Feb. 3. 1925. 1,525,341

C. UEBELMESSER

MEANS FOR ELIMINATING SEDIMENT FROM STEAM GENERATORS, BOILERS, ETC

Filed Dec. 8. 1923 2 Sheets-Sheet 1

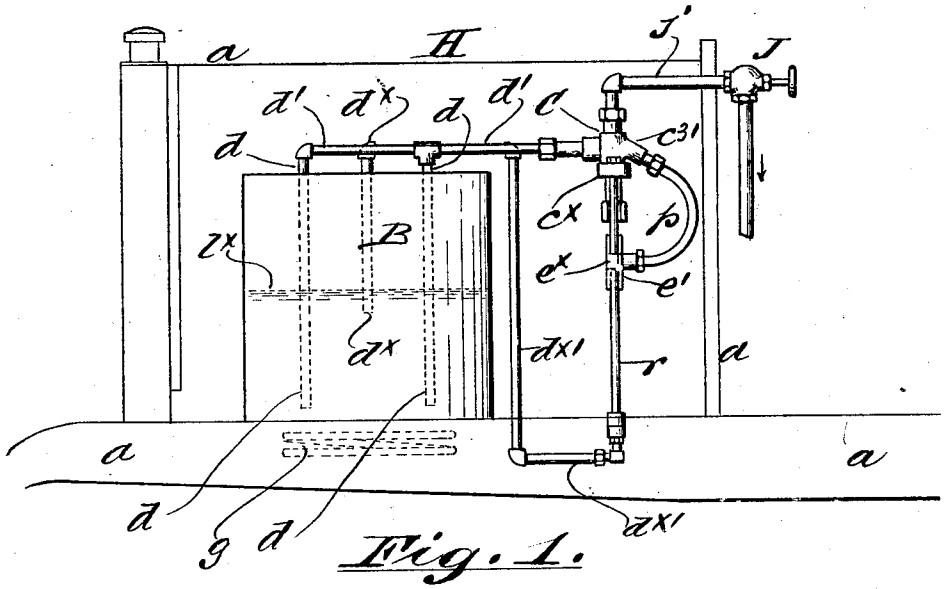


Fig. 1.

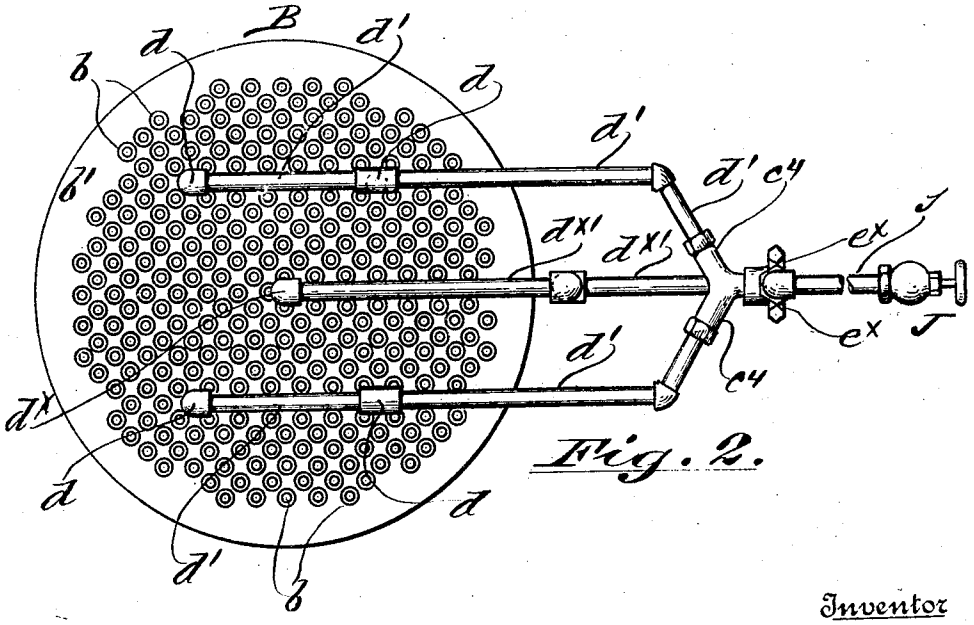


Fig. 2.

