

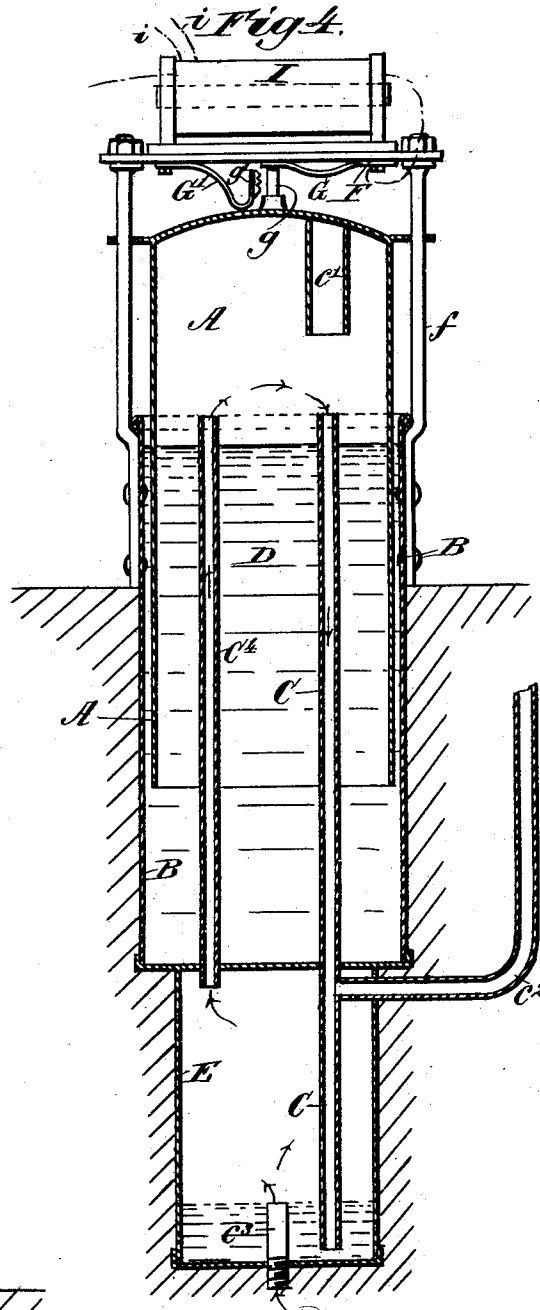
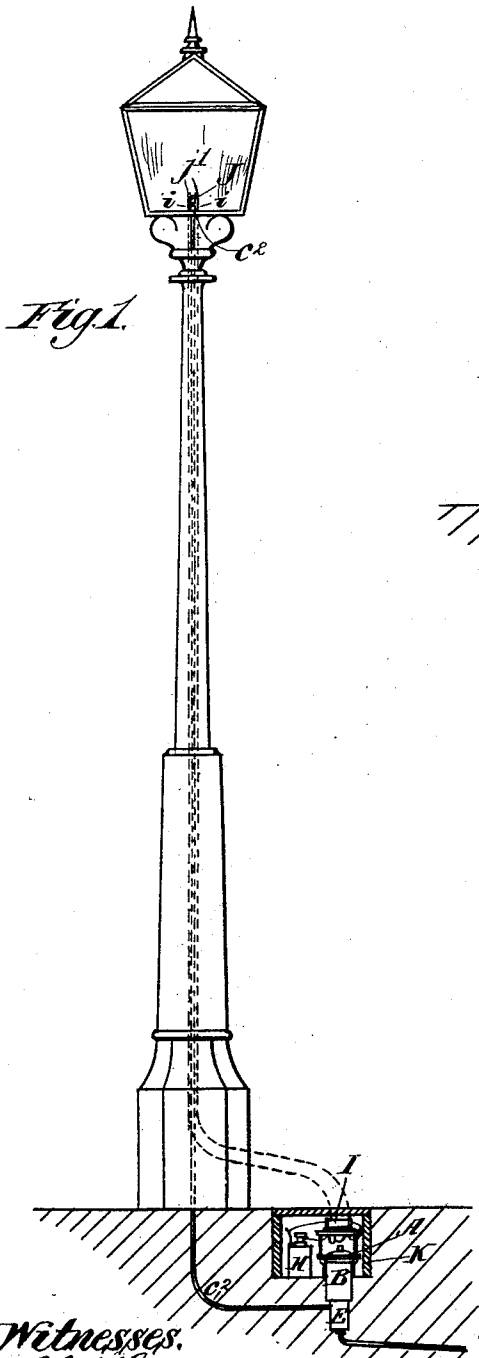
(No Model.)

