

H. F. SMITH.

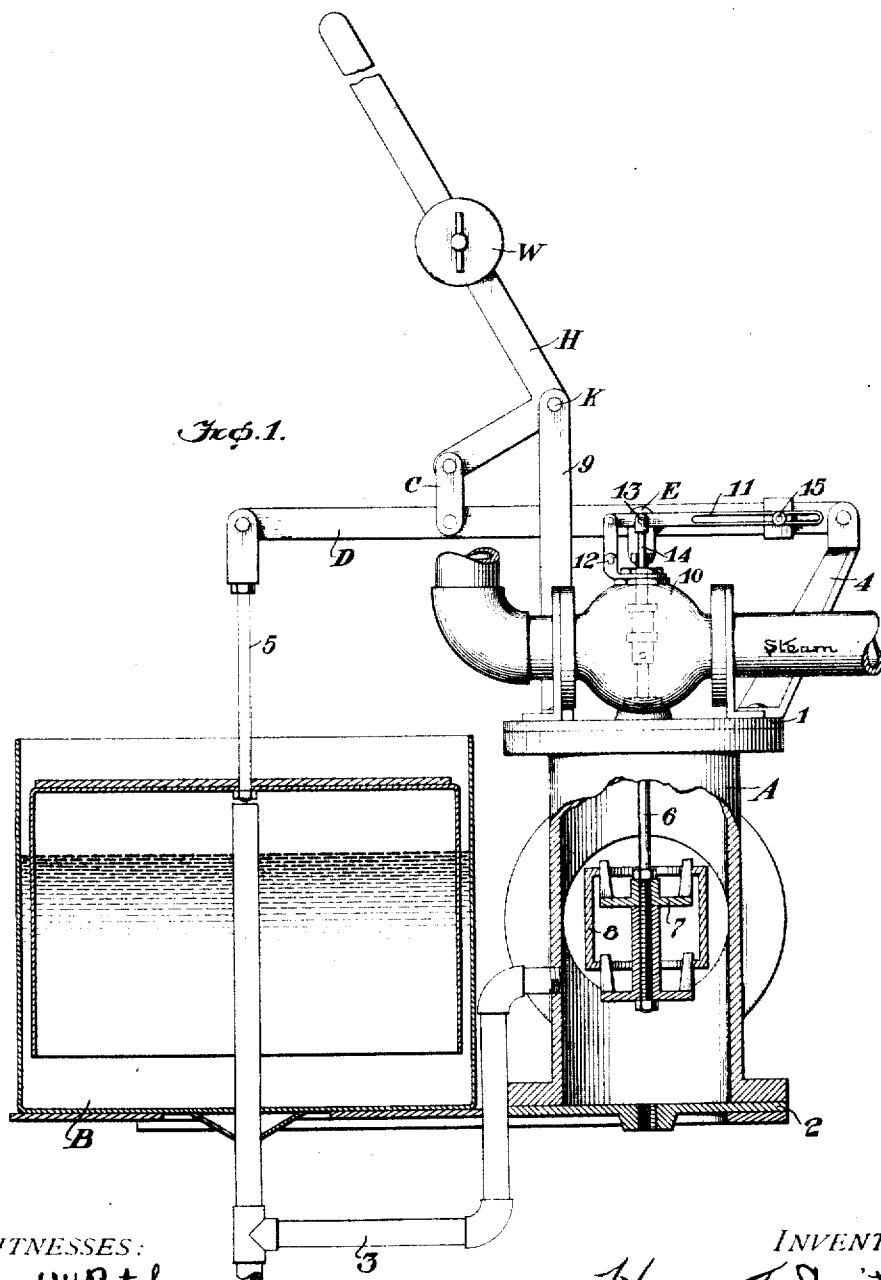
MEANS FOR AUTOMATICALLY CONTROLLING THE STEAM SUPPLY TO PRODUCERS.

APPLICATION FILED APR. 29, 1909.

