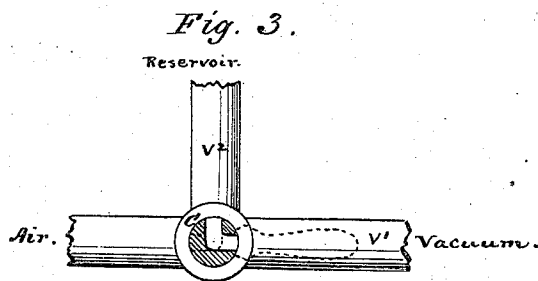
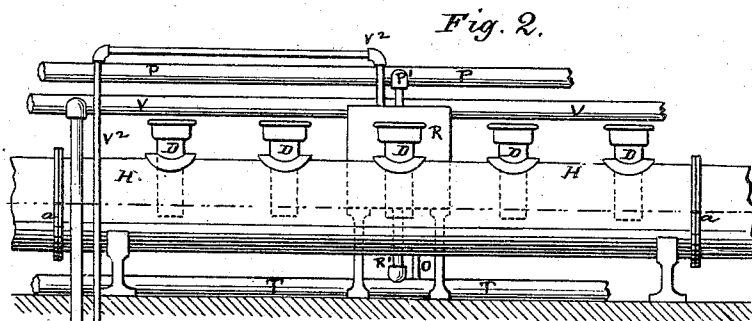
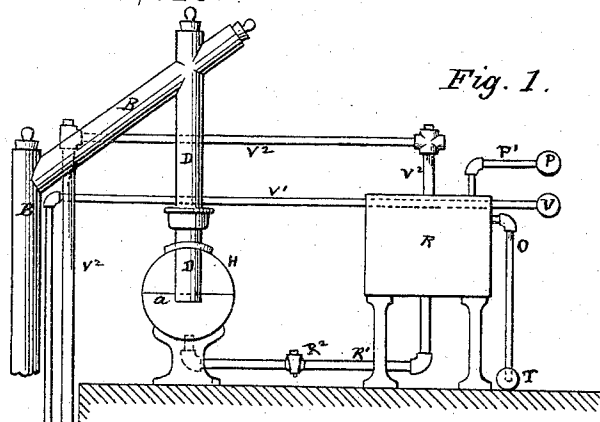


H. H. EDGERTON.
Sealing Dip-Pipes in Gas Works.

No. 137,425.

Patented April 1, 1873.



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY H. EDGERTON, OF FORT WAYNE, INDIANA.

IMPROVEMENT IN SEALING DIP-PIPES IN GAS-WORKS.

Specification forming part of Letters Patent No. **137,425**, dated April 1, 1873; application filed March 24, 1873.

To all whom it may concern:

Be it known that I, HENRY H. EDGERTON, of Fort Wayne, Allen county, Indiana, have invented certain new and useful Improvements in Apparatus for the Manufacture of Gas, of which the following is a specification:

This invention has for its object the sealing and unsealing of the hydraulic main of gas-works. This has heretofore been attempted in various ways, which, while more or less effective for the purpose, have been objectionable on several accounts, such as the complicated apparatus required, the expense of making and using the same, &c. The prominent feature of my invention consists in the mode of unsealing the dip-pipes which enter the hydraulic main, by means of a vacuum formed in a communicating chamber or reservoir, one for each section of the hydraulic, in such manner that, when required, the level of the liquid in the hydraulic main, or the section of the same, may be lowered to any extent, the liquid thus withdrawn passing into and being contained within the said reservoir or chamber, where it is held until again required to seal the dip-pipes, at which time, by destroying the vacuum and restoring equilibrium, the liquid will be free to flow back into the hydraulic to reseal the dip-pipes. In connection with the said chamber or reservoir I also employ a pressure-pipe, entering the same and designed to supply compressed air, when it is required, under certain conditions, in order to maintain equilibrium, and to keep the dip-pipes sealed—as, for instance, when, by reason of accidental disturbances, the pressure in the hydraulic happens to exceed the normal pressure. The nature of my invention and the manner in which the same is or may be carried into effect will be readily understood by reference to the accompanying drawing, in which—

Figure 1 is an end elevation of a portion of a hydraulic main provided with means for carrying my invention into effect. Fig. 2 is a side elevation of the same. Fig. 3 is a detail hereinafter referred to.

