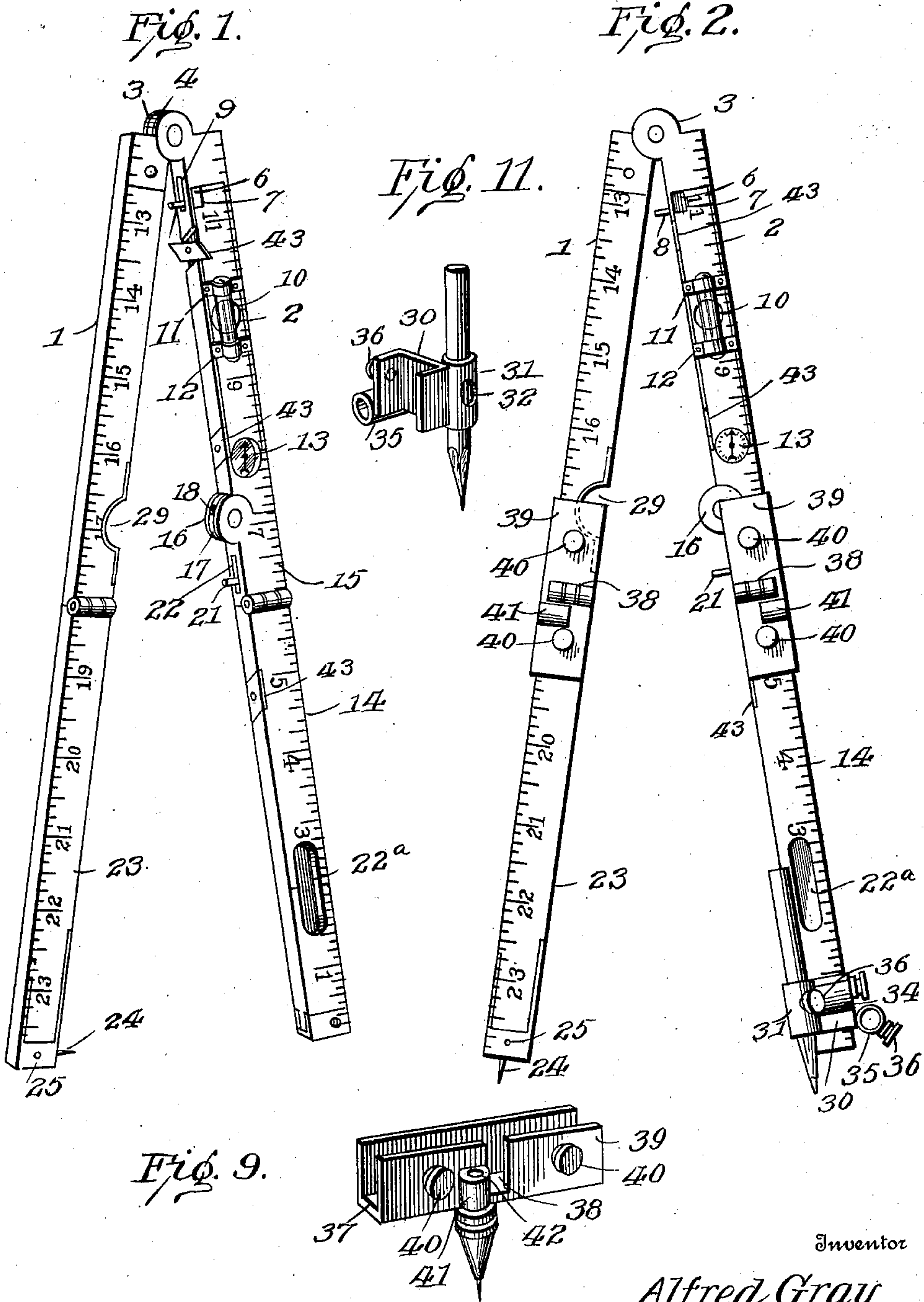


A. GRAY.
COMBINATION RULE.

APPLICATION FILED AUG. 13, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses

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PATENTED JULY 28, 1903.

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3 SHEETS—SHEET 2.

NO MODEL.

