

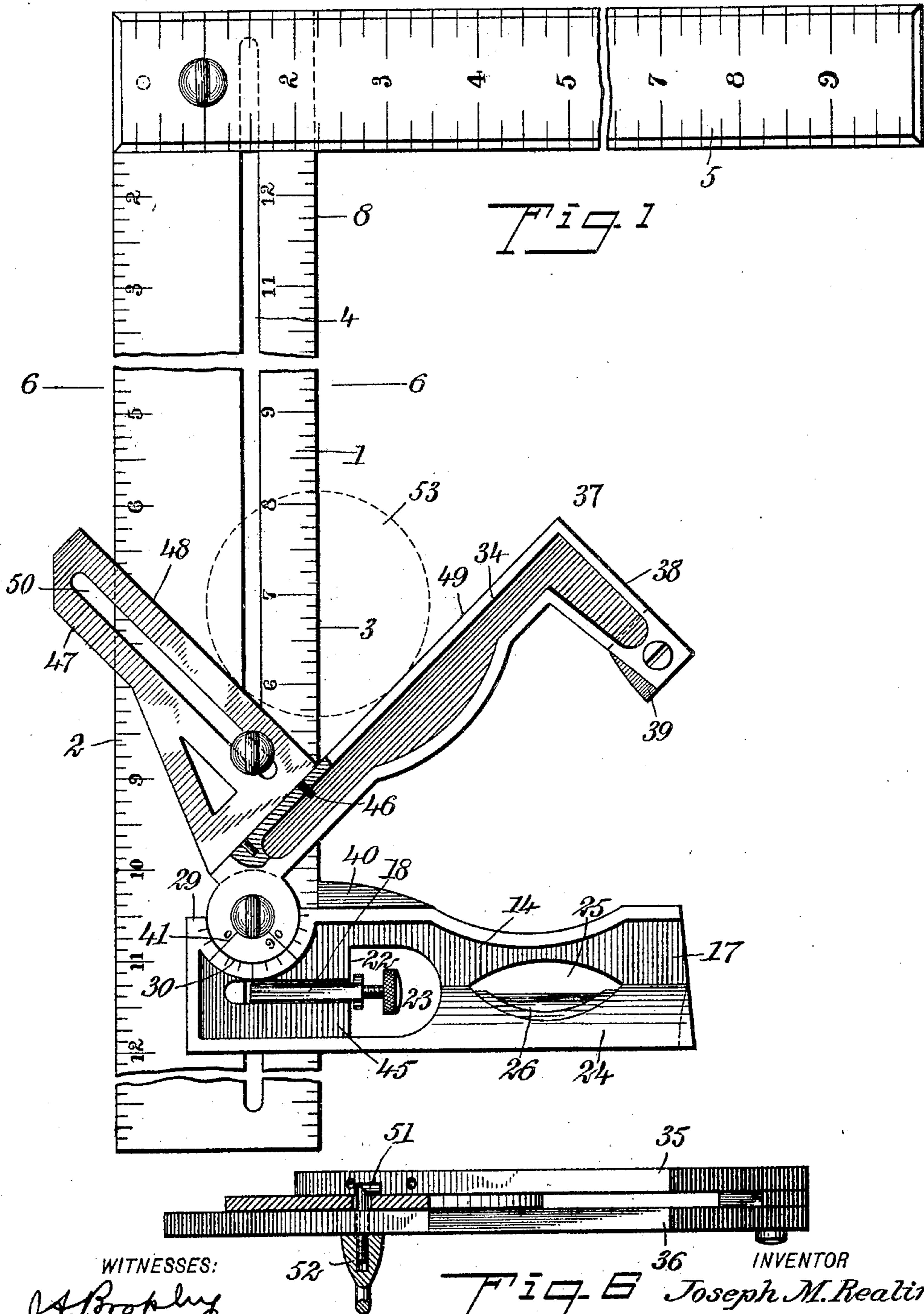
No. 813,173.