933,592.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

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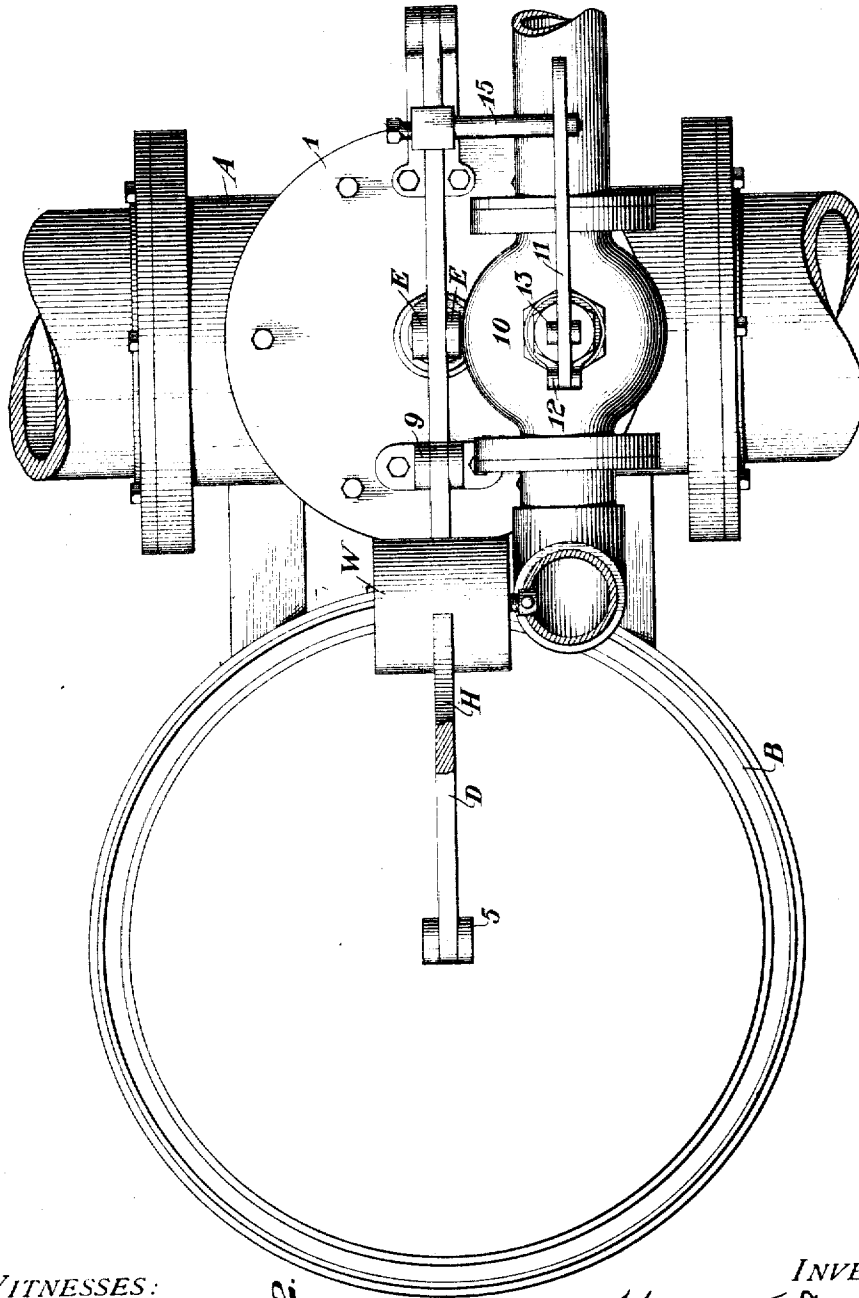
Louis Baggett

his Attorneys.

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Fig. 2.

INVENTOR
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UNITED STATES PATENT OFFICE.

HARRY FORD SMITH, OF LEXINGTON, OHIO.

MEANS FOR AUTOMATICALLY CONTROLLING THE STEAM-SUPPLY TO PRODUCERS.

933,592.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed April 29, 1909. Serial No. 492,922.

To all whom it may concern:

Be it known that I, HARRY FORD SMITH, a citizen of the United States, residing at Lexington, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Means for Automatically Controlling the Steam-Supply to Producers, of which the following is a specification.

My invention relates to an improvement in means for automatically controlling the steam supply to producers, and it consists in means, such for instance as is set forth in another application Serial No. 492,923, in which the gas pressure is automatically regulated by means of a pressure regulating valve, gasometer or gas holder, and connections between the two for automatically varying the load of gasometer in such a manner as to compensate for the variation in weight of the gasometer due to its submer-sion, thereby providing greater sensitiveness in the movement of the valve whereby to establish and maintain a perfect equilibrium and bring about an accurate control pressure. It is evident that the position of the gas throttle valve referred to is a reliable index of the amount of gas being delivered by the plant, and the object of the present invention is to always insure a proportional amount of steam in the blast, and to this end a second valve is placed on the steam line leading to the producer ash pit from a suitable source of steam supply, such as a boiler.