Inventor
Charles Uebelmesser,
By his Attorney,
Geo. H. Miller

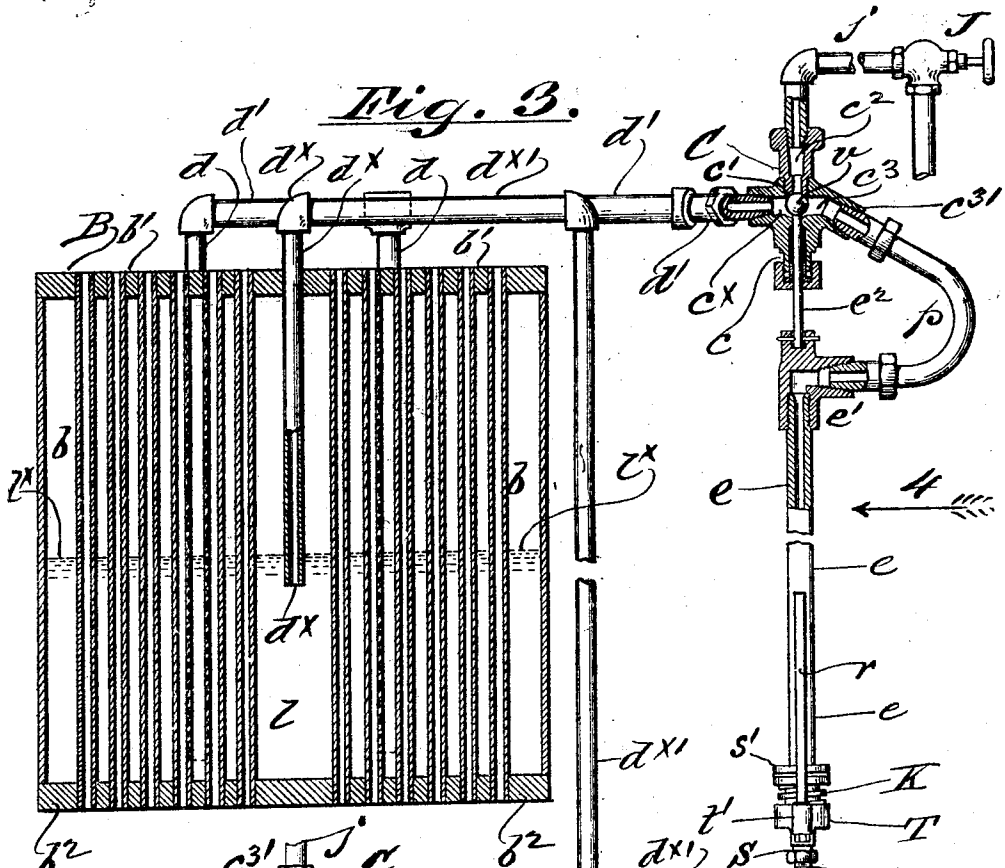
Feb. 3, 1925. 1,525,341

C. UEBELMESSER

MEANS FOR ELIMINATING SEDIMENT FROM STEAM GENERATORS, BOILERS, ETC

Filed Dec. 8, 1923 2 Sheets-Sheet 2

Fig. 3.



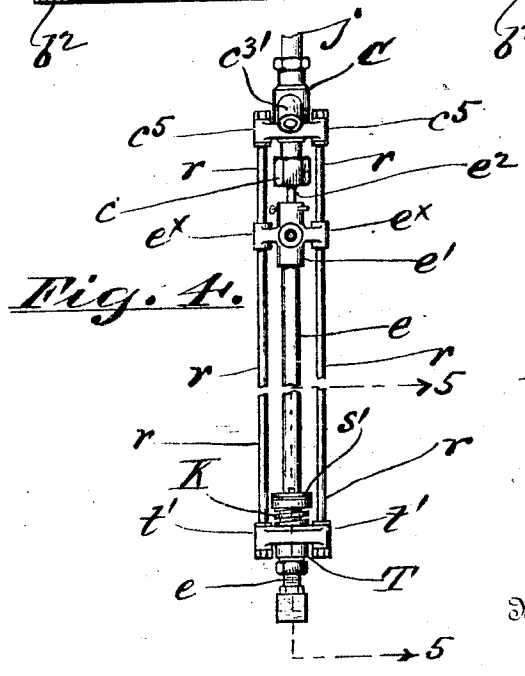


Fig. 4.

