

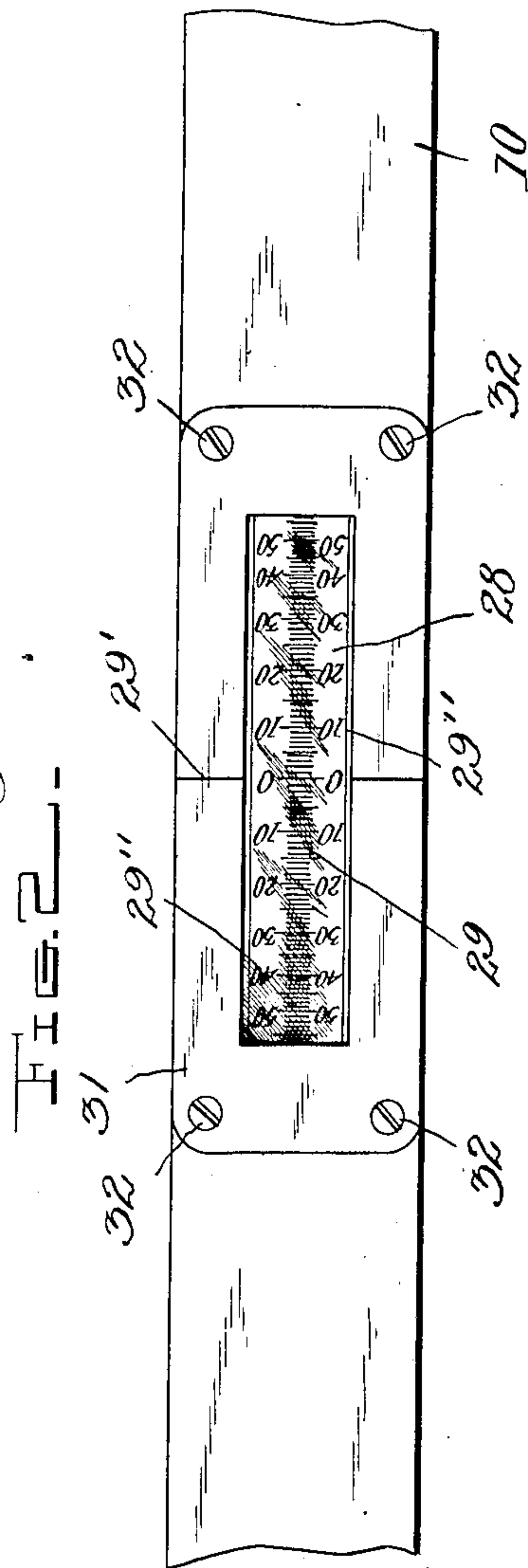
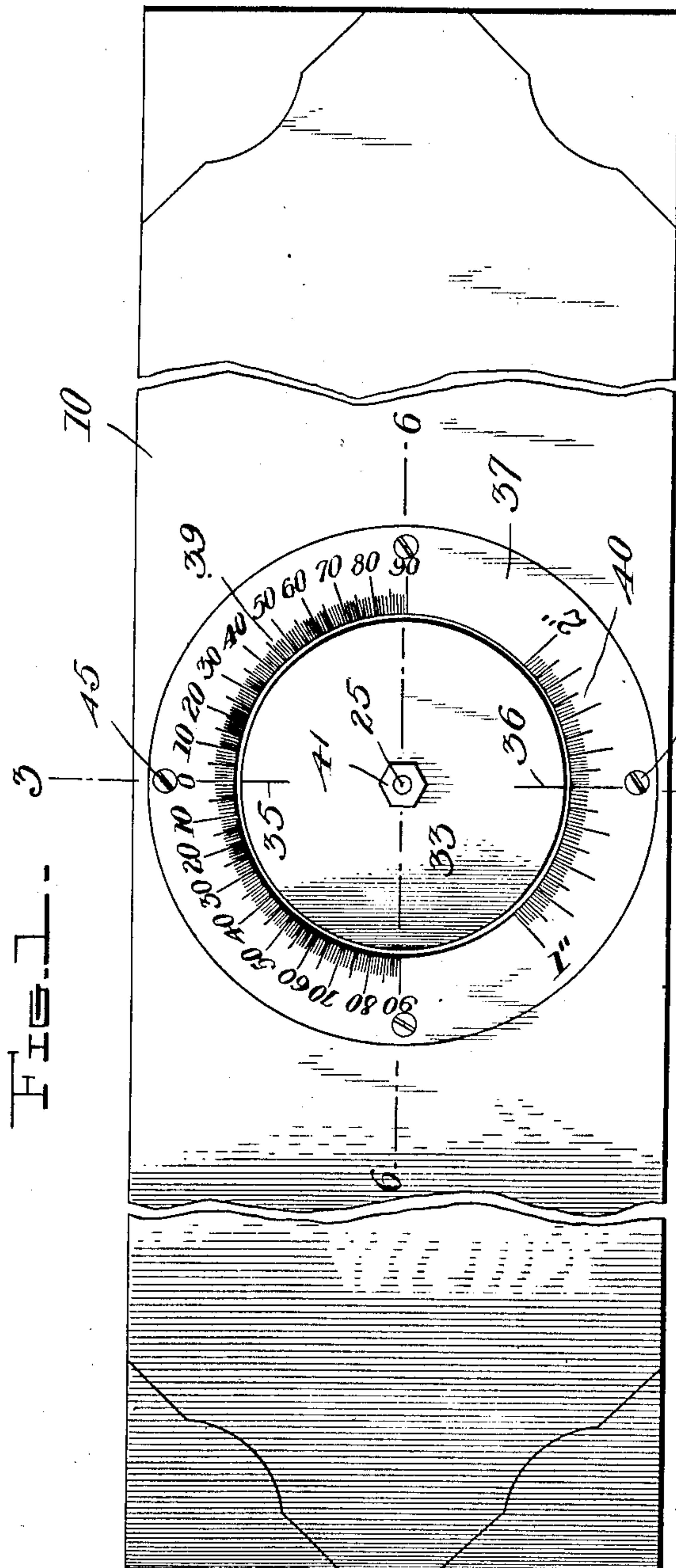
No. 871,924.

