

(No Model.)

D. W. FISH & J. J. JOYCE.
PLUMB AND LEVEL.

No. 557,983.

Patented Apr. 7, 1896.

Fig. 1.

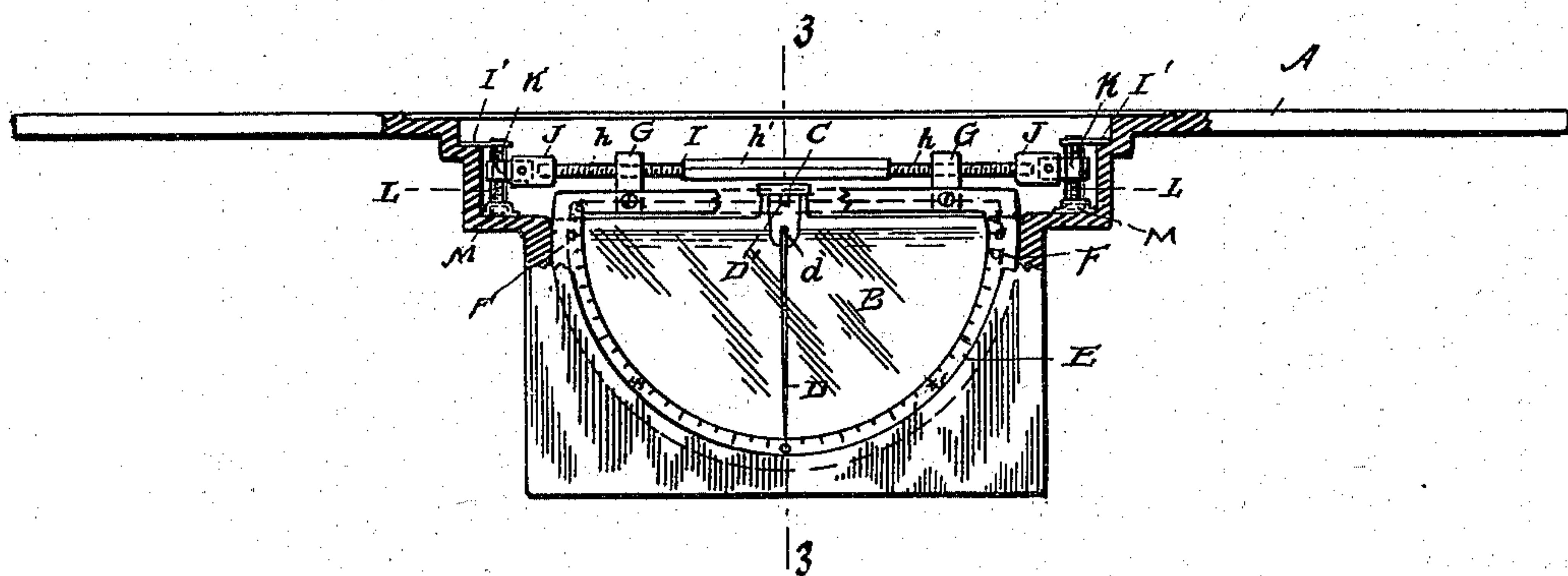


Fig. 2.

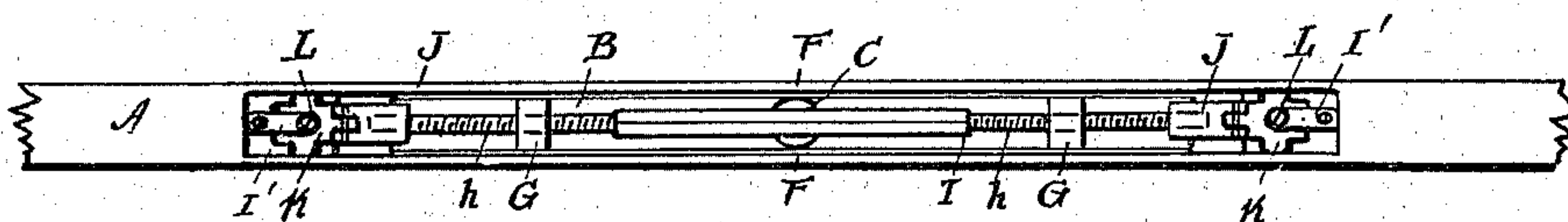


Fig. 3.

