Oct. 20, 1936. J. M. THOMPSON 2,058,370

SCALE PREVENTER

Filed Oct. 10, 1935

Fig. 1

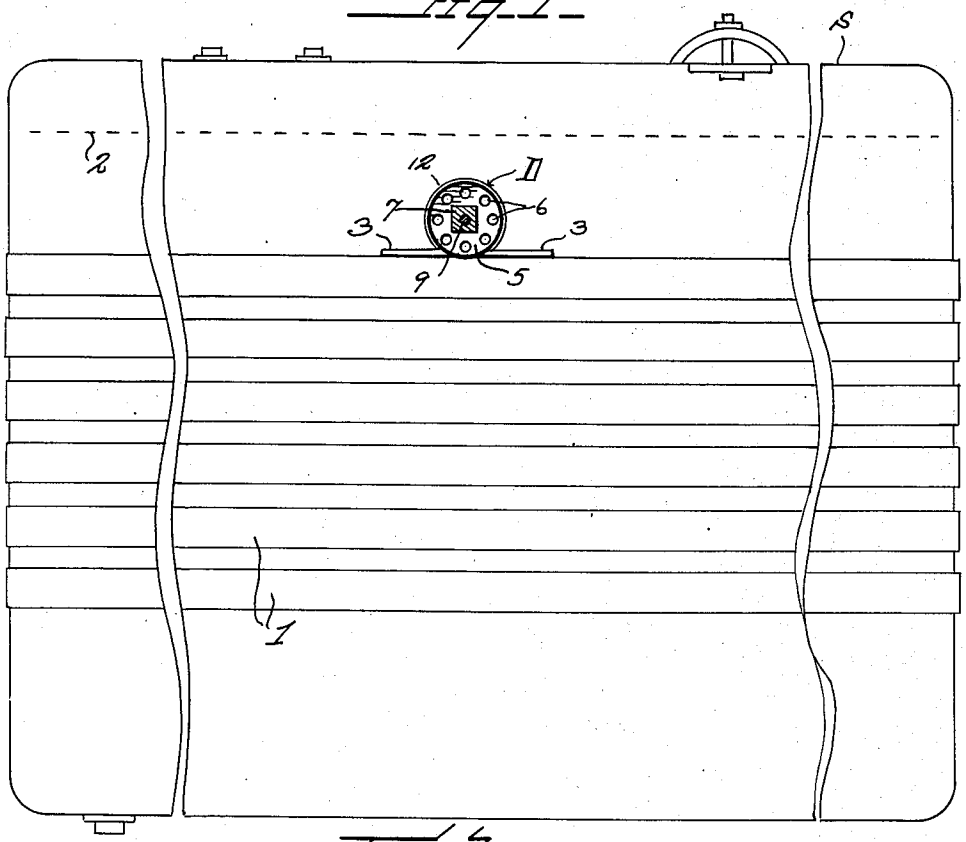
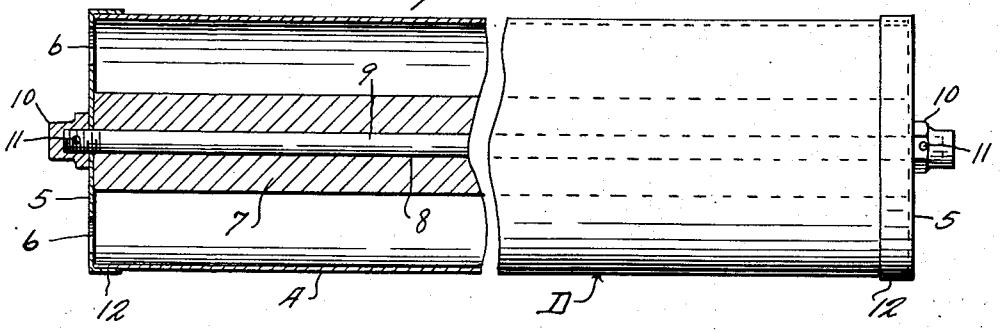


Fig. 2



Inventor

J. M. Thompson

By Watson E. Coleman

Attorney

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SCALE PREVENTER

John Merritt Thompson, Menominee, Mich.

