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SAFETY ATTACHMENT FOR GAGES.

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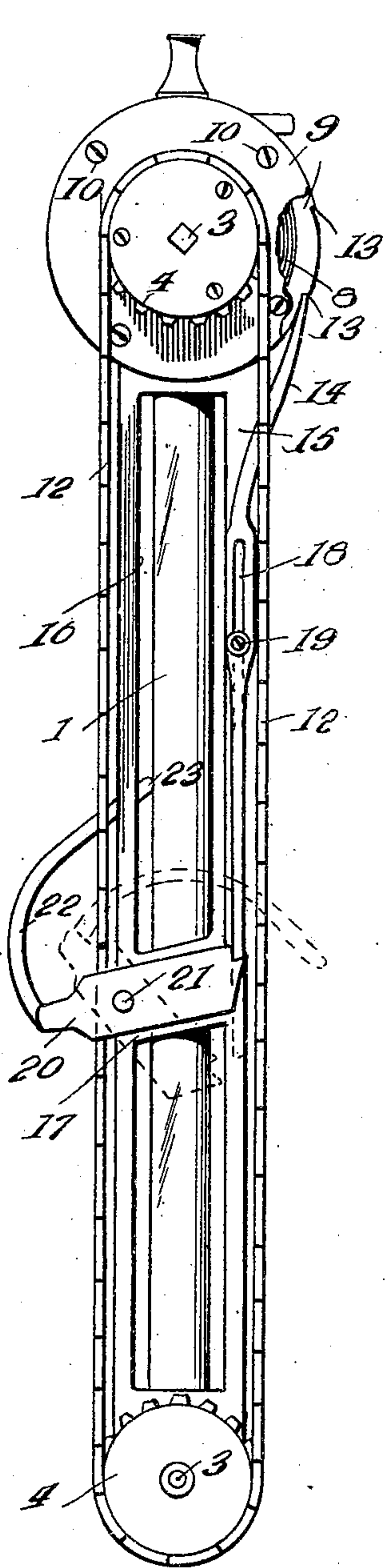


FIG. 1.

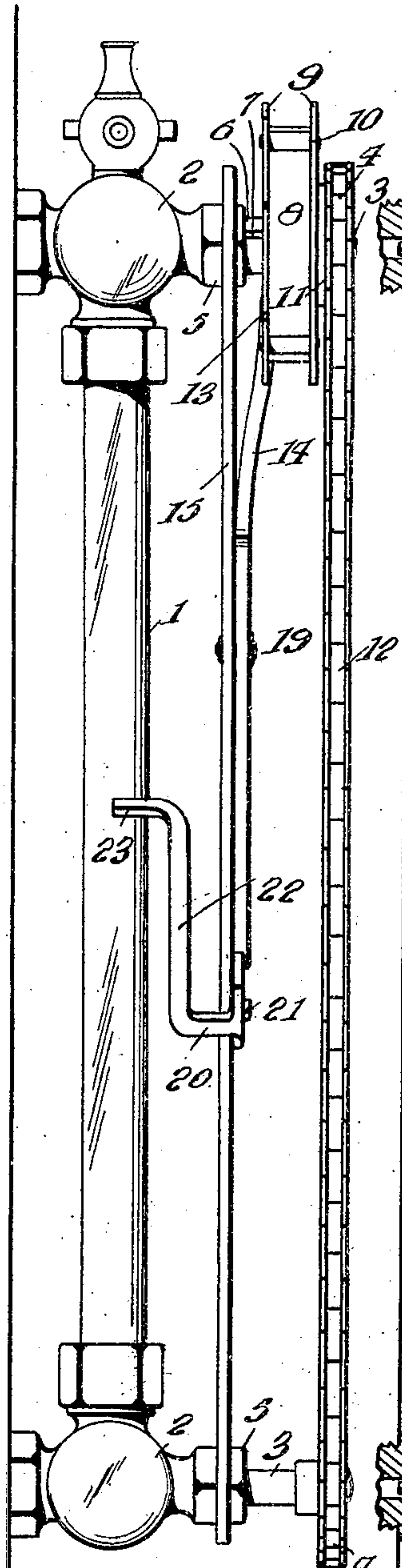


FIG. 2.

