

(No Model.)

H. B. WRIGHT.
MECHANICAL PURIFIER.

No. 578,686.

Patented Mar. 9, 1897.

Fig. 1.

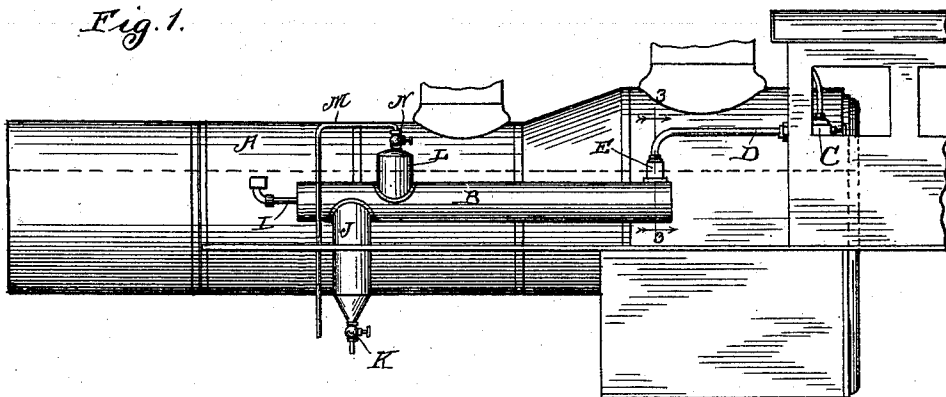


Fig. 2.

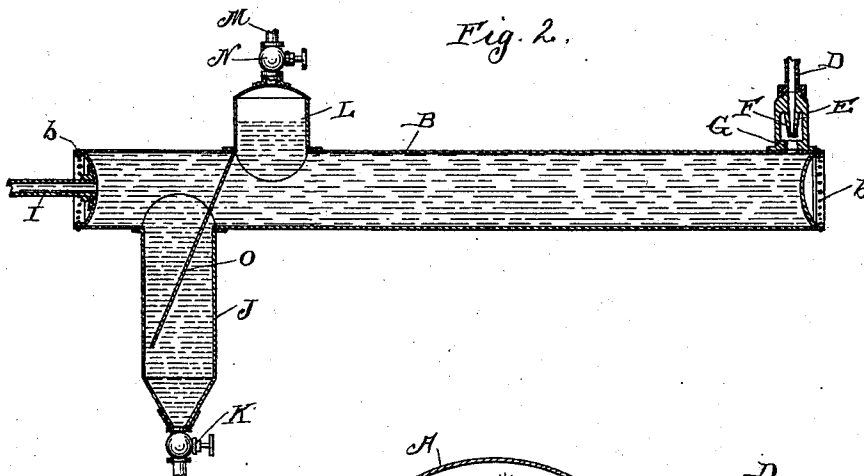
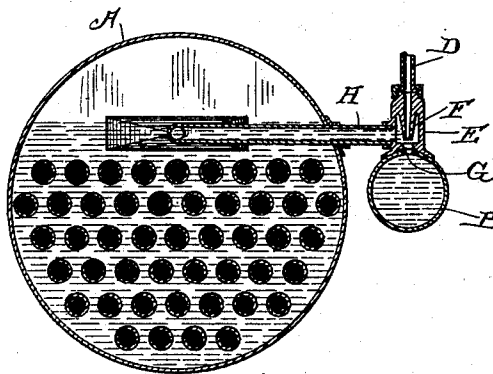


Fig. 3.



Witnesses:
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By
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UNITED STATES PATENT OFFICE.

HERBERT B. WRIGHT, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO
EDWIN P. MONROE AND JAMES W. SEYK, OF SAME PLACE.

MECHANICAL PURIFIER.

SPECIFICATION forming part of Letters Patent No. 578,686, dated March 9, 1897.

Application filed May 11, 1896. Serial No. 591,043. (No model.)

To all whom it may concern:

Be it known that I, HERBERT B. WRIGHT, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful
5 Improvements in Mechanical Water-Purifiers, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete description, sufficient to enable those
10 skilled in the art to which it pertains to understand, make, and use the same.

The object of this invention is to obtain an apparatus wherein and whereby water may be purified before it is introduced into the
15 boiler of a locomotive or other steam-generating apparatus, and thereby the formation of scale largely, if not wholly, prevented.

The manner in which I accomplish the object sought by me is hereinafter fully described.
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Briefly stated, I obtain the results sought by placing adjacent to the boiler a receptacle, admitting thereto hot water under pressure slightly greater than the pressure carried in the boiler, (that is, so that an automatic flow of water therefrom into the boiler will occur, when the apparatus is being used, through a connecting-pipe,) in connecting the water-supply to such receptacle by a pipe extending into such receptacle from the injector ordinarily used for forcing water into the boiler, and by so connecting a pipe from the boiler to the cold-water-supply pipe that the introduction of cold water into the receptacle through the cold-water-supply pipe will also introduce a sufficient quantity of hot water from the boiler to raise the temperature of the entire contents of such receptacle so high as to cause the precipitation of the substances desired to be gotten rid of and contained in the water while such water is in such receptacle.
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In addition to the foregoing construction I place a well at one end of the receptacle, so that the water extending through the receptacle will pass over the mouth of the well before being discharged from the well, and I place a blow-off cock at the lower end of the well, so that whatever substance is deposited
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50 or precipitated in the well it may be cleaned

therefrom. I also prefer to have a deflecting-plate placed in the receptacle, so that the water passing through the receptacle is forced to extend thereunder and a slight distance into the well, thereby insuring the deposit or
55 precipitation in the well of the substance or material taken from the water passing through the receptacle. Further, I place on the receptacle a dome, in which will be collected such substances as are separated from
60 the water and are of less specific gravity than such water, and a blow-off cock from such dome.