2 Sheets—Sheet 1.

W. WHITE.
IGNITING DEVICE.

No. 548,492.

Patented Oct. 22, 1895.



Witnesses.
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Dennis Sumby.

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Fig. 2.

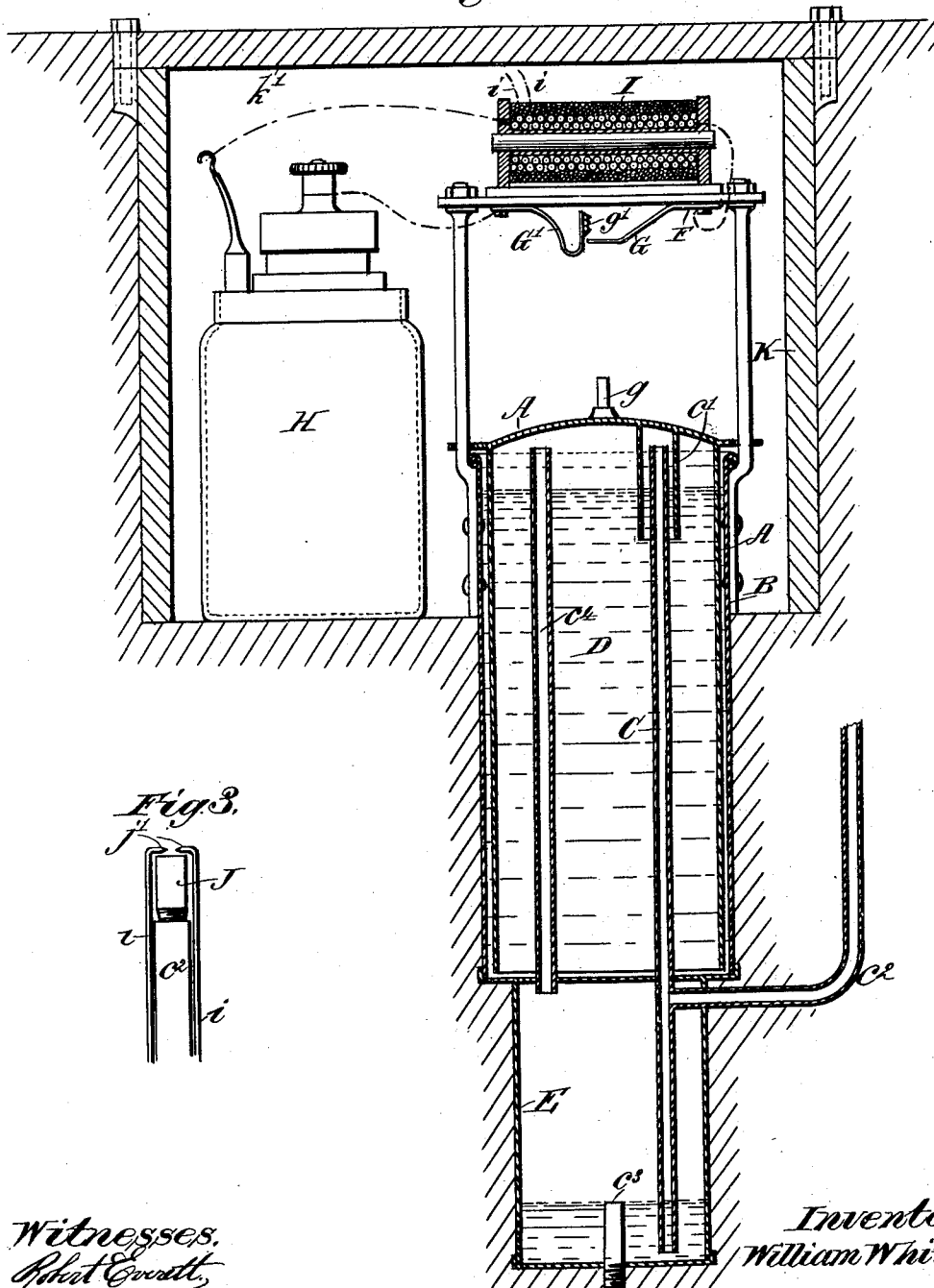
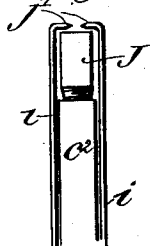