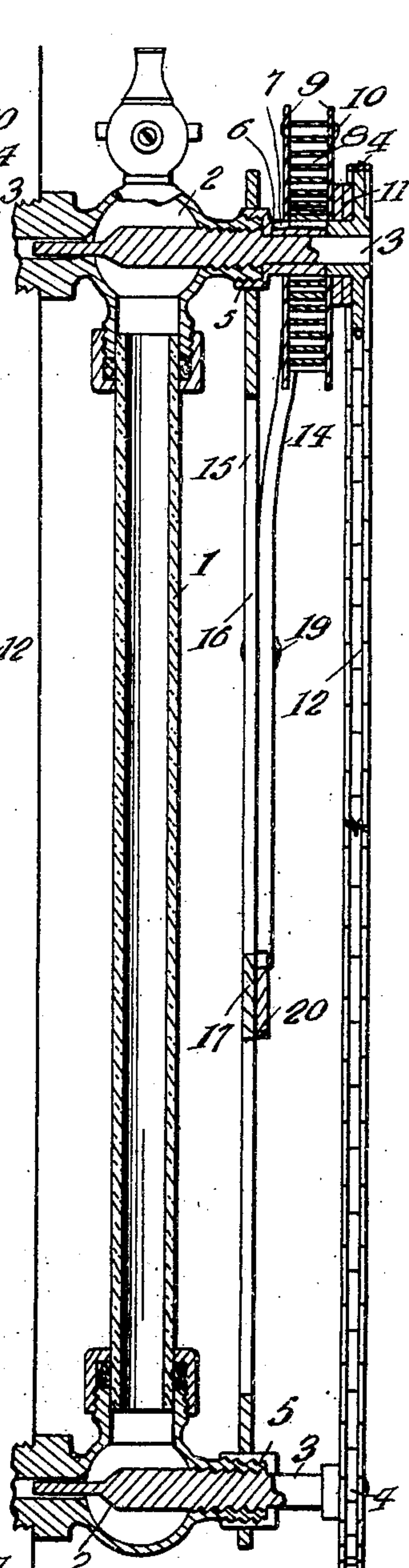


FIG. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

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SAFETY ATTACHMENT FOR GAGES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ISAAC W. HOUSTON, HENRY C. BURNS, and ANSON VAN VOORHEES, citizens of the United States, residing at Marshall, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Safety Attachments for Gages, of which the following is a specification.

10 This invention embodies means for use in connection with water or similar gages such as used on steam-boilers or the like and embodying a gage-tube for automatically operating the valves governing admission of
15 the gaged medium to the tube so that said valves will be closed when the tube is broken from any cause.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

25 Figure 1 is a front elevation of a mechanism embodying the invention applied to an ordinary form of steam-gage. Fig. 2 is a side elevation showing the invention applied. Fig. 3 is a vertical sectional view.

Corresponding and like parts are referred
30 to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the invention, the numeral 1 designates the gage-tube, and the
35 numeral 2 indicates the valves at opposite ends of said tube 1, by which the supply of steam, water, or other medium which is to be gaged by the gage is governed. It will be understood that the gage may be of any suitable type so that it embodies the tube 1, and
40 the stems 3 of the valves 2 are provided with small sprocket-wheels 4 instead of handles, such as ordinarily employed. The stems 3 pass through the usual stuffing-boxes in the
45 valve-casings for the valves 2, and packing-nuts 5 are employed to close the stuffing-boxes in the customary manner. One of the packing-nuts 5 is formed with a tubular extension 6, which is provided with a slot 7 in
50 a side thereof, and mounted on the extension 6 is a spring 8, arranged between suitable plates 9, the latter connected by small screw-bolts 10, one end of the spring 8 being screwed to one of the screw-bolts, the opposite end

being bent at an angle into the slot 7 of the extension 6.