PATENTED NOV. 26, 1907.

S. H. GARDNER.
LEVEL.

APPLICATION FILED MAY 17, 1907.

3 SHEETS—SHEET 1.



WITNESSES:

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3 SHEETS—SHEET 2.

FIG. 4.

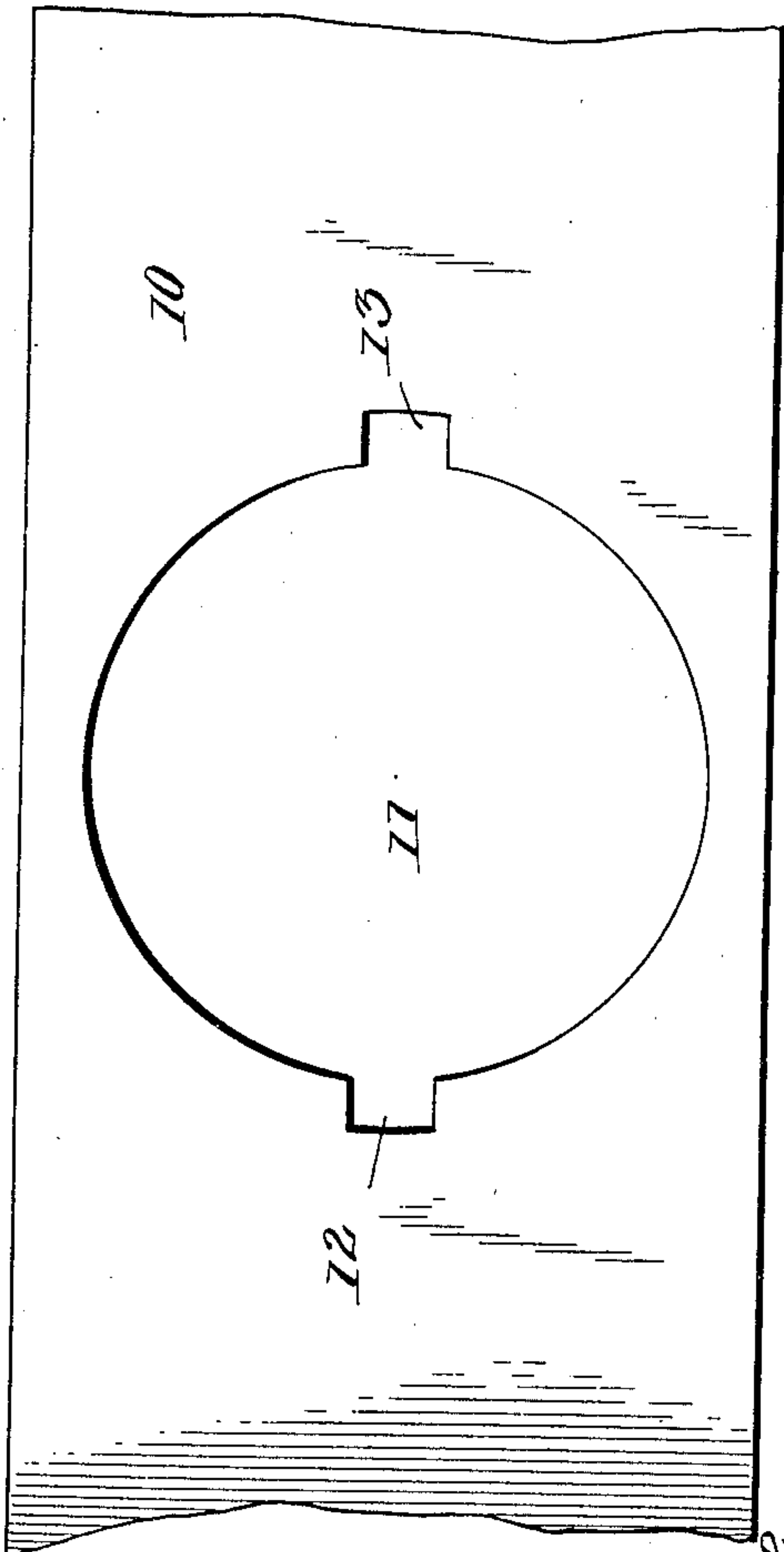


FIG. 5.

