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J. T. AVARY & E. L. THOMAS.

FEED WATER REGULATOR FOR BOILERS.

APPLICATION FILED NOV. 25, 1904.

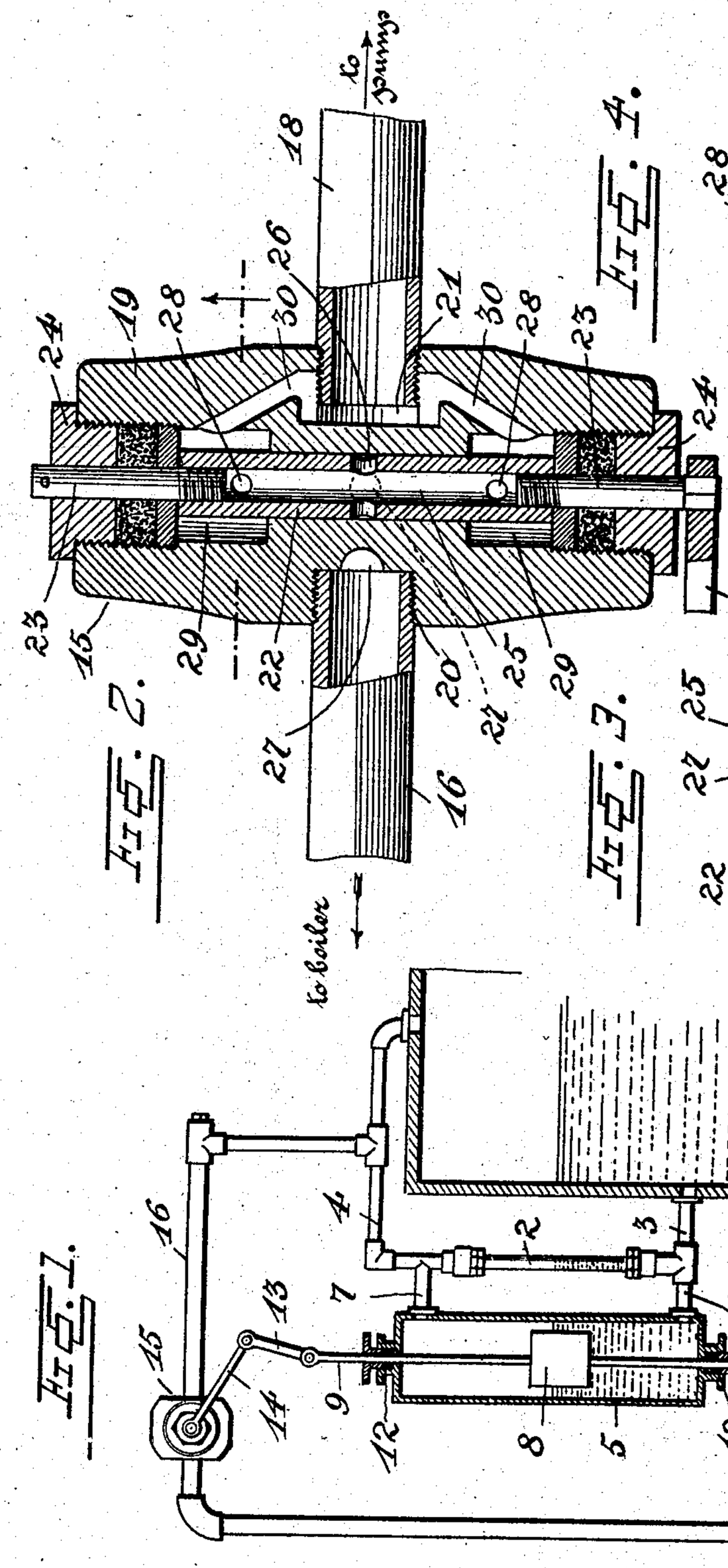

FIG. 2.