PATENTED FEB. 20, 1906.

J. M. REALING.
MECHANIC'S SQUARE.

APPLICATION FILED OCT. 28, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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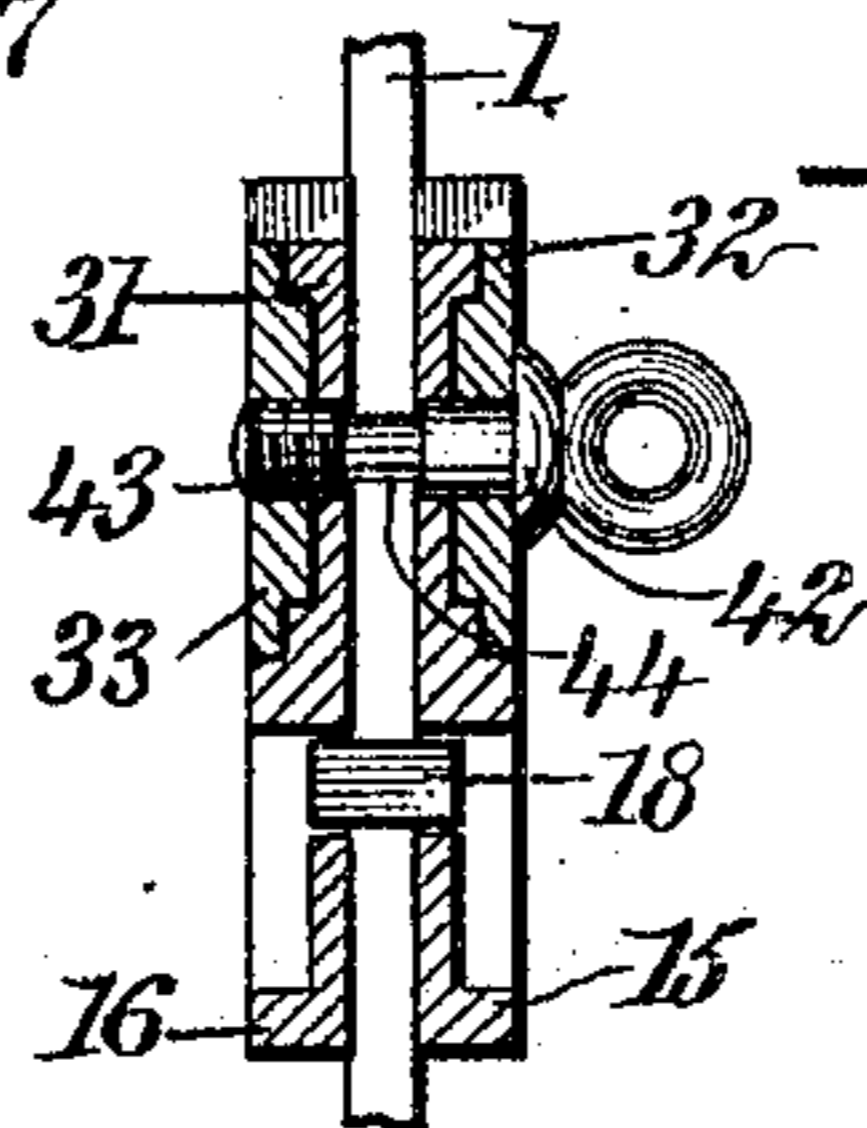
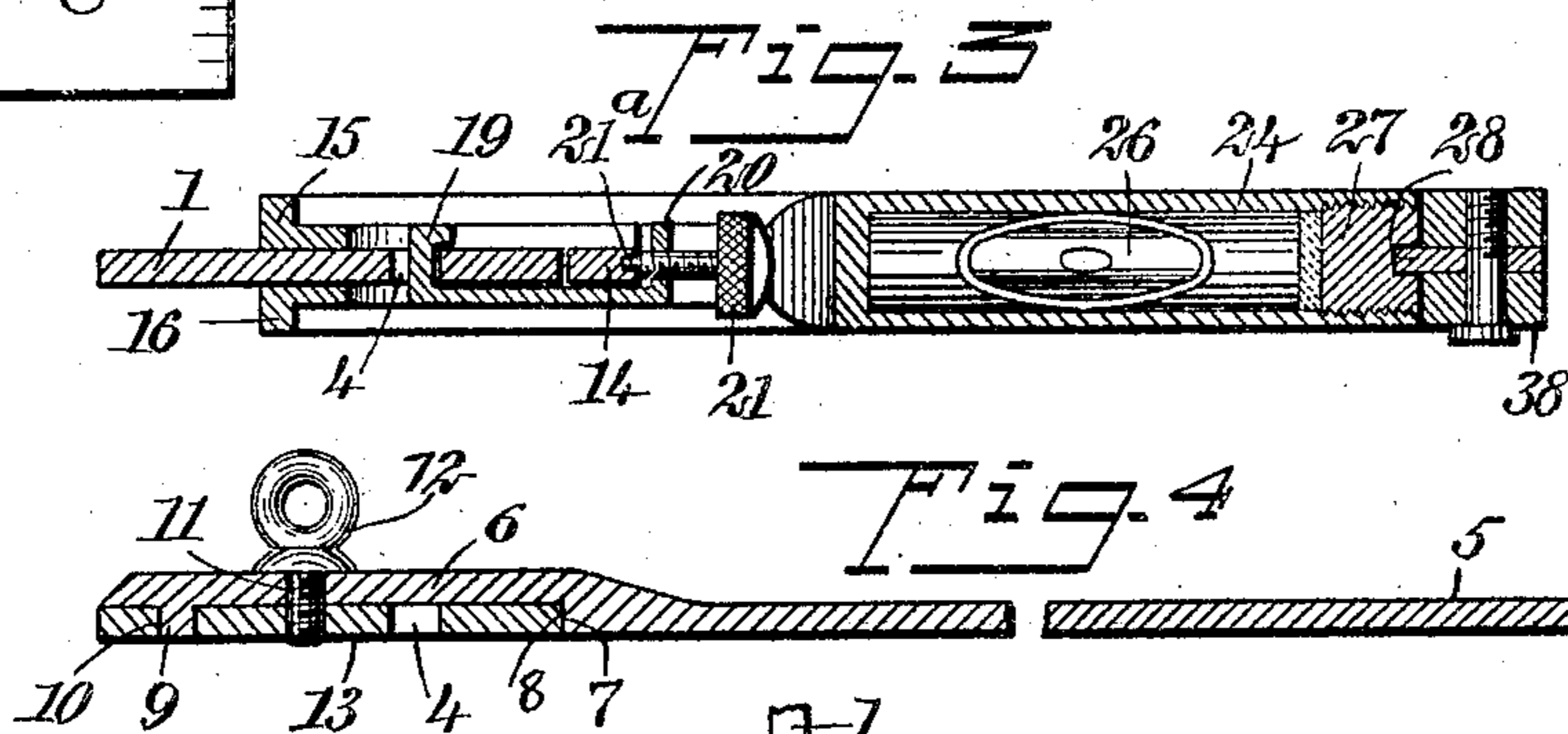
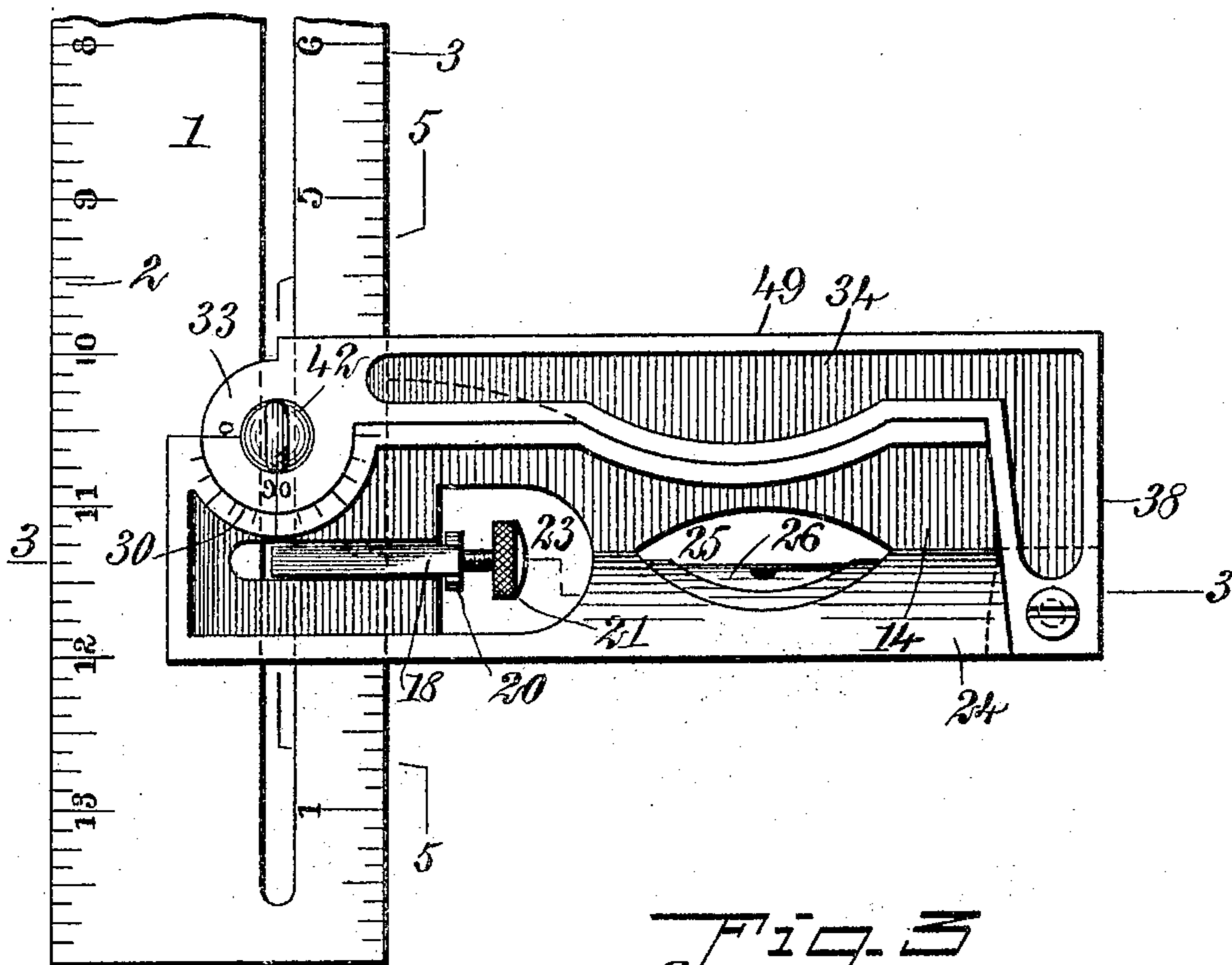