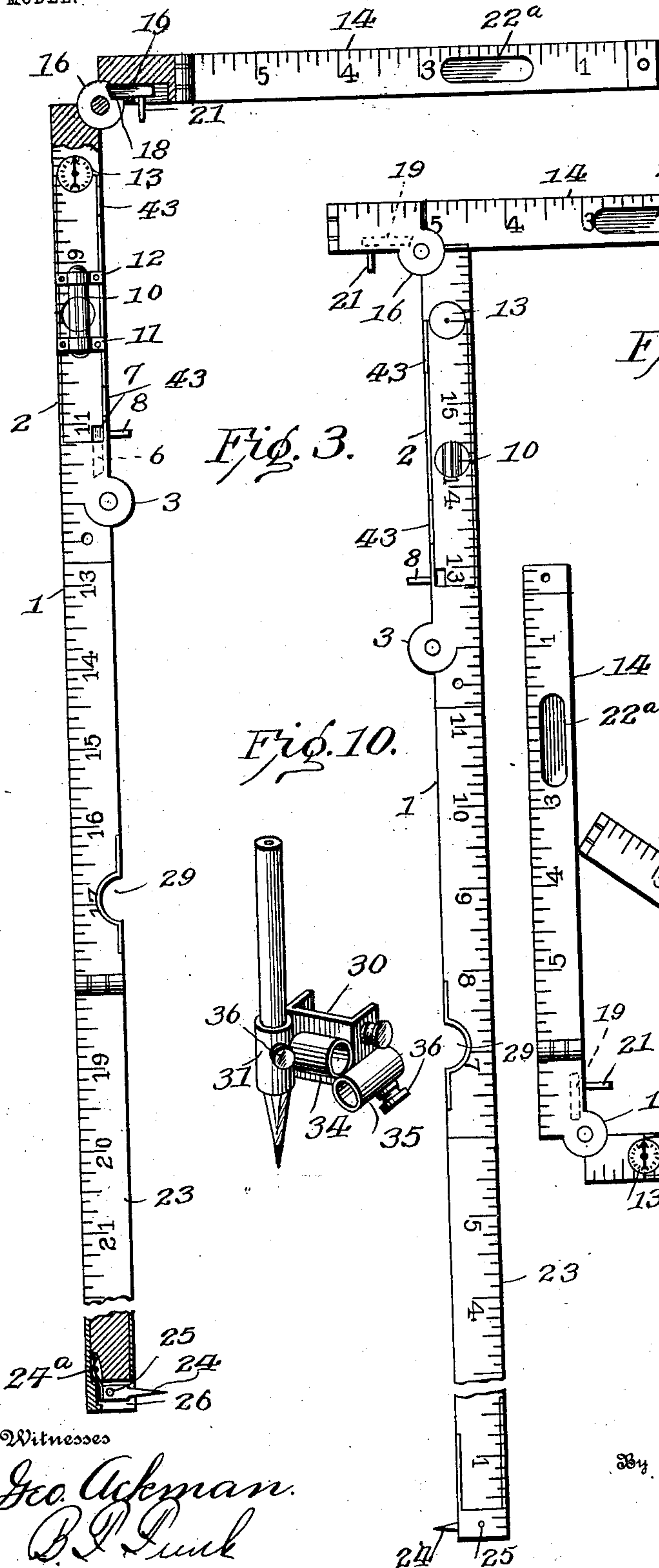


Fig. 3.

Fig. 10.

