J. F. SMIRZ.

FEED WATER REGULATOR AND ALARM.

APPLICATION FILED JUNE 7, 1916.

1,245,809.

Patented Nov. 6, 1917.

2 SHEETS—SHEET 1.

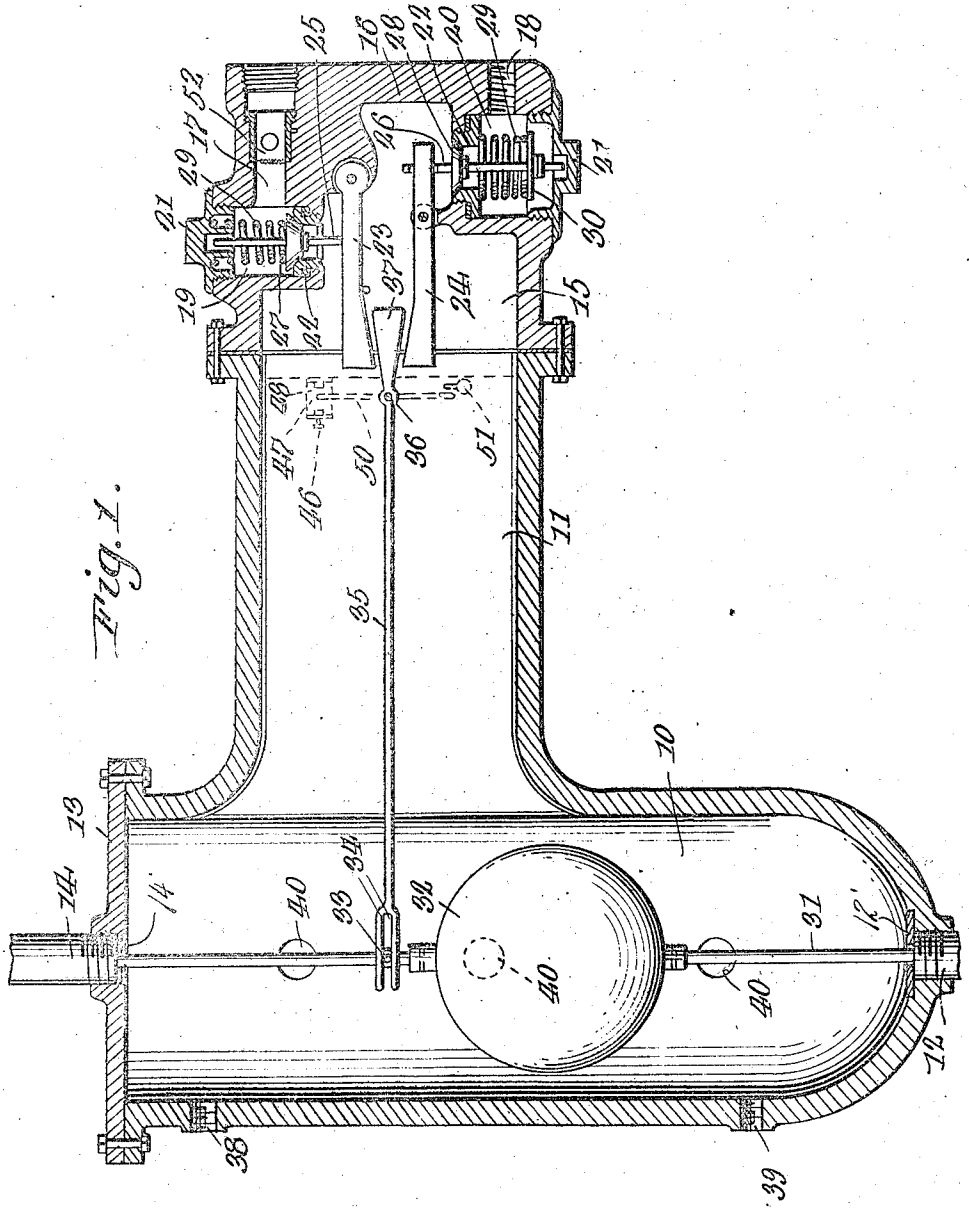


Fig. 1.