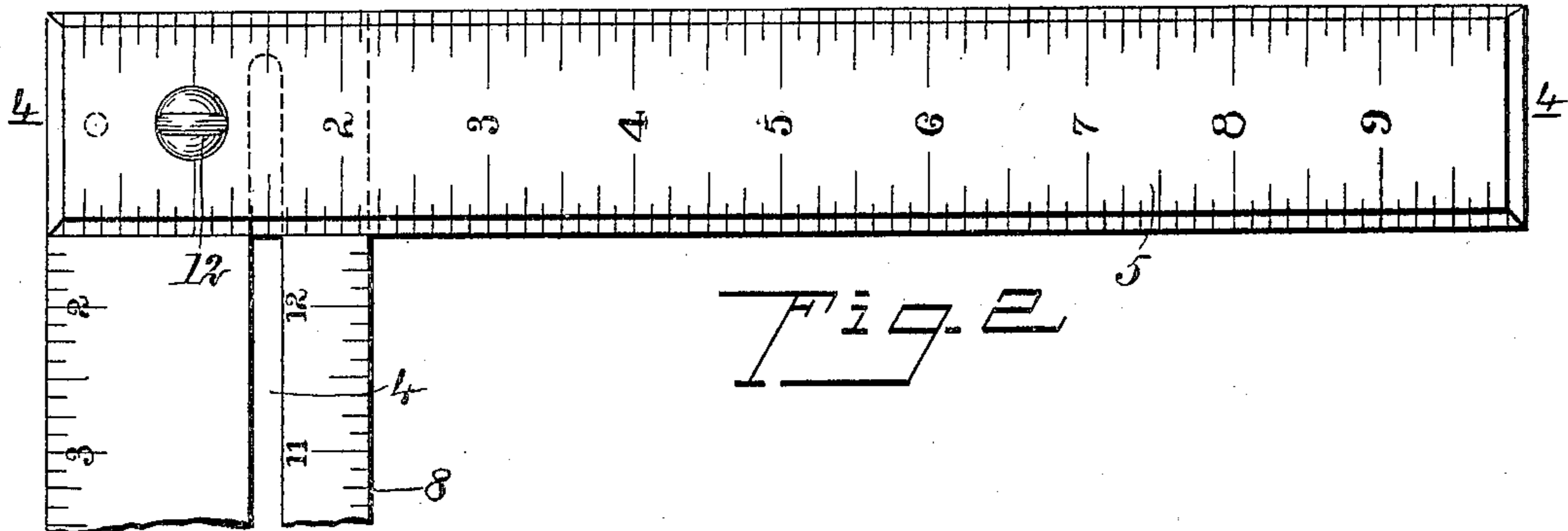
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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MECHANIC'S SQUARE.

