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W. F. DOHERTY.

ENGINEER'S SLIDE RULE.

APPLICATION FILED JAN. 3, 1906.

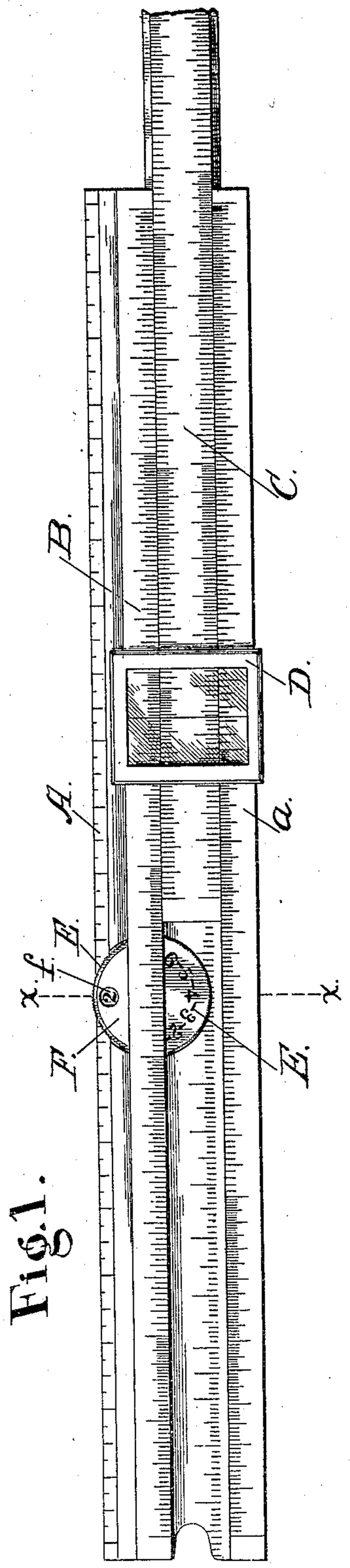

Fig. 1.

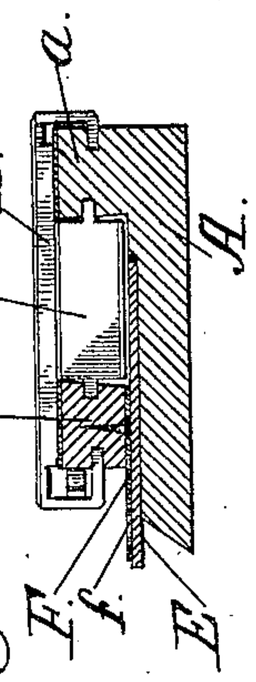

Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

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ENGINEER'S SLIDE-RULE.

No. 838,696. Specification of Letters Patent. Patented Dec. 18, 1906.

Application filed January 3, 1906. Serial No. 294,378.

To all whom it may concern:

Be it known that I, WILLIAM F. DOHERTY, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Engineers' Slide-Rules; and I hereby declare the following to be a true, correct, and exact description of the same.

My invention relates to the class of engineers' slide-rules.

In the use of these rules is it very difficult to carry in the memory the characteristic or decimal point, especially when the result of a long multiplication and division is required to be found.

Heretofore it has been attempted to remedy this difficulty by an indicator by the movement of which the decimal-point as found during the several steps of the calculation is recorded. In practice this indicator has been placed upon the Manaheim slide; but such disposition is open to objections about as serious as the difficulty sought to be obviated. For example, it is not conveniently located for operation, because not being on the non-sliding structure it does not present a permanent position on the rule, and, again, in registering the characteristic from time to time the operator is liable in moving the indicator to move the Manaheim slide itself, thereby destroying the registration of the line on its glass face with the number he has arrived at as the result of his mathematical procedure. In such a case he sacrifices accuracy for convenience in placing the decimal-point.

The object of my invention is to register or record the characteristic or decimal place conveniently and without endangering the accuracy or precision of the final answer sought.

To this end my invention consists in the novel improved slide-rule which I shall now describe by reference to the accompanying drawings, in which—

Figure 1 is a plan view of my improved rule. Fig. 2 is a cross-section, enlarged, on the line $x\,x$ of Fig. 1.

The general construction of the rule is the usual one, comprising a base A with elevated fixed scale a, a detachable scale B parallel with the fixed scale and secured to the base by suitable screws from underneath, a sliding scale C seated between the scales a and B, and a Manaheim slide D.

E is a digit-indicator consisting of a rotatable disk having upon its face near its perimeter the numerals from "±1" to "±6" and "0." In its best position it is about one inch to the left of the median transverse line of the rule, and it is so disposed that its rim, which is preferably knurled, projects to the edge of the base A, which edge being a beveled one permits the finger to easily press said rim to turn the disk. This position is one which is the most convenient for use, because the operator, holding with his left hand the rule from underneath, as is customary, can with the index-finger of said hand reach and turn the disk without difficulty to record the decimal place from time to time as it is found during his calculation.

The best manner of mounting the disk is that here shown. A circular bed or depression is cut in the base A, the disk is dropped into it, whereby it is rotatably seated, and then by screwing down upon it the detachable scale B it is held in place without the necessity for any pivot-pin with any degree of pressure that may be desired, thereby rendering it as accurate in its operation as possible.

In order to definitely indicate that particular figure upon the disk which is intended to record the decimal-point, there is a cover F over the exposed part of the disk E, said cover having a sight-hole f in it, adapted to expose only a single number on the disk. This cover is of course a stationary one and consists of a small plate secured in any suitable manner, as by means of screws, to the under side of the detachable scale B. It is slightly smaller in radius than the indicator-disk, so that the rim of the latter may be exposed for operative pressure.

From the foregoing description it will readily be seen that the indicator is in the most convenient position to be used by the operator with an easy movement of the first finger of his left hand while holding the rule in the customary manner and without disturbing his hold on the rule or interfering with the operation of the other parts of the rule with his other hand. It will also be seen that the record of the characteristic or decimal place is accurate and precise and cannot be disturbed by other manipulations, nor will its operation disturb them.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an engineer's slide-rule and in com-

bination with its base and detachable scale, a decimal-point-indicator disk rotatably mounted between said base and scale, with an arc of its circumference exposed for operative pressure.

2. In an engineer's slide-rule and in combination with its base and detachable scale, a decimal-point-indicator disk rotatably mounted between said base and scale, with an arc of its circumference exposed for operative pressure, and a fixed cover with a sight-hole, secured to the scale and lying over the disk.

3. In an engineer's slide-rule the combination of a base, having a circular depression made in its upper surface, a decimal-point-indicator disk seated rotatably in said depression, and a detachable scale, secured to the base and bearing on the disk to hold it in its seat.

4. In an engineer's slide-rule the combination of a base, having a circular depression made in its upper surface, a decimal-point-indicator disk seated rotatably in said depression, a detachable scale secured to the base over the disk, and a cover with a sight-hole, secured under the scale and partially overlying said disk.

5. An engineer's slide-rule including a base portion, a circular depression therein, a correspondingly-shaped decimal-indicating plate seated in said depression, the edge of said plate projecting slightly beyond the outer edge of said base portion, a scale detachably secured to said base portion and overlying a portion of the before-mentioned indicating-plate, and a perforated cover between said detachable scale and said indicating-plate, the same being secured to the detachable scale at a point to coincide with the position of the indicating-plate when the parts are assembled.

In witness whereof I have hereunto set my hand.

WILLIAM F. DOHERTY.

Witnesses:
J. COMPTON,
D. B. RICHARDS.