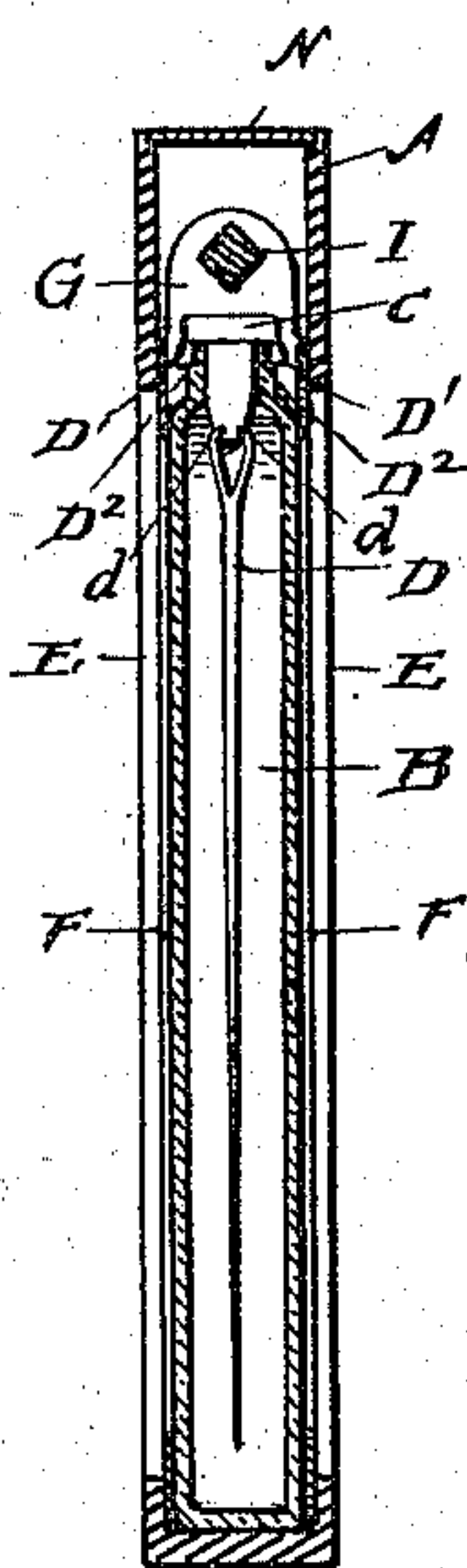
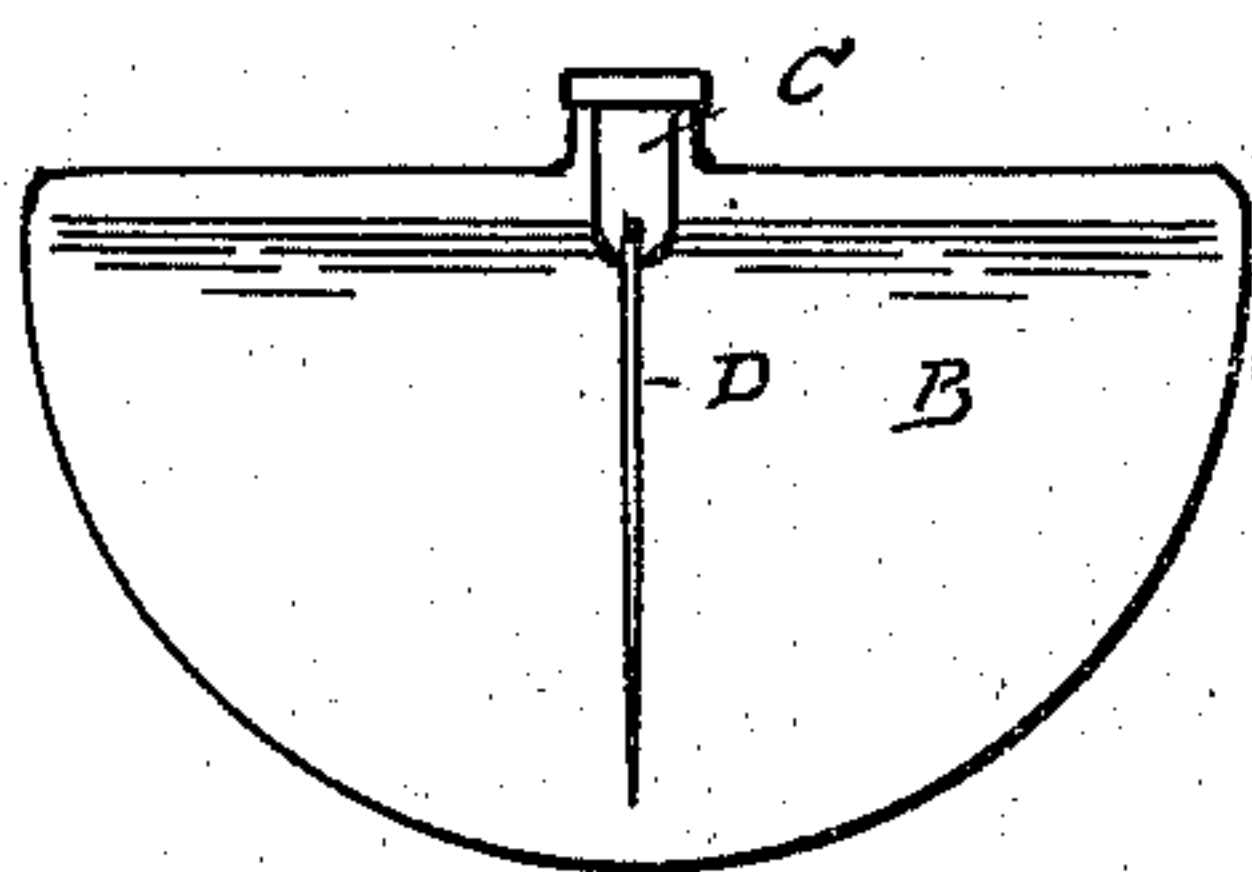