No. 813,173.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed October 28, 1905. Serial No. 284,795.

To all whom it may concern:

Be it known that I, JOSEPH MONTGOMERY REALING, a citizen of the United States, and a resident of Daytona, in the county of Volusia and State of Florida, have invented a new and Improved Mechanic's Square, of which the following is a full, clear, and exact description.

This invention relates to squares such as used by artisans in many classes of work.

The object of the invention is to provide a tool of this kind which will combine the utility of a try-square, bevel-gage, and a level.

The invention consists in the construction and combination of parts to be more fully described hereinafter and definitely set forth in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan of the tool, certain parts being represented in section or broken away, as will appear. This view represents a protractor, which constitutes a feature of the device, in an open position and illustrates, further, the operation of a center head which may be used in connection with the device. Fig. 2 is a view similar to Fig. 1, but representing the protractor in its closed position and showing the center head removed. Fig. 3 is a section taken substantially on the line 3 3 of Fig. 2. Fig. 4 is a section taken on the line 4 4 of Fig. 2, certain parts being broken away, as will appear. Fig. 5 is a vertical section taken on the line 5 5 of Fig. 2, and Fig. 6 is a cross-section on the line 6 6 of Fig. 1 and looking downward.

Referring more particularly to the parts, 1 represents the main blade of the tool, the same being preferably formed of flat steel and provided on its opposite edges with graduations 2 and 3, which extend in opposite directions. This blade is provided with a longitudinally-disposed slot 4, which extends substantially throughout the entire length thereof, as shown. At one extremity of this main blade 1 there is attached a pitch-blade 5, the same being preferably of steel with beveled edges. At one extremity this pitch-blade is offset, so as to form a head 6, presenting a transverse shoulder 7, which is adapted to engage the edge 8 of the main blade, as indicated most clearly in Fig. 4. This head 6 is provided on its inner face with a spur or projection 9, which is adapted to be

received in an opening 10, formed in the main blade 1. Through substantially the middle point of the head 6 an opening 11 is formed, through which passes a thumb-screw 12, having a threaded shank, which is attached in a threaded opening 13 in the main blade, as shown in Fig. 4. From this arrangement it should be understood that the pitch-blade 5 may be readily attached to or detached from the main blade 1. Furthermore, it may be as readily attached on one side as on the other side of the blade 1. The blades are fitted to each other, so that when attached, as shown, the blade 5 forms an exact right angle with the main blade 1.