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WITNESSES

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BY Richard Owen.

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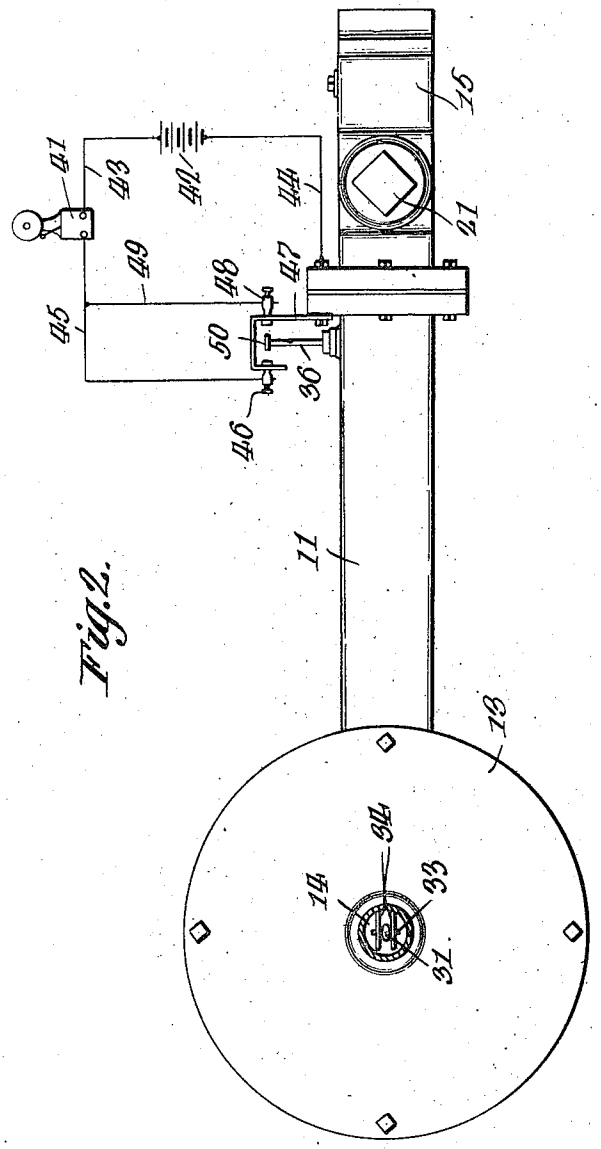


Fig. 2.

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JAMES F. SMIRZ, OF CHICAGO, ILLINOIS.

FEED-WATER REGULATOR AND ALARM.

1,245,809. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed June 7, 1916. Serial No. 102,316.

To all whom it may concern:

Be it known that I, JAMES F. SMIRZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Feed-Water Regulators and Alarms, of which the following is a specification.

This invention relates to an improved feed water regulator and alarm and the principal object of the invention is to provide a device of the character described which can be used in connection with a boiler and which will be so constructed that the water will be kept approximately at the desired level, an inlet valve being opened when the water in the boiler drops beneath the normal level and an outlet opening being opened when the water in the boiler rises beyond the desired level.

Another object of the invention is to so construct this device that it may have a water glass connected with it thus providing a sight gage which will indicate the height of the water and to further so construct the device that in case the water rises or lowers, an alarm will be sounded thus notifying the attender that the boiler contains either too much or not enough water and prevents danger in case of a leak or stoppage which would prevent the device from acting and returning the water to the normal level.

Another object of the invention is to so construct this device that a register may be operated by the swinging contact arm and thus record kept of the number of times, the water in the boiler has raised or lowered a sufficient amount to ring the alarm.

This invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a view showing the improved device in vertical longitudinal section.

Fig. 2 is a top plan view of the device with the steam pipe shown in section.

