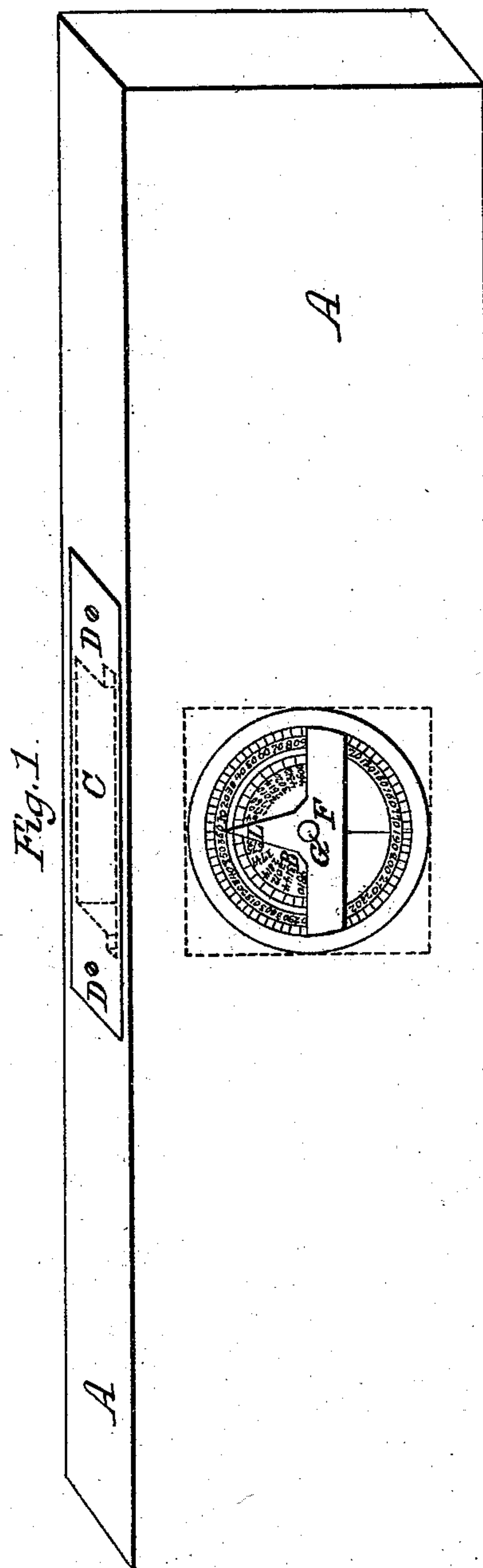