Slidably mounted on the main blade 1 I provide a stock 14, which preferably comprises oppositely-disposed forks 15 and 16. In order to lock this stock to the blade 1, the web 17 in the stock adjacent to the blade 1 is recessed, as indicated, so as to receive a small clamp 18, said clamp being formed with a projecting extremity or hook 19, which engages the edge of the aforesaid slot 4. This clamp 18 is formed with a laterally-projecting head 20, which receives a set-screw 21. The extremity of this set-screw 21 is formed with a tip, which is received in an opening 21^a in the edge of the web 14, as indicated in Fig. 3. This arrangement operates to prevent the clamp from falling out when loosened. From this arrangement it should be understood that when the hook 19 is applied, as shown in Figs. 1 and 3, the stock may be securely clamped in any position desired. Substantially the lower half portion of the stock 14, which is remote from the blade 1, is enlarged to form a substantially tubular housing or chamber 24. Near the middle of this chamber the web 17 aforesaid is cut away, so as to form an opening 25. This tubular housing 24 is open at the extremity remote from the blade 1 in order to enable a spirit-vial 26 to be inserted, the same being of glass of any common form and preferably set in cement or plaster-of-paris. After inserting the vial in the manner suggested the mouth of the tubular chamber is closed by means of a suitable threaded plug 27, as indicated most clearly in Fig. 3. The rear face of this plug is provided with a transverse slot or groove 28, which facilitates its being set into place by means of a screw-driver, and has another function which will appear more fully hereinafter.

At its inner extremity the upper edge 29 of

the stock 14 is formed with a semicircular recess 30, which is graduated in degrees, as shown. At this recess oppositely-disposed ears 31 and 32 are formed, which project upwardly, as shown most clearly in Fig. 5. These ears are preferably recessed on their outer faces to receive corresponding ears 33, which are formed on the extremity of a protractor 34, said protractor consisting of a pair of oppositely-disposed plates 35 and 36. These plates 35 and 36 are arranged parallel to each other, so as to form a bar 37, having a laterally-projecting arm 38, at which point the plates are connected by a spline or feather 39. This bar 37 is adapted to fold tightly against the upper edge of the stock, as indicated in Fig. 2, with the feather 39 occupying the groove 28 in the screw-plug 27. Near the extremity of the stock 14, which lies adjacent to the main blade 1, an upwardly projecting fin 40 is formed, disposed centrally on the upper edge of the stock, and this fin when the bar 37 is closed; as in Fig. 2, projects into the space between the plates 35 and 36. The side edge of this fin runs against the edge 8 of the main blade 1 and gives additional bearing for the stock when it is being slid along the main blade, as will be readily understood.

Upon the outer faces of the ears 31 and 32 marks 41 are formed, which read from zero to ninety degrees, and these marks cooperate with the graduations of the recess 30, so that the bar 37 constitutes a protractor. In this connection it should be understood that the bar may be rotated up into any position, such as that shown in Fig. 1. The ears 31, 32, and 33 are provided with alining openings, through which passes a thumb-screw 42, said thumb-screw having a threaded tip 43, which seats in one of the ears 33, and it has, further, a reduced shank or neck 44, which passes through the slot 4, as will be readily understood. From this arrangement it should be understood that while the protractor may be thrown into any inclined position desired the stock 14 carrying the protractor may be moved longitudinally of the blade 1.

