J. DELL & G. H. NILES.

COMBINED DIP REGULATOR AND TAR SEAL.

APPLICATION FILED JAN. 19, 1910.

1,041,044.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 1.

Fig. I.

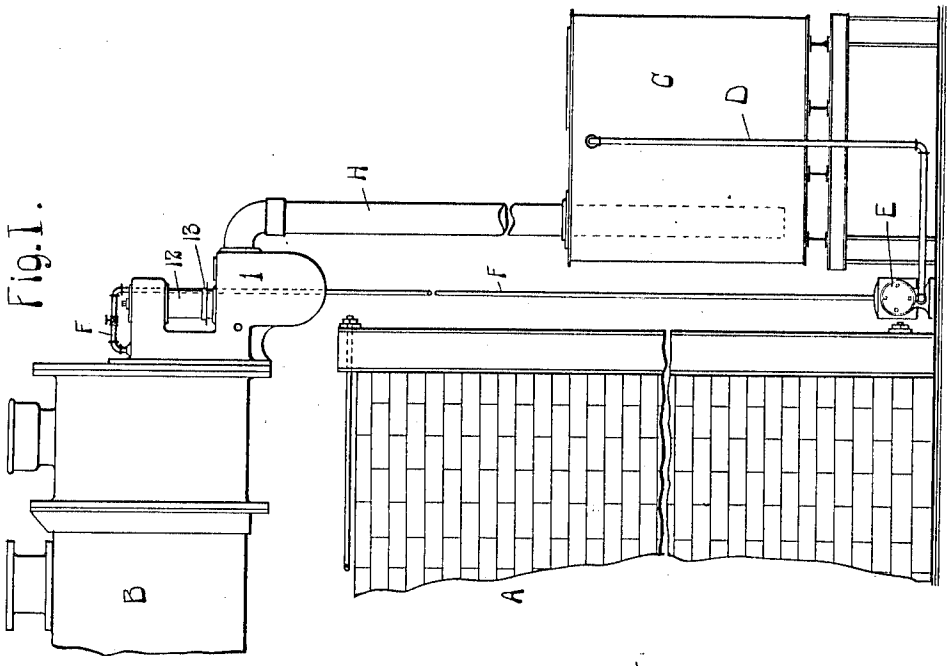
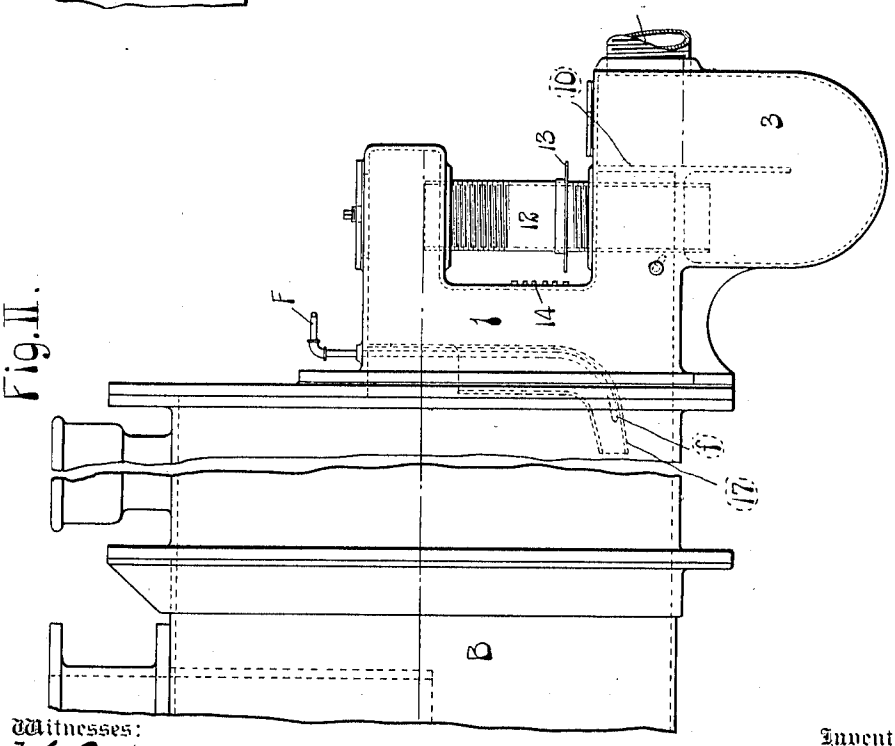


Fig. II.