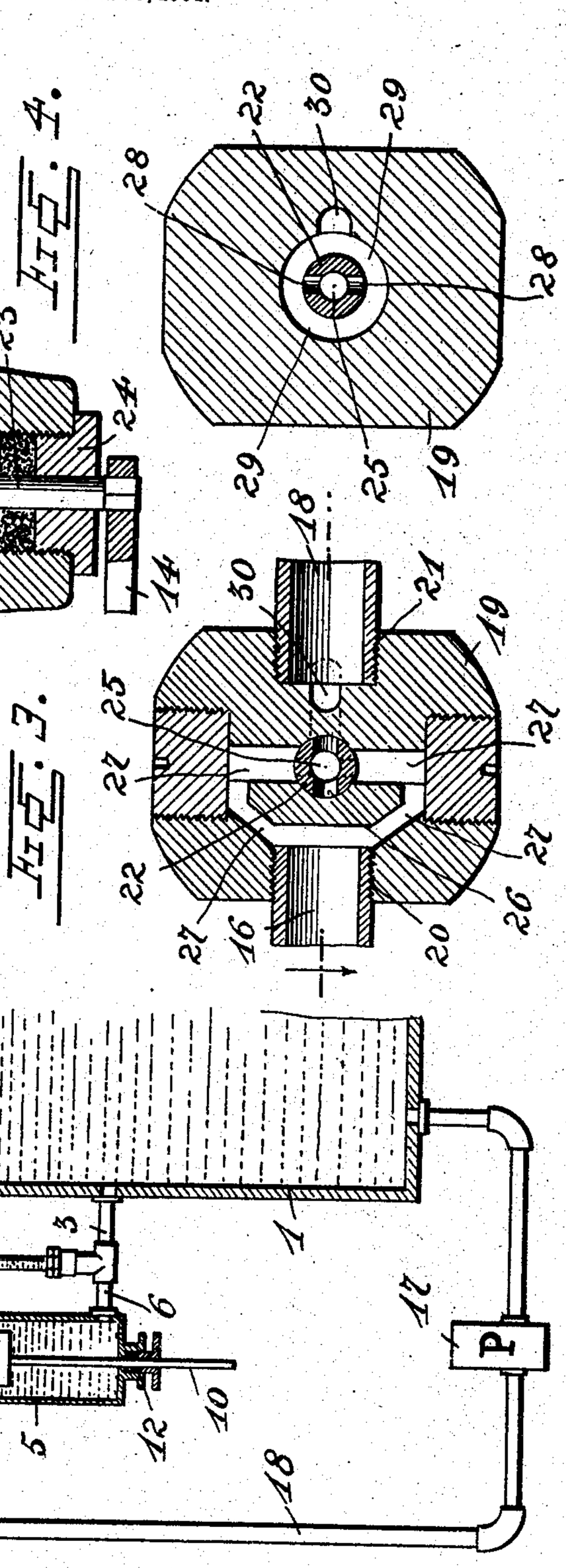

FIG. 3.

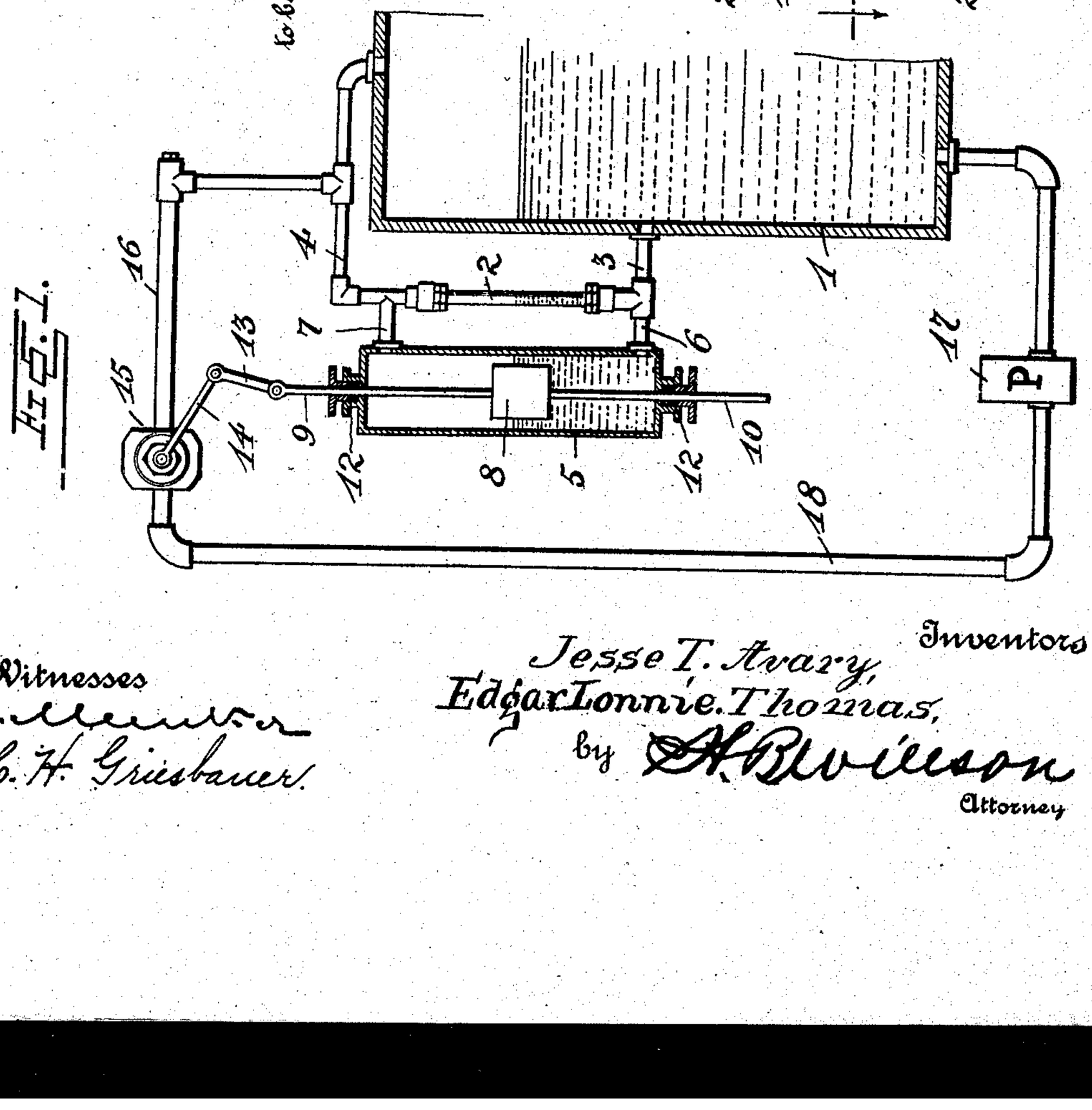

FIG. 1.