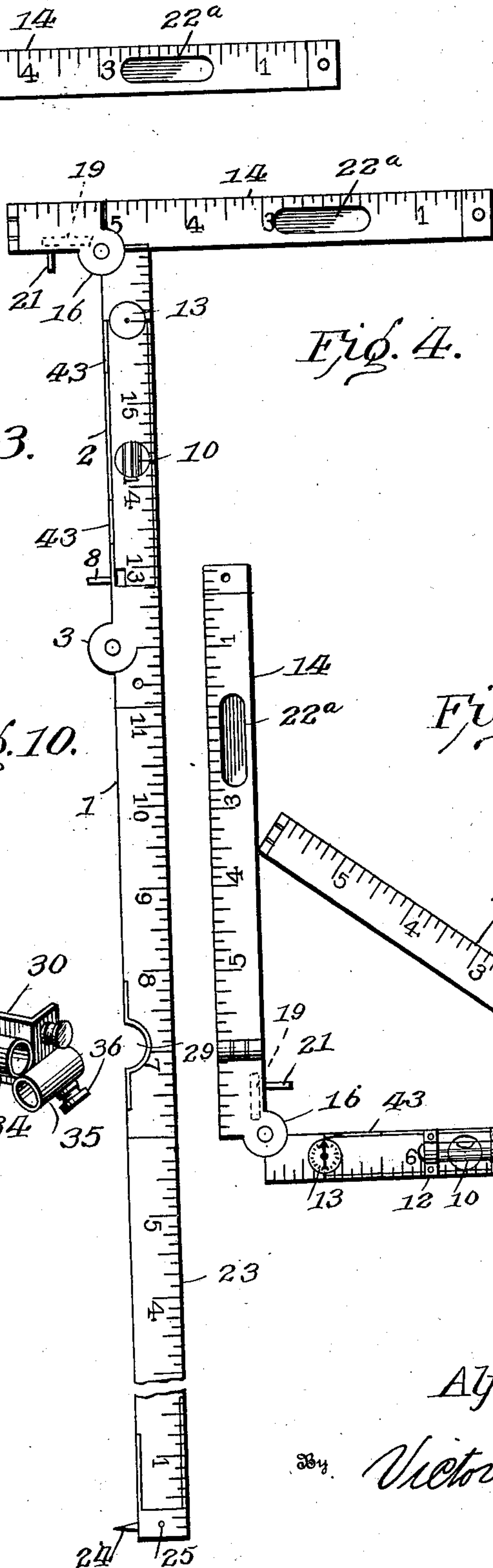
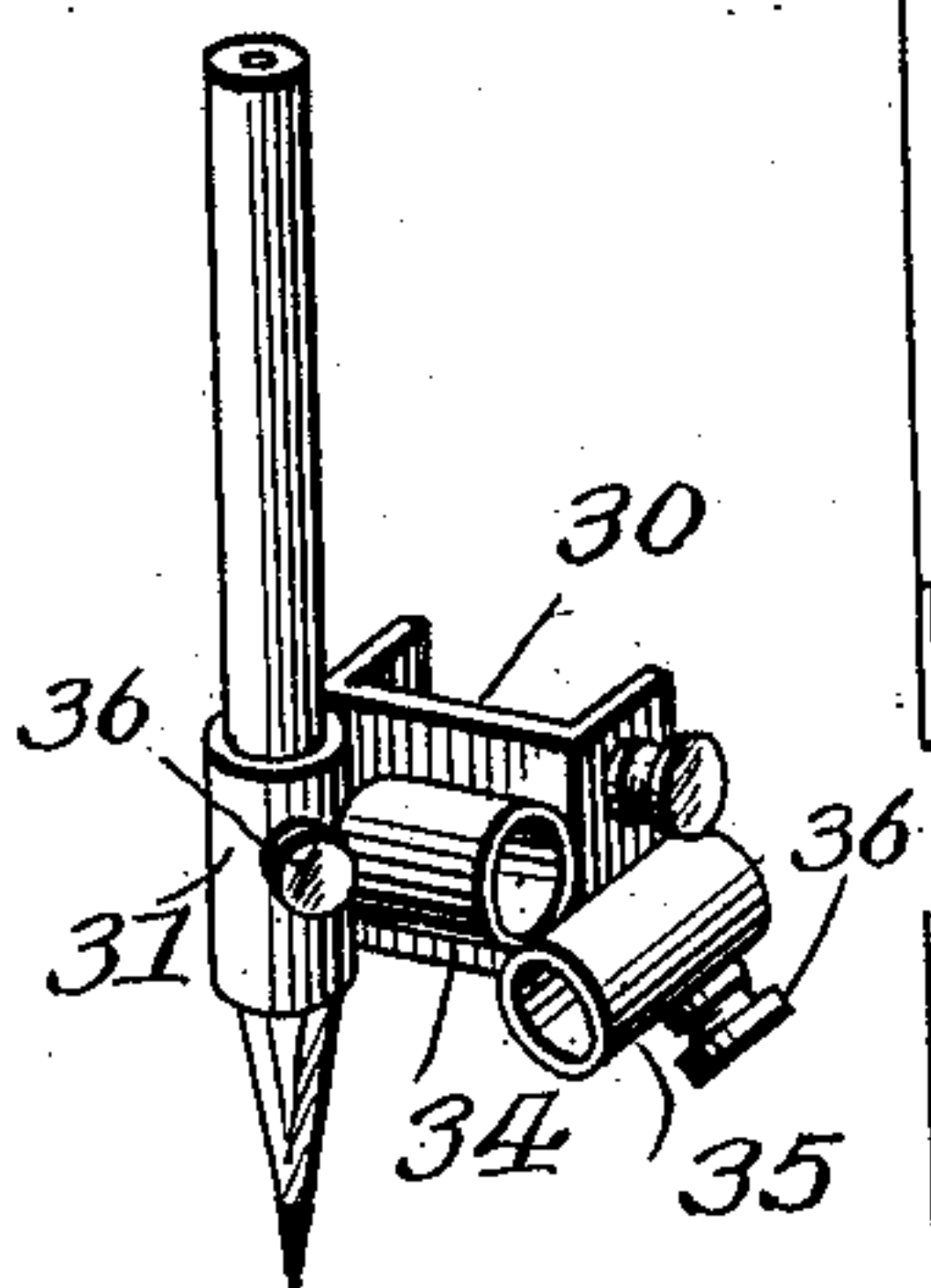


Fig. 4.