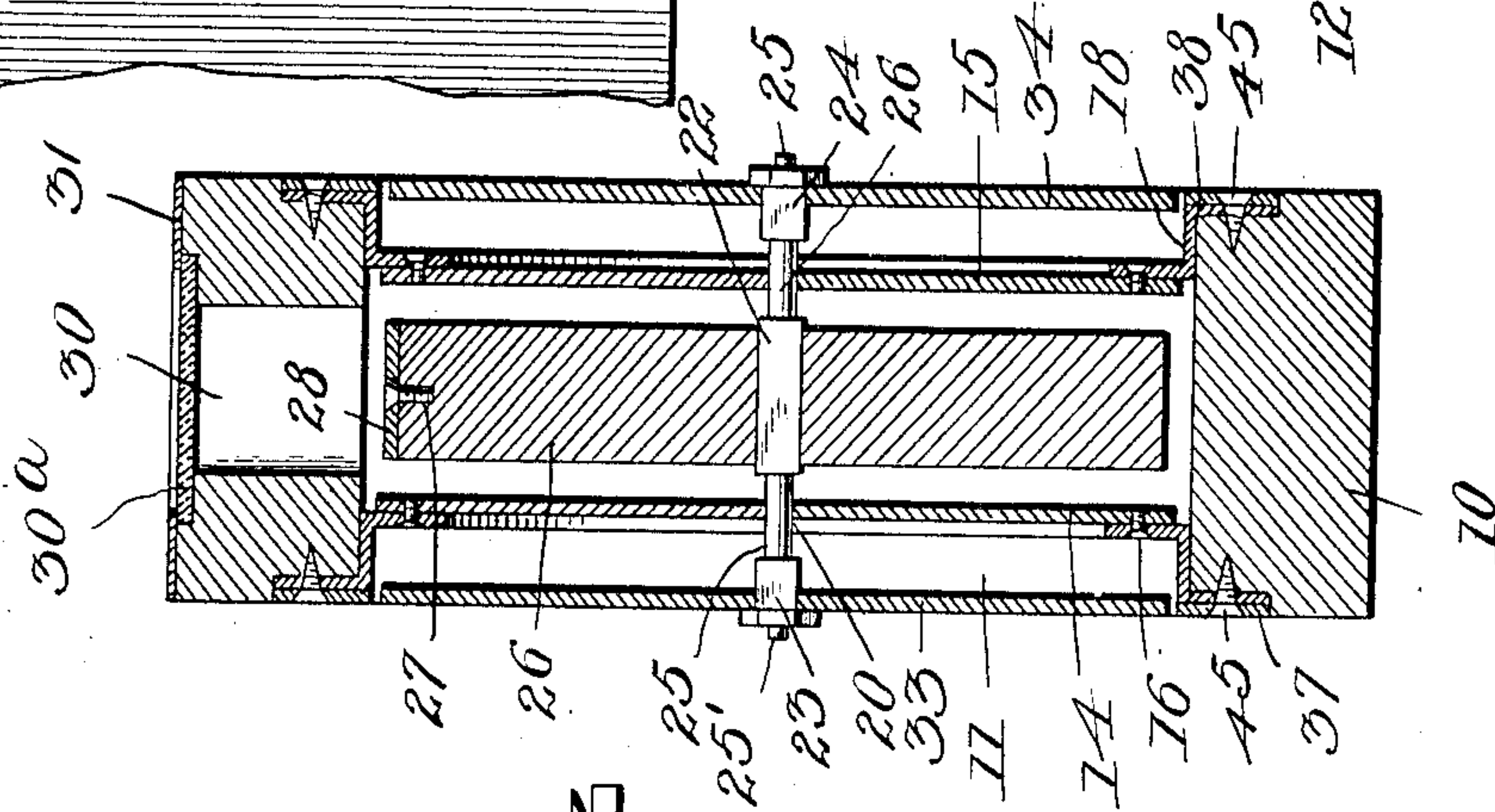
