

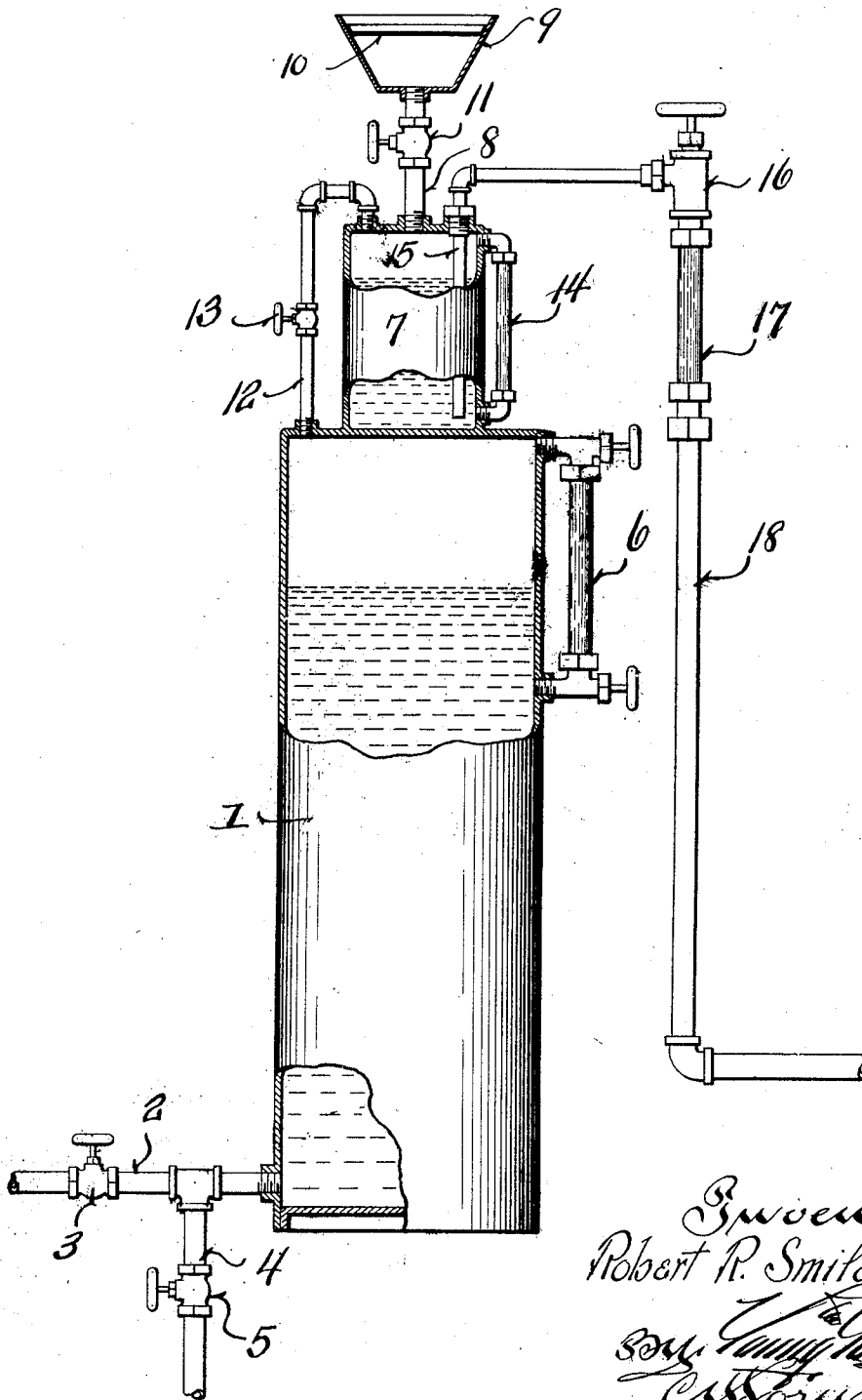
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AUTOMATIC BOILER COMPOUND FEEDER

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UNITED STATES PATENT OFFICE

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AUTOMATIC BOILER-COMPOUND FEEDER

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This invention relates to automatic boiler compound feeders.

Objects of this invention are to provide a novel form of device for automatically feeding compounds to boilers in a manner to permit the exact amount required to be easily fed and with absolute certainty.

Further objects are to provide a novel form of automatic boiler compound feeder or similar feeder which may be made in a manner to provide a sight feed so that the exact amount of the compound passing to the boiler or other apparatus may be easily ascertained under all conditions of operation, and in which the amount fed to the boiler may be very accurately controlled so that a continuous predetermined feed is obtained.

An embodiment of the invention is shown in the accompanying drawing in which:

The single figure is an elevation partly in section of the apparatus.

It is to be distinctly understood that while this invention will be described primarily as intended for feeding compounds to boilers, that it is obvious that it can be used for other purposes, such as feeding compounds to hard water in order to soften the water, or otherwise for treating purposes.

Referring to the drawings, it will be seen that the device comprises a main tank 1 which is connected by means of a pipe 2 with a source of pressure, such as a feed pump line, for instance. This pipe is controlled by means of the valve 3. Further, a pipe 4 controlled by a valve 5 leads to the waste.

