J. DELL.

COMBINED DIP REGULATOR AND TAR SEAL FOR GAS APPARATUS.

APPLICATION FILED MAR 2, 1908.

951,633.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

Fig. II.

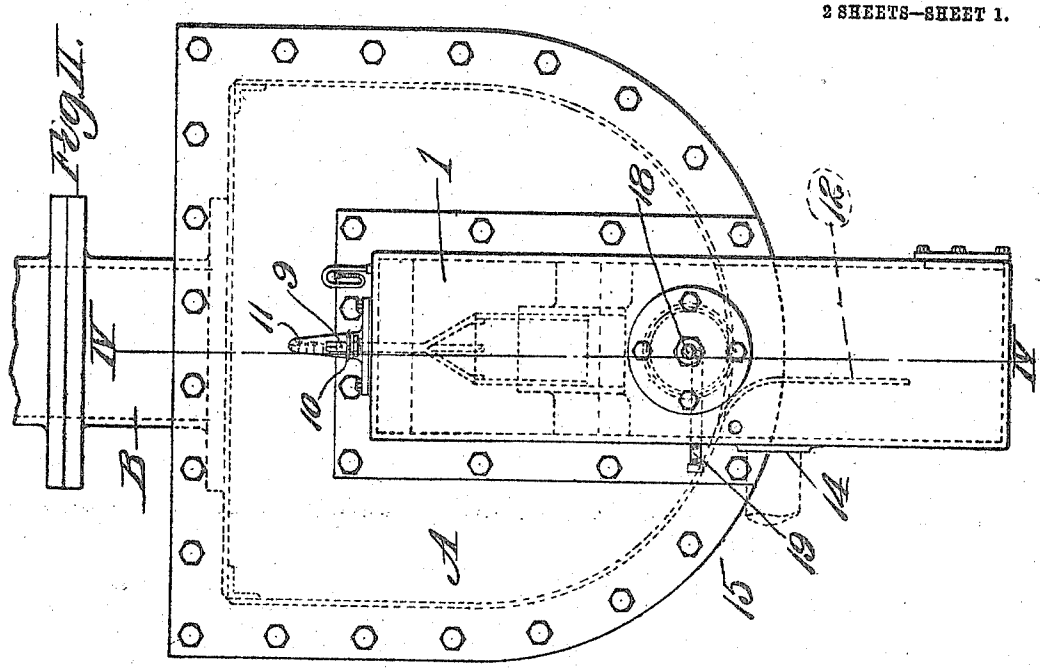
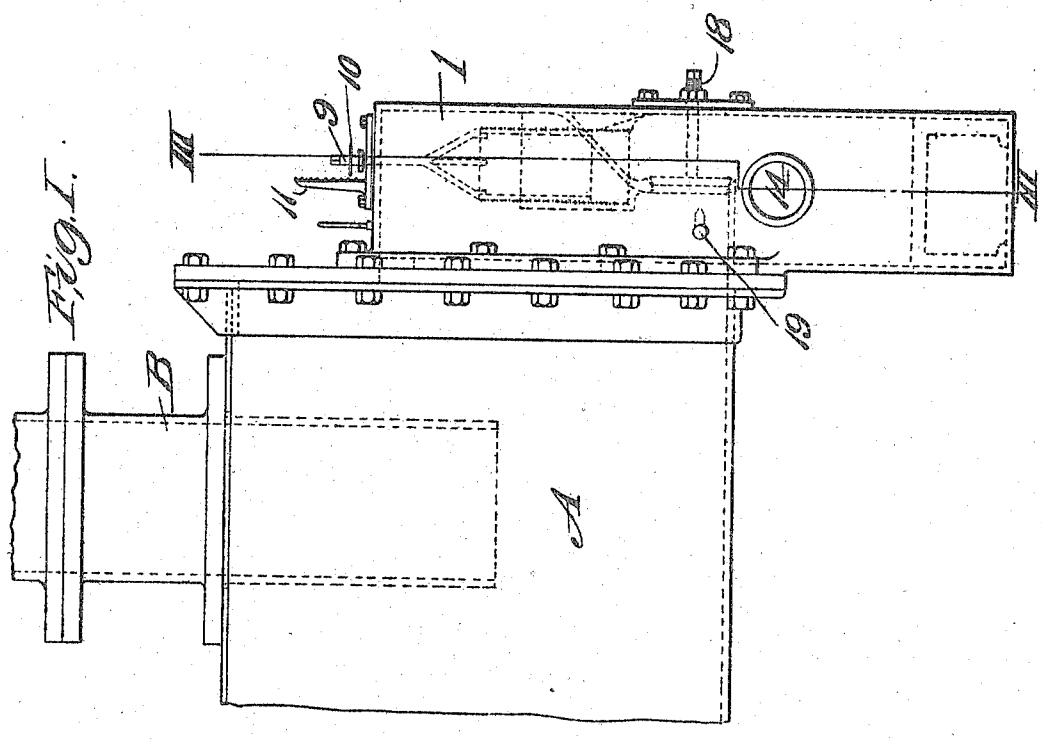


