

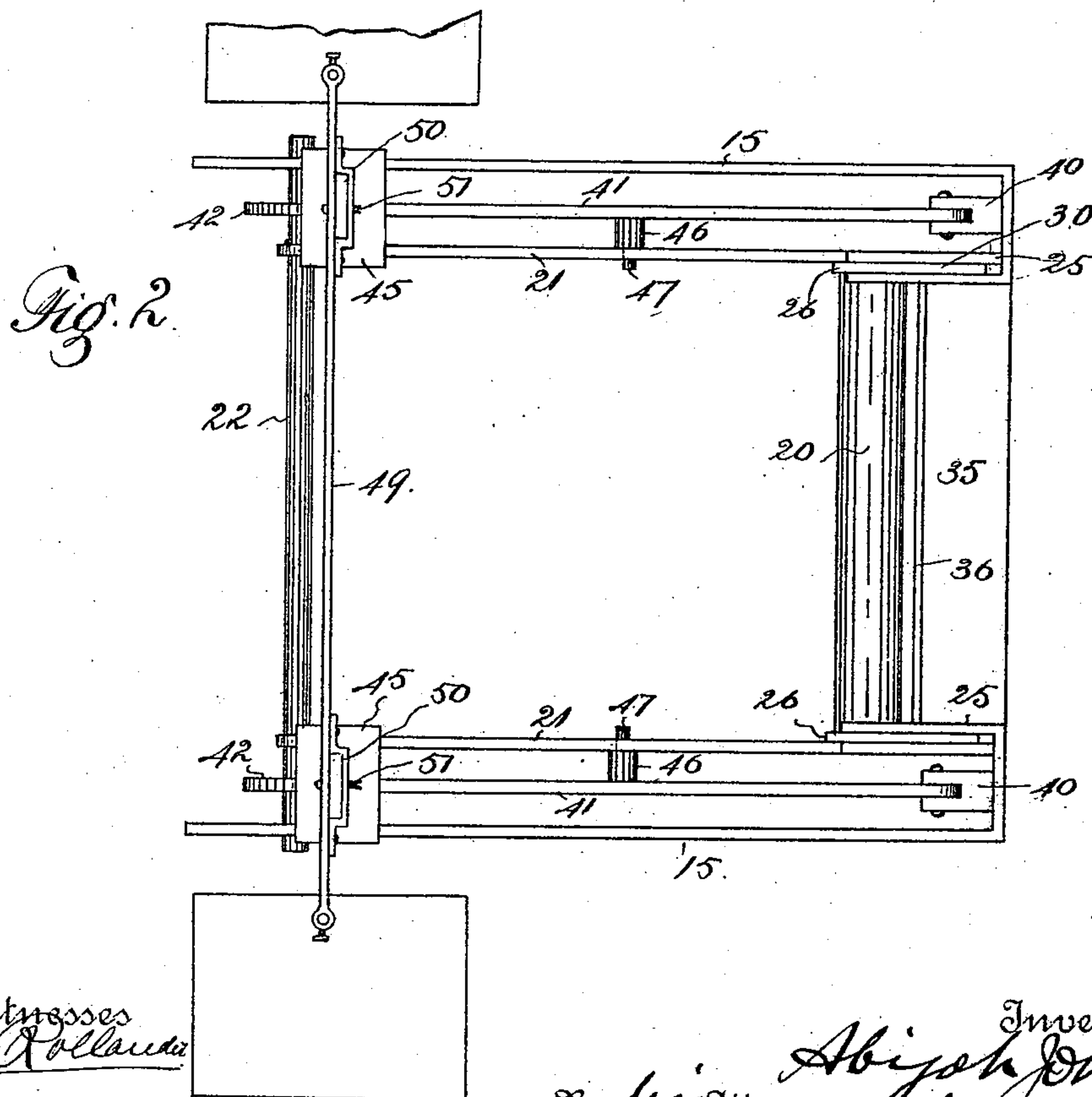
