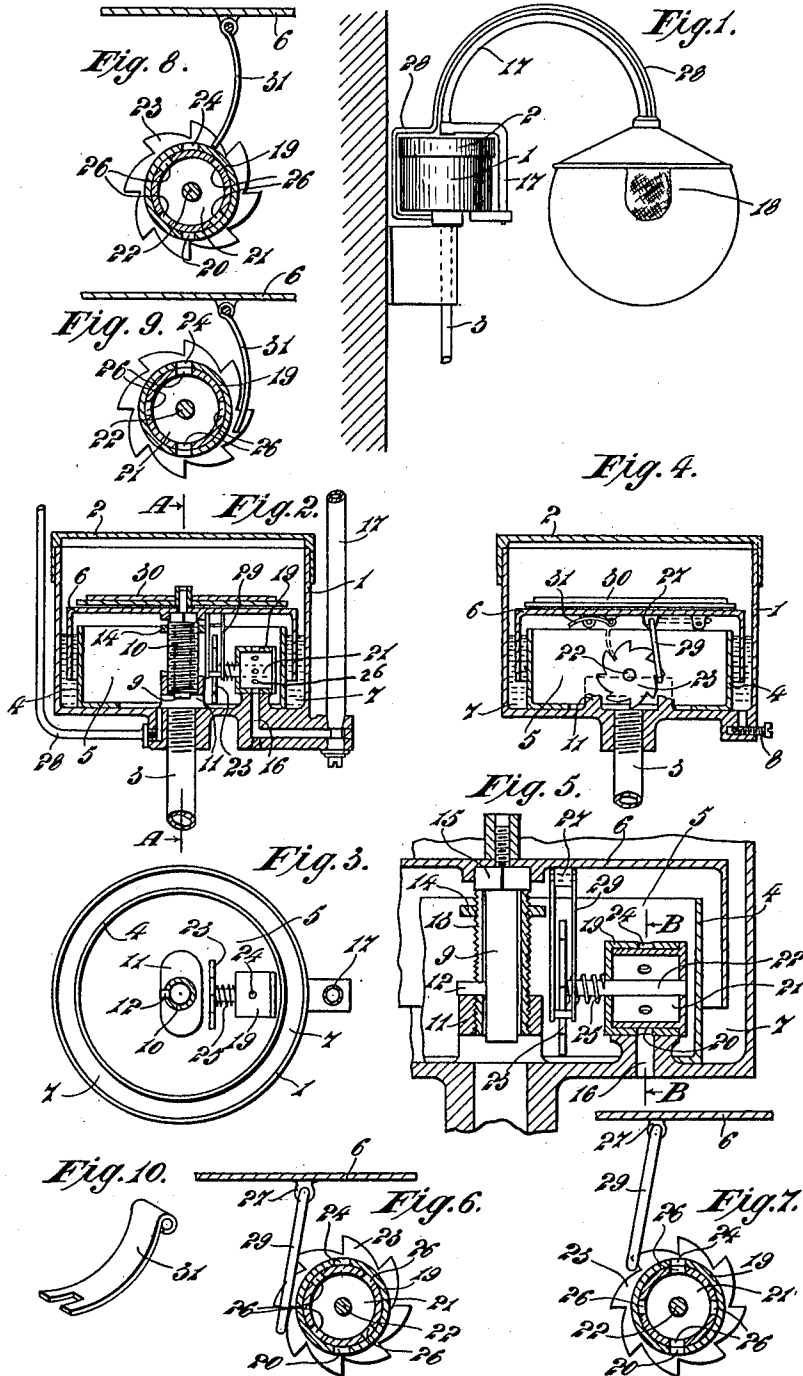


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 APPARATUS FOR LIGHTING AND EXTINGUISHING GAS LAMPS.
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1,035,477.

Patented Aug. 13, 1912.



Witnesses.
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR LIGHTING AND EXTINGUISHING GAS-LAMPS.

1,035,477.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed March 16, 1911. Serial No. 614,810.

To all whom it may concern:

Be it known that I, THOMAS MARTIN SANDIFORD, a subject of the King of Great Britain and Ireland, residing at 30 Workop road, Masterton, in the Provincial District of Wellington, in the Dominion of New Zealand, have invented new and useful Improvements in Apparatus for Lighting and Extinguishing Gas-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to apparatus for lighting and extinguishing a service of gas lamps where the lighting and extinguishing are controlled from a point where the gas pressure for the whole service is regulated and controlled.

The chief object of the invention is to enable the lighting and extinguishing to be controlled by alternate methods, viz., by the application of increased gas pressure above a given pressure, or by a reduction of gas pressure below a given pressure.

To this and other ends the invention consists in certain novel features and combinations such as will be fully described hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings forming part of this specification, in which similar reference numerals indicate corresponding parts in the figures.

Figure 1, is an elevation of a street gas lamp governed by the apparatus. Fig. 2, is a sectional elevation and Fig. 3, a plan of the apparatus. Fig. 4, is a cross section on line A—A Fig. 2. Fig. 5, is a part sectional elevation corresponding to Fig. 2 but drawn to a larger scale. Fig. 6, and Fig. 7, are cross sections through a part of the apparatus at line B—B Fig. 5 to show method of actuating the apparatus by increased pressure. Fig. 8, and Fig. 9, are similar views to Figs. 6 and 7 to show method of actuating the apparatus by means of reduced pressure. Fig. 10, is a perspective view of a detail.