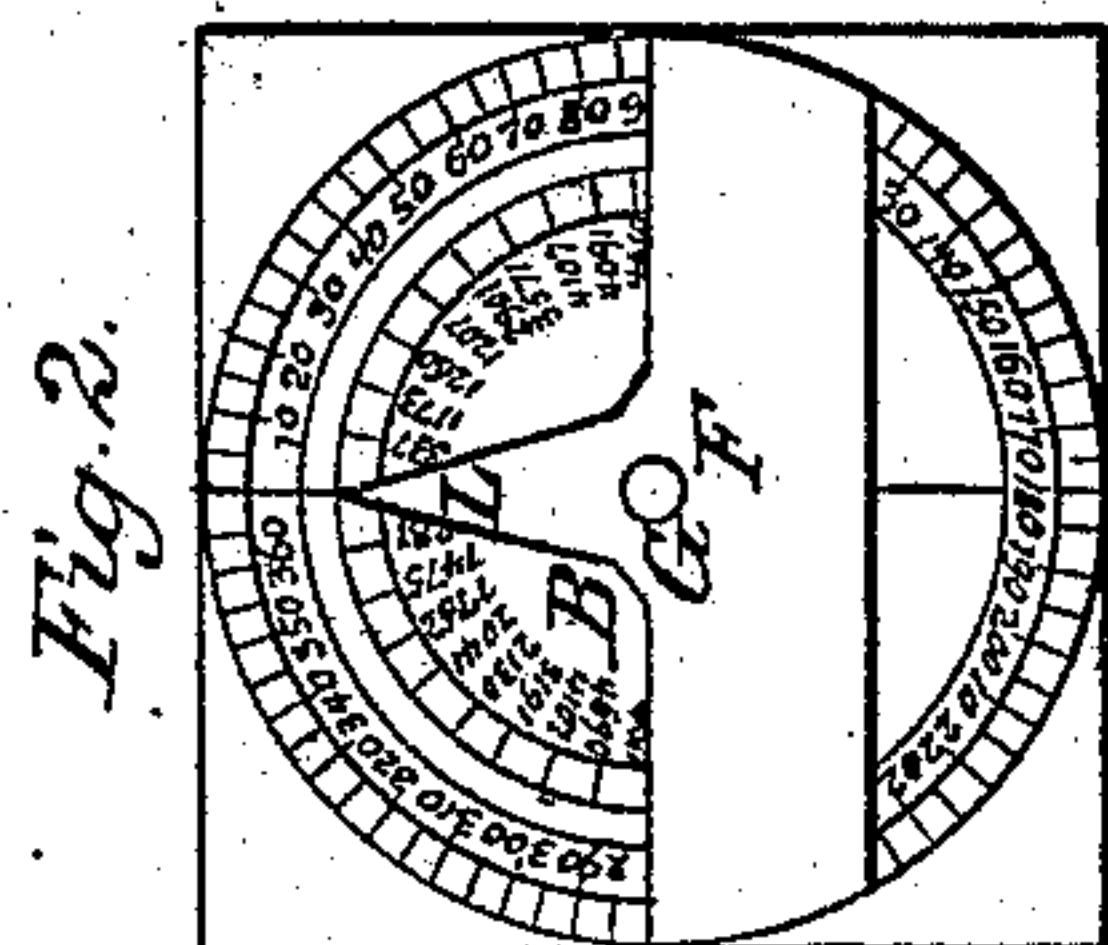
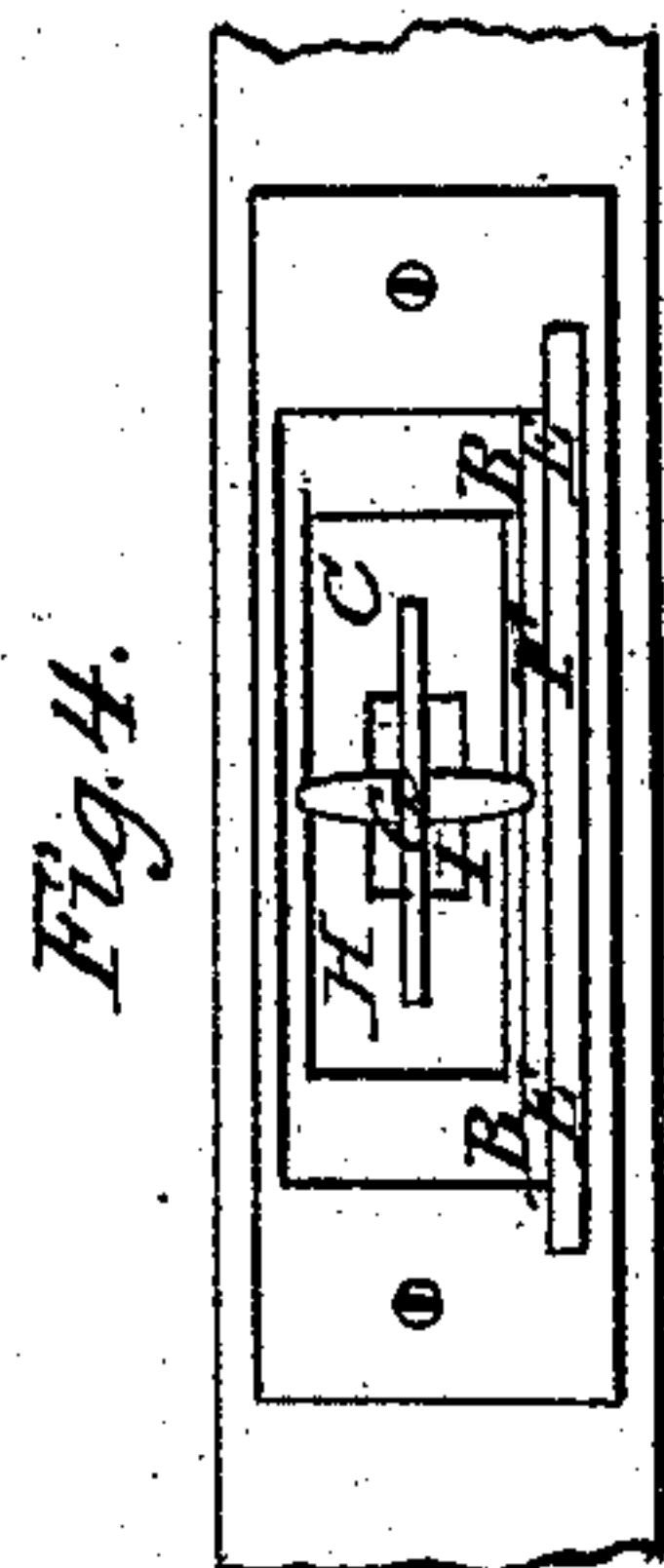
