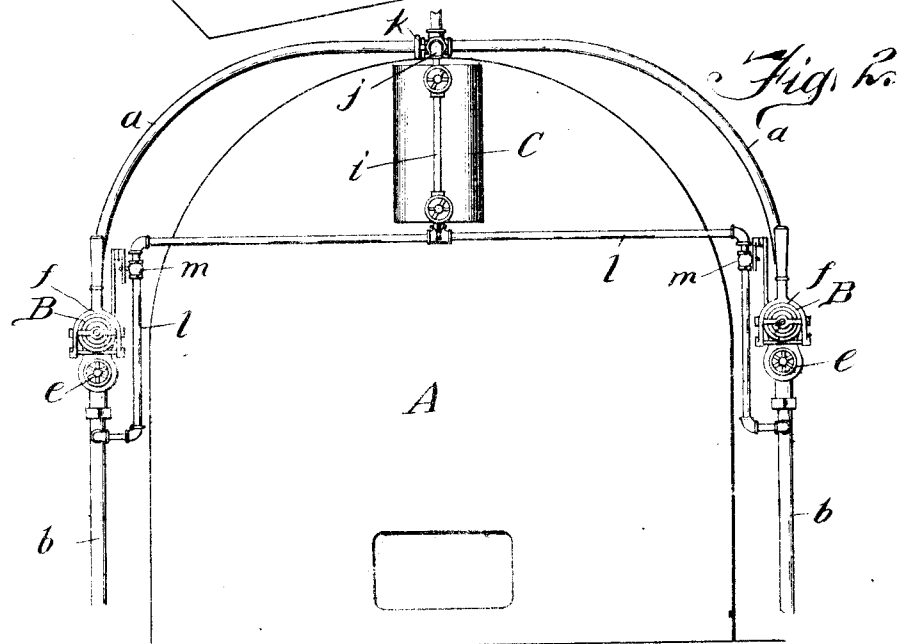
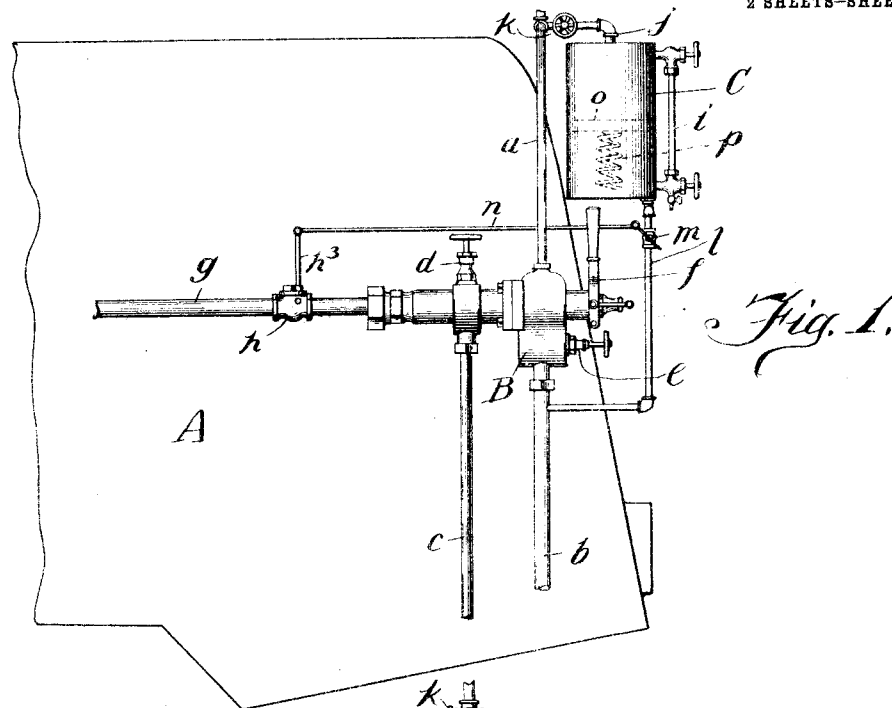


W. WHITE.
BOILER COMPOUND FEEDING MECHANISM.
APPLICATION FILED JULY 24, 1909.

1,025,224.

