No. 730,579. PATENTED JUNE 9, 1903.

W. A. STALLSMITH & M. G. BEARD.

CLINOMETER.

APPLICATION FILED OCT. 27, 1902.

NO MODEL.

Fig. 1.

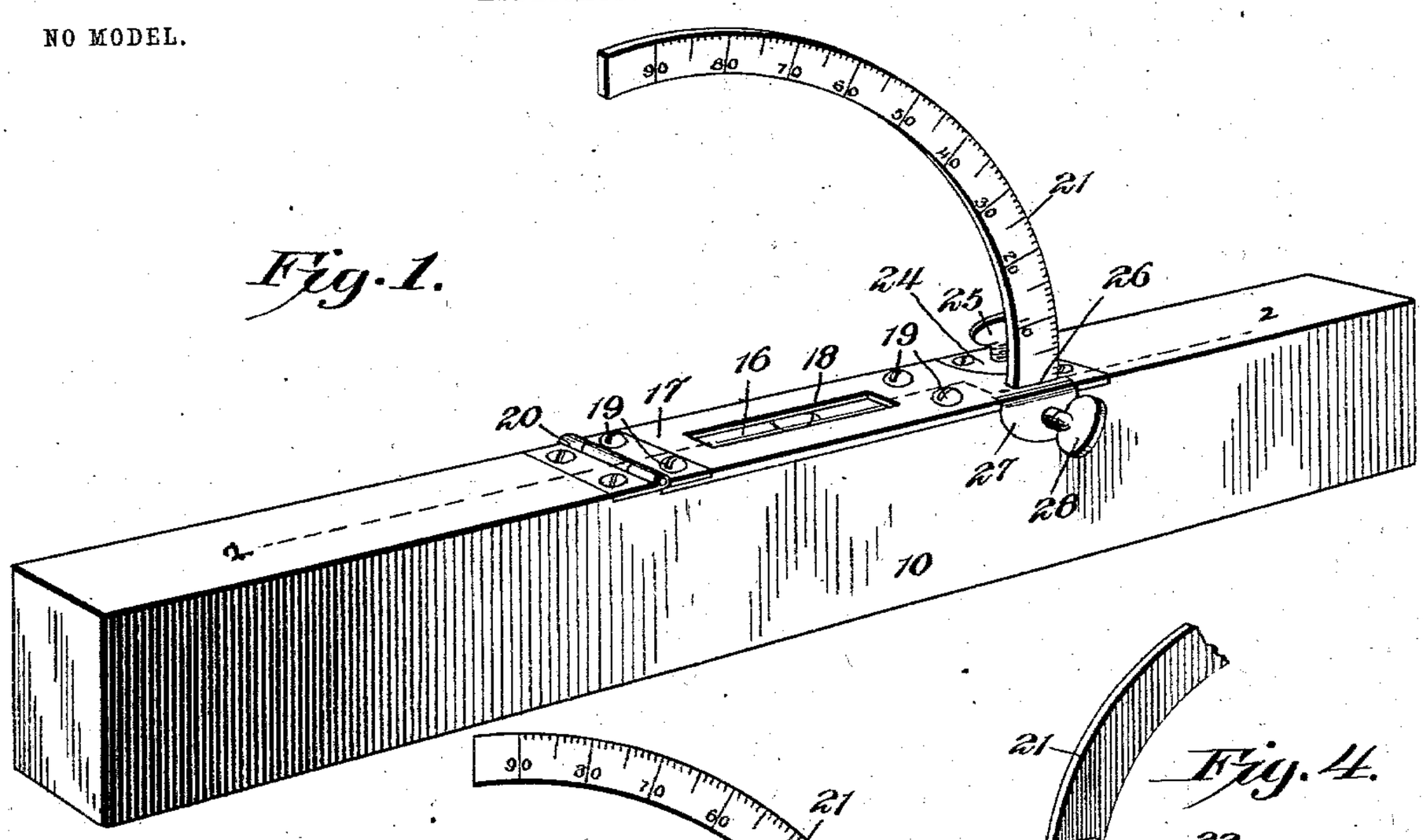


Fig. 2.

