D. F. ELMER.

Index Gage and Caliper.

No. 69,418. Patented Oct. 1, 1867.

Fig. 1.

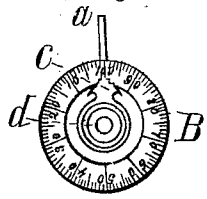


Fig. 2.

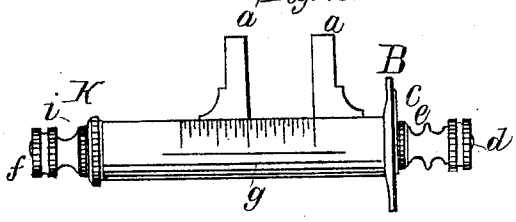
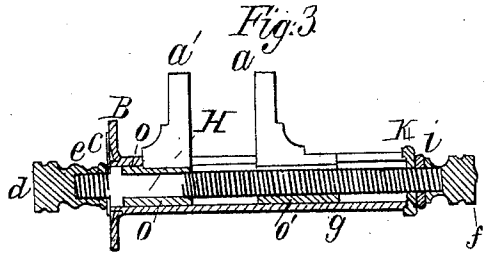


Fig. 3



Witnesses;
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United States Patent Office

D. F. ELMER, OF SPRINGFIELD, MASSACHUSETTS.

Letters Patent No. 69,418, *dated October* 1, 1867.

IMPROVEMENT IN INDEX-GAUGES AND CALIPERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, D. F. ELMER, of Springfield, in the county of Hampden, and State of Massachusetts, have made and invented a new and useful machine to be called an Index-Gauge and Caliper; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an end elevation,

Figure 2 a side elevation, and

Figure 3 a longitudinal section.

In the manufacture of watches, jewelry, and other fine work, it is necessary for the artificer to make very nice and accurate measurement of various bodies, and to work the same to very accurately-adjusted calipers. To facilitate such operations, I have invented an instrument which may be used either as a gauge or caliper, whereby the thirty-two hundredth part of an inch may be readily measured, which is accurate enough for all practical purposes, but which may be made to measure still more minutely if desired.

And in carrying out my invention, I construct the body thereof a hollow cylinder or tube, *g*, about two and one-fourth inches long by three-eighths of an inch in diameter, and one-sixteenth of an inch in thickness, open at both ends, and slotted along the side from one end to within about one-fourth of an inch of the other end. And further, I construct two boxes *o o'*, half an inch, more or less, in length, and of a size to fit the interior or chamber of cylinder *g*, and to the sides of the boxes *o o'* I attach by grooving or brazing or other suitable means the jaws *a a'*, which I make about the size seen in fig. 3, and of a thickness to fit the slot in cylinder *g*. I then pass box *o* into the slotted end of the cylinder, the jaw *a* protruding through the slot, and shove the box along till the jaw rests against the end of the slot, where I make both box and jaw fast by brazing or other suitable means, and when so placed the end of box *o* comes within about one-eighth of an inch of the end of cylinder *g*, as seen in fig. 3. From jaw *a* I graduate the cylinder *g*, along the slot therein, into thirty-seconds of an inch, (or at any desired scale,) for a distance of one inch, more or less. I then pass the box *o'*, with jaw *a'* attached, into the slotted end of cylinder *g*, and shove the box and jaw along till they meet jaw *a*, and when the jaws *a a'* are in contact with each other, the faces thereof should touch from top to bottom, or as nearly so as may be. And the box *o'*, with jaw *a'* attached, is intended to be moved back and forth by means hereinafter specified. And further, I construct a dial, B, about one inch in diameter by one-twelfth of an inch in thickness, and graduate the outer edge thereof into one hundred equal parts or degrees, as seen in fig. 1. I then attach the dial B by socket and brazing or other suitable means to the end of cylinder *g* opposite the slot, and I make the dial B and cylinder *g* concentric, or as nearly so as possible. And further, I construct a bolt, H, with a shoulder thereon near one end, as seen in fig. 3, and I make bolt H of a size to fit box *o*, the shoulder on the bolt fitting the interior of cylinder *g*. The ends of bolt H I make male screws, the threads on the longer end being one thirty-second of an inch apart, or as nearly so as possible. And further, I make a small steel hand, *c*, fig. 1, which I fasten to the shorter end of bolt H by means of the serrated nut *e*. I then insert bolt H in cylinder *g*, passing it through boxes *o* and *o'*, which latter I construct a female screw fitting the male screw on the longer end of bolt H. And further, I construct a small socketed cap, *k*, which I place on the slotted end of cylinder *g*, and on to the end of bolt H, which projects about one-fourth of an inch through cap *k*, I turn the small serrated nut *i*, thus confining the bolt in the cylinder, but allowing it to revolve freely therein. And further, I construct the serrated heads *d* and *f*, which I screw on to the opposite ends of bolt H, till they rest firmly against the small nuts *e* and *i*, and this completes the construction of my machine, which when properly adjusted allows bolt H to be revolved by either head *d* or *f*, and accordingly as bolt H is turned backward or forward, will jaw *a'* approach and recede from jaw *a*, and when by turning bolt H the jaws *a a'* are brought in contact with each other, then will the hand *c* point exactly at zero on the dial B. And when the jaws *a a'* are in contact, if the hand *c* assumes any other position than that indicated, it should be adjusted and brought to position, which can always and readily be done by means of the nuts *e* and *i*. The jaws then, *a a'* being closed or in contact, the hand *c* indicating zero on the dial B, and the threads on the longer end of bolt H being one thirty-second of an inch apart, or the same distance as the marks of the scale on the side of cylinder *g*, one revolution of the bolt H will of course cause the jaw *a'* to recede from the jaw *a* one thirty-second of an inch,

as will be observed by reference to the scale on cylinder *g* and so on but the hand *e* revolves with bolt H, and marks hundredths on the dial B, by which means I am enabled to measure the thirty-two hundredth part of an inch.

To gauge any given body by my instrument, place the body between the jaws *a a'*, bring the jaws in contact with the opposite sides of the body, and observe the thirty-seconds of an inch indicated by the jaw *a'* and the scale on cylinder *g*, and the hundredths of a thirty-second will be indicated by the hand *e* on the dial B. As a caliper, the jaws *a a'* may be set at any desired distance, and any given body worked down till it passes between the jaws so set.

I prefer to have the dial B and boxes *o o'* of brass, and all other parts of my instrument of steel. All the round surfaces of my instrument I turn in a lathe with great care, particularly the bolt H and the thread on the longer end thereof, and the distance between the threads on the longer end of bot H should always be one-half as great, as great, or twice as great, as the distance between the marks of the scale on the cylinder *g*, and this scale, as well as the dial B, should be graduated with the greatest accuracy. I serrate the edges of nuts *e* and *i*, heads *d* and *f*, and cap *k*, for looks and convenience. The proportions of my instrument herein specified are those which I prefer, but other proportions and dimensions may be used if thought necessary or advisable.

I claim—

1. The cylinder *g* slotted and graduated as specified, in combination with the jaws *a a'*, dial-plate B, hand *e*, and bolt H, substantially as described.

2. The combination of the graduated dial-plate B with the cylinder *g*, in the manner and for the purpose set forth.

3. The jaws *a a'* in combination with the slotted and graduated cylinder *g* and bolt H.

4. The combination of the bolt H with the graduated cylinder *g*, as and for the purpose specified.

D. F. ELMER.

Witnesses:

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