

No. 778,131.

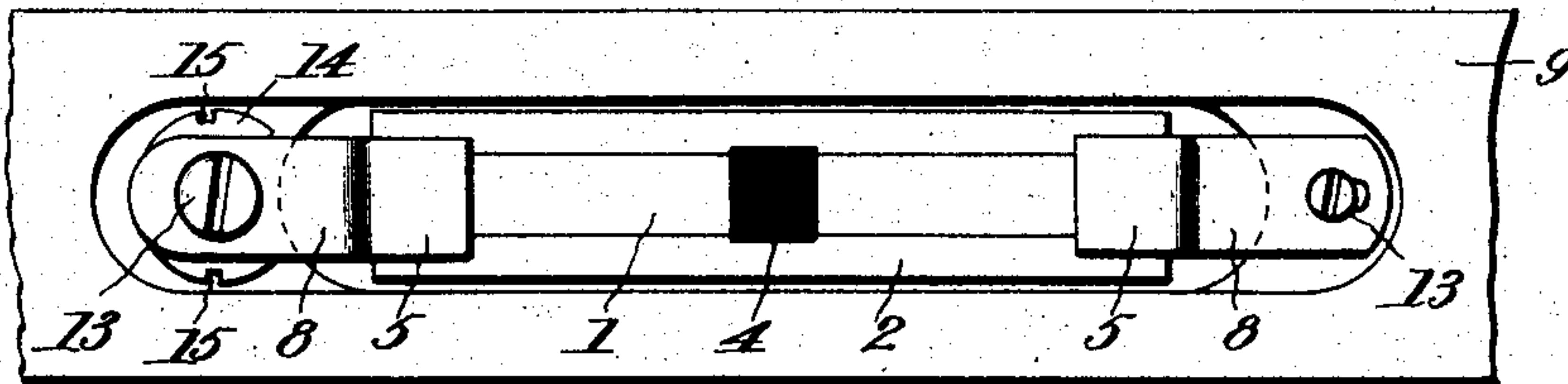
PATENTED DEC. 20, 1904.

D. A. JAMES.  
SPIRIT LEVEL.

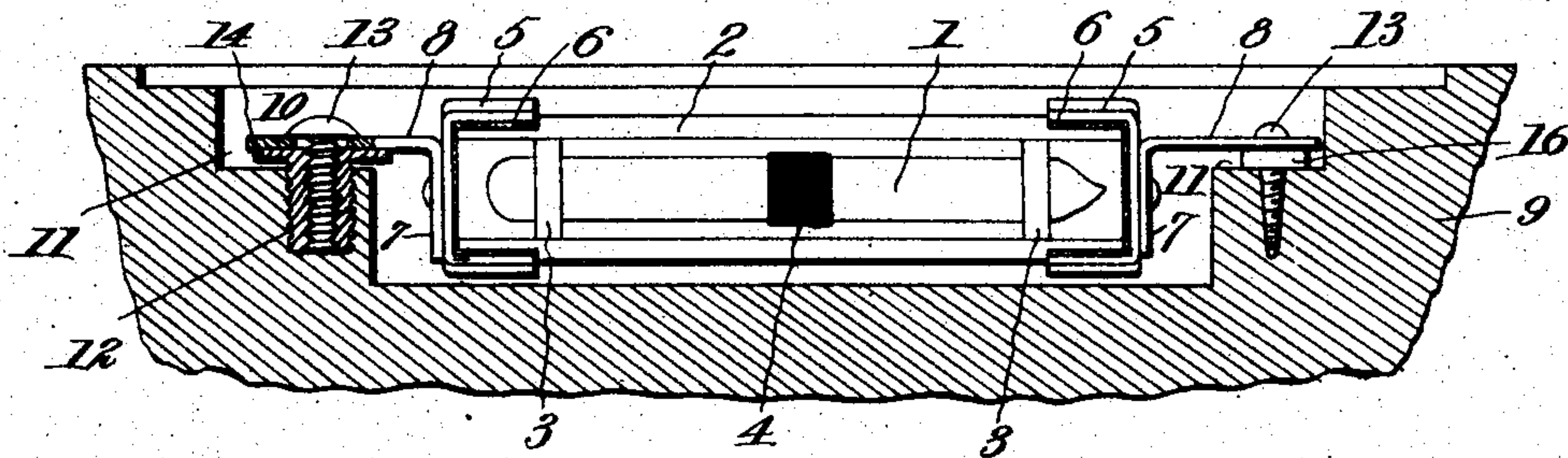
APPLICATION FILED MAR. 8, 1904.