H represents a portion of the hydraulic main. It is as usual divided into sections by partitions *a*, the tops of the partitions being in a horizontal plane, which is above the level

of the lower ends of the dip-pipes D, as indicated in Fig. 1, and by the dotted lines in Fig. 2. The dip-pipes for each section are three, four, or more in number—five, in the present instance—according to the number of retorts for each section. B are the bridge-pipes communicating with said retorts in the usual way. R is a reservoir, one such reservoir being provided for each section of the hydraulic, connected with its section by a pipe, R¹, provided with a stop-cock, R², which may be used when occasion demands to shut off communication between the reservoir and its section. The bottom of the reservoir is about on a level with the tops of the partitions in the hydraulic. V is a vacuum-pipe, in which, by ordinary or suitable means, the constant needed vacuum is maintained, and from which a separate communication is made with each reservoir by means of a pipe, V¹, and pipe V², the latter entering the top of the reservoir, as shown. Communication between pipes V¹ and V² is established by a two-way cock, C, as shown more plainly in Fig. 3, where the cock is shown in section, the handle indicated by dotted lines. This cock is also arranged, as shown, so that it may open communication between the external atmosphere and the reservoir. P is a pressure-pipe, from which communication is had with each reservoir by a pipe, P', the pressure being obtained from a suitable source. A suitable cock or cocks for shutting off or letting on and regulating the pressure should of course be provided. O is an outlet-pipe leading from the reservoir into the tar-pipe T. The gas, generated in the retorts in the usual way, is conducted to the hydraulic main by the bridge and dip pipes B D. Ordinarily the gas discharged from the dip-pipes bubbles up through tar and water in the hydraulic main, which liquid is maintained at about the height of the partitions *a* and above the lower ends of the dip-pipes, so that when the operation of removing a lid from a retort is to be gone through, the tar may rise in the pipe D of that retort, preventing a return of gas. This is known as the hydraulic seal. My invention purposes to do away with this seal except when necessary for the purpose of removing retort-lids. The operation is as follows: The two-way cock C is turned in the po-

sition shown in full lines in Fig. 3, by which the reservoir R is put in communication with the vacuum-pipe V. The small cock R² being open, the liquid is removed by suction from the section of the hydraulic main, and is drawn into the reservoir R. The vacuum should be so regulated and governed, and the proportions of the reservoir to the hydraulic so determined, as to cause the tar to extend up to and reach the outlet-pipe O, and from thence the excess of tar is removed as soon as formed, and carried off through the tar-pipe T. The tar should reach the point O before the last portions leave the hydraulic, in order that a seal may remain in the pipe R¹. To restore the seal, the two-way cock C is turned to the position indicated in dotted lines in Fig. 3, opening communication between the reservoir and the external atmosphere and shutting off the vacuum. Immediately the level of the liquid falls in the reservoir, and the liquid passes back therefrom through the pipe R¹ into the hydraulic, filling the same to the height of the partitions or diaphragms *a*. The pressure in the hydraulic is supposed to be maintained at ordinary air-pressure, or thereabout, so that there will be equilibrium of air and gas pressure. In case the pressure of gas in H appreciably exceeds atmospheric pressure, then more or less of the liquid, according to the degree of excess of pressure, will be forced from the hydraulic into the reservoir. The pressure-pipe P, as above stated, is in communication with all the reservoirs R in use at the works; and if, by reason of any accident to machinery, or other cause, the pressure of gas in H becomes too great, and the tar is blown by such excess of pressure into the reservoir from the hydraulic, a requisite pressure, by means of compressed air, is transmitted through the pipes P and P' to counteract such accidental increase of pressure in the hydraulic. For this purpose suitable gages may be placed where the pump for producing the vacuum and pressure is located, so that the engineer may at once see whenever it may become necessary to employ the pressure instead of the vacuum.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim and desire to secure by Letters Patent, is—

1. The method herein described of unsealing the dip-pipes of a hydraulic main by the formation of a vacuum in a chamber or reservoir communicating with said main, or the section thereof containing the dip-pipes to be unsealed, substantially as and for the purposes shown and set forth.

2. The combination with a hydraulic main of reservoirs, one for each section of the main, each reservoir being connected with its section and with a vacuum or exhaust pipe for removing at proper times the air, in whole or part, from said reservoir, substantially as and for the purposes herein shown and set forth.

3. The combination with the reservoir connected with the hydraulic main and with an air-exhaust so as to operate to unseal the dip-pipes substantially in the manner set forth, of the outlet and tar pipes for removing the excess of tar as soon as formed from the reservoir, substantially as described.

4. In combination with the reservoir communicating with the hydraulic as described, a system of pipes or conduits communicating with the external atmosphere and with an air-exhaust substantially as specified, and provided with a suitable regulating cock or cocks, whereby the reservoir may be put in communication either with the external atmosphere or with the exhaust, to effect the sealing or unsealing of the dip-pipes, as described.

5. In combination with the reservoir communicating with the hydraulic main, as specified, the pressure-pipe for conveying compressed air to the reservoir to counteract accidental disturbances or increase of gas-pressure in the hydraulic, substantially as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

H. H. EDGERTON.

Witnesses:

EDM. F. BROWN,
A. POLLOK.