Patented May 7, 1912.

2 SHEETS-SHEET 1.



Witnesses:
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N. E. Vassar

By

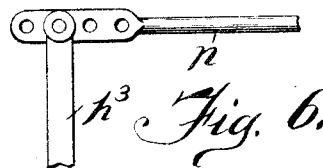
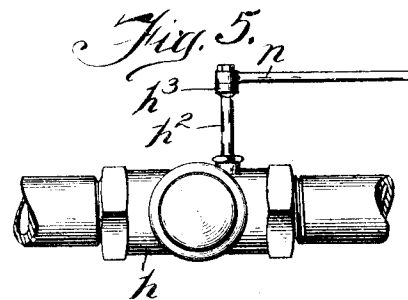
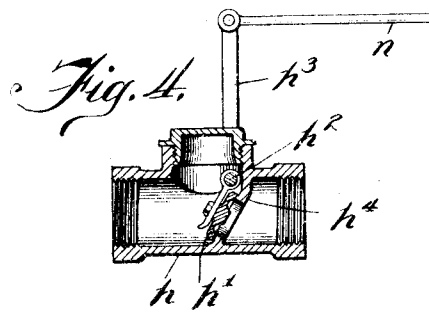
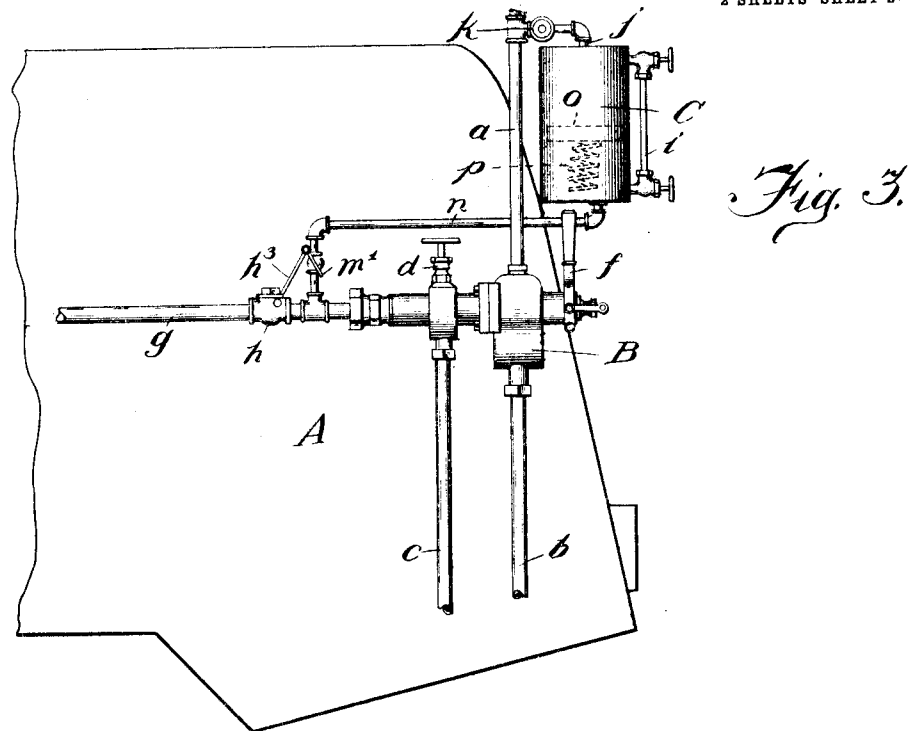
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

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BOILER-COMPOUND-FEEDING MECHANISM.

1,025,224.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed July 24, 1909. Serial No. 509,445.

To all whom it may concern:

Be it known that I, WILLIAM WHITE, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Boiler-Compound-Feeding Mechanism, of which the following is a description.

My invention relates to a method and a mechanism for automatically feeding boiler compounds to boilers in a manner that will not only produce greater efficiency, but also be more economical than the method now employed; the mechanism illustrated for carrying out my invention being adapted for use on stationary and locomotive boilers, as will be apparent from the following detailed description of the accompanying drawings which form a part of my specification.

