

No. 769,092.

PATENTED AUG. 30, 1904.

A. KOLLAR & H. YOUNG.
FEED WATER REGULATOR.

APPLICATION FILED MAY 25, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

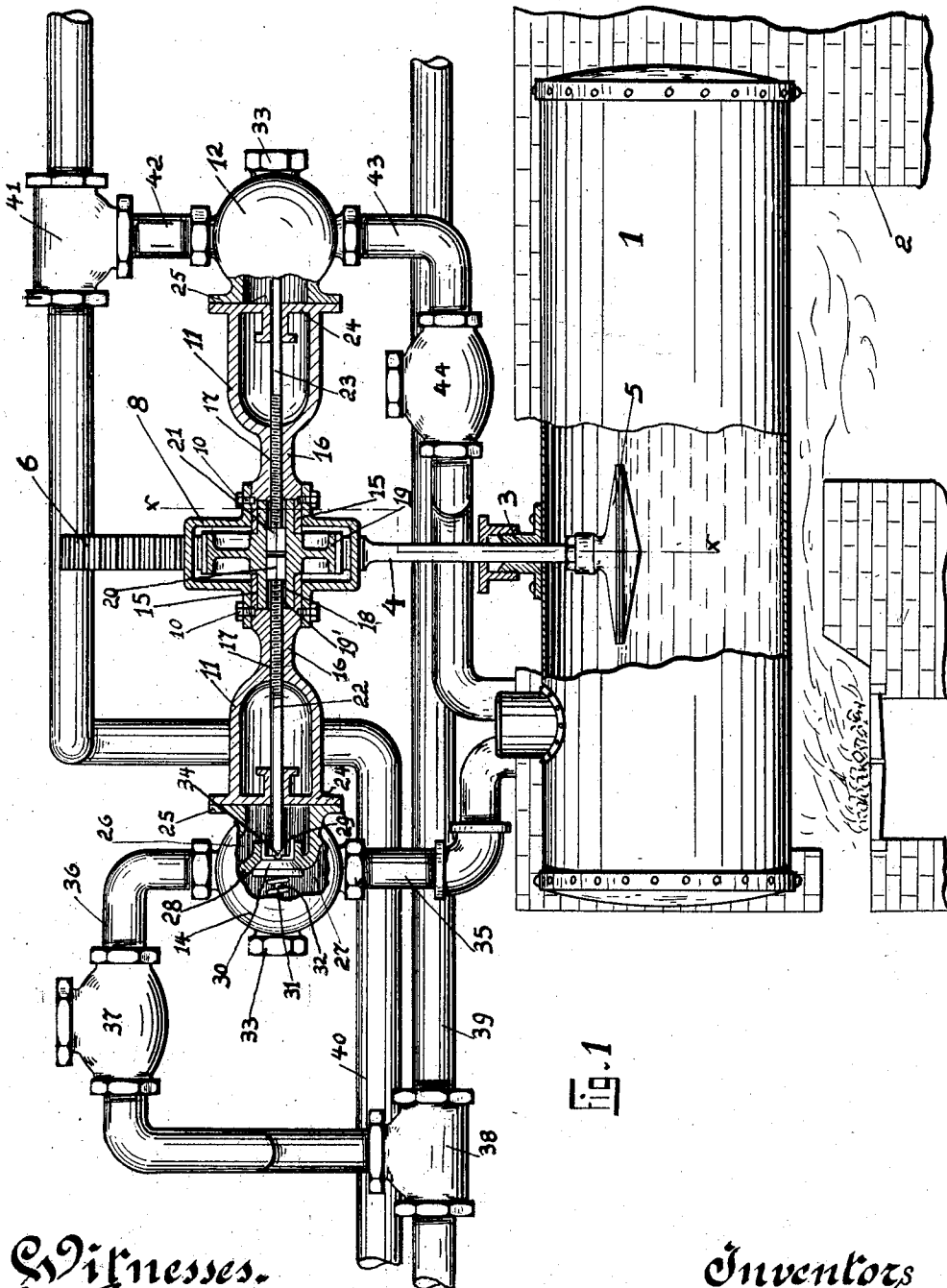


Fig. 1

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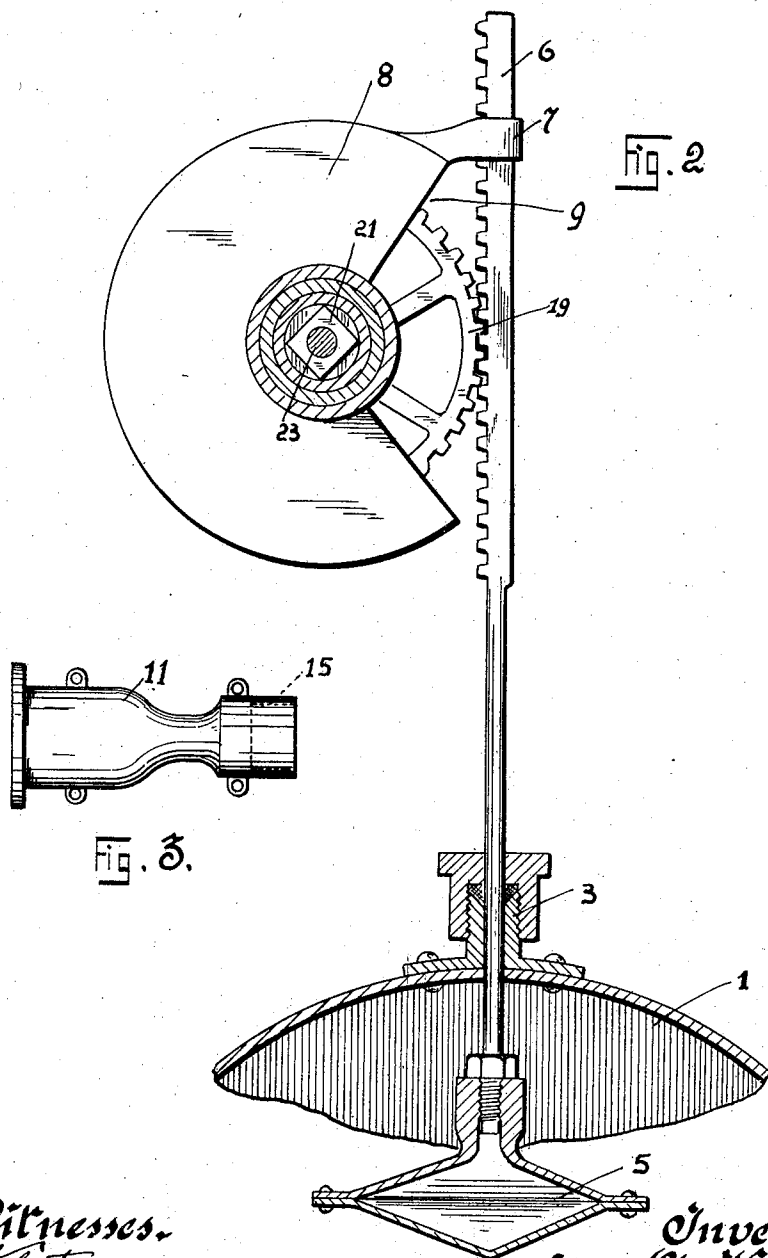
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UNITED STATES PATENT OFFICE.

AUGUST KOLLAR AND HENRY YOUNG, OF BRIDGEVILLE, PENNSYLVANIA.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 769,092, dated August 30, 1904.

Application filed May 25, 1904. Serial No. 209,709. (No model.)

To all whom it may concern:

Be it known that we, AUGUST KOLLAR and HENRY YOUNG, subjects of the Emperor of Austria-Hungary, residing at Bridgeville, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Feed-Water Regulators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to feed-water regulators; and the object of our invention is to provide a regulator of this type which is adapted to be used in connection with a boiler whereby should the level of the water in the boiler reach a dangerous point another supply of water will be admitted to said boiler.

Another object of our invention is to provide a feed-water regulator which is adapted to control the operation of the pump which supplies water to a boiler, and we have provided novel means in connection with the regulator whereby should the level of the water within the boiler reach a dangerous point the regulator will be operated to supply steam to a pump, whereby water will be forced into said boiler and overcome the danger which is occasioned by a small supply of water within the boiler.

