

No. 675,298.

Patented May 28, 1901.

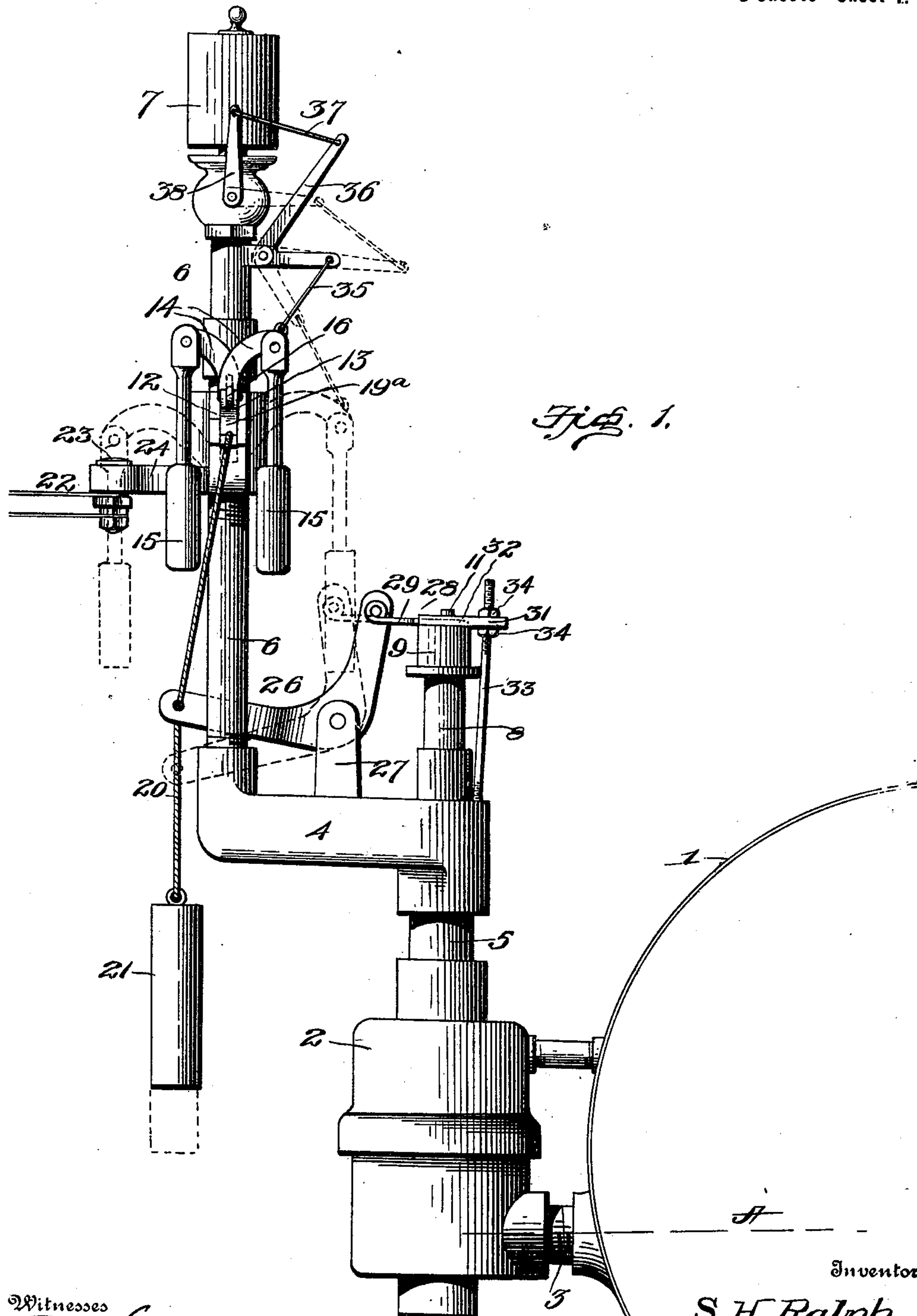
S. H. RALPH.

LOW WATER ALARM FOR STEAM BOILERS.