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COMBINED DIP REGULATOR AND TAR SEAL.

APPLICATION FILED JAN. 18, 1910.

1,041,044.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 2.

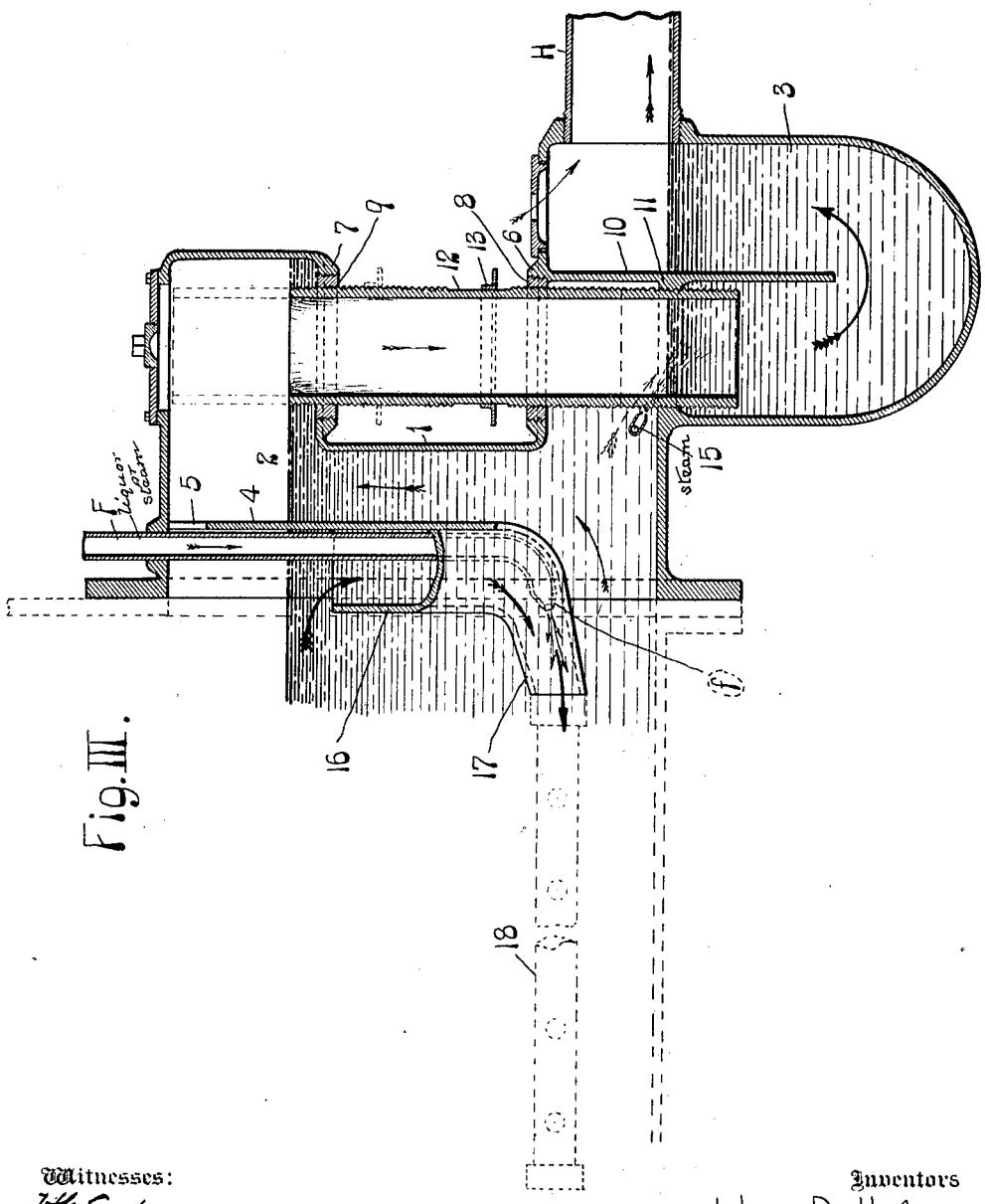

Fig. III.

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UNITED STATES PATENT OFFICE.

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COMBINED DIP-REGULATOR AND TAR-SEAL.

1,041,044. Specification of Letters Patent. Patented Oct. 15, 1912.