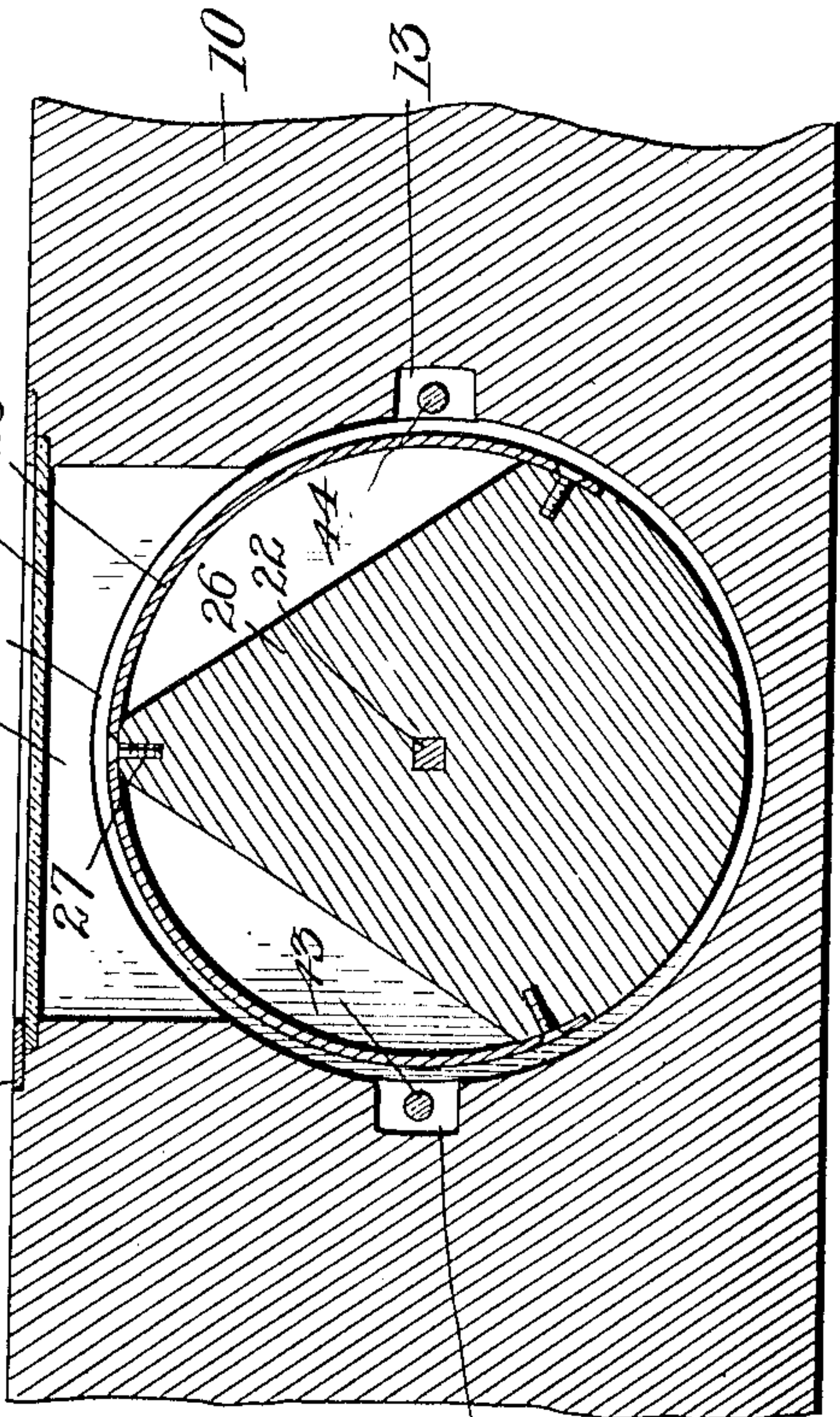


FIG. 6.

