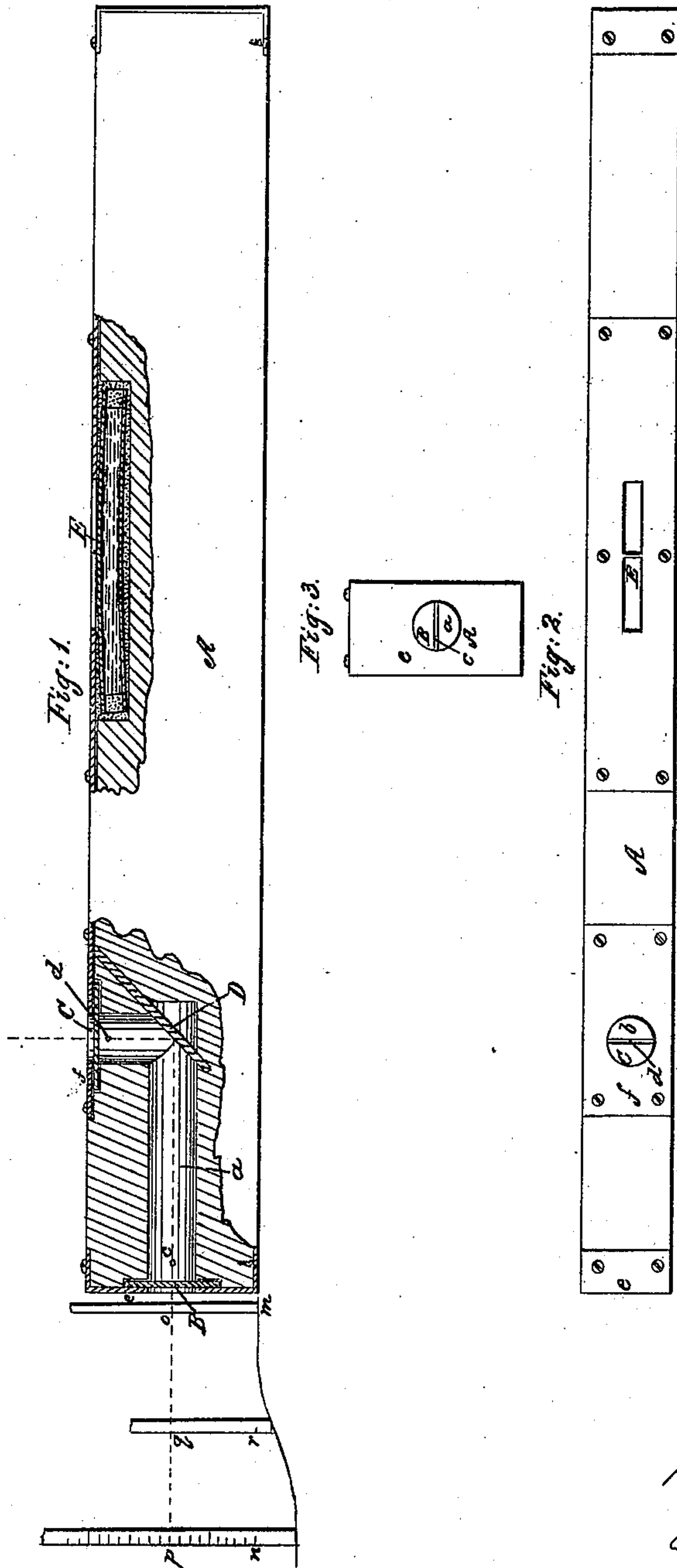


FAIRCHILD & JOYCE.

Leveling Instrument.

No. 30,914.

Patented Dec. 18, 1860.



Witnesses:
Edw. D. Dyer
Amos J. Dyer

Inventors:
Geo. W. Fairchild
Thomas Joyce

UNITED STATES PATENT OFFICE.

G. N. FAIRCHILD AND T. JOYCE, OF NEW YORK, N. Y.

COLLIMATOR.

Specification of Letters Patent No. 30,914, dated December 18, 1860.

To all whom it may concern:

Be it known that we, G. N. FAIRCHILD and THOMAS JOYCE, both of the city, county, and State of New York, have invented a new and Improved Collimator; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a sectional side elevation of our invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a front elevation of the same.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to produce a simple, cheap and reliable instrument, with which straight lines running from one point to another at a small distance and running in a horizontal or in a vertical, or in an inclined direction, can be determined in an easy and ready manner.

To enable those skilled in the art to make and use our invention we will proceed to describe its construction and operation with reference to the drawing.

The stock A, of our instrument is made of wood or of any other suitable material sufficiently long and wide to give a good substantial bearing. The best form of this stock in fact will be that generally given to the stock of carpenters' levels, but the form may of course be varied according to convenience and to suit circumstances. One end of this stock is provided with a cylindrical cavity or hole *a*, the axis of which is parallel to the lower surface or sole of the stock, and another hole *b*, running at right angles to the hole *a*, extends to the upper surface of the stock as clearly shown in Fig. 1. Each of the two holes *a*, *b*, is provided with a thin wire *c*, *d*, placed diametrically into the holes exactly at right angles to the longitudinal edges of the stock or to the axis of the holes, and one parallel to the other, and the holes themselves are covered up by the plain or

magnifying glasses B, C, which are fastened down by means of metal plates *e*, *f*, or in any other convenient manner.

A mirror D, is inserted into the stock, just where the two holes *a*, and *b*, meet, at an angle of 45°, toward the axis of either of the holes or in a plane making an angle of 45°, with the lower surface or sole of the stock. An ordinary spirit level E, may be inserted into the stock A, in the usual manner.

The operation is as follows: By looking into the opening *b*, it will be observed that an image of each of the wires *c*, *d*, appears in the mirror D, and if the eye is brought in line with the axis of the hole *b*, the image of the wire *c*, in the mirror will cover that of the wire *d*. At the same time the image of two or more objects *o*, *p*, *q*, situated at various distances from the position of the operator will be observed in the mirror D, beyond the picture of the wire *c*, and if the images of the objects *o*, *p*, *q*, coincide with the image of the two wires in the mirror, said objects are situated in a straight line.

If it is desired for instance to cut off three posts *mo*, *rq*, *np*, so that their upper surfaces are situated in a horizontal plane, the stock A, is placed in a horizontal position by means of the level E, and those points *o*, *p*, *q*, of said posts, the images of which are in optical contact with the images of the two wires *a*, *b*, are marked and the posts are cut off. In the same manner the posts *mo*, *rq*, *np*, may be cut off to any desired inclination by placing the stock A, at the inclination desired and marking the points *o*, *p*, *q*, where the posts have to be cut.

These examples will show clearly, how this simple instrument may be used and it will be easily understood how it can be applied for the purpose of determining the height of one point over another or for the purpose of bringing the surface of a wall in a straight line, whether horizontal or inclined as may be desired.

Our instrument is easily understood by

every practical man. It can be made cheap and the functions of the level do not interfere in any way with the functions of the collimating attachment or vice versa, and
5 both can be used independently of each other or conjointly as the nature of the line to be laid out may require.

We do not claim, broadly the use of a mirror and spirit level in instruments of
10 this description but

Having thus fully described our inven-

tion, what we claim as new and desire to secure by Letters Patent is—

The combination of the two wires *c*, *d* with each other and with the mirror D as
herein shown and described. 15

GEO. N. FAIRCHILD.

THOS. ^{his} × JOYCE.
mark

Witnesses:

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