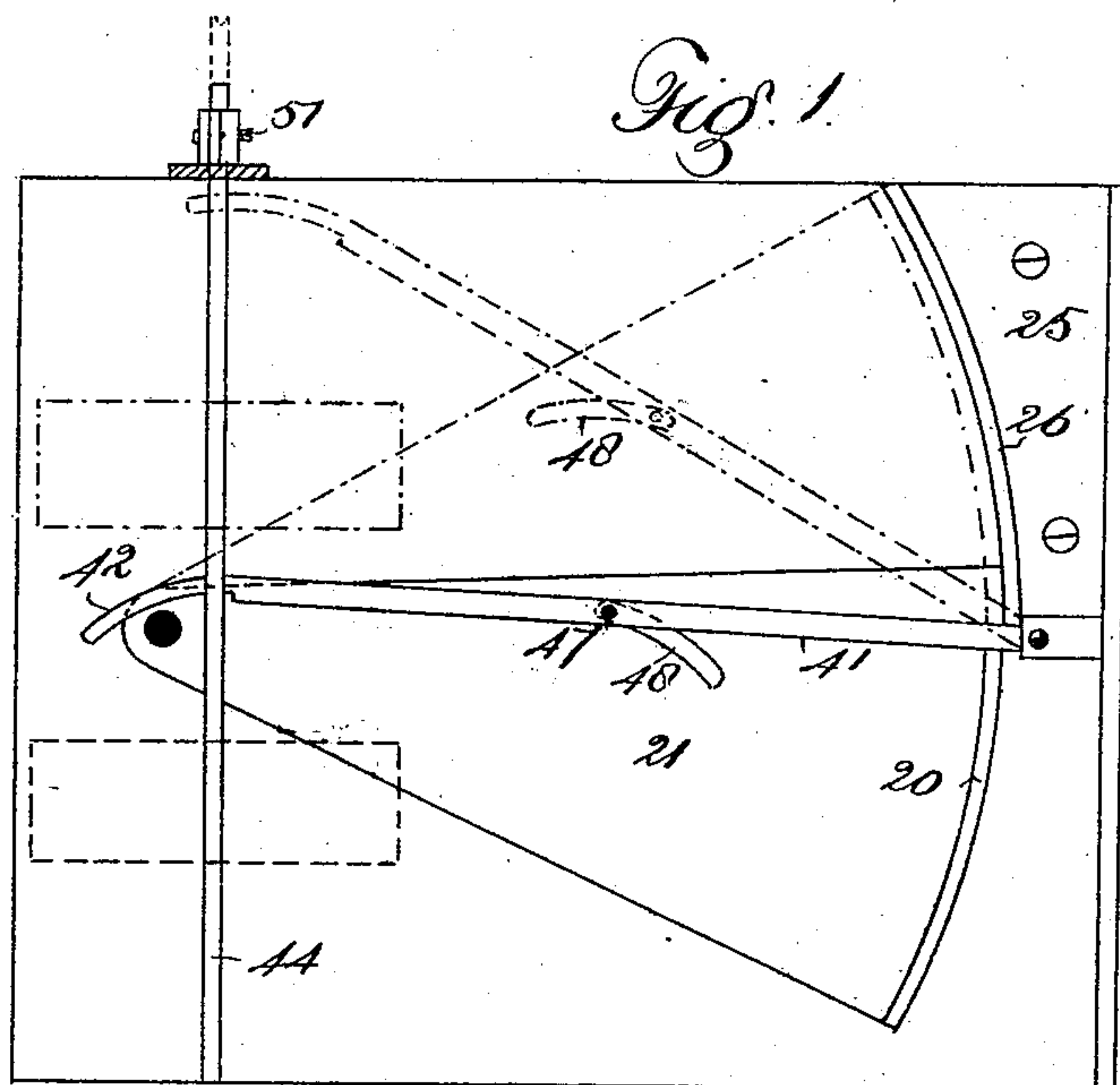
(No Model.)