Fig. I.



Witnesses:

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Fig. III.

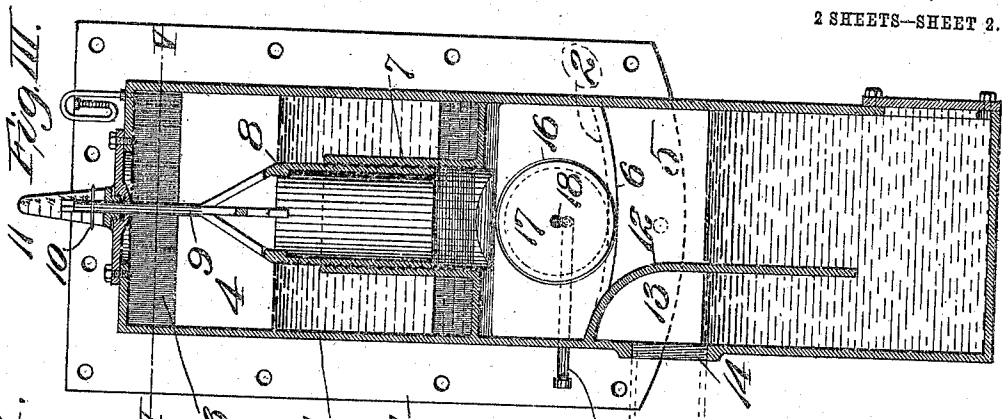


Fig. IV.

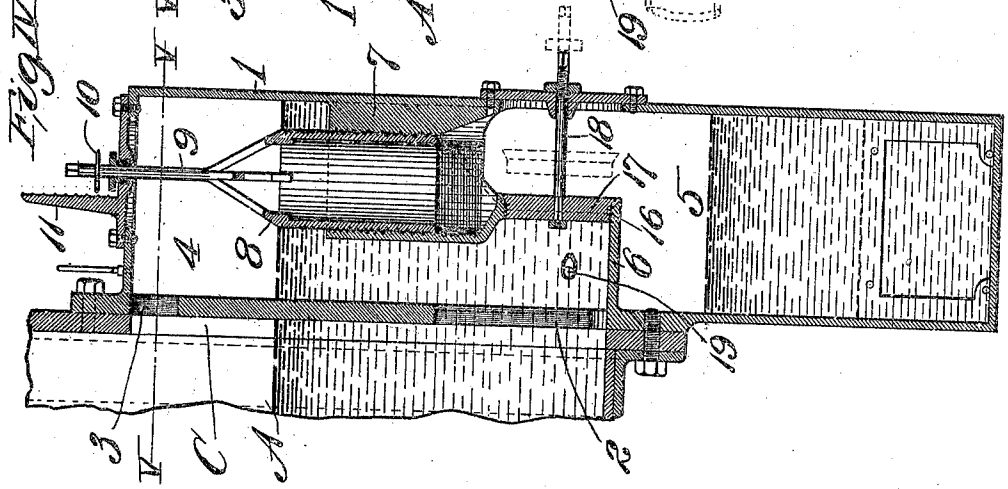
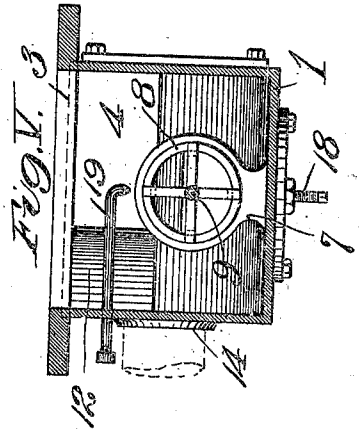


Fig. V.