The construction employed to accomplish the above objects will hereinafter be more fully described, and specifically pointed out in the claims.

In the drawings forming a part of this application like numerals of reference indicate like parts throughout the several views, in which—

Figure 1 is a side elevation of our improved water-regulator as applied to a boiler, a part of the regulator and boiler being shown in section. Fig. 2 is a vertical sectional view taken on the line *xx* of Fig. 1, and Fig. 3 is a top plan view of one of the cylinders forming a part of our improved regulator.

Referring to the drawings accompanying this application, the reference-numeral 1 indicates a boiler of a well-known type which is mounted in the brickwork-supports 2, and upon the top of said boiler we have mounted a stuffing-box 3, through which is adapted to

operate a rod 4, upon the lower end of which is mounted a float 5, this float being adapted to be supported upon the surface of the water in the boiler, and formed integral with the upper end of this rod is a rack-bar 6, which passes through a guide-yoke 7, carried by an annular casing 8, said casing having its one side cut away, as indicated at 9, and this casing is secured by screw-bolts 10 upon cylinders 11 11, which are secured by any desired means to the valve-casings 12 and 14. The cylinders 11 11, as shown in Fig. 3 of the drawings, are made of two sections and are provided with recesses 15 15, formed in their ends, and the neck portions 16 16 of the cylinders 11 11 are provided with screw-threaded openings 17 17, which communicate with the recesses 15 15, and in these recesses is mounted the hub 18 of a gear-wheel 19, which is normally adapted to mesh with the rack-bar 6. The bore 19' of the hub 18 is rectangular in cross-section, and in this port is mounted the blocks 20 and 21, these blocks being carried upon the ends of rods 22 23, which are screw-threaded upon their ends to engage in the screw-threaded openings 17 17 of the neck portions 16 16 of the cylinders. The outer ends of the rods 22 and 23 pass through the end walls 24 24 of the cylinders 11 11 and protrude into the valve-casings 12 and 14, and in describing the construction of these valve-casings it is only deemed necessary to describe in detail the construction of one casing, as they are similar in construction and perform a like function. Each valve-casing is provided with a flanged portion 25, to which is secured the cylinder 11, and the casing is also provided with the inlet-chamber 26 and the outlet-chamber 27, and separating said chambers is the partition 28, which is provided with an aperture 29, forming a valve-seat for the valve 30, which is normally held on its seat by a spring 31, mounted upon the valve-stem 32, said spring 31 being interposed between the valve and the side of the casing, which is provided with a boss 33, having an opening formed therein whereby the valve and its appurtenant parts may be inserted within the valve-casing.

The reference-numeral 34 indicates a seat

formed in the rear face of the valve to receive the pointed end of the rods 22 23 when the same are operated.

Communicating with outlet-chamber 27 is a pipe 35; which is connected to the top of the boiler 1, whereby any steam generated in said boiler will pass through said pipe to the valve-casing 14, and communicating with chamber 26 is a pipe 36, carrying a valve 37, and this pipe 36 is connected by a T 38 to a pipe 39, which passes to the pump. (Not shown.) From the pump leads a pipe 40, which is connected by a T 41 to a pipe 42, which communicates with the valve-casing 12 in a similar manner to the pipe 36, and the reference-numeral 43 indicates a pipe similar to the pipe 35, which is connected to the bottom of the valve-casing 12, this pipe being provided with a valve 44 and leads to the top of the boiler 1.