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UNITED STATES PATENT OFFICE.

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FEED-WATER REGULATOR FOR BOILERS.

No. 806,619. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed November 25, 1904. Serial No. 234,280.

To all whom it may concern:

Be it known that we, JESSE T. AVARY and EDGAR LONNIE THOMAS, citizens of the United States, residing at Ada, Chickasaw Nation, Indian Territory, have invented certain new and useful Improvements in Feed-Water Regulators for Boilers; and we 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.

This invention relates to improvements in feed-water regulators for steam-boilers.

The object of the invention is to provide a device of this character which will automatically control the admission or supply of water to the boiler.

A further object is to provide a valve for the device which may be easily controlled while under heavy or light steam-pressure by the action of the regulating device.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal vertical sectional view of the device, showing the application of the same to a boiler. Fig. 2 is an enlarged longitudinal sectional view through the steam throttle-valve. Fig. 3 is a cross-sectional view through the center of said valve, and Fig. 4 is a similar view through one end of the same.

Referring more particularly to the drawings, 1 denotes a steam-boiler.

2 denotes the water-glass of the boiler, said water-glass being of the usual construction and is connected with the lower portion of the boiler by means of a water tube or pipe 3 and at its upper end is connected to the upper portion of the boiler by means of a steam-pipe 4.

The feed-water regulator consists of a vertically-disposed tank 5, which is preferably cylindrical in form and is connected at its lower end to the water tube or pipe 3 by means of a water-pipe 6 and at its upper end is connected to the steam-pipe 4 by means of a pipe 7. By means of the connecting-pipes between the upper and lower ends of the water-glass tube and the tank 5 the water in said tank and water-glass will attain the same level as that in the boiler. Within the tank 5 is arranged a float 8, to the upper and lower ends of which are connected upwardly and downwardly projecting guide rods or stems 9 and 10. The guide rods or stems 9 and 10 are adapted to project through stuffing-boxes 12, arranged in the upper and lower ends of the tank 5, and to the projecting end of the upper guide rod or stem is connected a link 13, the opposite end of which is connected to the lever or handle 14. A throttle-valve 15 is arranged in a steam-supply pipe 16, which is connected to steam-pipe 4 at the upper portion of the boiler. The opposite end of said steam-pipe 16 is connected with a pump 17, whereby when said valve 15 is open the pump 17 will be supplied with steam, thus operating the same, and by which means water will be pumped into the boiler through a supply-pipe 18.

The throttle-valve 15 preferably consists of a shell or case 19, in the opposite sides of which are arranged inlet and discharge ports 20 and 21. In the casing 19 is arranged a centrally-disposed cylindrical plug 22, having formed on its ends stems 23, which are adapted to project through stuffing-boxes 24 in the opposite ends of said casing. In the plug 22 is arranged a longitudinally-disposed passage or chamber 25, with which is connected a centrally-disposed transverse inlet-passage 26, which when said plug is turned to the proper position will communicate with the inlet-port 20 through the passage 27, formed in the walls of the valve-casing. Near the ends of the plug 22 are formed transversely-disposed discharge-passages 28, which extend through said plug in a plane at right angles to the plane of the passage 26. The passages 28 intersect and communicate with the longitudinal passage 25 in the plug 22 and open into annular steam-chambers 29, formed in the opposite ends of the valve-casing and with which communicate discharge-passages 30. The opposite ends of said passages 30 open into the discharge-port 21, formed in the side of the casing, and with which is connected the steam-supply 18, which leads to the pump 17. To the projecting end of the valve-stem 23 is connected the lever or handle 14, said handle being connected by the link 13 to the upper end of the guide rod or stem 9 of the float 8, whereby when said float is raised and lowered by the

rising and falling of the water in the boiler said valve will be regulated or closed, thereby regulating the flow of steam from the boiler to the pump, so that when the water in the boiler has lowered to a danger-point the pump will be automatically started, thus forcing more water into the boiler, as will be understood.

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

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

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A valve for operation in a steam-pipe leading from a boiler to a pump and comprising a casing having chambers near its ends, passages leading to said chambers from the pump side of the steam-pipe, a bore connecting said chambers, a channel to connect the pump side of the steam-pipe with the bore, and a hollow turning plug for operation by a float, said plug having openings to communicate with the channel and being provided near its ends with openings communicating with the chambers in the casing.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JESSE T. AVARY.
EDGAR LONNIE THOMAS.

Witnesses:
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E. M. PUTNAM.