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3 SHEETS—SHEET 3.

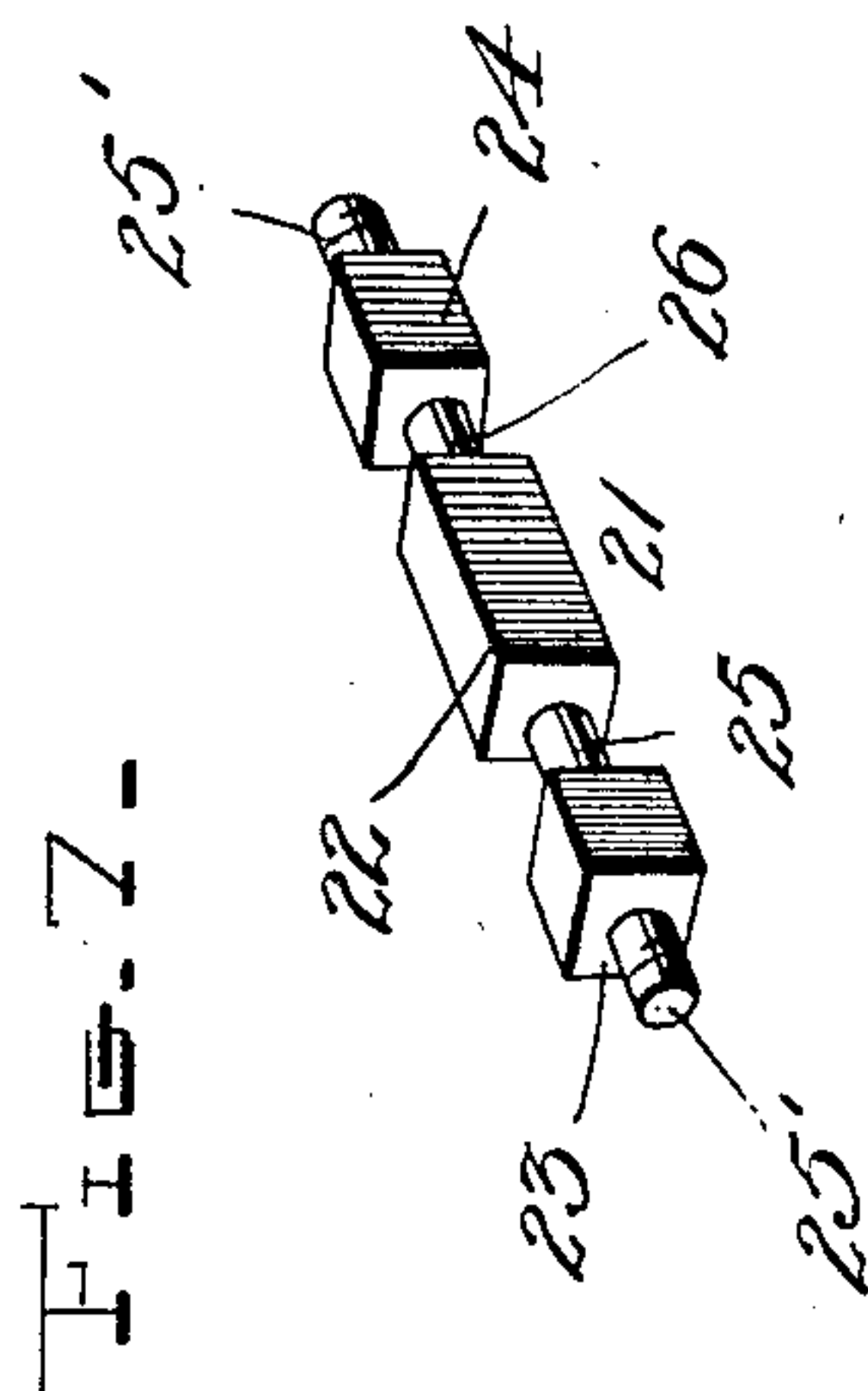