With this object in view, my invention consists in certain novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawings:—Figure 1 is an enlarged view showing parts broken away, parts in vertical section, and other parts in end elevation, and Fig. 2 is an enlarged plan view.

A, represents a casing and is in effect a four-way union or coupling closed at the top and bottom by means of plates 1 and 2 securely bolted thereon, and B is an ordinary form of bell or gasometer, and a pipe 3 leads from the casing at a convenient point, and discharges into the gasometer. A lever D is pivotally supported at one end to the upper end of an arm 1 erected on the top plate 1 of the casing, and the other end is

pivotally connected with a rod 5, which rod is secured at its lower end to the bell of the gasometer. Links E, E, are pivotally connected at the upper end to the lever D, and at the lower end to a rod 6, and this rod carries a throttle valve 7 at its lower end which operates in the valve seat 8, within the casing A, where it controls the flow of gas and regulates its pressure. A bell crank or L-shaped lever H is fulcrumed at K on the post 9 mounted on the top plate 1 of the casing, and the short arm of this lever is connected by means of links C, C, with the lever D, preferably at a point approximately midway between the rods 5 and 6. A weight W is adjustably secured on this bell crank or L-shaped lever. It is at once seen that by means of this construction the adjustable weight W will exert a downward pressure upon the gasometer through the lever D which is proportional to the displacement of the lever from its vertical position. This displacement varies with the position of the gasometer, and consequently with the degree of immersion. As the immersion becomes less, and the gasometer thereby heavier, the active working leverage of the weight W also becomes less, and it exerts thereby a small downward pressure on the lever D. By adjusting the weight W, on the arm H, a point can be readily found where the decrease in weight due to the movement of the weight W just counter-balances and equalizes the increase in weight of the gasometer as it rises from the liquid seal. Contrariwise, as the gasometer is further submerged by its downward motion, the weight W by its displacement adds just as much weight as is lost through the submer-sion of the gasometer and a condition of equilibrium is thereby established.

The steam controlling device of this invention consists of a second throttle valve 10. A lever 11 is pivotally connected at one end to the upper end of a post 12 which latter is pivotally supported on the casing of the valve 10, and a link 13 is pivotally connected with this lever 11 at one end and a valve stem 14 at the other end. The lever 11 is either attached directly or indirectly to the gasometer or to the gas throttle valve, and as shown in the illustration, it is connected indirectly by means of a bolt 15 to the lever D. In this way, the movement of the

two valves is always proportional. This second valve is placed on a steam line leading from a suitable source of steam supply (not shown) such as a boiler, and discharging into the producer ash pit (not shown).

From the foregoing it is at once apparent that when the gas demand increases, the gas throttle valve will open wider to permit the passage of a larger volume of the gas, and this movement will also open the steam valve wider and admit more steam to the producer ash pit. When the load decreases, the gas and steam valves will both be proportionally closed. Any variation in the amount of gas passing from the apparatus therefore causes an immediate and proportionate variation in the amount of steam supplied to the apparatus, this being the result it is desired to obtain through the use of this apparatus.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination with a gasometer, gas and steam passages, the former in communication with the gasometer, and valves for controlling said gas and steam passages, of compound lever mechanism comprising three levers, namely, a primary lever, and a secondary lever pivotally connected together and connecting the valves with the bell of the gasometer, and a third lever connected

with the primary lever and having a variable weight supported upon said lever.

2. The combination with a gasometer, gas and steam passages and valves controlling said passages, the gas passage communicating with the interior of the gasometer, of a lever pivotally supported at one point and pivotally connected with the bell of the gasometer at another, a secondary lever pivotally supported at one end and pivotally connected with the first mentioned lever, said levers pivotally connected with the two valves.

3. The combination with a gasometer, gas and steam passages and valves controlling said passages, the gas passage communicating with the interior of the gasometer, of a lever pivotally supported at one point and pivotally connected with the bell of the gasometer at another, a secondary lever pivotally supported at one end and pivotally connected with the first-mentioned lever, said levers pivotally connected with the two valves, and a weighted lever resting upon the first-mentioned lever.

In testimony whereof I affix my signature, in the presence of two witnesses.

HARRY FORD SMITH.

Witnesses:

WM. H. EARHART,
S. L. EARHART.