

No. 701,038.

G. M. HILGER.

Patented May 27, 1902.

FEEDER.

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(No Model.)

Fig. 1

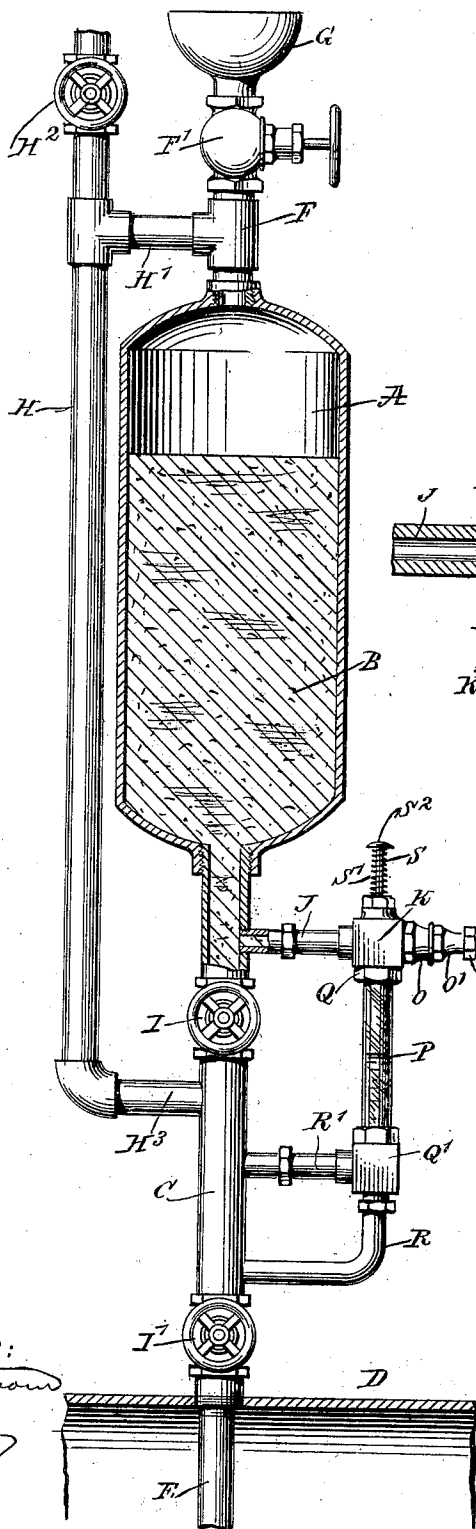
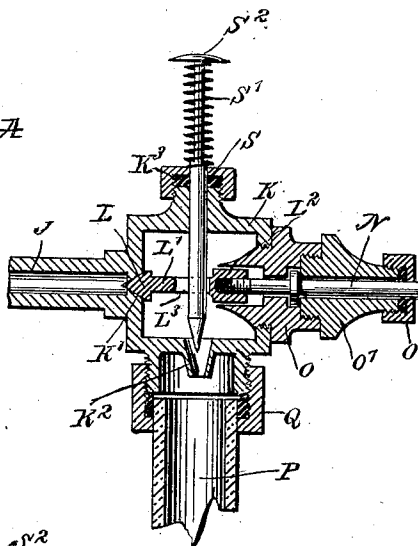


Fig. 2



WITNESSES:

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FEEDER.

SPECIFICATION forming part of Letters Patent No. 701,038, dated May 27, 1902.

Application filed November 19, 1901. Serial No. 82,886. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MICHAEL HILGER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Feeder, of which the following is a full, clear, and exact description.

The invention relates to devices for feeding a liquid compound into the feed-water of a boiler; and its object is to provide a new and improved feeder for use on boilers, open feed-water heaters, and the like and which is simple and durable in construction and arranged to feed the liquid compound drop by drop into the feed-water to prevent the formation of scales in the boiler.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a sectional side elevation of the improvement as applied to a boiler, and Fig. 2 is an enlarged sectional side elevation of the regulating-valve.

A reservoir A for containing a liquid compound B is held on the upper end of a pipe C, tapped into the top of a boiler D, an extension E leading from the lower end of the said pipe C a distance below the water-level of the boiler and close to the point where the feed-water enters the boiler. The upper end of the reservoir A is provided with a pipe F, containing a valve F' and supporting a filling-cup G for filling the compound B into the reservoir A, as hereinafter more fully described. The pipe F is connected below the valve F' by a branch pipe H' with an equalizing-pipe H, having a valve H² and connected to the steam-compartment of the boiler D, the said pipe H having its lower end H³ connected with the pipe C between valves I and I', of which the valve I is a wash-out valve and the valve I' is a shut-off valve. The pipe C above the wash-out valve I is connected by a small pipe J with the body K of a regulating-valve for controlling the amount of the compound B flowing from the reservoir A