It is preferable to provide the tank 1 with a water gauge 6 so that the height of the water may be readily ascertained.

The tank 1 carries at its upper end, an auxiliary tank or compound tank 7 which is provided with a pipe 8 opening through its upper end and equipped with a funnel-like hopper or receptacle 9 into which the compound is adapted to be poured. Preferably, the receptacle or hopper 9 is provided with a screen 10 and the pipe 8 is controlled by a valve 11.

It is to be noted also that the compound or auxiliary tank 7 is connected at its upper

end with the upper end of the pressure tank 1 by means of a pipe 12 controlled by a valve 13. Further, the compound tank 7 is provided with a gauge 14. A pipe 15 extends to adjacent the bottom of the tank 7 and passes over to a regulating valve 16. This valve is connected by means of a glass tube 17 with a pipe 18 leading to the boiler, not shown. The transparent pipe or glass 17 is preferably arranged at a height above the water level in the boiler so that it will be free of water and will allow a regular drip of the compound to occur.

The operation of the apparatus is as follows:

The valve 3 is opened and water is allowed to pass into the tank 1, thus trapping air in the upper portion of the tank and compressing it to a point slightly in excess of boiler pressure. This compressed air is led by way of the pipe 12 to the upper portion of the tank 7 and thus exerts the same pressure upon the upper surface of the compound within the tank 7. This forces the compound outwardly through the pipe 15 to the valve 16. Here the compound drips in a regular manner downwardly through the glass tube 17 and from thence passes to the boiler.

It is apparent that the feed may be regulated so as to give any amount required and so that it will be uniform throughout any given period of time.

It is to be distinctly understood that the pipe 18 may pass to any desired point.

When the supply of compound in the tank 7 has been used up, the valve 13 is closed and the valve 11 is opened. Therefore, this allows the escape of the air under pressure and allows the operator to refill the tank 7 through the hopper or funnel 9 into which the compound is poured. Thereafter, the valve 11 is closed and the valve 13 opened.

If at any time, it becomes necessary to restore the air in the tank 1, as it becomes used up, this may be readily accomplished by cutting off the valve 3 and opening the valve 5, thereafter opening the valves 11 and 13. This allows the water to flow through the

waste pipe 4 and allows air to be drawn into the pressure tank 1.

It will be seen, therefore, that a very simple and novel type of boiler compound feeder has been provided by this invention, which is easy to control, simple to make, and of substantially fool-proof construction.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

Particular attention is called to the fact that the principle of operation is based upon a differential pressure resulting from the flow of water from the boiler feed pump to the boiler which is usually five pounds, or more.

The feed water pump controls pressure in the main tank, and thereby acts as a regulator, thus maintaining in the main tank at a constant higher pressure than the pressure near, at, or in the boiler, thereby, in conjunction with the regulating valve, insuring a steady, constant, and regular flow of compound into the boiler proportional to said differential pressure.

I claim:

1. An automatic boiler compound feeder comprising a main pressure tank having means for supplying it with water under pressure, direct from boiler feed pump, an auxiliary compound receiving tank, a pipe connecting the upper portion of said tanks for transmitting air pressure from said pressure tank to said compound tank, means for passing compound into said compound tank, a pipe leading from adjacent the lower portion of said compound tank, a valve supplied by said pipe, and a downwardly extending pipe leading from said valve and provided with a transparent section immediately below said valve.

2. An automatic boiler compound feeder comprising a pressure tank, a pipe connected with the lower end of said pressure tank and adapted for connection to a source of water pressure or to a waste pipe, a boiler compound tank carried by the upper portion of said pressure tank, means placing the upper ends of said tank in communication with each other, a pipe extending downwardly to adjacent the bottom of said compound tank, a valve supplied by said last mentioned pipe, and a transparent tube positioned below said valve and through which said compound may drip.

3. An automatic boiler compound feeder comprising a pressure tank, a pipe connected with the lower end of said pressure tank and adapted for connection to a source of water pressure or to a waste pipe, a boiler compound tank carried by the upper portion of said pressure tank, means placing the upper

ends of said tanks in communication with each other, a pipe extending downwardly to adjacent the bottom of said compound tank, a valve supplied by said last mentioned pipe, and a transparent tube positioned below said valve and through which said compound may drip, and means for renewing the supply of compound in said compound tank.

4. In a device of the class described, the combination of a pressure tank, means for connecting the lower end of said pressure tank to a supply of water under pressure direct from boiler feed pump, and to a waste pipe, an auxiliary tank mounted upon the upper end of said pressure tank, a pipe leading from the upper end of said pressure tank to the upper end of said auxiliary tank, a valve in said last mentioned pipe, a pipe leading downwardly into the upper end of said auxiliary tank and having a valve therein and a hopper at its upper end, a downwardly extending pipe passing into said auxiliary tank and terminating adjacent the bottom of said auxiliary tank, a valve supplied by said last mentioned pipe for controlling the flow of compound from said auxiliary tank, and a glass tube mounted below said valve.

In testimony that I claim the foregoing I have hereunto set my hand at Green Bay, in the county of Brown and State of Wisconsin.

ROBERT R. SMILEY.