2 Sheets—Sheet 1.

A. JOHNSON.
AUTOMATIC MEASURING WEIR.

No. 472,127.

Patented Apr. 5, 1892.



Witnesses
G. J. Rollanda
Wm. M. Connell

Inventor:
Abijah Johnson
By his Attorney
A. W. Beebe

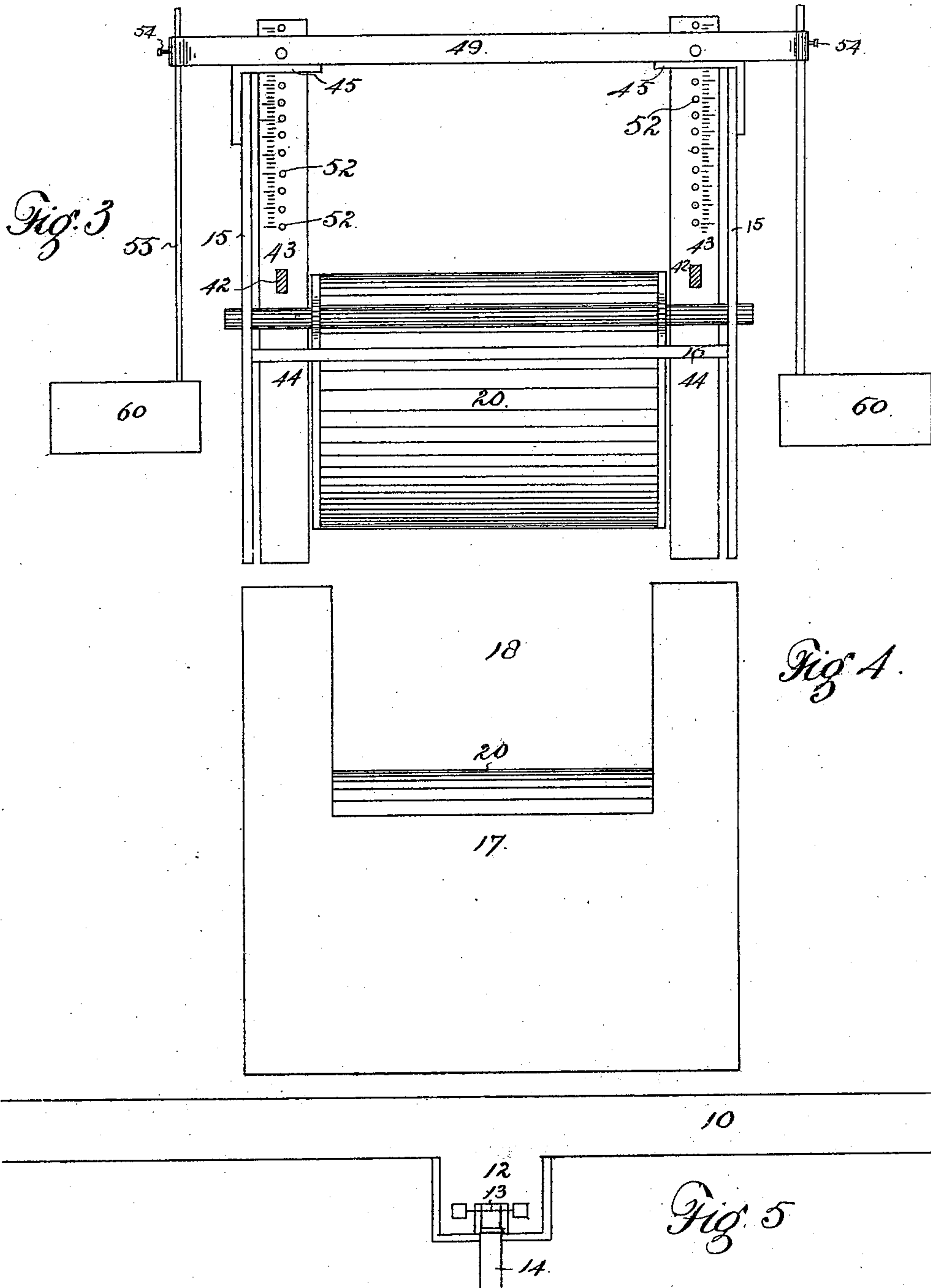
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By *Attorney* *A. J. O'Brien*

UNITED STATES PATENT OFFICE.