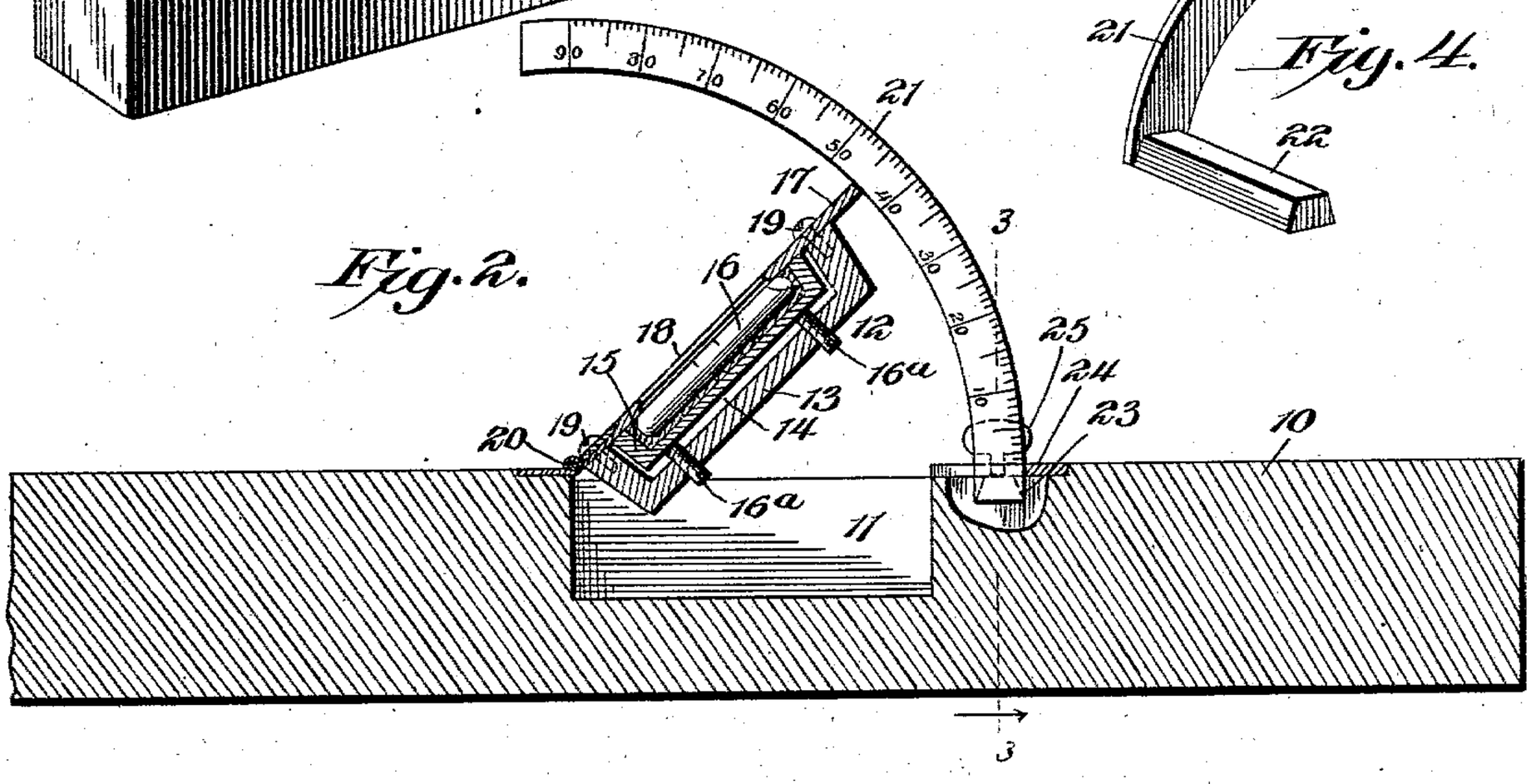


Fig. 4.