The housing or receptacle 10 is provided with a neck 11, the lower portion of the housing being provided with an inlet opening into which the water inlet pipe 12 is secured and the cap 13 of the housing being provided with an opening into which the steam pipe 14 is secured. These pipes may be either screwed into the openings as shown or may be releasably connected in any preferred manner to the boiler.

A head 15 is connected with the neck 11 and is provided with a closure wall 16 for its outer end through which there extends passageways or openings 17 and 18, the opening 17 being an inlet opening and the opening 18 an outlet opening. These openings 17 and 18 communicate with the valve chambers 19 and 20, each of which is provided with a closure cap 21 and at its inner end with a valve seat 22, removably mounted as clearly shown. Actuating levers 23 and 24 are pivotally mounted in the head 15 and engage the valve stems 25 and 26 so that when the actuating levers are moved, the valve heads 27 and 28 may be moved off of the valve seats 22. These valves 27 and 28 are normally held upon the seats by means of springs 29 and the valves 27 and 28 and abutment plate or disk 30 may be adjustably mounted upon the stems 25 and 26 so that the tension of the springs can be controlled and thus the valves permitted to move as freely as desired.

In the housing or receptacle 10 there is slidably mounted a rod 31 which extends through guides 12′ and 13′ into the pipes 12 and 14 and carries a float 32 so that as the level of the water rises or falls, the rod will be moved vertically. A pin 33 extends through this rod and extends between the forks 34 of the rocker arm 35 which is pivotally mounted in the neck by means of the pin or rocker shaft 36 and terminates in a head or enlarged end portion 37 positioned between the actuating levers 23 and 24. Therefore as the rod 31 moves vertically, the head 37 will engage one of the actuating levers and swing it to open the valve with which it is connected or engaged. If desired, a water glass may be connected with the housing and communicate with the interior thereof through the openings 38 and 39 and outlet pigots or cocks may be connected with the opening 40 thus permitting the height of the water in the device to be readily ascertained and further so as to permit water to be drained when necessary.

A signal such as an electric bell 41 may be mounted at a convenient place and will be connected with the battery or other source of electric supply 42 by means of wire 43. The wire 44 leading from the opposite end of the battery is connected with the attachment at a convenient point such for instance as one of the bolts connecting the head 15 with the neck 11. The wire 45 leading from

the second terminal of the bell is connected with one of the contacts 46 carried by the bracket 47 secured to and insulated from the neck 11. This bracket extends about the outer end portion of the rocker shaft 36 and carries a second contact point or terminal 48 with which is connected the branch wire leading from the wire 45. An arm 50 is carried by the rocker shaft 36 and has its upper end portion extending between the terminals or contacts 46 and 48 and it will thus be seen from an inspection of Fig. 1 that when the rocker arm 35 moves, the contact arm 50 will engage one of the terminals thus completing the circuit and ringing the bell. A suitable register 51 of any suitable type may be mounted so that it may be engaged by the lower end of the arm 50 and actuated when the arm 50 moves in one direction to make its contact with the terminal 46.

The operation of this device is as follows:—

This feed water regulator will be placed adjacent the boiler and a pipe 12 leading from the boiler will be connected with the lower end of the housing 10. A steam pipe 14 will be connected with the cap 13 and leads to the highest part of the boiler. The feed pipe will be connected with the inlet 17 and a pipe will lead from the outlet 18. If the water in the boiler is at the normal level, the housing 10 will be filled a proper amount to retain the float at the level shown in Fig. 1. When the level of the water in the boiler decreases, the float will be lowered thus swinging the rocker arm 35 to raise the lever 23 and open the valve 27 thus permitting water to enter through the inlet 17. This water will pass through the screen 52 thus removing any foreign substances. As soon as the water reaches the normal level, the valve will be again closed and the flow of water cut off. If the water simply drops in its level a slight amount, the rod 31 will of course be moved but it will not be moved a sufficient amount to operate the lever 23 and therefore the valve 27 will not be opened. The same would be true if the water were raised above its normal level a slight amount but if the water is raised above its normal level beyond the desired amount to any great extent, the head 37 will engage the lever 24 and move the lever to open the valve 28 thus permitting the surplus water to run out through the outlet 18. A feed water regulator has thus been provided which is so constructed that fresh water can be supplied to the boiler when necessary and surplus water drawn off when necessary and further a device of the character described has been provided which is so constructed that an alarm may be sounded in case the flow of water is cut off and thus preventing danger of explosion.

