

F. BRINK.
SURFACE INDICATOR.
APPLICATION FILED JULY 2, 1907.

928,492.

Patented July 20, 1909.

Fig. 2.

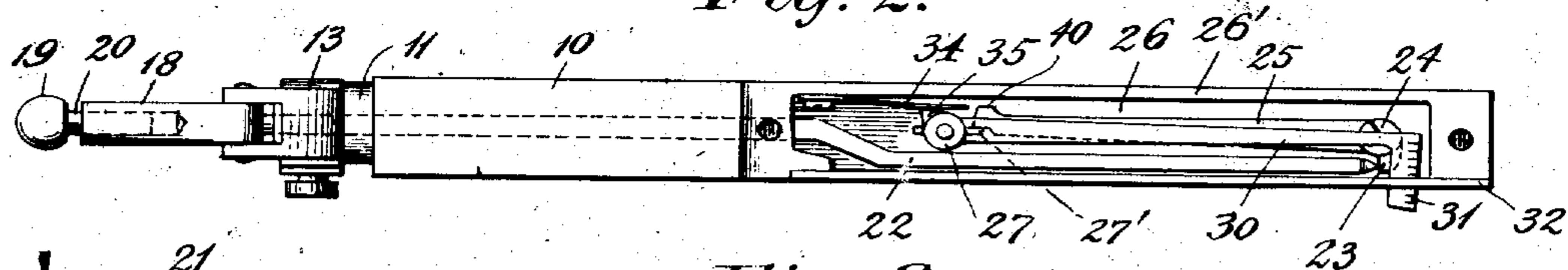


Fig. 3.

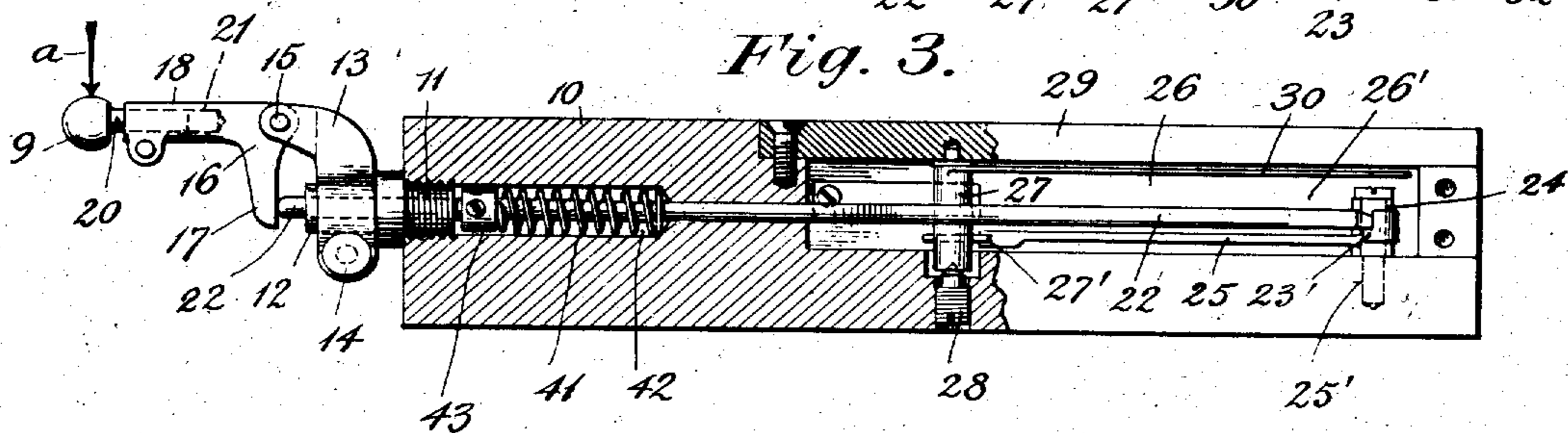
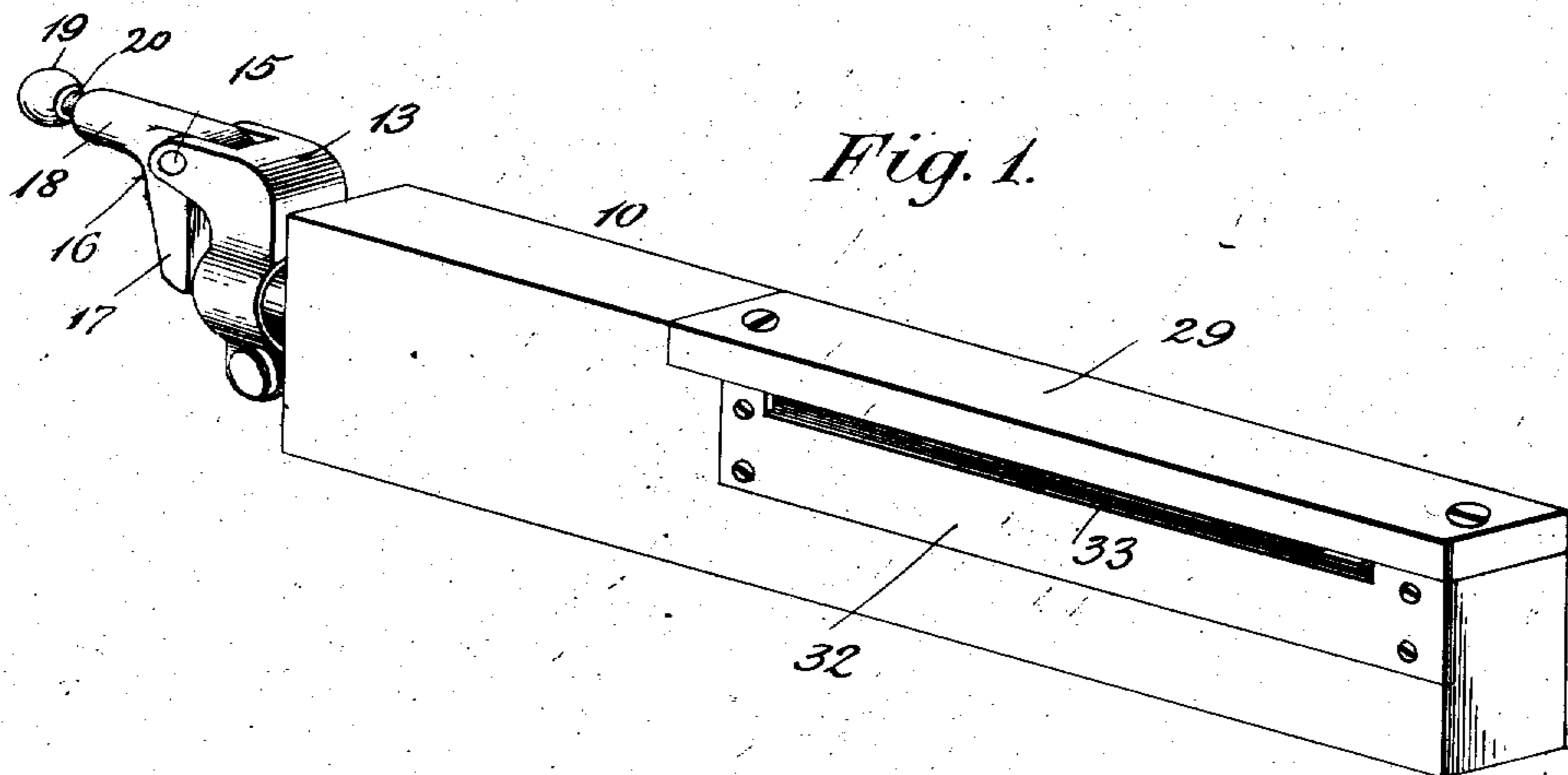