Fig. 3.



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UNITED STATES PATENT OFFICE.

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IGNITING DEVICE.

SPECIFICATION forming part of Letters Patent No. 548,492, dated October 22, 1895.

Application filed February 5, 1895. Serial No. 537,382. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WHITE, plumber and gas-fitter, a subject of the Queen of Great Britain, residing at the Brunswick Gas Works, Brunswick, in the British Colony of Victoria, have invented an Improved Method of and Apparatus for Automatically Lighting and Extinguishing Street or other Gas-Lamps, of which the following is a specification.

This invention consists of an improved apparatus for automatically lighting and extinguishing street and other gas-lamps.

Practical experiments have proved that a comparatively slight variation in the pressure of the gas in the main or other source of supply is sufficient to actuate mechanism which will open or cut off the supply to the burner and also complete an electrical circuit when the supply is fed to the burner and thus light the gas. For instance, an increase of pressure to the extent of five-tenths of an inch has been found sufficient to open the supply to the burner and light it and a diminution in the pressure to the same extent has been found sufficient to cut off the supply and extinguish the light. This variation in the pressure may be effected at any central station or at any position where a district governor may be placed.

This invention is intended mainly for the purposes of lighting and extinguishing street-lamps, in which case the supply would be taken from the gas-main; but it is evident that the same principle might be applied to the lighting and extinguishing of a number of burners in a theater or other large building, in which the source of supply was not a gas-main but a gas-meter. The improved apparatus which has been devised for carrying this method into effect is as follows:

A small vertically-sliding gas holder or reservoir is arranged to slide vertically in a vessel containing water placed in any convenient position near the lamp—as, for instance, in or near the lower and enlarged end of each lamp-post, the open end of said gas holder or reservoir being downward, after the manner of what is usually termed a “gasometer.” This vertically-sliding gas holder or reservoir is provided at its upper end with a

short tube, which extends down beneath the surface of the water in the containing-vessel when the gas-holder is in its lowest position—that is, when the gas is not at sufficient pressure to raise it to the required extent. A smaller pipe leads from inside the upper end of this short tube in said gas-holder above the water therein and passing out of the lower end of the containing-vessel extends up to the burner of the lamp, while the inlet gas-supply pipe passes up through the water in the containing-vessel into the upper part of the gas-holder.

A draining-vessel is provided under the lower end of the outer containing-vessel, from which draining-vessel the inlet gas-supply pipe leads to the gas-holder above and into which draining-vessel the gas is fed from the main through a pipe reaching up to and determining the level of water in said draining-vessel.

The pipe which, as above mentioned, leads from the gas-holder to the burner has a branch which leads down to beneath the water in the draining-cylinder, so that any water condensing out of the gas between the gas-holder and the burner can run back into the draining-cylinder and will therefore not stop up the pipes. By means of this vertically-sliding gas-holder the gas will be turned on or off when the pressure in the gas-main (and therefore in said holder) rises above or falls below a certain point. On a fixed frame or platform above this vertically-sliding gas-holder I secure an electrical contact-spring arranged to be operated by a pin or projection on said holder, so that when said holder rises sufficiently it will force said spring into contact with another one, and thus completes the circuit from a suitable battery through the primary winding of an induction-coil, and thus cause an induced current to flow from the secondary winding between two pointed wires arranged a short distance apart immediately above the top of the burner, the effect being to cause a spark or series of sparks to pass between the two points, and thus ignite the gas issuing from the burner.