(Application filed Oct. 19, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

E. Hunt.
J. Harrison

By

A. B. Wilson & Co

Inventor

S. H. Ralph

Attorneys

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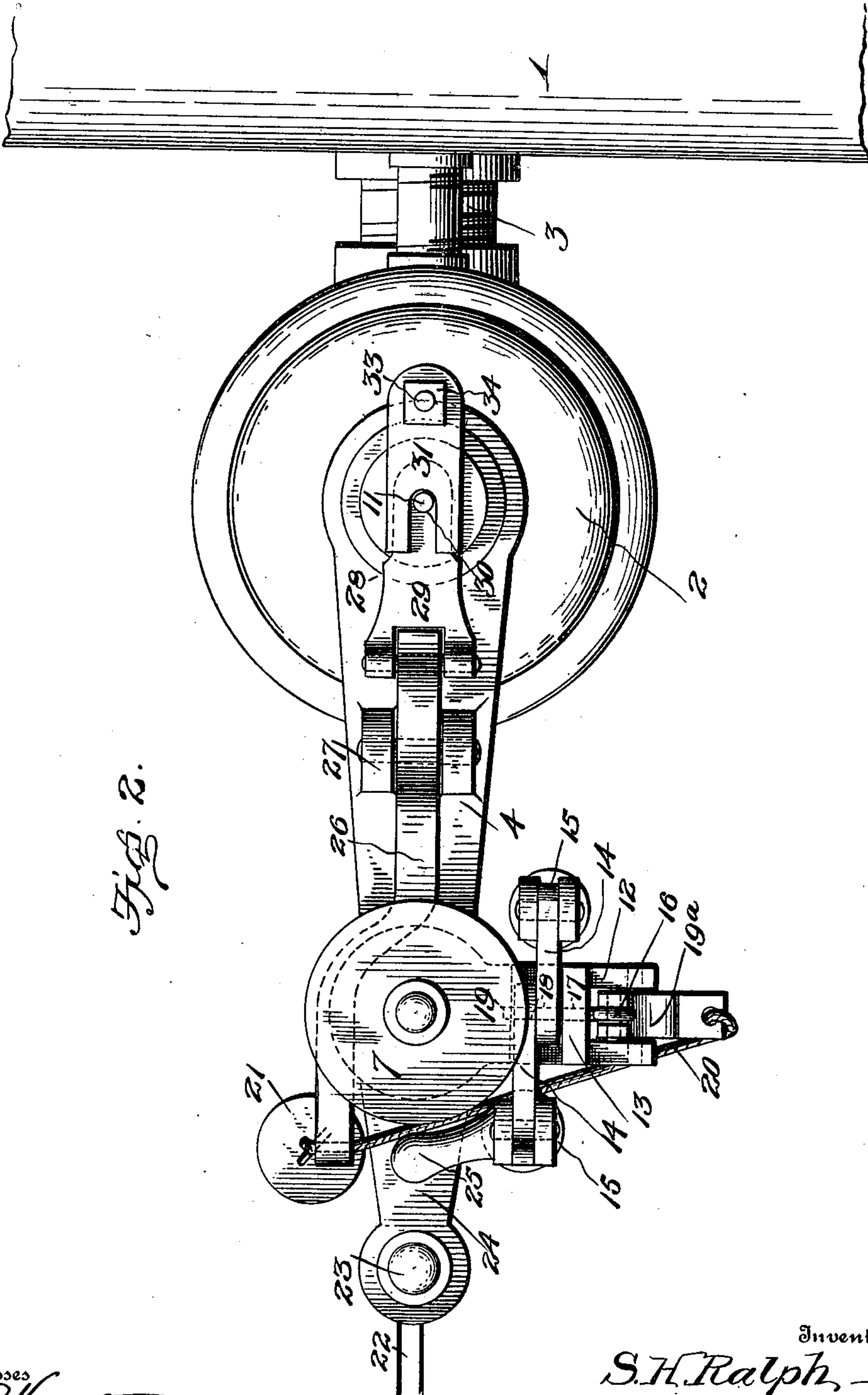
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Fig. 2.