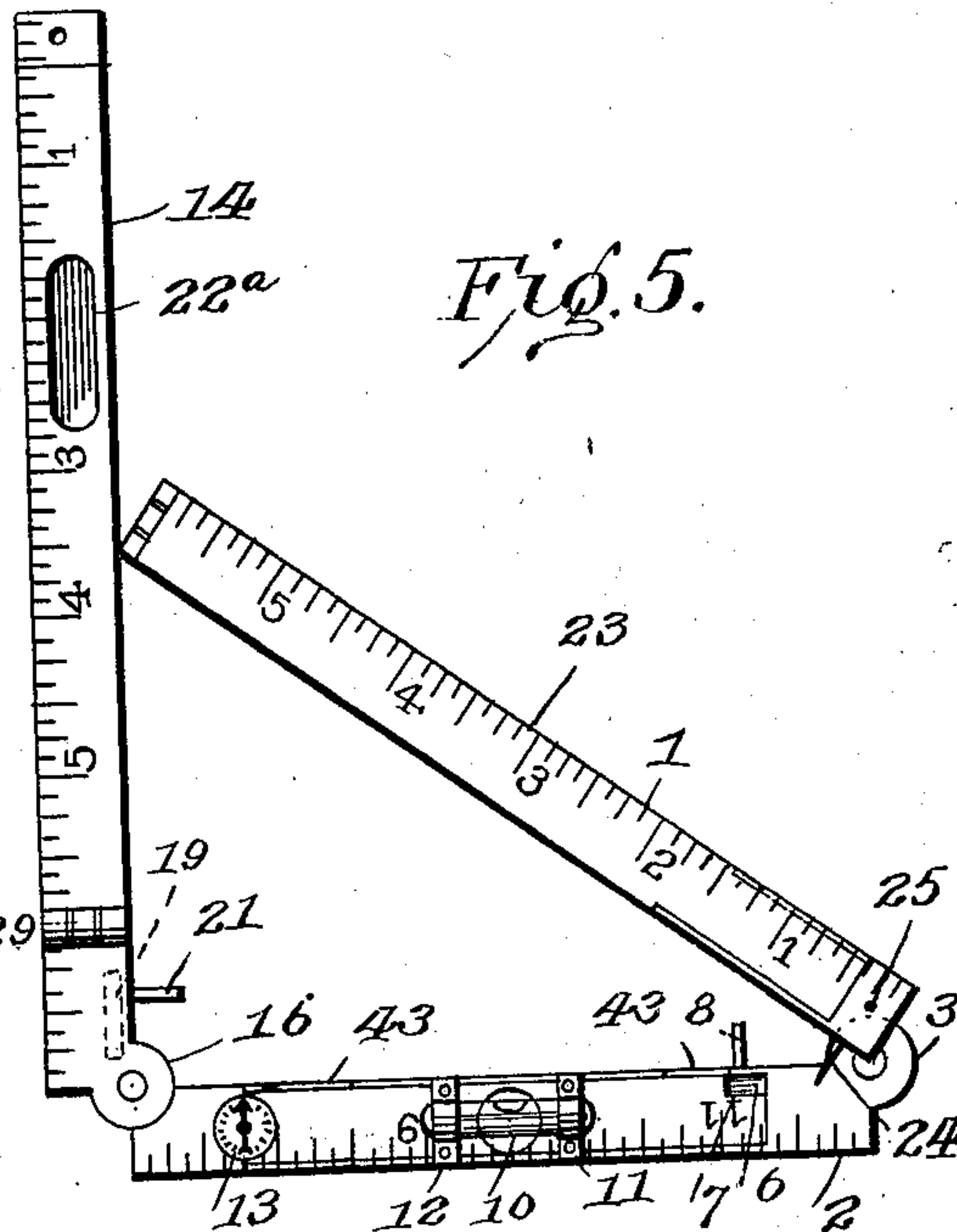


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 6.