ABIJAH JOHNSON, OF MONTROSE, COLORADO.

AUTOMATIC MEASURING-WEIR.

SPECIFICATION forming part of Letters Patent No. 472,127, dated April 5, 1892.

Application filed August 1, 1891. Serial No. 401,424. (No model.)

To all whom it may concern:

Be it known that I, ABIJAH JOHNSON, a citizen of the United States of America, residing at Montrose, in the county of Montrose and State of Colorado, have invented certain new and useful Improvements in Automatic Measuring-Weirs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to means for automatically measuring the water flowing from a canal, reservoir, or irrigating-ditch through a given orifice or opening.

The object of the invention is to provide a mechanism which shall automatically accommodate itself to the fluctuations of the water and which shall permit only the desired amount or requisite number of inches to flow from the supply source, regardless of the level of the water at said source.

The device is more specially designed for use in sections where the rainfall or atmospheric precipitations are inadequate to supply vegetation with moisture required for its proper growth, and where, as a consequence, resort must be had to irrigation. The water is supplied by a main canal or ditch, from which lead laterals or branches, which carry the water directly to the land along the line of the canal. My improved device is for use at the source of these laterals or branches, and when properly adjusted is designed to permit the required number of inches of water to pass into the lateral and will adjust itself to correspond with the rise and fall of the water in the canal and maintain a uniform flow therefrom.

My improved measuring-weir will be fully understood by reference to the accompanying drawings in connection with the description hereinafter given.

In the drawings, Figure 1 is a side elevation of the mechanism, partially in section, one side of the casing being removed to show the interior mechanism. Fig. 2 is a top or plan view. Fig. 3 is an end view from the canal side when the mechanism is in place,

and Fig. 4 is an end view from the opposite point of view. Fig. 5 is a top view on a small scale showing the mechanism in place.

In the views, similar reference characters indicating corresponding parts of the mechanism, let the numeral 10 designate the ditch, canal, or supply source; 12, a sort of penstock formed to one side thereof and communicating therewith; 13, my improved weir located in the penstock and in a position to control the flow of water therefrom to the lateral.

15 15 are sides of a casing inclosing and supporting the operating parts of the mechanism. These parts 15 are connected on the side next the ditch by a bar 16 and on the opposite by the plate 17, in which is formed an opening 18 for the escape of the water over the gate of the weir. The casing on the side next to the ditch is sufficiently open to permit the free access of the water thereto.

The gate consists of a curved plate 20, connected by segmental arms 21, the rear extremities of which are pivoted on a bar 22, having its extremities secured to the sides of the casing. Bar 22 forms the axis of the gate; hence plate 20 moves in the arc of a circle whose center is this axis. The plate is concavo-convex in shape, the outer surface being convex. This gate controls the passage of water through opening 18 in the casing. The interior of plate 16 is provided with a double flange 25 on each side of this opening. Between the two parts of each flange 25 is secured a resilient packing 30, which protrudes therefrom toward plate 20, as shown at 26, and is adapted to engage said plate. The object of this packing is to prevent the escape of any water at the sides of the plate. The bottom of the opening is provided with a similar flange 35, provided with a protruding packing 36, designed to perform the same function at the bottom of the opening 18 that packing 26 does at the sides. Hence all the water that passes through opening 18 must flow over the top of plate 20. The interior edges of flange 25 are concave to correspond with the convex adjacent surface of plate 20. To the interior of plate 17, on each side of opening 18 and outside of flange 26, are located sockets 40. In these sockets are pivoted one extremity of arms 41, having their opposite or free extremities curved, as shown at 42, and engag-

ing in suitable apertures 43, formed in the upright movable supports 44, which supports pass through suitable slots or openings formed in guide-plates 45, secured to the top of sides 15 15. Arms 41 are provided with interiorly-projecting shouldered pins 46, provided with wrists 47, engaging and passing through curved slots 48, formed in the segmental arms 21. Slots 48 are of suitable location, length, 10 and curve to permit the adjustment of the gate by the raising and lowering of arms 41. Supports 44 are connected at the top or above the guide-plates 45 by the transverse bar 49, provided with metal loops 50, through which 15 the supports pass, the loops being sufficiently large to allow bar 49 to slide easily upon the upright supports, which are secured thereto by detachable keys 51, bar 49 being adjustable upon the uprights, which are provided 20 with a series of apertures 52 for the reception of the keys 51, whereby the cross-bar may be adjusted on the uprights to suit the purpose.