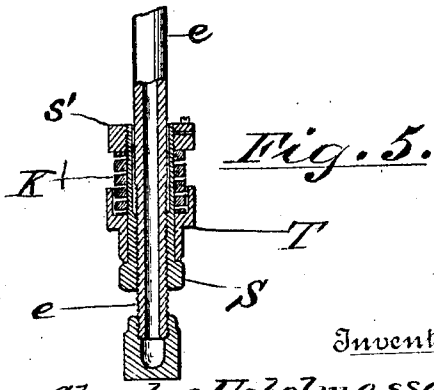


Fig. 5.

Inventor:
Charles Uebelmesser,
By his Attorney,
Leo. Wm. Widtf

Patented Feb. 3, 1925. 1,525,341

UNITED STATES PATENT OFFICE.

CHARLES UEBELMESSER, OF NEW YORK, N. Y.

MEANS FOR ELIMINATING SEDIMENT FROM STEAM GENERATORS, BOILERS, ETC.

Application filed December 8, 1923. Serial No. 679,327.

To all whom it may concern:

Be it known that I, CHARLES UEBELMESSER, a native of Germany, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Means for Eliminating Sediment from Steam Generators, Boilers, Etc., of which the following is a specification sufficient to enable those skilled in the art to which the invention appertains to utilize the same.

While applicable to various other analogous purposes and apparatus wherein the vaporization of liquid is effected by heat, my improvements are designed primarily and especially for use in connection with boilers and steam generators operating under pressure in excess of that of the atmosphere, my object being to afford simple but effective cleaning means whereby sediment, etc., may be positively eliminated with safety, the operation being essentially automatic in this respect, all as hereinafter fully set forth, and the invention consisting in the specific combination and arrangement of parts and appurtenances described and claimed.

In the accompanying drawings I exemplify a practical embodiment of the essential features of my invention, although I do not restrict myself to the identical form and construction of parts shown, since modifications in minor details and equivalent mechanical expedients may be resorted to with like results, and without departing from the spirit and intent of my invention.

With this understanding:

Fig. 1, represents the side elevation of a steam generator of the vertical tube or "Scotch boiler" type provided with my sediment discharge appliance;

Fig. 2, is a plan, upon a larger scale, of the boiler and apparatus shown in Fig. 1;

Fig. 3, is a central vertical sectional elevation of the parts shown in Fig. 2;

Fig. 4, is a sectional elevation of the sediment discharge tubing, etc., looking in the direction of the arrow 4 Fig. 3, the by-pass tube being omitted;

Fig. 5, is a sectional detail on a larger scale, taken upon plane of line 5—5 Fig. 4.

The outline a, a, shown in Fig. 1, of the drawings indicates diagramatically the installation of my sediment eliminating apparatus in connection with a boiler B, inclosed in the hood H, of an automobile, although, as hereinbefore intimated, I do not limit myself to this or any other particular use, nor to a specific type of steam generator,—that (B) shown being of the "Scotch" or vertical kind, provided with the usual upright flues b, b, for the passage of the products of combustion from a gas coil g, or other suitable means for effecting the evaporation of the liquid l, in said boiler, l^x, representing the approximate normal liquid level.

A plurality of fluid discharge pipes d, d, extend through the head d', of the boiler B, a majority of them extending down to a common level near the bottom plate b^2, of said boiler, four of these lower level drain pipes being shown in the drawings, although any desired number may be provided, preferably arranged in equidistant relationship around the central vertical axis of the vapor generating chamber.

A shorter discharge pipe d^x, is preferably positioned centrally as related to the vaporizing chamber and to the aforesaid plurality of lower level drain pipes d, d, said central discharge pipes d^x, extending down only to a level a little below the normal liquid level l^x, as shown more particularly in Fig. 3, of the drawings.