NO MODEL.

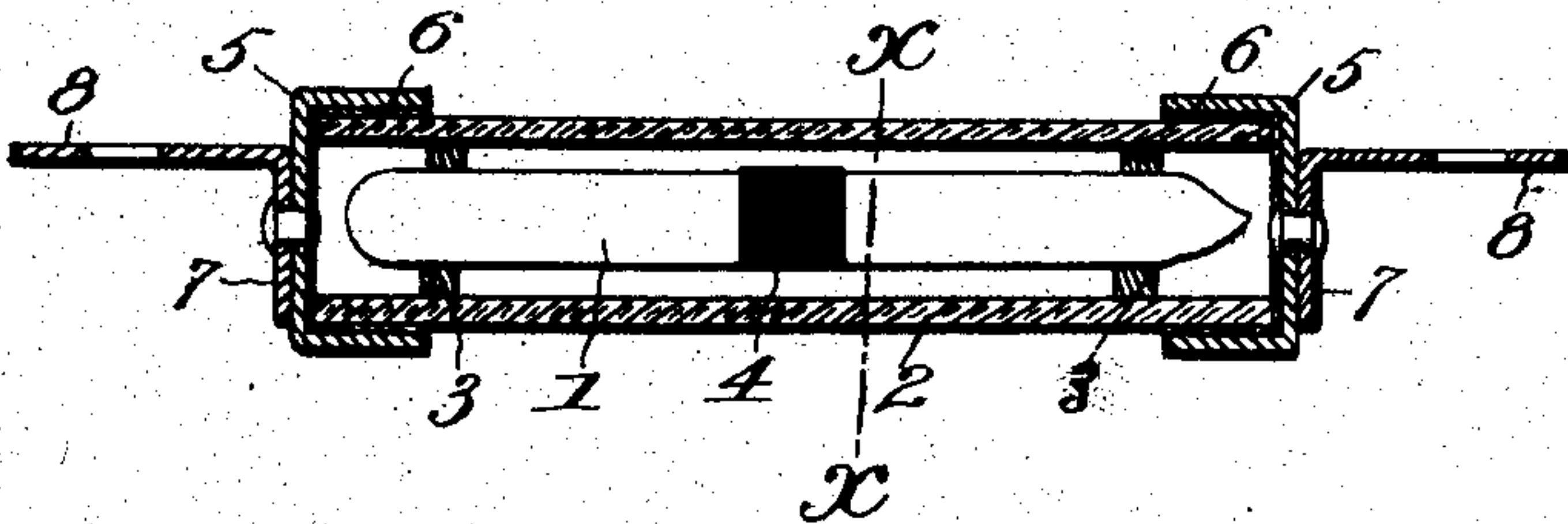
*Fig. 1.*



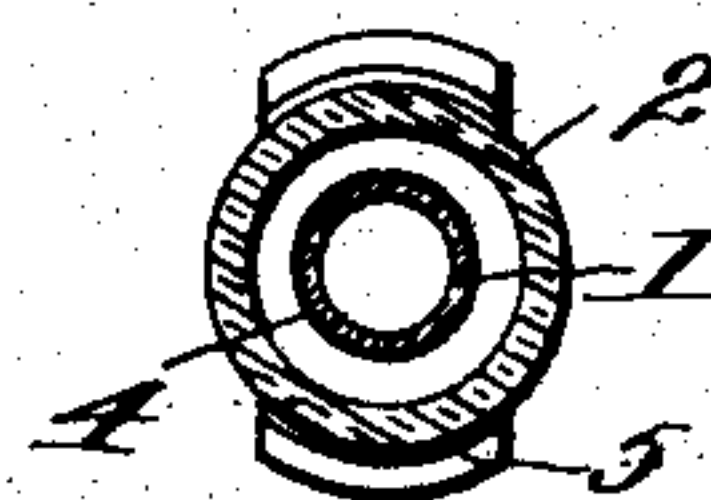
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