The operation of our improved feed-water regulator is as follows: During the formation of steam within the boiler 1 and the consumption of water within the boiler, the float 5 will have a vertical movement within the boiler, and as the water becomes low and travels toward the dangerous point the downward movement of the float carries with it the rod 4, and the rack 6 imparts a rotary movement to the gear-wheel 19, which is mounted within the annular casing 8, and upon the gear-wheel 19 rotating a similar movement is imparted to the screw-threaded rods 22 and 23 through the blocks 21 engaging in the rectangular bore 19' of the gear-wheel 19, and as the rods 22 and 23 are provided with screw-threads we provide the screw-threads on the rod 22 as right-hand threads and the threads upon the rod 23 as left-hand threads, whereby the valves in each of the valve-casings 12 and 14 will be opened, the end of the rods engaging the seats 34 and forcing the valves 30 from their seat, compressing the springs 31, at which time the steam generated in the boiler will pass through the partition 28, through port 26, through pipes 36 and 39 to the pump, operating said pump, whereby water will be forced through pipes 40 and 42 to the valve-casing 12, and the valve in this casing having been opened by the rod 23 the water will pass through pipe 43 to the boiler, refilling the same and causing the float 5 to rise to its normal position, at which time the valves in each of the valve-casings 12 and 14 are closed, shutting off the supply of water to the boiler and the supply of steam to the pump.

It will be seen that the valves in each of the valve-casings are controlled by the rising and lowering of the float within the boiler and that a slight vertical movement of the float will regulate the valves in the valve-casings, whereby a certain quantity of steam will be supplied to the pump and a certain quantity of water supplied to the boiler, whereby the float will be supported in a normal position

within the boiler, but may be operated at any time when the fires beneath the boiler have consumed the water therein and caused the float to descend to a dangerous point.

It will be noted that any desired form of pump or boiler may be used in connection with our improved water-regulator, and while we have not shown sufficient supports for the pipes and valves it is obvious that any desired means may be employed to support the same, and various slight changes, such as the general arrangement of the valves and their appurtenant parts, may be made without departing from the general spirit and scope of the invention.

What we claim is—

1. In a feed-water regulator, the combination with a boiler, a rod extending therein and carrying a float, and a rack carried by said rod, of a pair of alined cylinders, a gear-wheel engaging the rack and having its hub journaled in the adjacent ends of the cylinders, valve-casings connected to the outer ends of the cylinders and in communication with the boiler, valves in said valve-casings, means actuated by the gear-wheel for operating said valves, a steam-supply pipe connected to one of the valve-casings, and a water-supply connected to the other of said valve-casings, substantially as described.

2. In a feed-water regulator, the combination with a boiler, a rod extending into the boiler provided with a float, and a rack on said rod, of a pair of alined cylinders, a gear-wheel engaging the rack and having its hub journaled in the adjacent ends of the cylinders, valve-casings in communication with the boiler, spring-held valves in said casings, oppositely-threaded rods in the cylinders having their inner ends engaging the bore of the gear-wheel hub, a steam-supply connected to one of the valve-casings and a water-supply connected to the other valve-casing, substantially as described.

3. In a device of the type set forth, the combination with a boiler, of a pair of valve-casings both in communication with the boiler, and one of which receives steam from the boiler, and the other of which receives water to be discharged into the boiler, a pair of cylinders disposed between the valve-casings and connected one to each of said casings, valves in said casings, a gear-wheel having its hub journaled in the ends of said cylinders, a float in the boiler, and means connected to said float and engaging the gear-wheel whereby the valves are opened as the float descends in the boiler, substantially as described.

4. In a feed-water regulator, the combination with the boiler, the float therein, the rod connected to said float, and the rack on said float, of a pair of valve-casings one of which receives steam from the boiler and the other of which receives water to be discharged into the boiler, spring-pressed valves in said casings and connected one to each of said casings,

oppositely-threaded rods arranged in said cylinders, and means engaging the rack and said rods whereby the latter will operate to open the valves as the float descends in the boiler, substantially as described.

5 5. In a feed-water regulator, the combination with a boiler, a rod extending into the same and provided with a float, and a rack on said rod, of a pair of oppositely-disposed valve-casings in communication with the boiler, and one of which receives steam from the boiler and the other of which receives water to be discharged into the boiler, spring-pressed valves in said casings, a pair of cylinders connected one to each of the valve-casings, a gear-case mounted on the adjacent ends of said cyl-

inders, a gear-wheel arranged in said case and engaging the rack and having its hub journaled in the ends of the cylinders, and rods having their inner ends held in the bore of the hub and adapted as they are rotated through the medium of the rod and float descending to open the valves in said valve-casings, substantially as described.

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

AUGUST KOLLAR.
HENRY YOUNG.

Witnesses:

E. E. POTTER,
K. H. BUTLER.