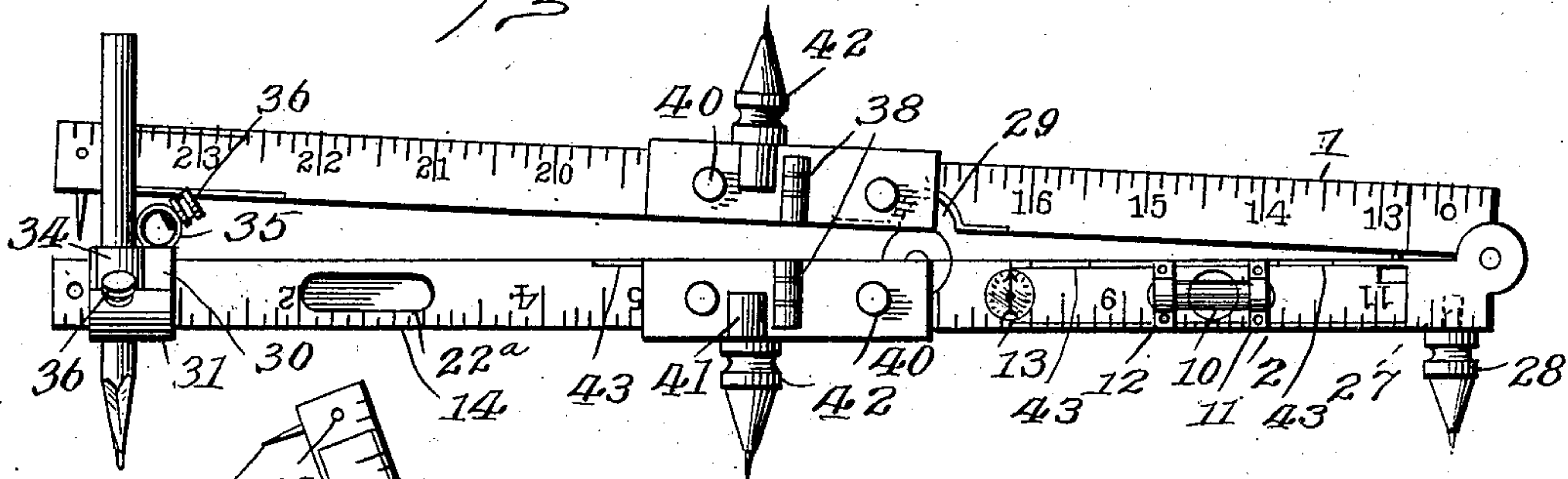


Fig. 7.