In the drawings:—Figure 1 is a side elevation of a form of my invention shown applied to a locomotive boiler, the rear portion of the latter only being shown. Fig. 2 is a rear end elevation of the same. Fig. 3 is an elevation similar to Fig. 1, showing a modification of the construction illustrated in Fig. 1. Fig. 4 is an enlarged horizontal or longitudinal section of the valve shown in Fig. 5. Fig. 5 is an enlarged plan view of the valve looking down on the valve shown in Fig. 4. Fig. 6 is a detail.

As is well known, it is customary to supply to the feed water for boilers compounds designed to prevent the formation of injurious incrustations within the boiler, and the object of my invention is to supply such compounds in such a manner that the proper proportion of the compound to the feed water will be always maintained, and to supply the compound to the feed water automatically so that whenever feed water is supplied to the boiler there will also be supplied at the same time a proper amount of boiler compound.

In the accompanying drawings in which I have disclosed one way in which I may carry out my invention A represents the rear or fire-box end of a locomotive boiler supplied preferably on both its sides with injectors B, B (see Fig. 2) which may be of any of the well known types now in use. These injectors B, B are connected up with steam pipe *a* which communicates with the boiler A; the steam being generally taken from the highest point in the boiler. The pipe *a*

supplies the steam whereby the injector is made to operate. Pipe *b* is the suction or supply line leading from the water supply or tank; *c* is the over-flow pipe leading from the injector, either to a reservoir (when in use on stationary boilers) or discharging below the engine cab; communication between the injector and supply line *b* being controlled by a valve as at *e*; and *f* represents a lever whereby the valve controlling the passage of the steam into the injector is operated, as is old and well known. The opposite or delivery end of the injector is provided with delivery or boiler feed pipe *g* through which the feed water passes to the boiler.

C represents any suitable style of tank or receptacle intended to contain any fluid boiler compound which may be employed to prevent incrustation. This receptacle is shown supplied with gage glass *i*. At or near its bottom the receptacle or tank C is provided with an outlet pipe *l* through which the compound is delivered to the feed water as hereinafter described. This receptacle C is also connected with the steam pipe *a* by means of the pipe *j* which preferably takes into the top of the receptacle, the pipe *j* being supplied with any suitable style of valve as at *k*.

In the construction illustrated in Fig. 1 the pipe *l* is shown connected to the suction or water supply line *b*.

In order to deliver the compound from the receptacle to the feed water in the proper proportion and at the same time to insure the delivery of such compound automatically as the feed water passes to the boiler, I provide the following mechanism: In the boiler feed pipe *g* is a valve casing *h* within which is mounted a valve *h'* adapted to seat against the valve seat *h''* in such a manner as to permit the passage of water to the boiler and to check any return from the boiler. This valve *h'* is pivoted upon a rock shaft *h²*, which rock shaft extends to the exterior of the valve casing as clearly shown in Fig. 5. The connection between the valve *h'* and the rock shaft *h²* is rigid so that as the valve is opened or closed the rock shaft is turned correspondingly. Upon the rock shaft on the exterior of the valve casing is rigidly mounted a lever arm *h³*. In the pipe *l* through which the compound is delivered to the feed water from the compound receptacle is a valve *m* which may be of any suit-

able construction to open and close the passage way in the pipe. On the exterior of the valve casing, this valve *m* is provided with an arm *m'* which is connected to the lever arm *h*³ so that as the lever arm is moved by the operation of the valve *h'* the valve *m* is correspondingly moved.

In the form shown in Figs. 1, 4, and 5 the lever arm *h*³ and the arm *m'* are connected to or water supply line *b*, while in the form shown in Fig. 3 the lever arm *h*³ and arm *m'* are connected directly at the ends as shown. In Fig. 1, the compound delivery pipe *l* is shown communicating with the suction or water supply line *b*, while in the form shown in Fig. 3 the compound supply pipe *l* is shown as communicating with the boiler feed pipe *g*.