It will be noted from the foregoing that the spring 8, being connected at one end with the nut 5, having the extension 6, will normally tend to turn the plates 9 when said
60 spring is wound up. The valve-stem 3, passing through the extension 6, is attached to the sprocket-wheel 4, carried thereby in any suitable way, said wheel preferably having a
65 square opening to receive the outer squared end of the stem, and this sprocket-wheel is attached to the outermost of the plates 9 by suitable fastenings 11. A sprocket-chain 12 connects the sprocket-wheels 4 of the two
70 valves 2, so that they will be simultaneously actuated. The innermost plate 9 is formed on its peripheral portion with a plurality of ratchet-teeth 13, adapted to be engaged by a
75 ratchet-lever 14, slidably mounted on a supporting-plate 15. The plate 15 may be cut away longitudinally thereof in order to reduce the weight of the same, as shown at 16,
80 a cross-bar spanning the cut-away portion 17 at a point intermediate the ends of the plate. The plate 15 is provided at its ends with hexagonal or similar openings, receiving
85 the packing-nuts 5, through which the valve-stems 3 pass. The lever 14 is provided at a point between its ends with a slot 18, through which a pivot or fastening 19 passes, the latter also passing through an opening in the
90 plate 15, to thereby mount the lever on said plate. One end of the lever 14 is adapted to engage the teeth 13 on the inner plate 9, before mentioned, and when in engagement with a tooth of said plate said lever is
95 adapted to hold the plates 9 in a position such that the spring 8 is wound up or under tension. The lever 14, though adapted for sliding movement because of the provision of
100 the slot 18 therein, is normally held in engagement with the inner plate 9 by means of a pressure-lever 20. The pressure-lever is pivoted between its ends, as shown at 21, to the cross-bar 17 of the plate 15, and one end
105 of said lever 20 is formed with a notch in which one end of the lever 14 is adapted to engage, the opposite end of the pressure-lever 20 having a curved arm 22 provided with a lateral extension 23 at its outer extremity. The extension 23 of the arm 22 is normally in engagement with a side of the gage-tube 1, bearing thereagainst with a positive pressure,

because of the pressure exerted against the notched end of the lever 20 by the ratchet-lever 14, one end of the latter being in engagement with the lever 20, while the other end is in engagement with the inner plate 9 and under pressure exerted by the tension of the spring 8 wound up as before described.

In practical operation, the parts being arranged as shown in Fig. 1, the extension 23 is bearing against a side of the tube 1, and should said tube become broken through inadvertence or any cause whatever the tension of the spring 8, exerted with regard to the inner plate 9, will force the ratchet-lever 14 downwardly, such movement not being resisted, because the tube 1 has been broken. Of course as the lever 14 is forced downwardly the plate 9 must turn or revolve, and such revolution will similarly actuate the sprocket-wheel 4, which is secured to the outer plate 9. This sprocket-wheel turning will rotate the valve-stem connected therewith and similarly rotate the other valve-stem, thereby simultaneously closing both valves 2.

The operation of the entire mechanism is automatic, and in view of its simplicity the advantages thereof will be apparent without further description.

Having thus described the invention, what is claimed as new is—

1. In combination, a gage-tube, a valve governing the supply of gaged medium to said tube, a ratchet-plate connected with said valve, means normally tending to close the valve, a ratchet-lever arranged to engage the ratchet-plate to hold the same in such position that the valve is open, and a pressure-lever bearing against the gage-tube and coacting with the ratchet-lever, whereby when the gage-tube is broken, the pressure-lever will permit movement of the ratchet-lever to permit closing of the valve.

2. In combination, a gage-tube, a valve governing the supply of the gaged medium to said tube, a ratchet-plate revoluble with said valve, a spring coacting with said plate and normally tending to close the valve, a ratchet-lever arranged to engage the ratchet-plate to hold the same in such a position that the valve is open, and a pressure-lever pivoted between

its ends and having one end in engagement with the gage-tube and the opposite end in engagement with the ratchet-lever, said pressure-lever being operable on breakage of the gage-tube to permit movement of the ratchet-lever to release the ratchet-plate and permit closing of the valve aforesaid.

3. In combination, a gage-tube, valves governing admission of the medium to be gaged to said tube, a ratchet-plate connected with the stem of one of the valves and revoluble therewith, a spring connected with said ratchet-plate and normally tending to hold the valve adjacent thereto closed, a pivotally and slidably mounted ratchet-lever having one end thereof in engagement with the ratchet-plate, a pressure-lever pivoted between its ends and having one end engaged with the opposite end of the ratchet-lever, and an endless connection between the valves aforesaid, whereby when the gage-tube is broken the pressure-lever will release the ratchet-lever and permit simultaneous closing of the valves under the action of the spring aforesaid.

4. In combination, a gage-tube, a valve therefor, a spring for actuating said valve, a ratchet-plate coacting with the spring, a ratchet-lever engaging the ratchet-plate to hold the spring under tension, and a pressure-lever coacting with the gage-tube and the ratchet-lever and operable on breakage of the gage-tube to permit closing of the valve under actuation of the spring.

5. In combination, a gage-tube, a valve therefor, a spring for actuating said valve, a ratchet-plate coacting with the spring, a longitudinally-slidable ratchet-lever engaging the ratchet-plate to hold the spring under tension, and a pressure-lever coacting with the gage-tube and the ratchet-lever and operable on breakage of the gage-tube to permit closing of the valve under actuation of the spring.

In testimony whereof we affix our signatures in presence of two witnesses.

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