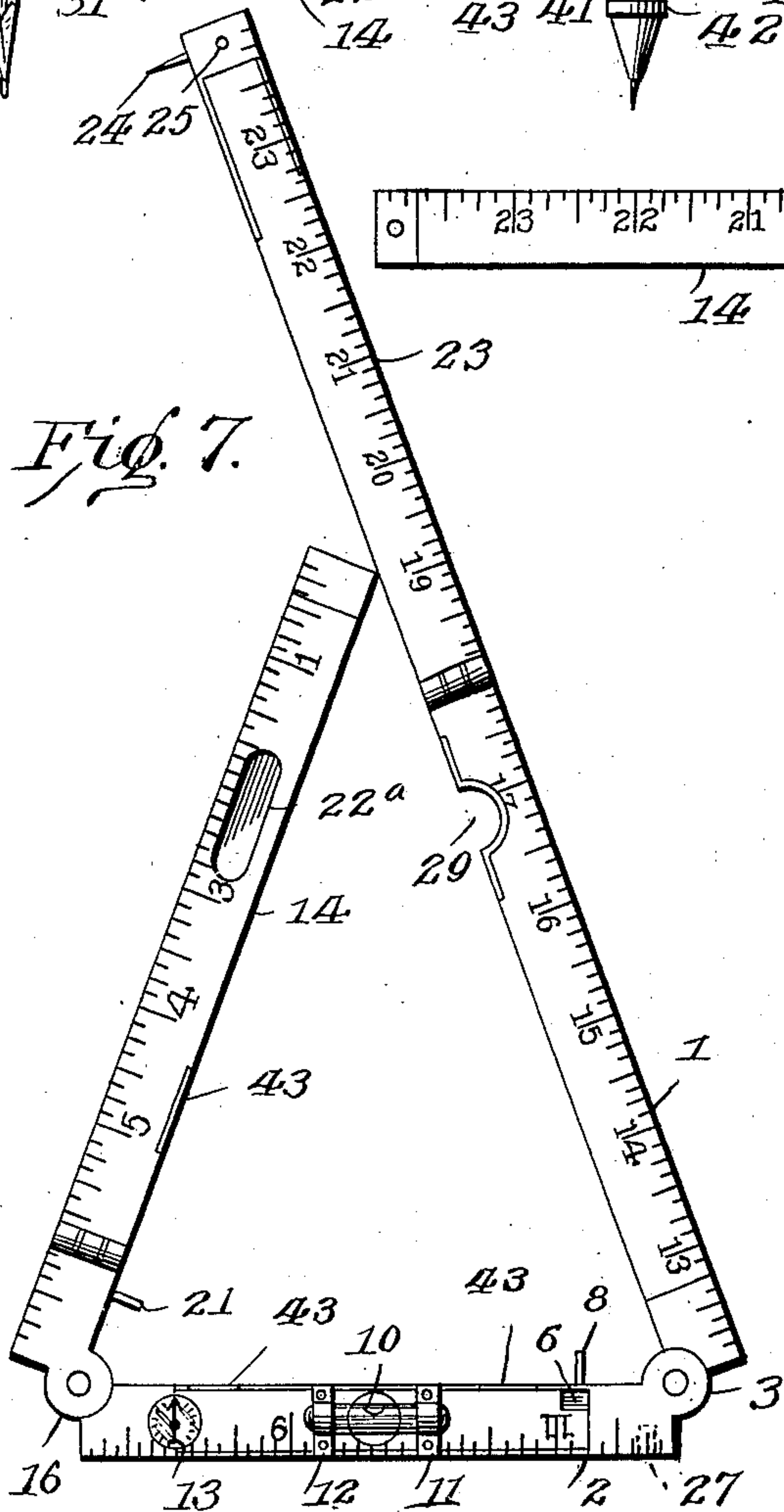
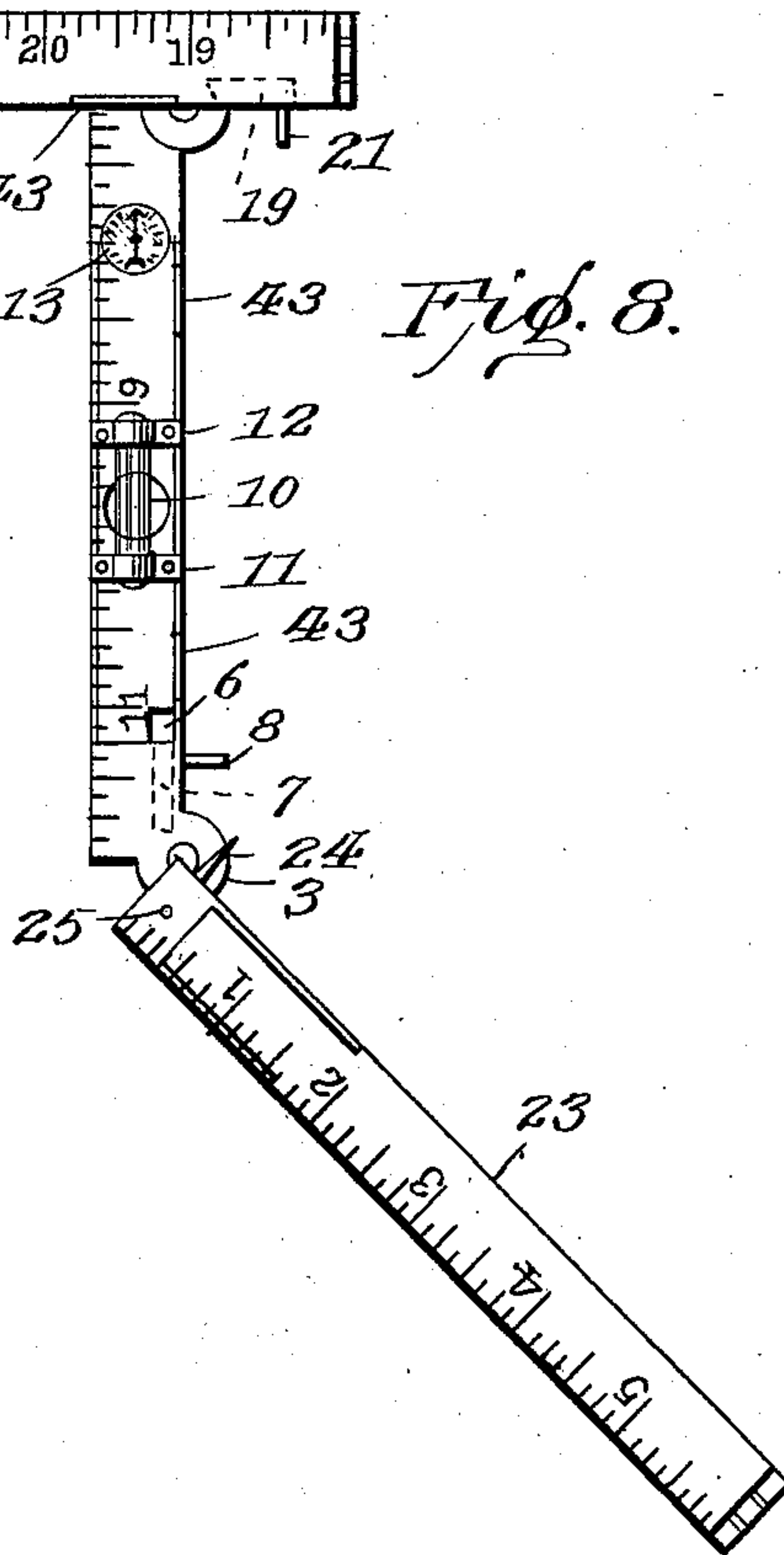