Application filed January 19, 1910. Serial No. 538,919.

To all whom it may concern:

Be it known that we, JOHN DELL and GLENN H. NILES, citizens of the United States of America, residing in the city of St. Louis and State of Missouri, and at Babylon, in the county of Suffolk and State of New York, respectively, have invented certain new and useful Improvements in Combined Dip-Regulators and Tar-Seals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to a combined dip regulator and tar seal for use in a direct connection with the hydraulic main of a gas apparatus and the main objects in the present improvement are the following, namely: 1. To provide in a dip regulator and tar seal a gate whereby the passageway from the upper end of the dip regulator to the tar seal and the dischargeway from the lower end of the dip regulator to the tar seal which is normally closed may be controlled by a single device. 2. To provide an efficient means whereby the heavy or viscous deposits in the hydraulic main to which the dip regulator and tar seal is associated may be agitated or broken up when there is occasion for their removal from the main.

Figure I is a side elevation of a portion of a gas apparatus in which our improvement is embodied. Fig. II is an enlarged side elevation of our dip regulator and tar seal and a fragment of a hydraulic main to which the regulator seal is attached. Fig. III is a vertical longitudinal section through our dip regulator tar seal.

In the accompanying drawings:—A designates part of a gas bench and B part of a hydraulic main.

C is a tar receiver to the upper end of which is connected a draw pipe D leading to a pump E and by which the liquor may be withdrawn from said receiver.

F is a return pipe leading from the pump E and which terminates at the end of the hydraulic main B to which our dip regulator and tar seal is applied.

1 designates the shell of our dip regulator and tar seal which is suitably connected to the hydraulic main B. Within the shell 1 is a dip regulator compartment 2 that occupies the upper portion of the shell and a tar seal compartment that occupies the lower portion of the shell. The dip regulator compartment is partially separated from the hydraulic main by a vertical partition 4 beneath which there is a passageway leading to the dip regulator compartment from the hydraulic main and above or in which near its upper end is an opening 5, through which gas may pass to maintain the same gas pressure in the upper end of the dip regulator compartment as is present in the hydraulic main. The shell 1 has a lower horizontal member 6 that is offset from the central part of the dip regulator portion of the shell and an upper horizontal member 7, also offset from the central part of the dip regulator portion of the shell 1. There are vertical openings in the members 6 and 7 and in these vertical openings are bushings 8 and 9, each screw threaded internally. The tar seal compartment 3 contains a vertical diaphragm 10 that extends downwardly from the lower horizontal member 6 to furnish a trap in the tar seal compartment due to necessity of the flow of tar beneath said partition before it may enter the outlet pipe H that leads to the receiver C. The diaphragm 10 and a segment of the wall around the dip regulator compartment 3 serve to provide an opening that is surrounded by an internally screw threaded annular flange 11. The opening just referred to is located at the bottom of the dip regulator compartment 2 and is adapted to provide communication between said dip regulator compartment and the tar seal compartment when it is not obstructed, but it is normally closed, as will presently appear.

12 designates a tubular gate rotatably positioned in the bushings 8 and 9 occupying the horizontal members 6 and 7 of the shell 1 and in the screw threaded flange 11 at the bottom of the dip regulator compartment. This gate is screw threaded externally, both at its upper and lower ends and it, therefore, has screw threaded engagement with all of the members mentioned through which it passes. The gate 12 serves to normally close communication between the lower end of the dip regulator compartment and the tar seal compartment and communication is maintained through said gate between the upper end of the dip regulator compartment and the tar seal compartment. It will therefore be seen that as the liquor rises in the dip

regulator compartment upon passing thereinto from the hydraulic main, it is permitted to constantly overflow through the gate to the tar seal compartment and that the height of liquor maintained in the tar seal compartment, and consequently in the main, may be readily controlled by any desired vertical adjustment of the gate. Provision is made for constant information as to height of adjustment of the gate through the medium of an indicator ring 13 fitted to the gate and the placing upon the central portion of the dip regulator part of the shell 1 of a scale 14, (see Fig. II).