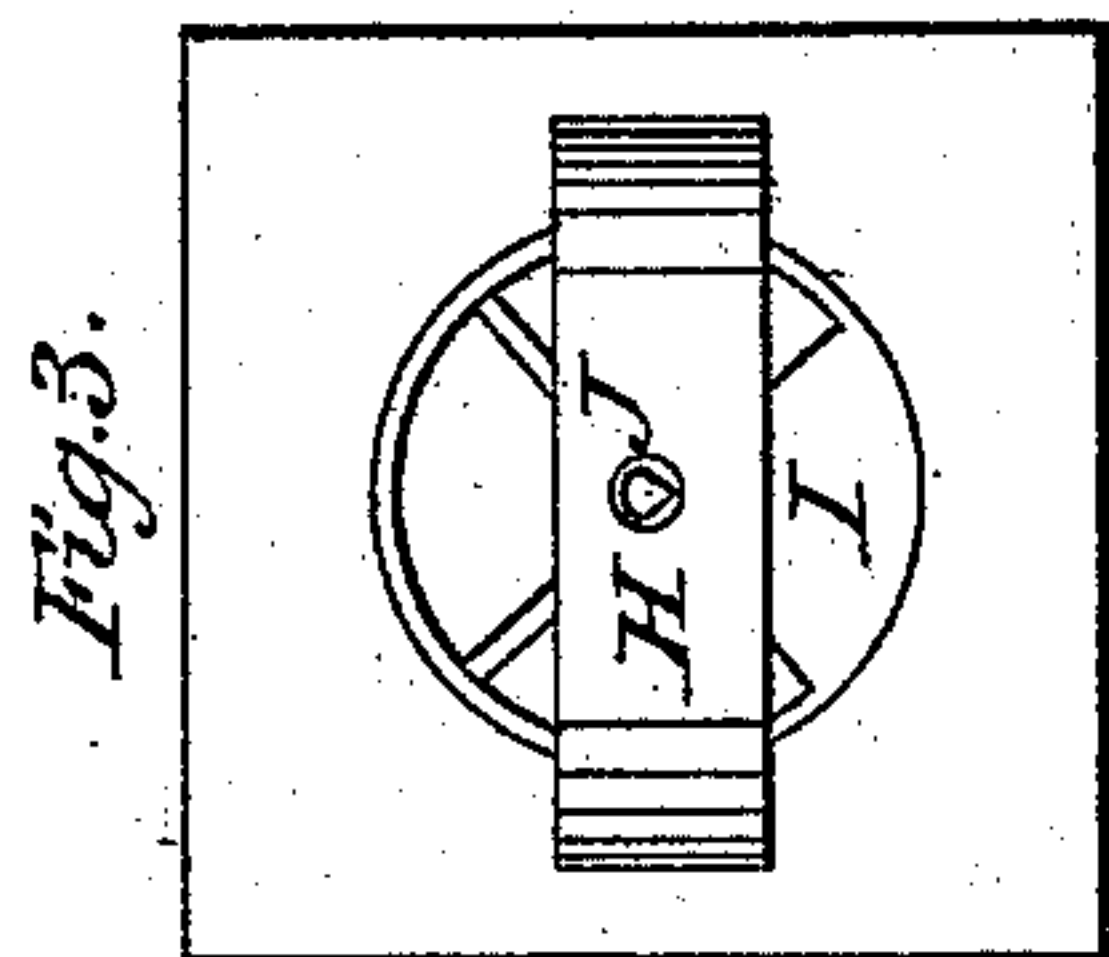