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALFRED GRAY, OF PASSAIC, NEW JERSEY.

COMBINATION-RULE.

SPECIFICATION forming part of Letters Patent No. 734,539, dated July 28, 1903.

Application filed August 13, 1902. Serial No. 119,549. (No model.)

To all whom it may concern:

Be it known that I, ALFRED GRAY, a subject of the King of Great Britain, residing at Passaic, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Combination-Rules, of which the following is a specification.

This invention relates to a combined pocket-rule, spirit-level, inclinometer, and compasses.

The object of the invention is to provide means whereby a multiplicity of devices will be included within a single tool, thereby providing convenience in manipulation.

The peculiar manner of accomplishing the desired results, as well as the novel details of construction, will be specifically described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a rule constructed in accordance with my invention. Fig. 2 is a perspective view of the same, showing the attachments applied whereby the rule may be used as a compasses. Fig. 3 is a side elevation of the device in a position to be used as a try-square. Fig. 4 is a view in elevation of the device used as a T-square. Fig. 5 is a plan view of the invention in a position to be used as an inclinometer. Fig. 6 is a plan view of the rule folded, showing another form of applying the attachment for scribing a circle. Fig. 7 is a plan view illustrating another form of folding the device so as to utilize it as an inclinometer. Fig. 8 is a plan view showing the position of one of the arms for forming a bevel. Fig. 9 is a detail perspective view of one of the clips for holding the hinged joint rigid. Fig. 10 is a detail perspective view of the pencil-holding clip, and Fig. 11 is a detail perspective view of the pencil-holding clip in reversed position.


The rule consists of two graduated members 1 and 2, hinged together at their extremities by a hinge 3, which consists of two plates, one of which is carried by each member, a sector-plate 4 being interposed between the two plates, comprising a hinge and having a notch or cut-out portion 5 therein, which is adapted to be engaged by a sliding bolt 6, secured in a recess 7 in the end of the member 2, said bolt being provided with a projecting pin 8, which passes through a slot 9 in the

edge of the member 2, whereby the bolt may be operated, so as to engage and disengage the notch 5. On the arm or member 2 is a spirit-level 10, which is secured to the arm by means of cleats 11 and 12. Arranged adjacent to the spirit-level is a plumb-level 13, which can be in the form of an ordinary weight-level usually employed. On the end of the arm 2 is a supplemental arm 14, which is also graduated and is secured to the arm 2 through the medium of an interposed hinged link 15, which is hinged and adapted to swing at right angles to the arm 14, said link 15 being fastened to the arm 2 through the medium of a hinge 16, which also comprises two plates and between which is a sector-plate 17, having a cut-out portion 18, which is designed to be engaged by a sliding bolt 19, working in a slot or recess 20 in the link 15, said bolt having a right-angularly-projecting pin 21, which extends through the slot 22 in the edge of the link, whereby the bolt may be retracted from or brought into engagement with the sector-plate, so that the arm 14 will be locked at right angles to the arm 2. It will be noticed that this connection is somewhat similar to the locking device positioned at the hinged part of the arms 1 and 2, the difference being that the bolt in the first-referred-to lock engages the sector-plate so as to cause the arms 1 and 2 to be at an angle less than right angle, whereby a bevel can be made, whereas the latter lock is designed for the purpose of securing or locking the arm 14 at right angles to the arm 2, as shown in Fig. 3, whereby a try-square can be formed.

