A. G. CASH.

INDICATOR.

APPLICATION FILED SEPT. 2, 1913.

1,108,697. Patented Aug. 25, 1914.

Fig. 1.

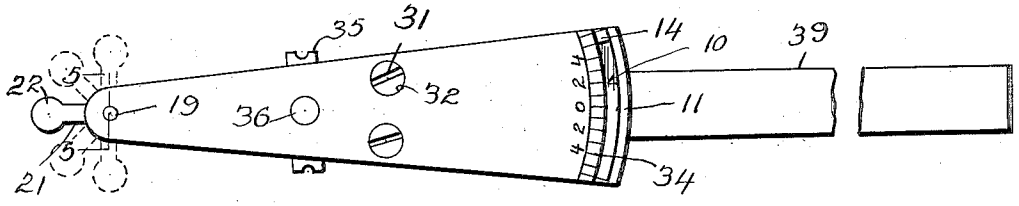


Fig. 2.

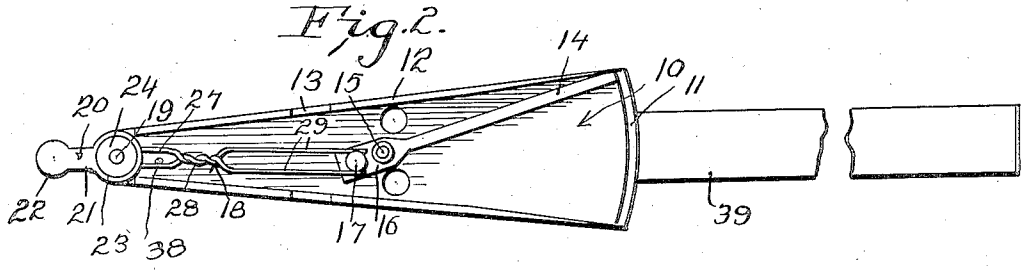


Fig. 3.

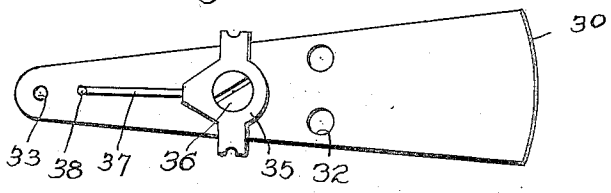


Fig. 5.

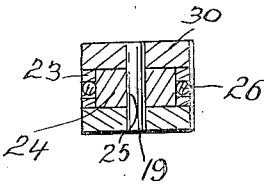


Fig. 4.

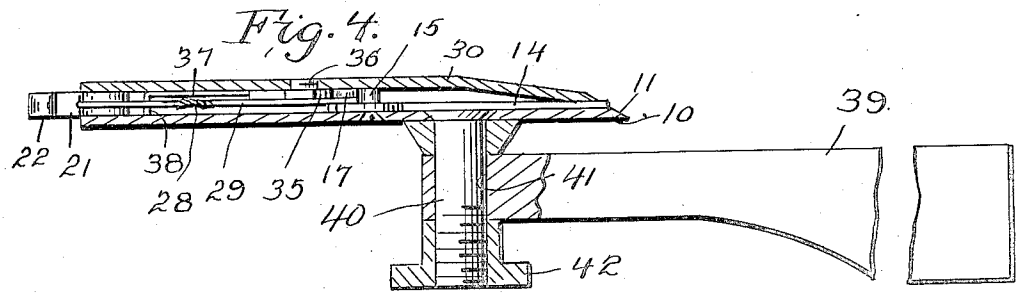
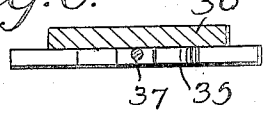


Fig. 6.



Witnesses

R. M. Jones.

R. M. Smith.

Inventor

A. G. Cash.

By W. H. Rudolph Jr.

Attorney

UNITED STATES PATENT OFFICE.

ALFRED GEO. CASH, OF ROCHESTER, NEW YORK.

INDICATOR.

1,108,697. Specification of Letters Patent. Patented Aug. 25, 1914.

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To all whom it may concern:

Be it known that I, ALFRED G. CASH, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Indicators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention comprehends improvements in indicators or gages, which are especially adapted for determining inaccuracies in rotating work carried by a lathe and for testing or setting work in a planing, shaping or milling machine.

One of the objects of the invention is to provide a tool of this nature which shall be of extremely simple construction, very delicate, and capable of various adjustments which will facilitate its use in various positions in testing objects of different shapes.

Another and more specific object of the invention is to provide an indicator including a pivoted finger, a pivoted forked lever for actuating the finger and a contact element for engagement with an article to be tested, the contact element being angularly adjustable with respect to the forked lever. This adjustment of the contact element with relation to the forked lever is an important feature of the instrument.

The invention also aims to generally improve indicators of this type to render them more useful, practical and commercially desirable.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a side elevation of my improved indicator, the contact element being shown in different positions by dotted lines, Fig. 2 is a side elevation with the cover plate removed, Fig. 3 is a bottom inside elevation of the cover plate, showing the cross head secured thereto, Fig. 4 is a longitudinal sectional view through the indicator, parts thereof being shown in elevation, Fig. 5 is a transverse section taken on the plane of line 5—5 of Fig. 1, and Fig. 6 is an inverted transverse sectional view through Fig. 3 looking toward the cross head.