T. A. CHANDLER.

Level.

No. 17,023.

Patented April 14, 1857.



UNITED STATES PATENT OFFICE.

THOS. A. CHANDLER, OF ROCKFORD, ILLINOIS.

PENDULUM LEVEL OR INCLINOMETER.

Specification of Letters Patent No. 17,023, dated April 14, 1857.

To all whom it may concern:

Be it known that I, THOMAS A. CHANDLER, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and Improved Pendulum Level, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 is a view in perspective of my improved level; Fig. 2, a front elevation of the indicating dial in its chamber together with the index or pointer; Fig. 3 a back elevation of the dial and margin of the chamber detached; and Fig. 4 a horizontal sectional view of the level.

The box or stock A of the level is rectangular and oblong, presenting four edges, either two opposite ones of which are parallel; and the several edges at right angles to each other. An indicating dial B is fitted within a chamber C in the said stock so as to be exposed to view through a glass E from one side of the stock. This dial has on its face an entire graduated circle, each quarter or ninetieth degree of which, forms a cardinal point, prominently delineated on the dial and situated so that a line intersecting it, drawn from the center of the dial, would, if produced to the edge of the stock, form right angles therewith. The index F is made with vertical and double horizontal pointers; it is attached to a knife edge pivot G hung or working freely in bearings in the center of the dial and a back plate or piece H. To the pivot is attached a pendulum I. The relation of this pendulum with the index and cardinal points of the dial, is such that when the plumb line of the pendulum forms right angles with the under edge of the stock, the vertical and horizontal pointers of the index, are situated opposite or in the same line as the cardinal points of the dial. Thus it will be seen that whichever edge of the stock is applied to the surface it is designed to ascertain the level of or degree of inclination therefrom, the same indications by the pointers of the index will be made, by reason of the parallel sides of the stock and entire graduated circle of the dial; the pendulum of the index preserving a perpendicular position, which ever edge of the stock be made the plumbing or leveling one;

and the four cardinal points of the dial with their intermediate degrees serving alike, by the pointers, to indicate the level, or deviation therefrom, whereby the index may not only face the operator in whichever position he may stand, but great facility and certainty is afforded in the use of such a level as no care is necessary, except to keep the face in sight, in the application of it; and where doubt exists as to the correctness of the observation made each of the four edges of the stock may be used in succession to confirm the observation, while the said four edges tend to the durability and preservation of the truth of the instrument as by varying their surfaces in the application of the level, no one surface will be more liable to be defaced or worn than another.

What I claim is—

1. The combination of an entire graduated circle provided with a pendulum and index with the two parallel sides of the level stock, whereby I am enabled to apply either side of said stock to the surface whose direction is to be ascertained, and at the same time have the index facing the operator in whatever position he may be placed.

2. I do not claim the level stock with its opposite sides parallel, nor the graduated indicating circle or dial, nor the indicator with two horizontal and one vertical pointer, nor the knife edge bearing upon which the indicator and pendulum are mounted, nor the pendulum; because, separately and for other purposes they are all well known but they have never before been combined to form a level, nor has a level of any kind ever before been made capable of performing the functions of this combination; therefore I claim the level composed of the before enumerated parts in combination: whereby among other things either edge of the instrument may be used uppermost with its face or dial toward the operator, and when any two of the pointers are screened from sight by an intervening body the third will indicate the inclination of the surface to which the instrument is applied, and the angles at the head and foot of a rafter will be indicated at the same time.

THOS. A. CHANDLER.

Witnesses:

T. S. SMITH,
F. G. FONTAINE.