It will be noticed that the arm 14 is provided with a concavity or recess 22^a, which is adapted to fit over the spirit-level 10, carried by the arm 2. On the end of the arm 1 is a supplemental arm or member 23, which is hinged thereto and carries at its extremity a pivoted point 24, which is secured by a pin 25, passing transversely through the recess 26 in the end of said arm. This point 24 can be swung so as to point at right angles to the arm 23 or to project longitudinally thereof, as occasion may demand. The point 24 is held rigid with relation to the arm of the rule by means of a flat spring 24^a, which is secured within the recess 26 and bears against said

point. In the outer edge of the arm 2 is a threaded recess 27, which is designed to receive a threaded restricted portion on the end of the point 28, which can be secured to said arm and will act as a pivot-point for the arm 2 when it is desired to scribe a circle, as will be described hereinafter. A recess 29 is also formed in the arm 1, into which the hinge 16 can fit when the arms 1 and 2 are closed one upon the other.

In order to utilize the device as a compasses, I employ certain novel forms of attachment, which will be described hereinafter and the uses explained.

By reference to Figs. 10 and 11 it will be noticed that a pencil-holder is provided, which comprises a flanged plate 30, which is approximately -shaped in cross-section, and along one flanged edge of said plate and on the face opposite to that at which the flange is situated is a tubular socket 31, provided with transverse openings 32 and 33, which align with each other and also with a right-angularly-arranged tube 34, which is carried by the plate and is provided for the purpose of holding and retaining a pencil when it is desired to utilize the device in the form of a compasses, as shown in Fig. 6. On the flanged edge of the plate 30 distant from the tube 31 is a similar tube 35, which is designed also to hold a pencil for the purpose of scribing circles. This tube 35, it will be noticed, is at right angles to the tubes 31 and 34, each of the tubes 31 and 35 being provided with openings for the insertion of set-screws 36, which may impinge upon the pencil and hold it firmly in position.

When it is desired to utilize the rule as a compasses, as shown in Figs. 2 and 6, it is necessary to provide means whereby the hinges connecting the supplemental arms to the arms 1 and 2 may be held rigid. In order to do this, I provide clips, preferably of the form shown in Fig. 9, in which 37 designates a flanged plate approximately U-shaped, and in one of the flanges is a slot or cut-out portion 38, which is designed for the purpose of permitting the hinges to protrude there-through when the clips are forced over the arms, it being understood that the clip formed by the plate 37 extends over each arm. One of the flanges, which I designate by the reference-numeral 39, is provided with thumb-screws 40, which can be turned to impinge against the arms of the rule, and thereby prevent an accidental displacement of the clip. An internally-threaded tubular socket 41 is carried by the clip and is designed to receive the threaded neck of a point 42, whereby a pivot is provided when it is desired to

employ the rule as a compasses of the form shown in Fig. 6.

At suitable points on the sections of the rule, preferably at the inner edges thereof, are provided pivoted pins 43, which are seated in recesses and are provided with beveled ends, so that they can be turned to form stops for holding the rule against the edge of the body on which it is desired to scribe or mark a line. These pins can be swung around so that their edges will be parallel with the edges of the rule when they are not in use.

In Fig. 3 the device is shown in a position to be used as a right-hand try-square, while in Fig. 4 the arm 14 is folded upon the link 15, whereby the device may be used as a left-hand try-square.

In Fig. 8 the device is illustrated as a combined try-square and miter.

In Figs. 5 and 7 the device is illustrated as being adapted for different forms of angles and for measuring inclines.

Of course it will be understood that the device is capable of uses other than those illustrated and that a convenient and compact tool is provided for the purposes intended.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination with a plurality of sections hinged together and adapted to fold one upon the other, of means for locking the hinged sections so that they will remain rigid with relation to each other, except the central hinged sections which are free to move, a point carried by the extremity of one of the sections and a pencil attachment for the other section whereby a compasses is formed, said pencil attachment consisting of a flanged plate designed to be secured to the section and a plurality of tubular sockets carried by the plate, each socket being arranged at a right angle with relation to the other.

2. A pencil attachment comprising a flanged plate, and a plurality of tubular sockets, each socket being arranged at a right angle with relation to the remaining sockets.

3. A pencil attachment comprising a flanged plate, and a tubular socket carried by one of the flanges, a socket arranged transversely of the plate, and a socket at a right angle to the transverse socket and also carried by the plate for the purpose described.

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

ALFRED GRAY.

Witnesses:

GEO. M. ESTEP,

CLIFFORD F. LINDHOLM.