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2 Claims. (Cl. 204—25)

This invention relates to a scale preventer, and it is primarily an object of the invention to provide a device of this kind comprising in its construction two dissimilar metals, such as copper and zinc, assembled in a manner to create a mild current of electricity when placed within a boiler under the water line to hold in suspension the solids or hard particles in the water to prevent such solids or particles from attaching to the wall of the boiler and thereby forming scale.

Another object of the invention is to provide a device of this kind constructed in a manner to make it particularly desirable for use in connection with boilers having fire tubes disposed therethrough, the device being readily supported by the tubes below the water line in the boiler in a position to function to eliminate scale from attaching to the inside of the boiler and particularly around the rivets where the caustic soda embrittles the boiler itself.

It is also an object of the invention to provide a device of this kind which, when in applied position within a boiler, causes by the creation of an electrical current suspension of the solids or particles within the water to prevent such solids or particles adhering to the inside face of the boiler so that said solids or particles will precipitate to the bottom of the boiler to be readily withdrawn as mud.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved scale preventer whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:—

Figure 1 is a diagrammatic view illustrating a scale preventer constructed in accordance with an embodiment of my invention and in applied position;

Figure 2 is a longitudinal sectional view taken through the preventer as herein disclosed with certain of the parts in elevation;

As disclosed in the accompanying drawing, S denotes diagrammatically a boiler shell of a horizontal type and which has disposed therethrough the fire tubes 1, the uppermost of which as is well known terminating below the normal water level within the shell S as indicated by broken lines at 2. My improved scale preventing device D when applied rests upon the uppermost tubes 1 and at substantially the longitudinal center of the boiler shell S and extending transversely thereof.

One or more of the uppermost fire tubes 1 have secured thereto the chocks 3 engaging the applied device D at opposite sides thereof to hold the same in place.

My improved device as herein disclosed comprises a tubular member or barrel 4 open at both ends and having its wall of copper. Each end of the member or barrel 4 is closed by a cap 5, said cap being provided therearound with an annular series of openings 6 whereby water within the boiler shell S may readily enter the member or barrel 4. These caps 5 are made of a material conductive of electricity and preferably of cold rolled steel.

Disposed axially through the member or barrel 4 and of a length co-extensive to the length of said member or barrel 4 is a bar 7 of zinc, said bar being herein disclosed as substantially square in cross section and having an opening 8 disposed entirely therethrough at the axial center thereof. A rod 9 is disposed through this opening 8 in the bar 7 and is of a length greater than the length of said bar so that the extremities of the rod 9 may be disposed through the central portions of the applied caps 5 in order to hold the caps 5 and the bar 7 in working assembly when the cap nuts 10 are threaded upon the end portions of the rod 9 outwardly of the caps 5. These cap nuts 10 clamp the caps 5 to the ends of the bar 7 and the nuts 10 are locked against retrograde turning by the lock pins 11 or otherwise as may be preferred. The caps 5 as herein disclosed are of a slip type and the coaction of the marginal flanges 12 of said caps 5 with the member or barrel 4 maintains the bar 7 at the axial center of said member or barrel.

The device when in applied position within the boiler is in submergence and the bridging of the dissimilar metals, such as copper and zinc, by the water filling the member or barrel 4 results in the generation of a small voltage which tends to cause the flow of an electrical current and particularly when the water contains some dissolved salts. This flow of electricity maintains in suspension the solids or particles within the water and thus prevents the same from adhering to the inner face of the boiler shell S and forming scale but allows such solids or particles to precipitate

to the bottom of the boiler shell S so that the same can be removed in the regular way as mud.

From the foregoing description it is thought to be obvious that a scale preventer constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A scale preventing device for submergence within a boiler comprising a barrel, perforated caps disposed over the ends of the barrel, the caps being conductive of electricity, a bar extending through the barrel, a rod extending through the bar and through the applied caps, and means for clamping the caps to the ends of the bar to maintain the caps and bar in working position, said barrel and bar being of dissimilar metals to set up an electrical current when the device is in submergence.

2. A scale preventing device for submergence within a boiler comprising a barrel, perforated caps disposed over the ends of the barrel, the caps being conductive of electricity, a bar extending through the barrel, a rod extending through the bar and through the applied caps, and means engaging the extremities of the rod for clamping the caps to the ends of the bar to maintain the caps and bar in working position, said barrel and bar being of dissimilar metals to set up an electrical current when the device is in submergence.

JOHN MERRITT THOMPSON.