This higher level discharge pipe d^x, is connected by auxiliary piping $d^{x'}$, with the lower end of an expandible stand pipe e, on the upper extremity of which is attached an elbow coupling e', on which is mounted a push valve rod e^2, which protrudes through a stuffing box c, on the lower portion of the coupling head C, as shown more particularly in Fig. 3, of the drawings, by reference to which it will also be seen, that a ball valve v, is positioned on the upper end of said push-rod e^2, for engagement with a valve seat c', located centrally in said coupling head C, said valve seat c', forming the inlet to the discharge conduit c^2, of the coupling head C, which latter communicates through the branch pipe j, with the ejector valve J, which constitutes the means for the initial control of my draining apparatus, considered in a unitary sense.

The valve chamber c^x, of the coupling head C, has three inlets; one, c^3, connecting with a nipple $c^{3'}$, to which the upper end of a bent by-pass tube p, is connected; the other two inlets communicating through nipples c^4, c^4, with the pipes d', d', which

connect with the upper ends of the lower level drain pipes d, d, as shown more particularly in Fig. 2, of the drawings.

The bent by-pass tube p, is preferably made of copper to afford the requisite degree of flexibility, and its lower extremity is connected with a lateral nipple c^2, of the elbow coupling e', as shown more particularly in Fig. 3, of the drawings.

The elbow coupling e', is essentially a slidable cross head, being formed with rigid lateral arms e^x, e^x, through which the guide rods r, r, extend, said guide rods r, r, being rigidly secured at their upper extremities to lateral arms c^5, c^5, on the coupling head C, and at their lower extremities to cross arms t', t', on a head T, which is slidably mounted on a sleeve S, rigidly secured to the lower portion of the expansion pipe e, as shown more particularly in Fig. 5, of the drawings. The upper portion of the sleeve S, is male-screw threaded for engagement with the female screw thread of an adjusting nut s', between which and the cross head K, is interposed a take up or compensating spring K, which tends constantly to relieve the guide rods r, r, of possible distortive strain owing to inequality of expansion as compared with and related to the expansion valve tube e.

The operation of my cleansing apparatus is as follows. When it is desired to eliminate sediment and scum from the boiler B, the ejector valve J, is opened, and as a result the steam pressure in the upper part of the boiler forces the liquid l, out through the discharge pipes d, d, d^x, the sediment being carried out through the lower level pipes d, d, and the scum through the upper level pipe d^x. The lower level discharge pipes d, d, communicate, as hereinbefore set forth, directly with the coupling head C, whereas the upper level discharge pipe d^x, $d^{x'}$, communicates indirectly with said coupling head C, through the medium of the expansion stand pipe e, and by-pass pipe p, as clearly indicated in Fig. 3, of the drawings. As a consequence of this arrangement, when the liquid level l', falls below the lower extremity of the high level discharge pipe d^x, live steam will be admitted thereto, and through it and its connection pipes $d^{x'}$, to the expansion valve pipe e, passing off through the by-pass pipe p, and coupling head C. As a result of this live steam discharge the pipe e, will expand, the by-pass pipe p, yielding sufficiently to allow the expansion pipe e, and push valve rod e^2, to close the valve v, on its seat c', and thereby automatically stopping the discharge, of both fluids as long as the liquid level l^x, in the boiler B, is below the inlet to the high level discharge pipe d^x.

Supposing the ejector valve J, to be left open unintentionally or otherwise, and the liquid in the boiler B, to be replenished to normal level, the operation described will be repeated without harm to the apparatus; but the closing of ejector valve J, will of course render the device inoperative for the time being.

If the discharge of live steam through the expansion valve pipe e, results in the elongation of said pipe after the valve v, is in engagement with its seat c', in the coupling head C, this excess of expansion is compensated for by the spring K, which in such event relieves the guide rods r, r, of distortive strain as hereinbefore explained.

It will be understood that by thus automatically closing the valve v, when the liquid level l^x, falls below the upper level discharge pipe d^x, the boiler is protected from damage that might otherwise result from excess of heat in the absence of a suitable volume of liquid therein.