The gate 12 by its construction and position serves, in addition to its function of providing a passageway from the upper end of the dip regulator compartment to the tar seal compartment, as a means for controlling the lower end of the opening leading from the dip regulator compartment to the tar seal compartment through which the contents of the hydraulic main and the tar regulator compartment may be discharged when these parts are to be cleansed, it being apparent that the only act necessary to establish communication between the lower end of the dip regulator and the tar seal compartment is the elevation of the gate to a sufficient degree to withdraw its lower end from its normal position within the annular flange 11. To facilitate the discharge of the matter from the tar seal compartment when the opening just referred to is unobstructed, we locate adjacent to said opening a jet pipe 15 through which steam or other fluid may be discharged into the tar seal compartment.

We now come to the features of construction in our improvement whereby the deposits in the hydraulic main may be agitated or broken up whenever there is occasion for such action. This part of our improvement preferably includes the liquor conducting pipe F that leads to our device from the pump E by which liquor is withdrawn from the tar receiver C, and while we prefer to utilize liquor drawn from said receiver and forced into the hydraulic main for the purpose of breaking up the deposits therein, any other fluid, such for instance, as steam, may be conducted through said pipe. The pipe F leads into the hydraulic main and terminates in a nozzle *f*, (see Figs. II and III), which is so presented that the fluid discharged therefrom will be directed longitudinally of the hydraulic main.

16 is a pocket member arranged adjacent to the partition 4 in the dip regulator and the open upper end of which is located at an elevation that will provide for its being constantly beneath the level of the liquor in the hydraulic main and dip regulator compartment 2 when there is a sufficient quantity of liquor to provide for its passage into the gate 12. The pocket member 16 terminates at its lower end in a nozzle 17 within which the nozzle of the pipe F is inclosed, and through which the fluid discharged from said pipe escapes into the hydraulic main. The pocket member 16 is of greater dimensions than the pipe F, thereby permitting a circulation of liquor through said pocket member, and while the pocket member preferably terminates in a nozzle 17, there may be utilized in connection with said pocket member a perforated pipe 18, (see dotted lines Fig. III), that extends longitudinally of the hydraulic main and through which the fluid discharged from the pipe F and circulating through the pocket member may also circulate before finding escape into the hydraulic main, with the result of causing a more even distribution of the fluid and liquor in the hydraulic main for the purpose of breaking up the deposits therein. It will be obvious that whenever a fluid is forced through the pipe F and discharged from its nozzle into the hydraulic main, either directly from the nozzle 17 of the pocket member 16 or through the pipe 18, said fluid will act forcibly upon the deposits in the hydraulic main and cause the circulation of the liquor in the main to take place, including circulation through the pocket member 16 to constantly supply liquor to the nozzle 17 or the pipe 18 to be used in connection with the fluid discharged from the pipe F for breaking up the deposits in the hydraulic main.

We claim:—

1. In a device of the character described, the combination of a dip regulator compartment having offset portions above and below, said offset portions being spaced one from the other and provided with coaxial circular openings, a seal compartment depending from the lower offset portion of the dip regulator compartment, said seal compartment communicating with said dip regulator through a circular opening coaxial with the openings in said offset portions, and a tubular gate movable endwise through said openings, said tubular gate being opened at both ends to adapt it to provide a passageway from the upper offset portion of the dip regulator compartment to the seal compartment.

2. In a device of the character described, the combination of a dip regulator compartment having offset portions above and below, said offset portions being spaced one from the other and provided with coaxial circular openings, a seal compartment depending from the lower offset portion of the dip regulator compartment, said seal compartment communicating with said dip regulator through a circular opening coaxial with the openings in said offset portions, and a tubular gate providing a passageway from

the upper offset portion of the dip regulator compartment to the seal compartment, said tubular gate being connected by screw threads with the edges of the several openings to adapt it to be adjusted endwise therethrough.

3. In a device of the character described, the combination with a hydraulic main, of a dip regulator and tar seal operatively connected thereto, a tar receiver connected up with said tar seal, and separate means for conveying the liquor from the upper end of said tar receiver back to said hydraulic main.

4. In a device of the character described, the combination with a hydraulic main of a dip regulator, of a tar seal connected thereto, a tar receiver connected up with said tar seal, a pump, a pipe connecting the upper portion of said tar receiver with said pump, and a second pipe connecting said pump with said hydraulic main.

5. In a device of the character described, the combination with a hydraulic main, of a tar seal, a tar receiver, a pipe leading from said tar seal and discharging at the bottom of said tar receiver, a pump, a pipe connecting said pump with the upper portion of said tar receiver, an injector in said hydraulic main, and a pipe leading from said pump to said injector.

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In the presence of—
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