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COMBINED DIP-REGULATOR AND TAR-SEAL FOR GAS APPARATUS.

951,633. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed March 2, 1908. Serial No. 418,702.

To all whom it may concern:

Be it known that I, JOHN DELL, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Combined Dip-Regulators and Tar-Seals for Gas Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

My invention relates to a dip regulator and tar seal for use in connection with the hydraulic mains of gas apparatus, and through the medium of which the height of the liquid in the hydraulic mains and the delivery of tar and liquor from the main to and through the tar seal are controlled.

Heretofore it has been customary in gas apparatus to locate the dip regulator adjacent to the hydraulic main and the tar seal at a distance from the main and dip regulator, said seal being often placed at or upon the floor or in the ground near the gas furnace. There have been disadvantages to this practice for many reasons, one of the most important of which is that due to the seal being located remote from the gas furnace, the tar is liable to become congealed, especially in cold weather, with the result of preventing flow therefrom and a consequent impediment to the operation of the gas apparatus.

The object of my invention is to construct a dip regulator and tar seal which are combined in a single device that is applied to the hydraulic main, and in which there is no liability of the tar in the tar seal becoming congealed, inasmuch as it is kept constantly heated due to the warmth radiated from the gas furnace.

Figure I is a side elevation of one end of a hydraulic main, a dip pipe leading thereinto and my combined dip regulator and tar seal. Fig. II is an end elevation of the parts shown in Fig. I. Fig. III is a vertical cross section taken on line III—III, Fig. I. Fig. IV is a vertical longitudinal section taken on line IV—IV, Fig. II. Fig. V is a horizontal section taken on line V—V, Figs. III and IV.

In the accompanying drawings: A designates a hydraulic main to which may be connected any desirable number of dip pipes B. The hydraulic main is provided with an opening C that, as shown (see Fig. IV) is located in one of the heads of the main, although it may be located at any other desirable point in the main.

1 designates the shell of my dip regulator and tar seal, which is connected to the hydraulic main at the location of the opening C therein and in the rear wall of which is a lower aperture 2 and an upper aperture 3. The shell 1 is sub-divided interiorly into an upper dip regulator compartment 4 and a lower tar seal compartment 5. Direct communication from the hydraulic main to the dip regulator compartment is constantly maintained through the apertures 2 and 3, the former of which provides for the passage of liquid from the hydraulic main to the dip regulator compartment for the purpose of maintaining a level of liquid in said dip regulator compartment, corresponding to the level of liquid in the hydraulic main, and the aperture 3 providing for the passage of gas from the main to said compartment to maintain the same gas pressure in the compartment as is present in the main.

The tar seal compartment 5 is separated from the dip regulator compartment 4 by a partition 6 that is in part horizontally positioned and in part vertically positioned in the shell 1 and in which is incorporated a hollow gate receiving member 7.

8 is a gate that is operable in the gate receiving member 7 and which is adapted to be raised and lowered in said member to control the passage of liquid therethrough from the dip regulator compartment 4 to the tar seal compartment 5. The gate 8, as shown in the drawings, is in the shape of a cylinder having screw-threaded engagement with the member 7, but it may be of any other desirable description. The gate is adapted to be raised and lowered by a stem 9 that extends upwardly through the top of the shell 1 and which is provided with a pointer 10 that is adapted to indicate upon an index 11 the position of the gate and consequently the height of the liquid in the hydraulic main and the compartment 4.