What is claimed is:—

1. A boiler feed water regulator comprising a housing having a water inlet from the boiler at its lower end, a cap for said housing having a steam inlet from the boiler at its upper end, a neck extending from said housing, a head connected with the outer end of said neck and having a closed outer end, valve housings in said head, one being provided with an inlet opening and the second with an outlet opening, the valve housings communicating with the interior of said head and provided with valve seats at their inner ends, valve stems extending through said housings, valves carried by said stems, resilient means yieldably holding said valves in engagement with said valve seats, actuating levers pivotally mounted in said head and engaging said valve stems, a rocker shaft pivotally mounted in said neck and having one end portion extending between said levers, a rod slidably mounted in said housings, and a float carried by said rod, said rod engaging said rocker arm and when moved vertically with said float, moving the rocker arm to bring the same into engagement with one of said levers and move the lever to open its valve.

2. A boiler feed water regulator comprising a housing having a water inlet from the boiler at its lower end, a cap for said housing having a steam inlet from the boiler at its upper end, a neck extending from said housing, a head connected with the outer end of said neck and having a closed outer end, valve housings in said head, one being provided with an inlet opening and the second with an outlet opening, the valve housings communicating with the interior of said head and provided with valve seats at their inner ends, valve stems extending through said housings, valves carried by said stems, resilient means yieldably holding said valves in engagement with said valve seats, actuating levers pivotally mounted in the head and engaging the valve stems, and float actuating means including a rocker arm pivotally mounted in the neck and extending between said levers.

3. A boiler feed water regulator comprising a housing, a neck extending from said housing, said housing being provided with an inlet and an outlet, a rod extending through said housing and slidably mounted for vertical movement, a float mounted upon said rod and yieldably supporting the same at a normal height, a rocker arm pivotally mounted in said neck, a pin extending from said rod and engaging said rocker arm, a head connected with said neck and provided with valve controlled inlet and outlets, and actuating levers for the valves of the inlet and outlet extending upon opposite sides of said rocker arm whereby movement of said rod will swing said rocker arm to bring the

end portion thereof into engagement with one of said levers to open its respective valve.

4. A boiler feed water regulator comprising a housing, a neck extending from said housing, a float controlled rod slidably mounted in said housing, a rocker shaft extending through said neck and through one side thereof, a rocker arm carried by said rocker shaft and engaging said rod, a head connected with said neck and provided with a valve controlled inlet and a valve controlled outlet, actuating levers for the valves of the inlet and outlet having their free end portions extending upon opposite sides of said rocker arm, a bracket connected with said neck and extending about the outer end portion of said rocker shaft, contacts carried by said bracket and positioned upon opposite sides of said rocker shaft, a signal, a circuit for the signal including a source of power and conductors leading from the source of power and connected with said signal, and neck and conductors leading from the signal and connected with terminals carried by said bracket, and a contact arm carried by said rocker shaft and extending between the terminals of the bracket whereby movement of said rocker shaft will bring the contact arm into engagement with one of said terminals.

5. A boiler feed water regulator comprising a housing having an inlet and an outlet, a neck extending from said housing and provided with valve controlled inlets and outlets, a rod extending through said housing and slidably mounted for vertical movement, a float mounted upon said rod, a rocker arm pivotally mounted in said neck, an abutment extending from said rod and loosely engaged by said rocker arm, and actuating levers for the valves of said inlet and outlet of the neck extending upon opposite sides of said rocker arm whereby movement of said rod will swing said rocker arm to bring the end portions thereof into engagement with one of the levers to open its respective valve.

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

JAMES F. SMIRZ.

Witnesses:
CABOTT HARRIS,
B. W. JACOBS.