Fig. 1.



WITNESSES:

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INVENTOR.

Frederick Brink,
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UNITED STATES PATENT OFFICE.

FREDERICK BRINK, OF HARTFORD, CONNECTICUT.

SURFACE-INDICATOR.

No. 928,492.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed July 2, 1907. Serial No. 381,946.

To all whom it may concern:

Be it known that I, FREDERICK BRINK, a citizen of the United States, and resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Surface-Indicators, of which the following is a full, clear, and exact specification.

This invention relates to surface indicators and more especially to that class thereof which are employed to determine the "true-running" condition of a piece of work in a lathe, grinding machine, or other machine tool, in order to enable the workman to center the same properly, or to determine its eccentricity or deviation from a true circle on the line of its contact with the device.

My invention has for one of its objects the provision of an instrument of this class which may be secured in a tool-post of a lathe, and the working parts of which are normally protected by being contained within the interior of the stem of the device.

My invention has, furthermore, for its object the provision of improved means for transferring the movement of the contact point of the device, to the indexing member thereof in a largely-increased rate, so that very small deflections from an absolutely true surface will be magnified sufficiently and to such an extent that the operator may read them plainly.

My invention has, furthermore, for its object the simplification of the device, as a whole, and to adapt the same for use on surfaces differently disposed relatively to the rotation axis of the work.

Further objects of the invention will hereinafter appear and particularly be pointed out in the claim.

My invention has been clearly illustrated in the accompanying drawings, in which similar characters denote similar parts, and in which—

Figure 1 represents a perspective view of an indicator embodying my invention. Fig. 2 shows a top-view thereof, the cover-plate at the rear of the tool being removed. Fig. 3 is a partial side-view and section thereof.