In the tar seal compartment 5, into which the liquid may enter from the compartment 4 by passing through the gate 8, is a diaphragm 12, see Fig. III, that extends downwardly from a point near the upper end of the compartment to a point above the bottom of the compartment. This diaphragm serves to sub-divide the tar seal compartment and furnish therein an outlet chamber

13 back of the diaphragm and which is constantly separated from the main portion of said compartment by said diaphragm. Provison for the discharge of tar from the tar seal compartment is made by furnishing an outlet 14 which leads from the chamber 13 and through which the tar entering into the tar seal compartment may constantly find escape. To provide against siphonic action in the chamber 13 and any connection that may be made to the outlet 14 for the purpose of conducting the tar through said outlet, I provide an air inlet opening 15 that leads into said chamber from the exterior of the shell 1, see Fig. II, thereby avoiding liability of the tar present in the tar seal compartment being withdrawn from the compartment to a sufficient extent to break the seal therein.

It is necessary in the use of the hydraulic main to, at intervals, flush the entire amount of liquid from the main, and to provide for such flushing into the tar seal compartment of my device, I provide in the partition 6 of my device, a flushing orifice 16, see Figs. III and IV, said orifice being normally closed by a valve or stopper 17 which preferably has screw-threaded engagement with the wall of said orifice 16. The valve 17 is provided with a stem 18 loosely mounted in the wall of the shell 1, and adapted to rotate in said wall for the purpose of unseating and seating the valve. When said valve is withdrawn from the flushing orifice, the liquid in the hydraulic main is permitted to flow into the tar seal compartment 5, and after entering into said compartment, finds escape therefrom by flowing through the outlet 14.

It frequently occurs that the liquid in the hydraulic main becomes very thick and heavy and will not readily flow from the main in flushing action, and to induce or facilitate such flow, I introduce into the dip regulator compartment 4, immediately back of the flushing orifice, a steam jet pipe 19 to which a steam conducting pipe may be attached to deliver steam to the jet pipe and therefrom into and through the flushing orifice.

The combined dip regulator and tar seal herein described is, as will be seen, of simple construction and requires very slight attention to keep it in continuous operation, due to the advantageous combination and close assemblage of its various parts.

I claim:

1. The combination with a chamber having an outlet, of a combined device associated with said chamber at its outlet, and comprising a shell containing a dip regulator compartment, and a seal compartment, the latter being provided with an outlet; the dip regulator compartment having communication with the seal compartment at two points, means for controlling both of said points of communication between said dip regulator compartment and seal compartment, and a diaphragm in said tar seal compartment separating the outlet from the portion of the tar seal compartment in communication with the dip regulator compartment.

2. The combination with a chamber, of a combined device associated with said chamber comprising a shell, a partition in said shell sub-dividing the interior thereof into a dip regulator compartment and a seal compartment, the latter being provided with an outlet, and which is provided with a gate receiving member and with a flushing orifice, a gate in said gate receiving member controlling communication between said dip regulator compartment and seal compartment, a valve for controlling said flushing orifice, and a diaphragm in said tar seal compartment separating the outlet from the portion of the tar seal compartment in communication with the dip regulator compartment.

3. The combination with a gas apparatus hydraulic main, of a combined device associated with said main comprising a shell, a partition in said shell sub-dividing the interior thereof into an upper dip regulator compartment, and a lower tar seal compartment having an outlet, and which is provided with a gate receiving member and with a flushing orifice, a gate in said gate receiving member controlling communication between the upper portion of said dip regulator compartment and tar seal compartment, a valve for controlling said flushing orifice, and a diaphragm in said tar seal compartment separating the outlet from the portion of the tar seal compartment in communication with the dip regulator compartment, substantially as set forth.

4. The combination with a gas apparatus hydraulic main, of a combined device associated with said main comprising a shell, a partition in said shell sub-dividing the interior thereof into an upper dip regulator compartment, and a lower tar seal compartment and which is provided with a gate receiving member and with a flushing orifice, a gate in said gate receiving member controlling communication between the upper portion of said dip regulator compartment and tar seal compartment, a valve for controlling said flushing orifice, and a steam jet pipe in said dip regulator compartment in proximity to said flushing orifice, substantially as set forth.

JNO. DELL.

In presence of—
BLANCHE HOGAN,
E. S. KNIGHT.