Fig. A.



WITNESSES

Geo. M. Tinsley
P. O. Massey.

INVENTORS

D. W. Fish
J. J. Joyce
by E. W. Anderson
their Attorney.

UNITED STATES PATENT OFFICE.

DAVID W. FISH AND JOHN J. JOYCE, OF DOLGEVILLE, NEW YORK.

PLUMB AND LEVEL.

SPECIFICATION forming part of Letters Patent No. 557,983, dated April 7, 1896.

Application filed December 2, 1895. Serial No. 570,828. (No model.)

To all whom it may concern:

Be it known that we, DAVID W. FISH and JOHN J. JOYCE, citizens of the United States, residing at Dolgeville, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Clinometrical Plumbs and Levels; and we do 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a side view of level with casing partly broken away. Fig. 2 is a plan view of level with cap-piece removed. Fig. 3 is a section through level on line 3 3, Fig. 1. Fig. 4 is a detail of flask.

An object of this invention is to provide a clinometrical plumb and level of improved character wherein the indications are made by means of a needle or pointer which is suspended within a closed flask or vessel filled or partly filled with spirits or other fluid.

A further object is to provide means of improved character for the adjustment of the dials which are employed in connection with the said needle or pointer.

With these objects in view the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims.

Referring to the accompanying drawings, the letter A designates the stock, which is of the ordinary character in so far as size and shape are concerned.