Having now generally described and ascertained the nature of this invention and in what manner the same is to be performed, I

will proceed to more particularly describe the same, with the aid of the accompanying drawings, wherein—

Figure 1 is a side elevation of an ordinary street gas-lamp fitted with my improved apparatus for lighting and extinguishing it. Fig. 2 is a vertical section of said apparatus drawn to a much larger scale. Fig. 3 is a side elevation of the burner in said gas-lamp, showing it fitted with the pointed wires between which the igniting-spark is produced. Fig. 4 is a sectional view illustrating the operation of the main part of this invention.

The same letters of reference indicate the same parts in all the figures.

A represents the vertically-sliding gas holder or reservoir, and B the vessel containing water in which said gas-holder is arranged to slide up and down, the lower end of said holder being open, as shown, after the manner of what is ordinarily known as a "gasometer."

c' represents the short downwardly-projecting tube which is fitted in the under side of the cover or upper part of said gas-holder A, and which projects down below the surface of the water D in the containing-vessel B when said gas-holder A is in its lowest position, as illustrated in Fig. 2.

C represents a tube which projects down from within the tube c' , above the level of the water D, to near the bottom of a draining-vessel E, the gas-supply pipe c^2 leading to the burner being led off from this said pipe C at or near the bottom of the containing-vessel B.

c^3 represents the gas-supply pipe which leads from the main and projects a short distance into the draining-cylinder E, whereby this said cylinder is kept supplied with gas.

c^4 represents a length of pipe which leads from this draining-cylinder E to above the water-level in the gas-holder A outside the short downwardly-projecting tube c' .

F represents a fixed frame or platform which is carried by suitable supports f above the containing-vessel B, while G G' represent the electrical contact-springs, which are provided on the under side of said frame or platform and are arranged to be operated by a pin or projection g on the upper end of the gas-holder A. Of these two contact-springs the one marked G' is provided with a block g' , having a roughened or serrated contact-surface, so that as the spring G passes over it the circuit will be made and broken several times from the battery H to the primary winding of an induction-coil I. i represents wires which lead from the secondary windings of this induction-coil up to the burners J of the lamp, where they terminate in points j' , as illustrated in Fig. 3, so that when the induced current passes between them it will form a spark immediately above the top of said burner and thereby ignite the gas issuing therefrom.

The operation of this invention is as follows: Commencing with the gas at its normal or lowest pressure—that is, before it is turned

on at the main to meet the increased evening's consumption—the gas-holder A will be down in its lowest position, as illustrated in Fig. 2, and the escape of the gas from said holder will be prevented by the short tube c' being sealed beneath the surface of the water in the containing-vessel B. The contact-springs G G' will, moreover, be out of contact with each other, as shown, and thus no current will pass from the battery H through the induction-coil I. As soon, however, as the pressure of gas is increased to a certain amount the gas-holder A will rise until the lower end of the tube c' is lifted out of the water D, when the gas will be free to pass, as indicated by the arrows in Fig. 4, up through the pipe c^4 into the gas-holder A, as before, and thence down through the pipe C and along the pipe c^2 to the burner J of the lamp. By this means the gas will be turned on.

The lighting is effected as follows: As the gas-holder A continues to rise, the projection or pin g will come in contact with the spring G and will bend same upward, so as to cause its end to contact with the spring G'—that is, with the roughened surface thereon—the effect being that as said spring G passes over said roughened surface it will cause contact to be made and broken several times between those two points, and thus an intermittent current will be allowed to flow through the primary windings of the induction-coil I, causing an induction-current to pass along the wires i to the burner J, across which a spark will pass between the pointed ends j' of said wires. By this means the lighting of the gas is effected.