Fig. 3.

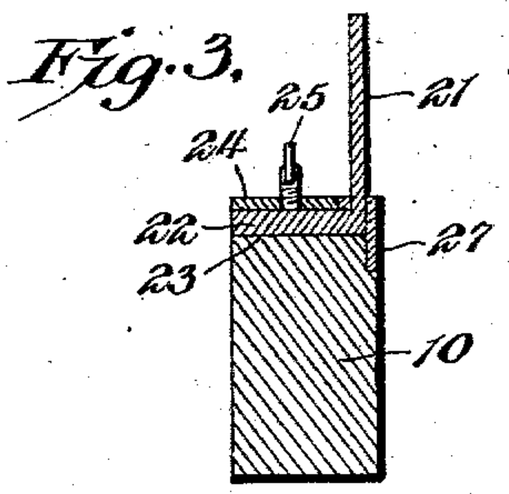
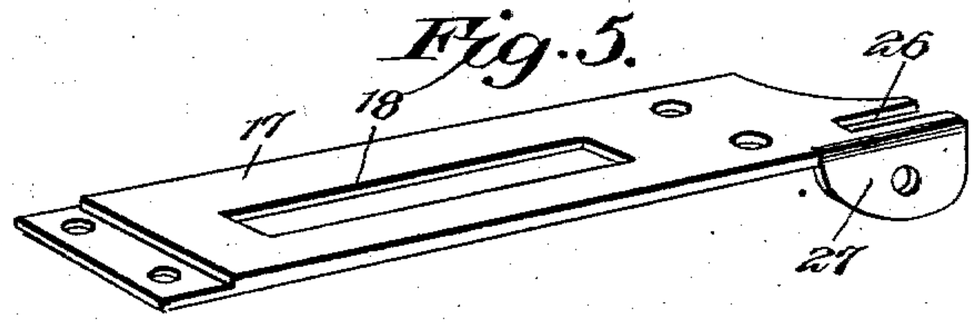


Fig. 5.



Witnesses
Howard D. Orr.
B. L. Foster.

Walter A. Stallsmith
and Malden G. Beard,
Inventors.

By E. G. Siggers.
Attorney

No. 730,579. Patented June 9, 1903.

UNITED STATES PATENT OFFICE.

WALTER A. STALLSMITH AND MALDEN G. BEARD, OF HANOVER, PENNSYLVANIA.

CLINOMETER.

SPECIFICATION forming part of Letters Patent No. 730,579, dated June 9, 1903.

Application filed October 27, 1902. Serial No. 129,036. (No model.)

To all whom it may concern:

Be it known that we, WALTER A. STALLSMITH and MALDEN G. BEARD, citizens of the United States, residing at Hanover, in the county of York and State of Pennsylvania, have invented a new and useful Clinometer, of which the following is a specification.

The present invention relates to improvements in instruments for determining angles and pitches for roofs and other structures.

The object of the invention is to provide a very simple article of the above character with which the degree of any angle may be readily and accurately obtained, said article being so arranged that it may be employed as an ordinary level, without any projecting parts or elements that will interfere with its successful use in this relation.

The preferred embodiment of the invention is illustrated in the accompanying sheet of drawings and is described in the following specification.

In said drawings, Figure 1 is a perspective view of the improved clinometer. Fig. 2 is a longitudinal sectional view through the same, taken on the line 2 2 of Fig. 1. Fig. 3 is a vertical transverse section taken on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of one end of the quadrant-arm. Fig. 5 is a detail perspective view of the cap-plate of the carrier member.

Similar reference-numerals designate corresponding parts in all the figures of the drawings.