In the drawings, 10 denotes a holder or shank adapted to be secured in the tool post of a lathe, and for receiving the several parts of the indicating mechanism. Secured to the front end of the shank 10, is a sleeve 11, preferably in screw threaded engagement with said shank and having a cylindrical

hub portion 12 for receiving a bracket 13, which may be clamped thereon in any desired position, by means of a clamping screw 14. Pivoted at 15 on the bracket 13, is an angle lever 16, one arm 17 of which extends toward the center of the hub 12, while the other arm 18 is disposed substantially at a right angle relatively to the arm 17 and carries at its free end a feeler-member shown hereip as a knob 19, the shank 20 of which may be clamped within a recess 21 provided therefor in the arm 18. The knob 19 constitutes that part of the mechanism which comes in contact with the work to be tested, and may be readily changed to suit the particular requirements or replaced when worn. Inasmuch as the bracket is mounted for rotational adjustment on the hub 12, it is evident that variously-disposed surfaces may be tested without changing the position of the holder 10 in the tool-post. The arm 17 engages the forward end of a longitudinally-shiftable rod 22 resting in the central bore of the sleeve 11 and constituting the primary member of the indexing device. At its rear end the rod 22 is in engagement with an ear 23 formed on the hub 24 of a lever 25 which is fulcrumed on a stud 25' fixed in the shank or bar 10, which latter is recessed as at 26 to receive the several operating parts. The front end of the lever 25 engages a pin or other projection 27' of a spindle 27 which is journaled on a bearing screw 28, and also in a plate 29 secured to the bar whereby the top opening of the recess 26 is closed and which is sufficiently strong to resist the pressure of the tool-post-screw whereby the instrument is clamped in place.

Secured to the upper end of the spindle 27 is an index arm 30 the free end of which is provided with a laterally-projecting blade 31 having graduation-marks which are to be read by the operator in conjunction with the outer face of a side plate 32 whereby the side opening of the recess 26 is closed, said plate having a slot 33 to permit the arm 30 to swing outwardly when the rod 22 is moved rearwardly by the surface of the work.

Means are provided for normally retracting the index arm 30 into the recess 26, these means consisting preferably of a blade spring 34 engaging a lug 35 on the spindle 27 (see Fig. 2), and the organization is such that when the index arm is in its normal or retracted position, the end of the blade

31 will be substantially flush with the surface of the plate 32, so that no part of the delicate indexing mechanism projects beyond the lines of the bar 10. Furthermore, by virtue of the rod 22 resting against the ear 23 on the rotatable hub 24, it is evident that an excess of movement of said rod will result in disengaging the latter from said ear, inasmuch as the rod moves on practically a straight line while the ear revolves, so that the rod-end will ultimately be pushed from the ear and thus release itself from the indexing device, and no damage can result. A similar action takes place between the end of the lever 25 and the pin 27'.

In order to maintain the end of rod 22 in proper vertical position relative to the ear 23, the latter is provided with a lip 23', upon which said rod-end rests, and which at the same time prevents the rod from turning over in the bar 10.

From the foregoing description it will be understood, that the blade spring 34 serves to swing the index-arm 30 toward the side wall 26' of the recess 26, this action resulting at the same time in swinging the lever 25 until its abutment face 40 contacts with said side wall 26', and the several parts are thus held against free play.

In order to prevent the rod 22 from free movement, I provide a spring 41 seated in a recess 42 of the bar 10, and resting against a collar 43 which is secured to the rod 22 and serves also as a means for limiting the outward movement thereof.

The lever-system above described has for its particular object to magnify the movement of the rod 22 to such an extent that in practice deflections of the work-surface can be readily discovered, even if they are not more than one-ten thousandth of an inch, and there are no parts permanently disposed on the outside of the bar 10.

The instrument is shown in action, in Figs. 2 and 3, pressure being exerted by the work in the direction of arrow *a* (Fig. 3), and any variation in the work-surface will result in a vibration of the index-blade 31.

When it is desired to use the instrument in a direct manner, or in other words: to let the end of the rod 22 rest against the work without the intervention of the angle lever 16, the latter may be removed with the bracket 13, or it may be simply swung backward around its pivot pin 15.

I claim:

The combination, with a bar 10, an index member 30 carried thereby, a rod 22 shiftable in said bar, and means for transferring movement of said rod to the index member, of a cylindrical sleeve 12 on the bar and supporting said rod, a bracket adjustably and rotatably mounted on said sleeve, means for holding said bracket on said sleeve and angle lever fulcrumed on said bracket and in engagement with said rod.

FREDERICK BRINK.

Witnesses:

ABNER W. BARTON,
CHAS. F. SCHMELZ.

Corrections in Letters Patent No. 928,492.

It is hereby certified that Letters Patent No. 928,492, granted July 20, 1909, upon the application of Frederick Brink, of Hartford, Connecticut, for an improvement in "Surface-Indicators," errors appear in the printed specification requiring correction, as follows: In the claim, the reference-numerals "10, 30, 22, and 12" should be stricken out; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of August, A. D., 1909.

[SEAL.]

F. A. TENNANT,

Acting Commissioner of Patents.

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