into the pipe C and down the pipe E into the feed-water contained in the boiler D. The regulating-valve is provided with a valve-seat K', leading to the pipe J, and on this valve-seat K' is adapted to be seated a conical needle-valve L, provided with a stem L', having a head L², in which screws the inner threaded end of a rod N, mounted to turn in a bonnet O, screwed into the body K of the regulating-valve, as plainly indicated in Fig. 2. The rod N is held against longitudinal movement in the bonnet O by a cap O', and the outer end of this cap is provided with a stuffing-box O² to prevent leakage. The rod N carries at its outer end a suitable handle N' to permit the operator to turn the said rod to cause the valve L to move toward and from its seat K' to regulate the amount of the liquid compound B flowing through the valve-seat into the body K. The bottom of the latter is provided with a funnel K², discharging the liquid compound B drop by drop into a glass tube P, standing vertically and held in fittings Q and Q', of which the fitting Q is attached to the body K. The fitting Q' is connected by pipes R and R' with the pipe C between the valves I and I', so that steam from the equalizing-pipe H can pass through the pipes R and R' into the fitting Q' and the glass tube P to allow of clearly seeing the liquid-compound drops as the latter fall through the tube P. In order to hold the valve-stem L' and its valve L against turning when screwing the threaded end of the rod N into the head L², I provide a pin S, extending through an elongated aperture L³ in the stem L', the said pin also serving to clean the funnel K² in case the latter is clogged up. The pin S for this purpose extends vertically in alinement with the funnel K², and the pin passes through a suitable stuffing-box K³, carried on the top of the body K. On the outer end of the pin S is coiled a spring S', resting with one end on the top of the stuffing-box K³, the other end of the spring pressing against the under side of a button S², held on the outer end of the pin S. Thus the inner lower end of the pin S is normally held out of engagement with the funnel K² by the pressure of the spring S'; but when the funnel K² is clogged the operator presses the button S² to cause the pin S to move downwardly and with its pointed end

extend into and through the funnel K² to clean the same of foreign matter. As soon as the operator releases the pressure on the button S² the spring S' returns the pin S to its normal position. (Shown in Fig. 2.)

The operation is as follows: When the device is applied to the boiler D and it is desired to fill the reservoir A with the compound B, it is necessary for the operator to close the valves I, I', and H² and also the needle-valve L and then open the valve F', so as to allow any steam that may be in the reservoir A to escape therefrom. The liquid compound B is now poured into the filling-cup G, from which the liquid flows into the reservoir A and fills the same. When this has been done, the valve F' is closed and the valves H², I', and L are opened, so that steam-pressure is exerted on the compound in the reservoir A, and the steam also prevents the water from rising in the pipe E above the level of the water in the boiler D, so that the remaining portions of the pipe E and the pipe C up to the valve I are filled with steam, which also fills the pipes R R' and the glass tube P. When the valve L is opened, the liquid compound B flows by its own gravity through the valve-seat K' into the body K and then down the funnel K² drop by drop, so that the operator can see through the glass tube P how much of the liquid compound flows through the fitting Q' and pipe R, through the lower portion of the pipe C, through the valve I', and down through the pipe E into the water contained in the boiler D.

When it is desired to clean the reservoir A, the operator opens the valve I, so that any remnants of the compound B remaining in the reservoir A are washed directly through the pipes C and E into the feed-water. When this has been done, the valve I is again closed.

When the feeder is to be used on an open exhaust-heater for the feed-water, then the pipe E is extended below the water-level in the heater, and the pipe H is connected with the main exhaust-pipe to furnish steam-pressure to the reservoir A, as previously explained. The operation is the same as above described—that is, the liquid compound falls by its own gravity into the feed-water in the heater drop by drop.

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

1. A feeder for feeding a liquid compound into the feed-water of a boiler, comprising a

reservoir for containing the liquid compound, a pipe carrying the reservoir and opening into the feed-water below the water-level, a wash-out valve in the said pipe, a regulating needle-valve having connection with the pipe on opposite sides of the wash-out valve, and an equalizing steam-pipe connected with a steam-supply, with the top of the reservoir and with the said pipe below the wash-out valve, as set forth.

2. A feeder for feeding a liquid compound into the feed-water of a boiler, provided with a regulating-valve, comprising a body having a valve-seat, a needle-valve for engaging the said valve-seat, a rod mounted to turn, and screwing on the said needle-valve to move the latter to or from its seat, means for holding the needle-valve against turning, and a funnel leading from the bottom of the said body, as set forth.

3. A feeder for feeding a liquid compound into the feed-water of a boiler, provided with a regulating-valve, comprising a body having a valve-seat, a needle-valve for engaging the said valve-seat, a rod mounted to turn, and screwing on the said needle-valve to move the latter to or from its seat, means for holding the needle-valve against turning, a funnel leading from the bottom of the said body, and a spring-pressed pin for cleaning the said funnel, as set forth.

4. A feeder for feeding a liquid compound into the feed-water of a boiler, comprising a reservoir for containing the liquid compound, a pipe carrying the reservoir and opening into the feed-water below the water-level, a wash-out valve in the said pipe, an equalizing-pipe connected with a steam-supply, with the top of the said reservoir and with the said pipe below the said wash-out valve, and a regulating-valve comprising a valve-body connected with the said pipe above the wash-out valve, an inlet-valve in the entrance-seat of the said valve-body, a funnel in the bottom of the said valve-body, a glass tube connected with the valve-body and into which opens the said funnel, and a fitting carrying the said tube and connected with the said pipe below the wash-out valve, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE MICHAEL HILGER.

Witnesses:

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JOHN BOES.