Witnesses

E. Hunt,
J. P. Wilson

By

S. H. Ralph,
A. B. Wilson & Co.

Inventor

Attorneys

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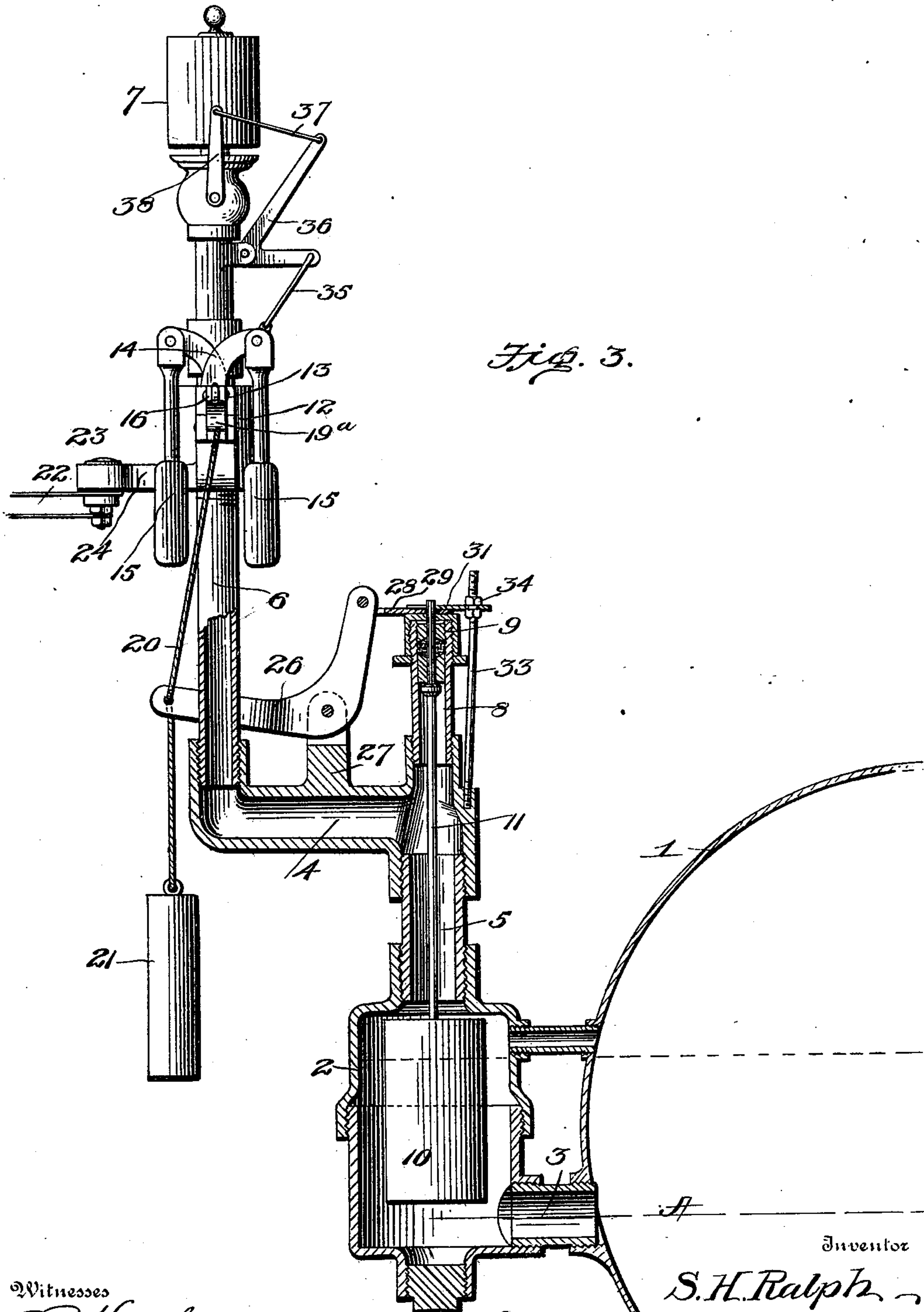
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Witnesses
E. Hunt
J. Wilson

By *A. B. Wilson & Co.*

Inventor

S. H. Ralph

Attorneys

UNITED STATES PATENT OFFICE.

STEPHEN H. RALPH, OF WOODVILLE, OHIO.

LOW-WATER ALARM FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 675,298, dated May 28, 1901.

Application filed October 19, 1900. Serial No. 33,586. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN H. RALPH, a citizen of the United States, residing at Woodville, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Low-Water Alarms for Steam-Boilers; 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.

The invention relates to low-water alarms for steam-boilers.

The object of the invention is to provide a device of the character described which shall be simple of construction, durable in use, and comparatively inexpensive of production, which when the water lowers to a certain position within the boiler one or more alarms will be sounded, one by the action of steam upon the whistle and one by the closing of the bell-circuit, which latter may be arranged at a point remote from the steam-boiler and its whistle, so that the superintendent or officer of the factory may be notified of the condition of the water within the boiler, although his office may be quite a distance therefrom and out of hearing distance from the whistle.