B is a transparent flask of approximately semicircular flat-sided form, which is set and tightly secured in a mortise cut in one edge of the stock. Said flask is closed by an airtight-fitting stopper C and is designed to be filled or partially filled with spirits or other fluid. Suspended from the inner end portion of said stopper is a metallic pointer or needle D, having needle-points *d*, which engage bearings in the stopper.

D' are lugs or projections on the sides of

the stopper which engage recesses or offsets D² in the neck or mouth of the flask and thereby hold the stopper and indicator in proper position. There is usually about one-fourth of an inch space between the two sides of the flask, or sufficient to permit the indicator to move freely therein.

In the sides of the stock A are cut openings E, which communicate with the seat, in which is the flask and through which the flask and indicator may be seen, said openings being about one thirty-sixth or ten degrees larger than a semicircle.

F F are sheet-metal plates, one of which is placed upon each side of the flask, and each of which has an opening therethrough which corresponds with the opening E in the side of the stock, except that the radius of its circle is three-sixteenths of an inch or thereabout less, whereby a margin is formed on which is marked the scale in degrees and half-degrees, or in accordance with any other desired system of indication. The standard scale, which shows the rise or fall to a foot in distance with a given variation from level, may also be added. On the dial shown in the drawings the plumb-and-level marks are denoted by zeros. From the center zero, denoting "level," the dial is marked each way to the zeros denoting "plumb" and five degrees above, or ninety-five degrees in all each way.

The plates F F are rigidly fastened to nuts G G, which engage and are supported by threaded portions *h h* of a rod or bolt I. This rod or bolt is formed with a flat portion *h'*, by means of which it may be turned. By rotation of this rod or bolt it will be readily seen that the nuts G will be moved to adjust the dial. The ends of the rod or bolt are journaled in pivot-blocks J, pivoted to nuts K, which engage vertical adjusting-screws L. These screws L L are supported in recesses of the main mortise of the stock, and are each held in place at the bottom by means of an inverted-cup-shaped washer M, placed over its headed lower portion, and at the top by a plate I'.

The rod or bolt I and the screws L are the adjusting-points for the dials. Owing to the

loose or pivotal connection between the block J with the nuts K, there is no bind when but one of the screws L is turned to lower one end of the dials and the other screw is turned to
5 raise the opposite ends.

N is a cap-plate which covers the mortise in the stock.

The fluid in the flask not only acts to accelerate the motion of the indicator, but it also
10 prevents the vibrations thereof, which would otherwise render an exact reading a slow and difficult matter.

The flask acts as a guard for the indicator, whereby it is impossible for mineral attraction to interfere with its operation.
15

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

1. In a plumb and level of the class described, the stock having the closed flat-sided semicircular flask secured therein in stationary position and filled or partially filled with liquid, the tight-fitting stopper which closes an aperture in the top of said flask, the indicator suspended at its upper end from said
20 stopper within the said flask, the parallel, dial plates, one upon each side of the said flask and cut away to expose the same, and

means for adjusting the said dial-plates, substantially as specified. 30

2. In a plumb and level of the class described, the stock having the closed flask secured therein, the indicator suspended within the said flask, the apertured dial-plates, the nuts to which said plates are secured, the rod
35 or bolt engaging said nuts, the pivot-blocks in which said rod or bolt is journaled, the nuts to which said pivot-blocks are attached, and means for securing the vertical adjustment of the said nuts, substantially as specified. 40

3. In a plumb and level of the class described, the combination with a dial-plate, of nuts to which said plate is attached, a rod or bolt engaging the said nuts, pivot-blocks in
45 which said rod or bolt is journaled, nuts to which said pivot-blocks are attached and screws engaging the said nuts, substantially as specified.

In testimony whereof I affix my signature 50 in presence of two witnesses.

DAVID W. FISH. [L. S.]

JOHN J. JOYCE. [L. S.]

Witnesses:

THEO. H. ROTH,
EDWARD DEDICKE.