On the pressure in the main being reduced the reverse action to that above described will obviously take place, the holder A again falling to its normal position, as indicated in Fig. 2, and thus shutting off the supply of gas and sealing the lower end of the short tube c' and thereby closing the end of the pipe C leading through the pipe c^2 to the burner.

The apparatus which I have above described must be fitted in some convenient position in juxtaposition to the lamp. For instance, it can either be fitted inside the lower end of the gas-lamp or it can be placed in a box or case alongside the gas-lamp in the same way that the meters are now arranged, or it can be fitted inside a cast-iron or other box or casing K let into the ground alongside the lamp-post and fitted with a cover k' , which can be removed when required.

The arrangement of the pipes C c' c^2 above described is useful, because it allows the water condensing in the pipes between the apparatus and the burner to drain back into the draining-vessel E, whence it can overflow into the pipe c and so pass down into the main, and, moreover, there is but very little friction to interfere with the working of the gas-holder A; but if preferred a telescopic or a flexible rubber or other tube might be led up from the top of the gas-holder A to the burner and

be arranged to normally project slightly below the level of the water therein, in which case the lower draining-cylinder could be dispensed with. Instead, moreover, of using the contact-springs with roughened surfaces, as above described, for producing the makes and breaks in the electrical current passing to the induction-coil I, an ordinary vibrating contact-breaker might be fitted upon said coil and be arranged to be operated by the alternate magnetization and demagnetization of the core of said coil in the manner usual with induction-coils.

The battery H can be made up of any kind or number of cells preferred, but in practice, in all probability, it will be found that two ordinary Leclanché cells will answer all requirements.

The invention above described is mainly useful for street-lamps; but it can be applied for the purpose of lighting and extinguishing gas-lights in large buildings—such, for instance, as theaters and elsewhere—in which case the apparatus could be operated by merely increasing or decreasing the pressure of gas by means of the meter.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In apparatus for automatically lighting and extinguishing street and other gas lamps, the combination of a vessel or chamber containing liquid, a gas inlet pipe extended through said vessel or chamber to a point above the liquid therein, a gas outlet pipe extended through said vessel or chamber from a point above the contained liquid and leading to the burner, a vertically sliding gas holder immersed in the liquid contained in said chamber and provided at the top with a depending tube the upper end of which is closed and the lower end open and adapted to project below the surface of the liquid and inclose the upper end of the gas exit pipe when the said gas holder is in its lowest position, and electric igniting devices adapted to be actuated from the vertically sliding gas holder when said holder rises, substantially as shown and described.

2. In apparatus for automatically lighting

and extinguishing street and other gas lamps, the combination of a vessel or chamber containing a liquid, a draining chamber communicating with a gas main or service pipe, a gas inlet pipe leading from the draining chamber to a point above the liquid in the first named chamber, a gas outlet pipe extended from a point above the surface of said liquid to a point near the bottom of the draining chamber and provided with a branch leading to the burner, a vertically sliding gas holder immersed in the liquid of the upper or first named chamber and carrying a depending tube the upper end of which is closed and the lower end open and adapted to project below the surface of the liquid and inclose the upper end of the gas exit pipe when the said gas holder is in its lowest position, and electric igniting devices adapted to be actuated from the vertically sliding gas holder when said holder rises, substantially as shown and described.

3. In apparatus for automatically lighting and extinguishing street and other gas lamps, the combination of a chamber or vessel containing a liquid and provided with a gas inlet pipe and a gas outlet pipe each of which projects above the surface of said liquid, a vertically sliding gas holder immersed in the liquid and carrying a depending tube the upper end of which is closed and the lower end open and adapted to project below the surface of the liquid and inclose the upper end of the gas exit pipe when the said gas holder is in its lowest position, a battery, an induction coil having its primary winding in circuit with the battery through contact springs G G', one of which is provided with a serrated contact surface g', a pin or projection g carried on the vertically sliding gas holder and adapted to bear on the spring G and cause it to make and break the battery circuit, when said holder rises, and wires i i' leading from the secondary windings of the induction coil, to the lamp burner, substantially as shown and described.

WILLIAM WHITE.

Witnesses:

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EDWARD NEEDHAM WATERS.