The uprights 44 are graduated, as shown in Fig. 3, for use in adjusting the gate, so as to 25 allow the desired number of inches of water to pass thereover.

The bar 49 projects beyond the slides 15 of the casing and is provided with eyes or suitable apertures for the reception of rods 55, to 30 the lower extremities of which are secured the floats 60, which are hollow and made of proper specific gravity for flotation, the size of the floats being such relatively to the weight of the gate and its attachments that the buoy- 35 ancy of the floats will support the gravity of said parts and cause the gate to rise and fall as the water fluctuates in the canal.

The size of rods 55 is so regulated with reference to the openings in the extremities of 40 bars 49 that the rods slide freely therein, so that they may be set to suit the purpose by the use of set-screws 54.

In the use of my improved measuring-weir the floats are so set by the adjustment of their 45 supporting-rods that the requisite amount or desired number of inches shall pass over plate 20, leaving sufficient margin for movement in either direction, according to the fluctuation or rise and fall of the water in the 50 canal.

From the foregoing description the operation of the device will be fully understood.

As the water fluctuates in the canal the floats rise and fall therewith, moving the 55 transverse bar 49 up and down accordingly and actuating arms 41, whereby motion is imparted to the gate by virtue of its connection with said arms.

Having thus described my invention, what 60 I claim is—

1. In an automatic measuring-weir, the combination, with a suitable casing, of an axially-movable gate mounted upon the casing, movable arms pivoted on the casing and 65 provided with pins or projections engaging slots formed in the sides of the gate, floats

secured to standards connected with the movable arms, whereby said arms are actuated, and the gate controlled by the fluctuation of the water in the supply source, substantially 70 as described.

2. In a measuring-weir, the combination, with a casing located in proximity to the water-supply and communicating therewith, of an axially-movable gate located within the 75 casing, movable arms pivoted on the casing and provided with projections engaging slots formed in the sides of the gate, and floats connected with and actuating the movable arms, whereby the gate is controlled by the 80 fluctuations of the water in the supply source, substantially as described.

3. In a measuring-weir, the combination, with a casing located in proximity to the supply source and communicating therewith, of 85 a gate consisting of a curved plate provided with arms pivoted within the casing, flanges surrounding the opening in the casing and provided with a resilient packing engaging the curved plate, and floats connected with 90 the gate and controlling the same according to the fluctuation of the water in the supply source, substantially as described.

4. In a measuring-weir, the combination, with a casing communicating with the supply 95 source and provided with an outlet surrounded by flanges having a protruding resilient packing and shaped to correspond with the engaging part of the gate, of a gate consisting of a curved plate provided with arms 21, 100 pivoted within the casing, another set of arms 41, pivoted to the outlet side of the casing, provided with shouldered pins engaging curved slots formed in arms 21, arms 41 being provided with curved free extremities, upright 105 movable arms provided with openings for the reception of the curved extremities of arms 41, which extend therethrough, guides, and a suitable connection for the upright arms and floats connected with said arms, whereby the 110 gate is controlled by the fluctuation of the water in the supply source, substantially as described.

5. In an automatic measuring-weir, the combination, with a suitable casing, of an 115 axially-movable gate mounted upon the casing, a movable arm pivoted on the casing, said arm and the side of the gate being connected by a projection formed on or attached to one and moving in a slot or groove formed 120 in the other, and floats connected with and actuating the movable arms, whereby the gate is controlled by the fluctuation of the water in the supply source, substantially as described. 125

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

ABIJAH JOHNSON.

Witnesses:

L. F. TWITCHELL,
ED. ANDERSON.