On the upper faces of the plates 35 and 36 and near the ears 33 openings 45 are provided, which are adapted to receive dowel-pins 46, carried on the under face of a center head 47. From this arrangement the center head may be removably attached, as indicated in Fig. 1. This center head consists of an angle-plate presenting an edge 48, which is disposed substantially at right angles to the edge 49 of the protractor, and it is provided, further, with a vertical slot 50, through which passes a hook-bolt 51, as shown most clearly in Fig. 6. This hook-bolt is formed at one end with a lateral extension or hook, which engages the rear side of the main blade, and has a threaded shank at its other end, which receives a thumb-head 52, enabling the parts to be

clamped together securely, as will be readily understood. By providing the openings 45 on each side of the main blade 1, as shown, evidently the center head 47 may be attached against either face of the blade.

The main blade 1, together with the stock 14 and the protractor 34, makes a perfect try square, with an adjustable blade forming the long blade at one side of the stock and a short blade at the opposite side, as desired. With the main blade 1, the stock 14, and the protractor 34 evidently any incline, bevel, angle, or perpendicular from zero to ninety degrees can be taken at one time. If the stock 14, together with the protractor 34, be removed from the main blade 1, a steel square composed of the blades 1 and 5 results, which may be used for the ordinary purposes of a steel square such as carpenters or artisans usually employ. The main blade 1 with the stock 14, the protractor 34, and the pitch-blade 5 form a perfect pitch-board for stair-work which may be adjusted to any dimension of tread or riser. This is a very desirable feature. The point of attachment of the center head 47 upon the protractor 34 is so arranged that when the protractor is disposed with the angle between the edges 48 and 49 upon the edge 8 the edge 8 will bisect the angle therebetween. From this arrangement the device affords means for finding the center of a round timber, such as that indicated in dotted outline 53 in Fig. 1. Evidently the spirit-level 26 gives the tool the utility of a plumb-square. The tool is adapted for inside and outside position on all work.

In operating the tool in stair construction evidently by sliding the hook-bolt 51 up or down in the slots 4 and 50 the inclination of the protractor and center head may be adjusted as desired, so as to adapt the parts to any relation between the riser and the tread of the stairway.

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

1. In a tool of the class described in combination, a main blade having a longitudinal slot therein, a stock adapted to slide on said blade, a protractor, and a bolt pivotally attaching said protractor to said stock and passing through said slot, said bolt affording means for clamping said protractor and said stock to said blade.

2. In a tool of the class described in combination, a main blade having a longitudinal slot therein, a stock slidably mounted on said main blade, a protractor pivotally mounted on said stock, a center head attached to said protractor and having a longitudinal slot therein, and a clamping-bolt passing through said slots and affording means for adjusting said protractor and said center head in unison.

3. In a tool of the class described, a main

blade, a stock slidably mounted thereupon, a
protractor-bar pivotally mounted on said
stock and adapted to lie upon the upper edge
thereof, said stock having a tubular chamber
5 formed therein, a spirit-vial received in said
tubular chamber, a plug closing the outlet
from said chamber at the extremity of said
stock remote from said blade, said plug hav-
ing a groove in the outer face thereof, and a
10 feather carried by said protractor-bar and
adapted to engage said groove.

4. In a tool of the class described in com-
bination, a main blade, a pitch-blade remov-
ably attached to said main blade at one ex-
15 tremity thereof, said main blade having a
longitudinal slot therein, a stock slidably
mounted on said main blade, a clamp carried
by said stock and engaging said slot for rig-
idly securing said stock, a protractor, a bolt

securing said protractor to said stock and 20
passing through said slot, said protractor con-
sisting of plates lying respectively on oppo-
site sides of said main blade and having open-
ings therein adjacent to the inner extremity
of said protractor, a center head having 25
dowel-pins adapted to engage said openings
and presenting an edge disposed substan-
tially at right angles to the edge of said pro-
tractor, said center head having a slot there-
in, and a clamping-bolt passing through said 30
last slot and said first slot.

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

JOSEPH MONTGOMERY REALING.

Witnesses:

EDGAR S. HALL,
GRAHAM THOMPSON.