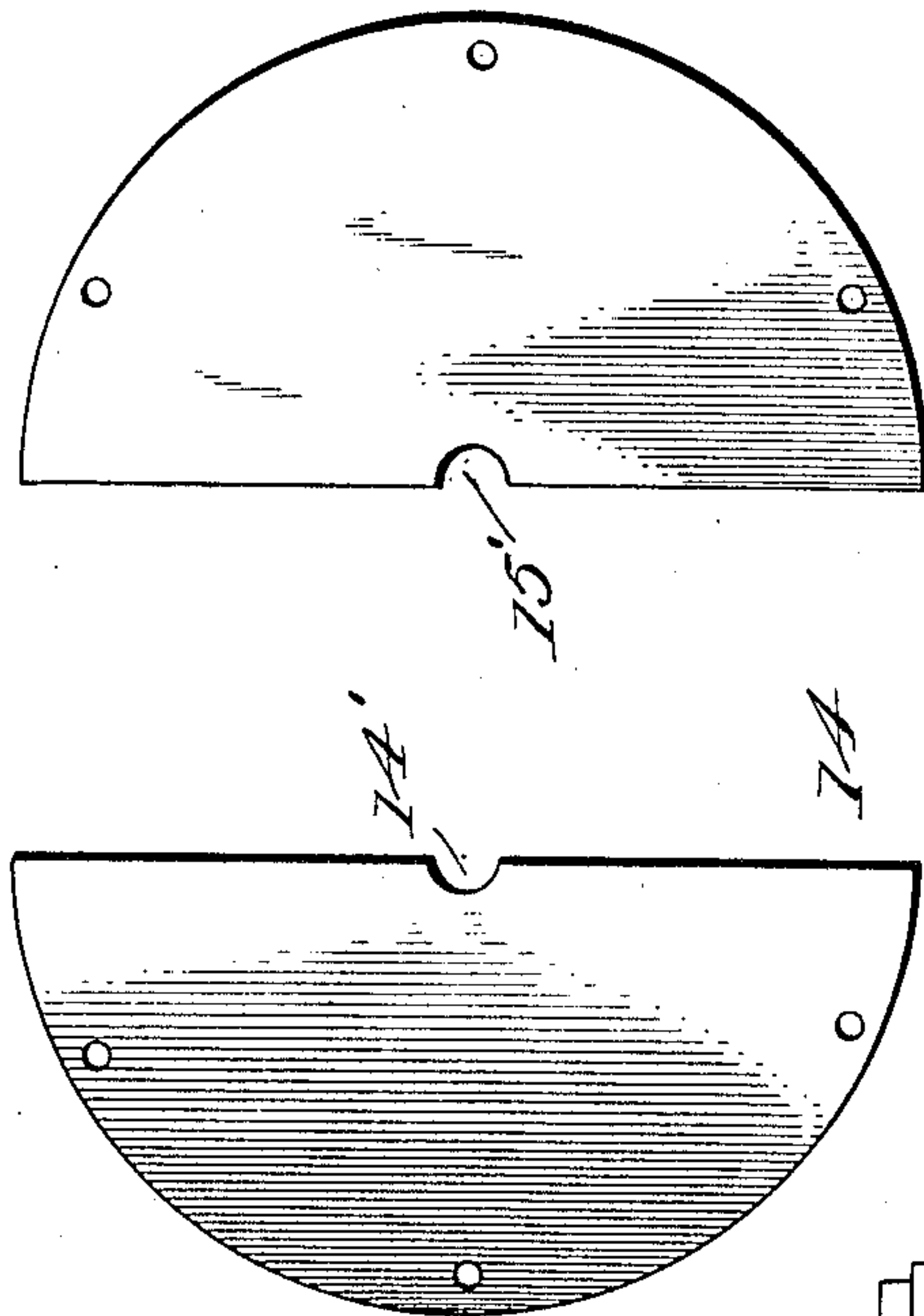
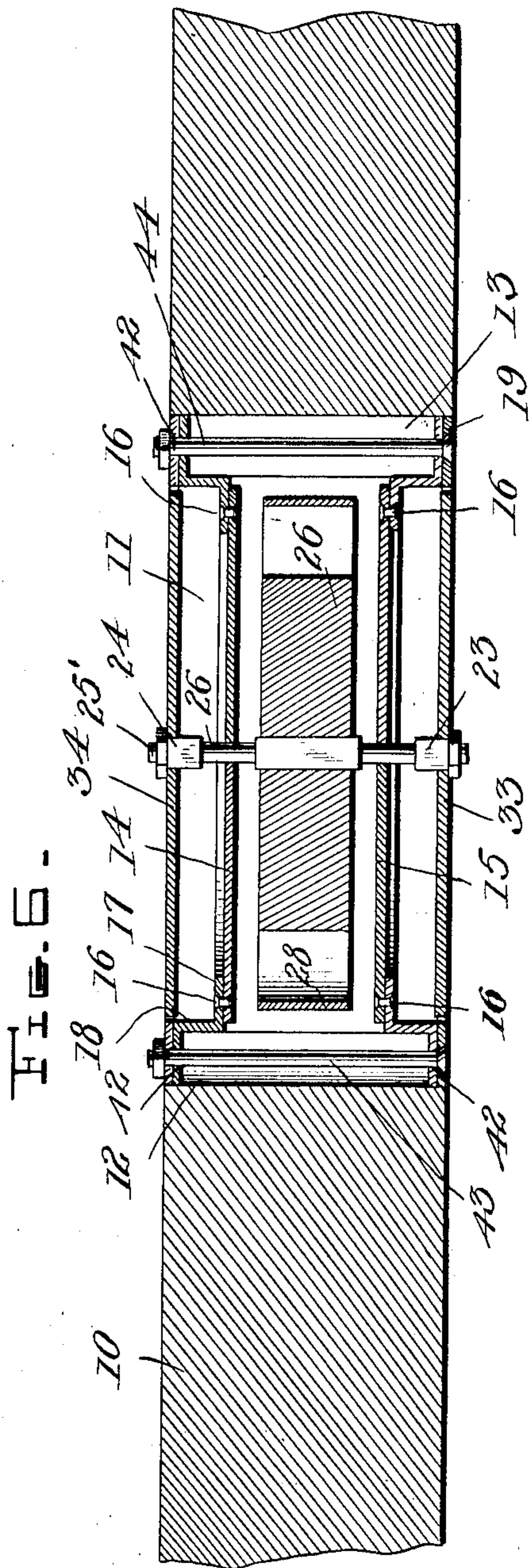