WITNESSES:

*C. W. Walker*  
*J. H. Adams*

INVENTOR

*Daniel A. James*

BY

*Samuel Bond*

Attorney



# UNITED STATES PATENT OFFICE.

DANIEL A. JAMES, OF AKRON, OHIO, ASSIGNOR TO THE BAKER-McMILLEN COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

## SPIRIT-LEVEL.

SPECIFICATION forming part of Letters Patent No. 778,131, dated December 20, 1904.

Application filed March 8, 1904. Serial No. 197,100.

*To all whom it may concern:*

Be it known that I, DANIEL A. JAMES, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Spirit-Levels, of which the following is a specification.

This invention relates to improvements in spirit-levels; and the object is to provide a simple and improved construction of spirit-level having convenient and effective attaching and adjusting means.

With the above object in view the invention consists in the novel features of construction hereinafter fully described, particularly pointed out in the claims, and clearly illustrated by the accompanying drawings, in which—

Figure 1 is a top plan view of my invention; Fig. 2, a view of the level, partly in section and partly in side elevation; Fig. 3, a longitudinal sectional view through the spirit-tube, incasing tube, and attaching means; and Fig. 4, a transverse sectional view on line *xx* of Fig. 3.

Referring now more particularly to the drawings, 1 indicates the transparent tube for the liquid, and 2 a transparent incasing tube therefor, said spirit-tube being held in the incasing tube by means of ring-like supports 3, preferably of rubber. Secured about the center of the spirit-tube is a broad band 4, of paper or other suitable material colored black or some other dark color. Said band constitutes the index to indicate the position of the bubble when the instrument is level. Attached to the incasing tube at each end is a metal clip 5. These clips are attached to the tube by means of interposed strips 6 of felt or other suitable material, which are cemented to the tube and to which the clips are cemented or glued. Secured to the clips by riveting or otherwise are attaching-plates or brackets 7, having perforated arms 8 extending horizontally from the clips.

The body or support 9 of the spirit-level is formed with a recess 10 to receive the spirit-tube and incasing tube, and at each end of the

recess is a shoulder 11, to which the arms 8 are attached. Adjustable in one of said shoulders 11 by means of screw-threads is a bushing or adjusting member 12, which is interiorly threaded to receive one of the attaching-screws 13, that pass through the perforated arms 8. The bushing is provided with a head 14, formed with slots 15 to receive a wrench or other tool. The other screw 13 passes through the other arm 8 into the other shoulder 11, a washer 16 being interposed between the arm and shoulder.

The perforations in the arms 8 are somewhat larger than the diameter of the screws 13, so that by loosening the said screws the spirit-tube and its incasing tube may be adjusted either longitudinally or laterally.

By loosening the screws 13 and adjusting the bushing the tubes may be adjusted vertically.

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

1. In a spirit-level, the combination with a support having a recess therein, of a transparent incasing tube fitting in said recess, metal clips attached to the respective ends of the tube having perforated arms extending therefrom, screws passing through the perforated arms and into the support and a spirit-tube positioned in said incasing tube.

2. In a spirit-level the combination with a support having a recess, of a transparent incasing tube fitting in said recess, metal clips attached to the respective ends of the tube having perforated arms extending therefrom, screws passing through the perforated arms and into the support, said screws having heads of larger diameter than the perforations but shanks of smaller size, whereby the tube may be adjusted laterally and longitudinally, and a spirit-tube positioned in said incasing tube.

3. In a spirit-level, the combination with a support having a recess, of a transparent incasing tube fitting in said recess, metal clips attached to the respective ends of the tube having perforated arms extending therefrom,

screws passing through said arms, an adjustable bushing threaded into the support and threaded interiorly to receive one of said screws, the other screw entering the support,  
5 said bushing having a head formed with slots to receive a tool, and a spirit-tube positioned in said incasing tube.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL A. JAMES.

Witnesses:

HELEN HINMAN,  
J. H. ADAMS.