B, a hole bored in the under side of the body to receive the pivot-block; C, the upholding-plug secured to the body by screws and having an adjustable center C′, which serves as the seat of the lower point of the pivot-block D.

E is the diametrical slot milled across the pivot-block.

D′ and D² are the pivot-points of the block.

F is the needle which presses eccentrically against the side of slot E to turn the pivot-block, and G is the spring coiled about the pivot to resist the thrust of the needle and to hold the index-arm H, which moves in passage I, in its resting position on scale J and under the limiting-guard K.

The arm L is screwed into the body, as shown, and carries the needle F, which projects outwardly and bears inwardly against pivot-block D in slot E.

Thus far the construction, arrangement, and mode of operation are substantially the same as described in my former patent hereinbefore referred to, with the exception of the adjustable center C′, which is tightly fitted in the upholding-plug C, so that it may be adjusted by driving against the lower pivot-point D² to take up any looseness occasioned by wear in a convenient and effective manner. The index-arm is also varied by making it with a curve and suitable angles to adapt it to improvements in the body of the tool.

I place in the passage I a block I′, which fills the passage on one side flush with the outer face of the tool, but inwardly has a curved outline, and is secured in place by pointed screws I², turned downward through the upper part of the body and onto the block, so as to press the same firmly. The object of this inserted block is to support the thinner overhanging part of the body above the passage I and prevent it from being sprung downward by the pressure of the tool-post screw, so as to bind the index-arm and interfere with its free action when such part of the tool is so held in the post, and thus it increases the longitudinal range of the tool in the post when in practical use, and the irregular outline of the index-arm adapts it to the inner contour of this block without its unduly projecting beyond the sides of the tool in the course of its movement over the face of the scale.

I have further modified the body of the tool by making a series of holes M M transversely through the same to adapt it for use upon a surface-gage in the manner illustrated in Fig. 7, in which is shown a screw-stud N, projecting outwardly from the vertically-adjustable block or sleeve N′ on standard P of the surface-gage and passing through one of the openings M in the tool. A thumb-nut N² is threaded onto the end of the stud and clamps the tool between it and block N′, and thus holds it firmly in proper relation to the standard. For this purpose of gaging or testing horizontal plane surfaces and detecting slight departures from their true level I

have further improved my indicator by devising and making the auxiliary attachment shown as detachably applied to the end of arm L in Fig. 1. This attachment is comprised of an angular body R, provided with a taper sleeve R′, fitted to the end of arm L, a needle-holding branch R^2, a needle F′, suspended in and projecting downward from branch R^2, and an oscillating block R^3, pivoted in an angle of body R at R^4 intermediate between the two needle-passages and having its body properly formed to bear against the ends of the needles F and F′, thereby transmitting the movement of one to the other. When needle F′ is passed along in contact with the surface of a piece of work and is moved inward by the inequality of the surface, it will press against one end of block R^3 and through it force inward needle F in arm L against the pivot-block D, thereby turning the block and swinging the index-arm H along scale J accordingly and against the resistance of the helical spring G, thus indicating on the scale through arm H in the usual manner, and when the pressure on the end of needle F′ is removed then spring G by its reaction will force the parts back into their normal positions of rest. When this attachment is applied to arm L and the tool is used upon a surface-gage, as shown in Fig. 7, the needle F′ may be adjustably rotated through the turning of its sleeve R′ upon and around arm L, so as to cause the needle to impinge on the face of a surface parallel to the axis of the needle in any direction therefrom.

The improvements herein described enlarge the usefulness of the tool as an instrument of precision and render it more substantial and less liable to derangement and inaccuracy in practical use.

I claim—

1. A micrometer-indicator comprising the following parts, constructed, arranged and operating together as and for the purposes described, namely; a body A, provided with a horizontal passage I; a supporting-block I′, formed to fill a portion of said passage; an index-arm H, adapted to vibrate in said passage in conformity with said block; a pivot-block D; a plug C, provided with an adjustable center C′; a spring G; an arm L; a needle F; and a scale J; all as specified.

2. A micrometer-indicator comprising a body A, provided with a horizontal passage I, and a series of transverse holes M, through the body; an extension-arm L; pivot-block D; plug C, having an adjustable center C′; arm H; needle F; spring G; scale J; a detachable auxiliary needle F′, arranged at right angles to needle F, and supported by a body R, having a sleeve R′, fitted to arm L, and an oscillating block R^3, pivoted to body R, and arranged to act in contact with and between the ends of needles F and F′, so as to transmit the movement of one directly to the other; all substantially as specified.

JOSEPH BOULET.

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