Fig. 8.

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UNITED STATES PATENT OFFICE.

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LEVEL.

No. 871,924.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed May 17, 1907. Serial No. 374,223.

To all whom it may concern:

Be it known that SIDNEY H. GARDNER, citizen of the United States, residing at Bellingham, in the county of Whatcom and State of Washington, has invented certain new and useful Improvements in Levels, of which the following is a specification.

My invention relates to a new and useful improvement in plumbs or levels, and has for its object to provide a device of this description which carries a protractor scale and a scale to indicate the rise per foot, and weighted pointers adapted to travel over the face of said scales to simultaneously indicate the angle and rise of the surface against which the level or plumb is held.

With these ends in view, this invention consists of the details of construction and the combination of elements hereinafter set forth, and claimed.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described, referring to the drawings forming a portion of this specification, in which,

Figure 1. is a side elevation of the level or plumb; Fig. 2 is a top plan view; Fig. 3 is a cross section on the line 3—3 of Fig. 1; Fig. 4 is a side elevation of a portion of the level, the operating parts being omitted; Fig. 5 is a section on the line 5—5 of Fig. 3; Fig. 6 is a section on the line 6—6 of Fig. 1; Fig. 7 is a perspective view of the arbor; Fig. 8 is an elevation of the arbor supporting plates.

Referring now to the drawings, the stock of the level is indicated at 10, and has formed therein a circular opening 11. Oppositely disposed recesses 12 and 13 respectively are formed in the stock of the level and adjacent the opening 11, for a purpose to be hereinafter described. In the opening 11, and on each side of the stock of the level are arranged circular plates 14 and 15 respectively and are secured within the opening 11 by means of rivets or screws, as shown at 16, to a band 17, bent at right angles as at 18, and having flanged portions 19. The plates 14 and 15 are formed of two parts, and have semi-circular openings 14' and 15', which, when placed together, form circular openings 20, adapted to support an arbor 21. This arbor has a center squared portion 22, squared end portions 23 and 24, and round portions 25 and 26, which are rotatable in the openings 20. On the end portions 23

and 24 are formed threaded studs 25'. Fixed on the portion 22 of the arbor 21, is a weight 26' of substantially triangular shape and fixed thereto and around the edge thereof by screws 27, is a band 28, having on its top face degree marks 29, and the band 28 coacts with an indicating mark 29' on the top face of the level. The band may be seen from the top, through an opening 30 formed therein, said opening being covered by a glass 30^a. A plate 31 is provided for holding the glass to the top of the level, and is held thereto by screws 32.