Referring in detail to the drawings by numerals, 10 designates, generally, the base plate which is segmental in shape, tapering from its inner curved edge 11 toward its outer extremity. This plate is formed adjacent its longitudinal edges with the laterally projecting flanges 12, which decrease in width as they approach the inner edge of the base plate, and which are provided with the notches 13. An indicating finger 14 is pivotally connected adjacent its outer end to a pivot pin 15 rigidly secured to the base plate on the line of its longitudinal center and is adapted to swing so as to move its inner extremity from one extremity to the other of the arcuate inner edge 11. The outer portion of the finger is enlarged, as indicated by the numeral 16, and carries a stud 17 which is engaged by a forked lever 18 preferably formed of a single length of spring wire.

A pivot pin 19 is rigidly secured to the base plate 10 adjacent the outer end thereof on the line of its longitudinal center and is for the purpose of securing the contact element, generally designated 20, in proper working position. This element comprises a shank 21 having a circular head 22 formed on the outer end thereof, and a pair of spaced rings 23 formed on the inner end thereof. A bearing disk 24 is secured in the rings 23 and is formed with a central opening 25 through which the pin 19 extends, as clearly shown in Fig. 5.

The forked lever 18 is formed by bending a wire centrally of its ends to form an open loop which surrounds the bearing disk 24 between the rings 23, as indicated by the numeral 26, then bent to form the loop 27, the twisted portion 28 and the spring prongs 29 which press against the stud 17.

A cover plate 30, similar in shape to the base plate 10, rests upon the flanges 12 and is secured in position by means of the screws

31 which extend through openings 32 in the cover plate and thread into the base plate. The outer end of the cover plate projects over the bearing disk 24 and rings 23, and is formed with an opening 33 to receive the end of the pin 19. The inner edge of the cover plate is beveled and graduated, as indicated by the numeral 34 and terminates short of the beveled inner edge 11 of the base plate. The flanges 12 hold the inner edge of the cover plate in spaced relation to the base plate, leaving an opening through which the extremity of the finger 14 may work.

A cross head 35 is pivotally secured to the inner side of the cover plate by means of the screw 36 and projects through the slots 13 formed in the flanges 12, said slots being greater in length than the width of the extremities of the crosshead to permit an oscillatory motion of the latter. A spring 37 is rigidly secured at one end to the cross head and has its free extremity extended angularly, as indicated by the numeral 38, so as to project through the loop 27. The cross head may be shifted around its pivot point so as to cause the end of the spring 37 to bear against either side of the loop 27, thus causing the finger 14 to be normally retained at one end or the other of the inner edge 11 of the base plate.

The base plate is pivotally connected to one end of the shank 39 by means of a bolt 40, said bolt being rigidly secured to the base plate and extending through an opening 41 formed in the shank. A nut 42 threads upon a bolt and holds the same within the opening 41. This means of connection between the indicator proper and the shank permits the former to be turned at different angles to the shank to facilitate the testing of various kinds of work.

In use the shank 39 is preferably secured in the tool holder and the head 22 of the contact element is then moved toward the work to be tested. If the work is not true, a pressure will be applied to the head 22, causing the contact member to swing about its pivot, thereby imparting a movement to the forked lever 18, which in turn swings the finger 14 to a position corresponding with the degree of unevenness possessed by the work. When a downward pressure is to be applied to the head as viewed in Fig. 2, the cross head 35 is shifted so as to cause the spring 37 to bear against the forked lever so as to hold the finger in a position, shown in this figure. Should the pressure be applied to the head 22 in the opposite direction, the cross head would first be shifted so as to cause the spring to hold the finger at the opposite end of the arcuate edge 11. Often it is necessary to test the interior of a cylindrical object and at such times the contact element may be swung into the positions, indicated by the dotted lines in Fig. 1. It will be understood that the frictional contact between the rings 23 and the forked lever 18, is sufficient to prevent a movement of the contact member relative to said lever when a test is being made and that this friction may be overcome by a force slightly greater than that encountered in making a test. The spring prongs 29 of the lever 18, being always in engagement with the stud 17, eliminate all lost motion and render the indicator very accurate.

From the foregoing description taken in connection with the accompanying drawings, it will be evident that I have provided an indicator of extremely simple construction, which may be used to test the accuracy of the exterior and the interior of cylindrical objects as they are slowly revolved and for testing the accuracy of work carried by a planing, shaping or milling machine.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the scope and spirit of the invention as claimed.

Having thus described my invention, I claim:—

1. In an indicator, a base plate, a finger pivoted to said base plate, a contact element pivoted to the base plate, a spring lever carried by the contact element and operatively engaging said finger, said lever being held against movement relative to the contact element by frictional engagement therewith which may be overcome by a slight force, and spring means for holding the lever against movement in one direction.

2. In an indicator of the character described, the combination of a base plate, a finger pivoted intermediate its ends to said base plate, a stud carried by the finger, a contact element including a pair of spaced rings disposed in parallel planes, a bearing disk secured within said rings, a pivot pin passing through said disk, a forked lever partially encircling the disk between said rings, said lever extending toward the finger and engaging the stud on opposite sides; and spring means engaging the lever and holding the same normally against movement in one direction, the position of the contact element being adjustable with respect to the lever.

3. In an indicator, the combination of a base plate, a pivoted finger carried thereon, a stud formed upon the finger, a pivoted contact element, a lever movable with said

element and engaging the stud on opposite sides, said lever being formed with a loop, a cover plate, a cross head pivoted to said plate; and a spring carried by the cross head and projecting through the loop, said spring tending to hold the lever against movement in one direction or the other.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED GEO. CASH.

Witnesses:
C. NAVEN,
ERNEST CRANE.