In the drawings referred to as forming a part of this specification, Figure 1 is a side elevation of a locomotive-boiler having an apparatus embodying my invention connected thereto; Fig. 2, an enlarged longitudinal central vertical section of the apparatus embodying the invention; Fig. 3, a cross-section on
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70 line 3 3 of Fig. 1, viewed in the direction indicated by the arrows.

A letter of reference applied to designate a given part is used to indicate such part throughout the several figures of the drawings wherever the same appears.
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A is the locomotive-boiler.

B is a receptacle adjacent to the boiler A. I prefer the receptacle B to be a cylinder constructed of sheet-steel or sheet-iron formed
80 up and riveted together in the ordinary manner, as by rivets *b b*, and I prefer also that the ends of cylinder B shall be dished in, so that the rivets *b' b* holding such ends in place may be riveted from the outside of the receptacle, such receptacle not necessarily being
85 of large diameter as compared with the diameter of the boiler the feed-water whereof is to pass through it.

C is an ordinary injector for forcing feed-water into a boiler.
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D is a feed-pipe extending from injector C to water-injector E.

E is a water-injector opening into (and discharging) receptacle B.
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F is the discharge pipe or nozzle of injector E and is placed on the end of the pipe D or so that such pipe D can be connected thereto.

G is the discharge-opening of injector E.

H is a pipe extending from boiler A into
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injector E and discharging into the chamber around the discharge-nozzle F, so that hot water extending from the boiler A through pipe H will be forced into the receptacle B in the ordinary manner of working of injectors.

I is a discharge-pipe from receptacle, extending therefrom into the boiler A.

J is a well in receptacle B, near the end thereof, from which discharge-pipe I extends.

10 K is a blow-off cock from well J.

L is a dome on receptacle B.

M is a pipe extending from dome L, and N is a blow-off cock in pipe M.

O is a deflector-plate in receptacle B.

15 The manner of operation of my mechanical purifier is as follows: When the injector C is opened, the feed-water from the supply is forced therethrough through pipe D, nozzle F in injector E, and into the receptacle B through the discharge G in injector E. At 20 the same time hot water from boiler A is drawn through pipe H and forced through discharge G into receptacle B along with the cold water. Such hot water in its passage through 25 discharge G is intermingled with the cold water discharged through nozzle F. The cross-sectional area of receptacle B is considerably greater than the combined cross-sections of pipes G and H, (as well as of discharge-pipe 30 I,) and the contents of such receptacle B are substantially at rest while passing through the receptacle, there being a slow current through the receptacle toward the discharge end thereof when the injectors C and E are 35 forcing water into the receptacle B through such receptacle and into the boiler from the discharge end of the receptacle through pipe I. As such water extends through the receptacle B, the water being in a highly-heated condition, the matter or substance desired to 40 be taken from the water will be precipitated in the receptacle B, and where, as I at all times prefer, the well J and deflector-plate O are used such substances as are of greater 45 specific gravity than the liquid contained in the receptacle B will be deposited in such well

J, from which it can be withdrawn by opening the blow-off cock K.

Where the dome L is used, substances of less specific gravity than the liquid contents 50 of the receptacle B will be collected in such dome and can be removed therefrom by opening the blow-off cock N.

Having thus described my invention, what I claim as new, and desire to secure by Letters 55 Patent, is—

1. A receptacle for liquid consisting of a horizontal cylinder, an injector discharging into the receptacle, at one end of the cylinder on the upper side thereof, a pipe extending to the injector from an ordinary feed-water injector, a second pipe extending to the injector from the boiler whereby hot and cold water are forced into the receptacle, a discharge-pipe through the center of the head 60 of the discharge end of the receptacle extending therefrom back to the boiler, a dome near the discharge end of the receptacle, and a well in the receptacle between the dome and the discharge end; substantially as described. 70

2. A receptacle for liquid consisting of a horizontal cylinder, an injector discharging into the receptacle at one end of the cylinder on the upper side thereof, a pipe extending to the injector from an ordinary feed-water 75 injector, a second pipe extending to the injector from the boiler whereby hot and cold water are forced into the receptacle, a discharge-pipe through the center of the head of the discharge end of the receptacle extending therefrom back to the boiler, a dome 80 near the discharge end of the receptacle, and a well in the receptacle between the dome and the discharge end with a deflector-plate extending from the upper side of the cylinder 85 adjacent to the dome into the well and near to the bottom thereof; substantially as described.

HERBERT B. WRIGHT.

In presence of—

FLORA L. BROWN,
J. F. SOMES.