In carrying out the invention as shown a body member 10 is employed, which may be constructed of any desired material and is provided in an intermediate portion with a longitudinally-disposed seat 11 opening at one side of said body. A carrier member (designated as a whole by the reference-numeral 12) is pivotally connected with the body member. This carrier member is preferably in the form of a metallic boxing 13, having a chamber 14 therein, within which fits the holder 15 for the usual level-glass 16, said holder being adjustable by means of screws 16^a. The boxing 13 is covered by a cap-plate 17, having a sight-opening 18 therethrough and attached to the boxing by means of screws 19. The carrier member is pivotally attached to the body member at one end of the seat 11 by means of a hinge 20, fastened to the cap-plate 17 by the same screws 19 that secure the plate to the boxing, as shown in Fig. 2, and said carrier member is so arranged that when fitted in the seat 11 the outer face of the cap-plate 17 will be flush with the face of the body member.

Means are employed for holding the two members in angular relation, this means being shown in the form of a quadrant-arm 21, having an offset dovetailed finger 22, detachably fitted in a transverse socket 23, arranged in the body member at one end of the seat 11, the outer face of the socket being closed by a plate 24, through which is passed a clamp-screw 25, that bears upon the finger to hold the same in place. The quadrant-arm is provided with a suitable scale, and the cap-plate 17 of the carrier member has its free end bifurcated, as shown at 26, to receive said arm. Said cap-plate, furthermore, has at its free end a depending ear 27, through which is threaded a holding-screw 28, arranged to bear against the arm, and thus hold the two members against relative movement.

The manner of using the clinometer will be apparent. Should it be desired to set an article at any given pitch, it is only necessary to swing the carrier member so that its free end will be located at the desired angle marked upon the scale, whereupon by elevating the body member until the level is exactly horizontal said body member will be at the pitch wanted. On the other hand, to ascertain the pitch of any article already placed it is only necessary to rest the body member upon the same and swing the carrier member until the level is horizontal. When the instrument is to be used as an ordinary level, the carrier member is swung around until disengaged from the arm, and said arm is removed after the clamping-screw 25 has been loosened. The carrier member is then fitted in the seat 11 and clamped in place by the holding-screw 28. It will be evident that this structure is very simple and may be manufactured at small cost. At the same time it can be made very accurate, and when used as an ordinary

level, the arm being removed, there are no projecting portions which will interfere with its employment for this purpose.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a clinometer, the combination with a pair of pivotally-associated members, one of which is provided contiguous to one edge with a transversely-disposed socket, of a level attached to one of the members and movable therewith, and means for securing the members in angular relation, said means including a curved arm projecting from the member having the transverse socket and having an offset portion rigidly carried at one end and detachably fitting in the transverse socket.

2. In a clinometer, the combination with a pair of pivotally-associated members, one of which is provided with a transversely-disposed socket, of a level attached to one of the members and movable therewith, means for securing the members in angular relation, said means including an arm having an offset finger portion that detachably fits in the socket, and a clamping-screw bearing against the finger for holding the same in the socket.

3. In a clinometer, the combination with a body member having a seat in one side, of a carrier member pivoted to the body and arranged to fit in the seat thereof, said body member also having a transversely-disposed socket located at one end of the seat, a level attached to the carrier member, a quadrant-arm having an offset finger located in the socket, a clamping-screw bearing against the finger, and a clamping-screw mounted upon the carrier member and engaging the quadrant-arm.

4. In a clinometer, the combination with a body member, of a carrier member comprising a boxing, a level located in the boxing, and a cap-plate covering the boxing and having a sight-opening through which the level is exposed, a hinge connection between the cap-plate and body member, and means engaging the cap-plate for holding the carrier and body members in angular relation.

5. In a clinometer, the combination with a body member, of a carrier member comprising an open-sided boxing, a level located in the boxing, and a cap-plate covering the boxing and having a sight-opening through which the level is exposed, a hinge secured to the body member, and common fastening means for securing the hinge, the cap-plate, and the boxing together.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WALTER A. STALLSMITH.
MALDEN G. BEARD.

Witnesses:
JULIUS W. FISCHER,
HARRY L. MILLER.