From the foregoing description, it is apparent that when the lever *f* of the injector is drawn out after the injector has been primed and the suction pipe valve *e* has been opened the water and steam will be forced through the injector into the feed pipe *g* and into the boiler. The water and steam from the injector will force the valve *h'* open which by reason of its connection with the valve *m* will open the latter, and it will be apparent that the opening of the valve *m* will be in proportion to the opening of the valve *h'* so that the amount of compound delivered to the feed water will be regulated in accordance with the amount of water fed to the boiler. The proportion of compound fed to the water may be further regulated by adjusting the connection between the valves *h'* and *m* so that the latter will be opened only to a certain degree while the valve *h'* is opened entirely. Any suitable means may be employed for effecting this function, as for example: an adjustable connection between the lever arm *h*³ and the connecting rod *n* as indicated in Fig. 6.

In order to insure the positive operation or passage of the compound from receptacle C through pipe *l* and into either the suction pipe *b* or into the delivery or feed pipe *g*, I have shown the branch pipe *j* communicating with the steam pipe *a* and the upper part of the receptacle C so that when valve *k* is opened some steam will pass into the top of receptacle and place the contents under pressure so that when valve *m* is opened, the compound is forced into contact with the water to be fed into the boiler, thus providing the boiler with water that has mingled with it a predetermined quantity of the compound.

Instead of relying merely upon the direct pressure of the steam in the upper part of receptacle C on the compound, the receptacle may be provided with a piston as shown in dotted lines at *o* which may normally be held in the upper part of the receptacle C by a light spring *p* as shown.

The compound being in the lower part of receptacle C with the piston *o* bearing on top thereof, it is evident that the steam passing through pipe *j* into the upper part of receptacle C with sufficient pressure to overcome the spring *p* will force piston *o* downward thereby placing the compound under pressure and insuring its passage into the boiler when the proper valves have been opened by the action of the injector. This will force the compound into pipe *b* and compel it to pass into the injector with the inrushing water, when the construction shown in Fig. 1 is employed; or the compound is forced into delivery or feed pipe *g* and passes into the boiler with the injected water when the construction shown in Fig. 3 is employed.

I claim as my invention—

1. In a boiler compound feeding mechanism, the combination of an injector having a steam and delivery or feed pipe connection with a boiler and a suction or intake pipe connection with a source of water supply, with a receptacle charged with a boiler compound, said receptacle being connected intermediate of the steam pipe connection and the delivery pipe connection and so related to said injector that the operation of the latter will establish communication between said receptacle and the boiler and permit of the passage of the compound from said receptacle to the boiler.

2. A boiler compound feeding mechanism comprising a compound receiving receptacle provided with an outlet valve, means whereby the compound in the receptacle is placed under pressure, an injector having steam connection with the boiler and supply pipe connection with a source of water supply, a feed pipe intermediate of the injector and the boiler, provided with a valve adapted to be opened by the pressure of the passing contents, and means intermediate of said valve and the outlet valve of the receptacle whereby the latter will be operated when the pressure in the feed pipe opens the valve therein.

3. A boiler compound feeding mechanism comprising a compound receiving receptacle provided with an outlet valve, an injector having a steam connection with the boiler, a connection with a source of the water supply and a feed pipe connection with the boiler, and means intermediate of the said feed pipe connection and said outlet valve adapted to be operated by the pressure produced in the feed pipe, whereby a predetermined quantity of compound is automatically fed into the boiler.

4. A boiler compound feeding mechanism comprising an injector having steam connection with the boiler, a supply pipe connection with a source of water supply and a feed pipe connection with the boiler, a

compound receiving receptacle provided
with an outlet valve and connected with the
steam pipe connection, means located within
the receptacle adapted to be affected by the
5 incoming steam whereby the compound is
put under pressure, and means located in the
feed pipe and having operative connection
with the outlet valve in said receptacle, said
means being adapted to be affected by the

pressure of the passing contents within the 10
feed pipe whereby a predetermined quantity
of compound is automatically fed to the
boiler.

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Witnesses:

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