On the portions 23 and 24 of the arbor 21, are fixed disks 33 and 34 respectively, which have marked thereon indicating points 35 and 36. Bands 37 and 38 respectively are fixed to the sides of the level and around the opening 11, and are provided at the top with a protractor scale 39, and at the bottom with a scale 40 for indicating the rise per foot.

In assembling the parts, the weight 26 is first fixed to the portion 22 of the arbor 21, the plates 14' and 15' are then placed around the portions 25 and 26, and secured to the band 17. The disks 33 and 34 are now placed on the portions 23 and 24, and held on the arbor by nuts 41. Alining openings 42 are formed in the bands 37 and 38, through which, and through the recesses 12 and 13 are passed bolts 43 and 44, which serve to securely hold the parts together at both sides of the opening 11. The recesses 12 and 13 adjacent the opening 11, allow proper adjustment of the parts. That is to say, the zero point of the protractor scale is brought into alinement with the indicating point 29' on the top face of the level, and with the point 35 of the disk 33. After this adjustment, the parts are held permanently to the body 10 of the level, by screws 45.

It will be apparent from the drawings that my level may be used as ordinarily, and that by providing the protractor scale and the scale for indicating the rise per foot, and a pointer to coact therewith, novel means are had for simultaneously finding both. It will also be seen that my improved level may be conveniently read from either side or from the top. The device is constructed in such a manner that, after once properly adjusted, it will not get out of order.

An illustration of the protractor scale, and the scale for indicating the rise per foot is as follows: Upon placing the level against an

angle to be found, the disks 33 and 34 respectively will revolve with the weight 26, and the indicating points thereon will travel over the scales 39 and 40 on the bands 37 and 38 respectively, the indicating point 35 telling the angle and the point 36 showing what fraction of an inch to the foot the rise may be.

What is claimed is:

10 1. In a level or plumb, a stock having a circular opening formed therethrough, an arbor arranged in the center of said opening, a weight secured to the arbor and within the opening, sectional plates secured to the
15 stock and provided with openings through which the arbor projects, the stock having scales, and disks secured to the arbor and having pointers arranged to co-act with the scales.

20 2. A level or plumb, a stock having a circular opening formed therethrough, the stock having an opening in its top and in communication with the opening through
25 the stock, an arbor arranged in the center of said first mentioned opening, a weight secured to the arbor, a band secured to the weight and on the top edge thereof and beneath the opening in the top of the stock,
30 the band having a scale, the top of the stock having a pointer and arranged to co-act with the scale on the band, the stock having scales, the scales being arranged above and below the circular opening through the
35 stock, pointers secured to the arbor and adapted to co-act with said scales, and sectional arbor supporting plates adjustably secured to the stock and arranged within the opening in the stock.

40 3. In a level or plumb, a stock having a circular opening formed therethrough, the stock having an opening in its top and in communication with the opening through

the stock, an arbor arranged in the center of said first mentioned opening, a weight secured to the arbor, a band secured to the
45 weight and on the top edge thereof and beneath the opening in the top of the stock, the band having a scale, the top of the stock having a pointer and arranged to co-act with the scale on the band, the stock having
50 scales, the scales being arranged above and below the circular opening through the stock, pointers secured to the arbor and adapted to co-act with said scales, bands adjustably mounted on both sides of the opening
55 formed through the stock, sectional disks secured to the bands and arranged to support the arbor, the stock having recesses adjacent to the opening through the stock and bolts arranged in the recesses and connected
60 to the bands.

4. In a level or plumb, a stock having a circular opening formed therethrough, and having an opening in its top and in communication with the first named opening,
65 an arbor arranged in the center of said first mentioned opening, a weight secured to the arbor, a band secured to the weight on the top edge thereof and beneath the opening in the top of the body, the band having a scale,
70 sectional plates secured to the body and provided with openings through which the arbor projects, the stock having scales above and below the opening formed therethrough, and pointers secured to the arbor and outside
75 of the above mentioned plates and adapted to coact with the scales above and below said opening.

In testimony whereof he affixes his signature, in presence of two witnesses.

SIDNEY H. GARDNER.

Witnesses:

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LONH MOODY.