With this and other objects in view the invention consists in certain features of construction and combination of parts, which will be hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of my improved low-water alarm, showing in full lines the parts set in position for operation when the water within the boiler has lowered below the desired level and showing in dotted lines the position of the parts after they have been tripped. Fig. 2 is a top plan view, and Fig. 3 is a longitudinal sectional view.

Referring to the drawings, 1 denotes the shell of the boiler, and 2 the casing of the low-water alarm, which is connected to the shell of the boiler by a short pipe or nipple 3.

4 denotes a hollow angular arm which is connected to the upper end of the shell by a short pipe 5, and has projecting upwardly from its free end a whistle-pipe 6, supporting a whistle 7 of any well-known or approved construction.

8 denotes a short pipe connected to the hol-

low angular arm and provided at its upper end with a stuffing-box 9.

10 denotes a float supported in the casing and provided with a stem 11, projecting upwardly through the stuffing-box.

12 denotes a bracket adjustably secured to the whistle-pipe and provided with a lug 13, between which and the bracket is pivoted two levers 14, supporting at their free ends pendent weights 15. The pivoted levers are held in upright position by a pin 16, extending through an aperture 17 in the lug and through apertures 18 in the levers and an aperture 19 in the bracket. The outer end of this pin is connected to one of the levers 14, to which is connected by a chain 20 a weight 21.

22 denotes a bell-circuit, and 23 denotes a circuit-connector supported by a lug 24 within the path of movement of a finger 25, carried by one of the pivoted levers 14.

26 denotes a bell-crank lever pivoted to a lug 27, projecting upwardly from the hollow angular arm. One arm of this bell-crank lever is connected to the chain or cord 20 and the other end to a catch device 28, which consists of a plate 29, pivotally secured to said arm and having an aperture 30, through which projects the upper end of the float-stem.

This catch device is held connected to the pin against accidental disengagement by means of a plate 31, having side flanges 32, which embrace the edges of the catch device, and is held in place upon a rod 33 by set-nuts 34. 35 denotes a rod connected to one end of a bell-crank lever 36, secured to the whistle-pipe. The other end of the bell-crank lever is connected by a link 37 to the whistle-lever 38.

The mode of operation is as follows: Assuming the water to be at a certain level in the boiler, or rather above a certain point, which I have indicated in Fig. 1 at A, should in the generation of the steam the water lower below this point the float will also lower, and the instant it withdraws its stem from engagement with the catch device the bell-crank lever is liberated and under the stress of the weight will swing downward, drawing upon the cord or chain. This action withdraws the pin from the levers 14, allowing them to drop, one coming in contact with the circuit-connector and completing the bell-circuit and sounding an alarm and the other

operating the whistle-lever to sound an alarm through the same.

From the foregoing description, taken in connection with the accompanying drawings, 5 the construction, operation, and advantages of my invention will be readily understood without requiring an extended explanation.

The device is exceedingly useful for the purpose for which it is designed and may be 10 placed upon the market at a comparatively small cost.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the prin- 15 ciple or sacrificing any of the advantages of this invention.

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

20 1. In a low-water alarm, the combination with a casing provided with a float carrying a stem, of a pivoted bell-crank lever, a plate pivoted to said bell-crank lever and having an aperture through which the stem projects, 25 an alarm device, and a connection between said lever and alarm device for sounding an alarm upon the withdrawal of the stem from the aperture of the plate, substantially as set forth.

30 2. In a low-water alarm, the combination with a casing, of a float supported by the

casing and provided with a stem, a whistle, a pivoted bell-crank lever, a catch device connecting said bell-crank lever and stem, a piv- 35 oted weighted lever connected to the operating-lever of the whistle, a trip for holding the pivoted lever in upright position, and a connection between the bell-crank lever and the trip for releasing the pivoted lever upon the disengagement of the pin from said catch, 40 substantially as set forth.

3. The combination with a casing and a float having a stem connected thereto, of a bell-crank lever, a catch device connecting 45 said stem to the bell-crank lever, a whistle having an operating-lever, two weighted levers, a trip for holding the weighted levers elevated, a connection between the trip and the bell-crank lever, a connection between 50 one of the levers and the whistle-lever, a bell-circuit, and a circuit-connector operating to close the circuit by the falling of one of said weighted levers, substantially as set forth.

In testimony whereof I have hereunto set 55 my hand in presence of two subscribing witnesses.

STEPHEN H. RALPH.

Witnesses:

M. T. SMITH,

W. W. McDONALD.