J. W. ETIENNE.

BOILER COMPOUND FEEDER.
APPLICATION FILED JUNE 30, 1916.

1,221,851.

Patented Apr. 10, 1917.

Fig. 1.

Engine

Fig. 2.

Fig. 3.

To Pump or Injector

From Source of Water Supply

Witnesses

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By

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JOHN W. ETIENNE, OF CLARION, IOWA.

BOILER-COMPOUND FEEDER.


To all whom it may concern:

Be it known that I, JOHN W. ETIENNE, a citizen of the United States, residing at Clarion, in the county of Wright and State of Iowa, have invented certain new and useful Improvements in Boiler-Compound Feeders, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a boiler compound feeder or device for feeding water purifying agents to steam boilers, the primary object of the invention being to provide a feeder of this character which is simple and inexpensive of construction, not liable to get out of order, positive, certain and reliable in action at all times, and adapted for feeding either solid or liquid compounds as desired.

A further object of the invention is to provide a device of the character described which may be connected with the water supply pipe of the boiler at a point between the source of supply of the water and the injector, pump or siphon, and which will supply a greater or less quantity of the purifying substance to the pump, boiler checks and other appliances between the source of supply and the boiler as well as to the latter, thus keeping all of the water supplying connections in prime condition.

A still further object of the invention is to provide a feeder of the character described using as a feeding pressure agent, as well as a solvent for a solid soluble compound, if used, exhaust or other steam from the engine or other steam generator, whereby efficiency of action is secured.

The invention consists in the features of construction and the combination and arrangement of parts which will be described hereinafter, defined in the appended claim and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the apparatus as connected up for use;
Fig. 2 is a vertical longitudinal section through the compound receptacle; and
Fig. 3 is a top plan view thereof.

Referring to the drawings, 1 designates a receptacle to hold the purifying substance or compound, which may be in either solid or liquid form, which receptacle is shown as comprising a cylindrical body 2 having at its lower end a detachable, conical discharge member 3 and closed at its upper end by a detachable screw cap or its equivalent 4, which may be provided with a flange or projection 5 for the convenient use of a wrench or other tool in applying and removing it.

The conical outlet 3 of the receptacle terminates in a cylindrical portion 6 which receives one end of a discharge pipe section 7, composed of suitable pipe sections and fittings, and having therein a controlling and cut-off valve 8 for governing the discharge of the compound. The pipe 7 is coupled by a T-union 9 to the water supply pipe 10 at a point between the source of supply of the water and the pump, injector, siphon or other device for feeding the water to the boiler.

At its upper end the receptacle connects with a steam admission pipe 11 having a controlling and cut-off valve 12 therein and united by a coupling 13 to a steam supply pipe 14 having a controlling and cut-off valve 15 therein. The pipe 14 leads from a suitable source of steam supply, as from a chamber 16, which may be either a boiler for supplying live steam to or a receptacle to receive the exhaust steam from a steam engine.

If desired, a check valve and pressure gauge may be arranged in the pipe 11 or pipe 14 for obvious purposes, but as these are elements commonly employed in steam supply systems and are not herein claimed, I have not deemed it necessary to illustrate the same. The pipes 11 and 14 are threaded into the coupling 13, and are thus detachably connected, so that the receptacle may be at any time disconnected from the source of steam supply.

In the use of the apparatus, the receptacle 1 is supplied with a desired amount of the compound or purifying agent, which may be in the form of a liquid or soluble solid, and upon the starting of the pump, injector or other water feed device in action, the valves 12 and 15 are opened for the supply of steam to the receptacle and the valve 8 operated at a proper time thereafter for the discharge of the purifying agent into the water contained in the pipe 10. This purifying agent passes through the pipe to the pump, injector, boiler checks and other parts of the equipment arranged between the source of supply of water and the boiler, and as a result of such, the conductors and working parts, together with pipes and fittings, are maintained in prime condition. My in-
vention thus overcomes objections to systems in which the purifying agent is supplied directly to the interior of the boiler without passing through the water supply conductors, which become coated or clogged with impurities, and also overcomes objections to those systems in which the purifying agent is fed to a water supply tank, to the walls of which it is liable to adhere, thus corroding or pitting the tank and supply an inadequate quantity of the material to the boiler.

It will be understood that in the use of the apparatus the steam acts as a pressure agent for a force feed action as well as a solvent, particularly in the use of a solid soluble compound or purifying substance, which is dissolved by the water of condensation from the steam and under the action of the warm water is quickly reduced to a soluble state and placed in condition to be supplied to the feed water. It will, of course, be understood that the amount of steam supplied to the receptacle may be varied as occasion may require by adjusting either of the valves 12 or 15, and that by adjustment of the valve 8 the amount of the purifying agent passing to the pipe 10 may also be varied, so that the exact amount of substance required to keep the system clear of deposits and the water purified may be furnished with certainty and reliability.

Inasmuch as the device is arranged so as to supply all of the water supplying connections with a purifying agent it will be seen that the entire system will be kept clear of deposits, incrustations, etc., and that as the device is of a simple character and is devoid of movable working parts, it is not liable to get out of order. It will also be evident that as the construction is simple the device may be made and supplied at a comparatively low cost and used without any required skill except the exercise of the ordinary judgment of the engineer or fireman in charge of the plant. Other advantages of the invention will be evident to those versed in the art from the foregoing description.

Having thus described my invention, I claim:

A device for containing and supplying a solid soluble water-purifying agent to steam boilers and the feed water supply connections thereof, comprising a cylindrical vertically disposed receptacle, open at the top for the reception of the purifying agent, a conical discharge member detachably connected at its enlarged portion with the base of the receptacle and having its reduced portion formed with an outlet, a water supply pipe disposed below said outlet, a discharge pipe leading from said outlet to the water supply pipe, said discharge pipe having a controlling valve therein, steam supplying means, a steam supply pipe leading therefrom and connected with the top of the receptacle below and independently of said closure for supplying steam thereto, whereby the steam and the water of condensation therefrom are Adapted to percolate downward through the solid soluble purifying material within the receptacle and dissolve and carry portions thereof through the outlet into the discharge pipe, and a controlling valve in the line of the steam supply pipe.

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

JOHN W. ETIENNE.

Witnesses:

J. A. ROGERS,
A. R. LADD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."