It is to be understood that the steam discharge pipes $d^{x'}$, connecting the upper level pipe d^x, with the expansible stand pipe e, have sufficient "give" or flexibility to admit of this excess of expansion of the tube e, if it occurs.

What I claim as my invention and desire to secure by Letters Patent is:

1. In combination with a steam pressure generator of the character designated, a sediment discharge pipe extending nearly to the bottom thereof, a higher level steam discharge pipe extending below the proximate normal liquid level in said generator, both of said discharge pipes being connected with a coupling head common to both said coupling head, a valve positioned therein to automatically stop the discharge of both fluids, and mounted upon a push rod rigidly connected with an expansible stand pipe forming part of the aforesaid steam discharge, said expansible valve stand pipe, and an initial control ejector valve connected with said coupling head, substantially in the manner and for the purpose set forth.

2. In combination with a steam pressure generator of the character designated, a plurality of sediment discharge pipes extending nearly to the bottom thereof, a higher level steam discharge pipe extending below the proximate normal liquid level in said generator, all of said discharge pipes being connected with a common coupling head, said coupling head, a valve positioned therein to automatically stop the discharge of both fluids and mounted upon a push rod rigidly connected with an expansible stand pipe forming part of the aforesaid steam discharge, said expansible valve stand pipe, and an initial control ejector valve connected with said coupling head, substantially in the manner and for the purpose set forth.

3. In combination with a steam pressure generator of the character designated, a sediment discharge pipe extending nearly

to the bottom thereof, a higher level steam discharge pipe extending below the proximate normal liquid level in said generator, both of said discharge pipes being connected with a coupling head common to both, said coupling head, a valve positioned therein to automatically stop the discharge of both fluids and mounted upon a push rod rigidly connected with an expansible stand pipe forming part of the aforesaid steam discharge, said expansible stand pipe, a flexible by-pass pipe connecting it with said coupling head, and an initial control ejector valve connected with said coupling head, substantially in the manner and for the purpose set forth.

4. In combination with a steam pressure generator of the character designated, a sediment discharge pipe extending nearly to the bottom thereof, a higher level steam discharge pipe extending below the proximate normal liquid level in said generator, both of said discharge pipes being connected with a coupling head common to both, said coupling head, a valve positioned therein to automatically stop the discharge of the fluids and mounted upon a push rod rigidly connected with an expansible stand pipe forming part of the aforesaid steam discharge, said expansible valve stand pipe, guide rods connecting the upper portion of said expansible valve pipe with the lower portion thereof, means for compensating for inequality of expansion between said guide rods and said expansible valve pipe, and an initial control ejector valve connected with said coupling head, substantially in the manner and for the purpose set forth.

5. In combination with a steam generator of the character designated, means for drawing off liquid from approximately the bottom thereof, means sealed by the normal liquid level for effecting the discharge of steam when the normal liquid level is lowered, discharge means common to both, and a valve interposed in said common discharge means to automatically stop the flow of both liquids and controlled by the expansion and contraction of the steam discharge means, substantially in the manner and for the purpose set forth.

6. In combination with a steam generator of the character designated, means for drawing off liquid from approximately the bottom thereof, means sealed by the normal liquid level for effecting the discharge of steam when the normal liquid level is lowered, discharge means common to both, and a valve interposed in said common discharge means to automatically stop the flow of both liquids and controlled by the expansion and contraction of the steam discharge means, together with an initial control ejector valve, substantially in the manner and for the purpose set forth.

7. In combination with a steam pressure generator of the character designated, a sediment discharge pipe extending nearly to the bottom thereof, a higher level steam discharge pipe extending below the proximate normal liquid level in said generator, both of said discharge pipes being connected with a coupling head, common to both, said coupling head, a valve positioned therein to automatically stop the flow of both liquids and mounted upon a push rod rigidly connected with an expansion stand pipe forming part of the aforesaid steam discharge, said expansion valve pipe, guide rods rigidly connected with the upper portion of said expansion valve pipe and to a slidable flange thereon, a compensating spring interposed between the lower portion of said expansion valve pipe and said slidable flange, substantially in the manner and for the purpose set forth.

CHARLES UEBELMESSER.

Witnesses:

MATHILDA STEURNAGEL,

GEO. WM. MIATT.