The apparatus comprises a chamber 1 of usual construction and has a cap 2 closing the top thereof, while the gas supply pipe 3 leads into the chamber at its bottom. An annular wall 4 is provided within the chamber 1 and is fixed to or integral with the bottom thereof and forms another chamber

5 which will hereinafter be referred to as the gas chamber of the apparatus. A bell 6 forms the top of the gas chamber, the annular wall of which dips into the annular space 7 thus formed between the said wall 4 and the wall of the chamber 1. The space 7 is filled with mercury or other suitable liquid in order to form a gas tight seal between the chamber 5 and the chamber 1. A plug 8 (see Fig. 4) is provided for the purpose of emptying the space 7 of mercury.

The bell 6 is supported upon a central guide post 9 (see Fig. 5) guided in a cylinder 10 screwed into a bridge 11 integral with the chamber 1. A stud or stop 12 projects from the post 9 and is adapted to slide in a slot 13 in the cylinder 10, thus preventing the post from rotating and at the same time forming a stop to limit the downward travel of said post while it limits the upward travel thereof by engaging an adjustable nut 14 threaded upon the outside of the cylinder 10. By screwing the said nut up or down the upward travel of said post is regulated. The bell 6 is prevented from rotating by a sided portion 15 of the post fitting into a correspondingly shaped recess in the upper part of said bell.

An outlet 16 from the gas chamber leads to and communicates with a pipe 17 leading to the lamp 18. The said outlet communicates with the interior of a cylindrical drum 19 through the medium of the opening 20 in its lower periphery, said drum being arranged horizontally and fixed at or near the bottom of and on the inside of the gas chamber 5 and is open at the rear end. Within the drum 19 another drum 21 is fitted, a spindle 22 to which the drum 21 is fixed extends through the end of drum 19 and has provided upon it a toothed wheel 23; while a coil spring 25 located upon the spindle 22 is in compression between the end of the drum 19 and the wheel 23 and thus retains a tension upon the drum 21 in relation to the drum 19. A by-pass opening 24 in the top of said drum 19 and diametrically opposite the opening 20 allows gas to enter therein; while the drum 21 is provided with by-pass openings 26 arranged at intervals in its periphery and in line with the openings 20 and 24 each opening being diametrically opposite another opening so that when an opening 26 is opposite the opening 24, an-

other opening 26 will be opposite the opening 20; thus making communication between the gas chamber and the outlet 16 for gas to pass through.

5 Every other tooth upon the wheel 23 corresponds to a by-pass opening 26 in the drum 21 while the intermediate teeth correspond to the space between the said openings; thus when the drum is in the position
10 shown in Fig. 6 and upon the wheel 23 being rotated the distance of one tooth it will cause openings 26 therein to be opposite the openings 20 and 24 respectively. Rotating the wheel the distance of another tooth the
15 spaces between the said openings 26 will come opposite the openings 20 and 24, thereby closing communication from the gas chamber to the outlet 16. In the drawings four by-pass openings are shown in the
20 drum 21 but it is obvious that any desired number may be used the wheel 23 being provided with teeth to correspond.

When it is desired to operate the apparatus by increased pressure of gas the wheel
25 and drum are rotated by means of a link 29 pivoted in a lug 27 provided upon the interior of the bell (see Figs. 4, 5, 6 and 7) the lower bar of the link 29 being adapted to engage the teeth of the wheel 23 as shown.

30 Assuming now that the wheel, drum and link are in the position shown in Fig. 6 a space being opposite the openings 20 and 24, then upon the bell top 6 rising owing to increased pressure within the gas chamber 5 the bell top will take with it the link
35 29 thus rotating the wheel 23 and drum 21 to the position shown in Fig. 7 thereby bringing openings 26 opposite openings 20 and 24 thus making communication between the gas chamber and the outlet 16. The
40 height to which the bell rises being limited by the stop 12, the nut 14 being adjusted to give the desired travel to the bell 6 and so insures against the drum 21 being carried beyond the position required. Upon
45 the pressure again becoming normal the bell returns to its original position the link 29 riding over the back of the teeth, sufficient tension being given to the drum 21 by the
50 coil spring 25 to prevent it being moved upon the return downward travel of the link. Gas can now flow from the chamber 5 through the drums into the supply pipe 17 to the burner 18 where it is lighted by
55 means of a pilot 28 leading from a convenient part of the gas supply, the drawing showing it leading from the bottom of the chamber 1. To extinguish the lamp the pressure is again increased and the bell top
60 6 rising, the link 29 again rotates the wheel 23 the distance of one tooth when a space between the openings 26 is brought opposite the openings 20 and 24 thus shutting off the gas to the pipe 17 and extinguishing the
65 lamp; upon, however, the pressure again

becoming normal the bell descends and the link rides over the teeth to its normal position as before and is ready to operate the wheel when the next application of increased pressure takes place.

In order to insure the bell returning to its lowest position against the usual pressure of gas, superimposed weights 30 are provided upon the top thereof and the weight of the bell can therefore be adjusted so that it will rise to its full limit when a predetermined degree of increased pressure is reached within the gas chamber, but will descend to its original position when the extra pressure is removed.

80 If it be desired to operate the apparatus by means of a reduction of the normal pressure in the chamber, the link 29 is dispensed with or may be slung up and secured against the inside of the bell as shown in Fig. 4
85 while a blade or link 31 (see Figs. 4, 8, 9, and 10) is provided pivoted to the inside of the bell similarly to the link 26 but adapted to operate by downward pressure upon the teeth on the opposite side of the wheel 23.
90 In this case the bell 6 is not weighted sufficiently to descend to its lowest position against the normal pressure, but on the contrary the normal pressure tends to raise it to its highest limit. Assuming that the
95 wheel 23, drum 21 and bell 6 are in the position shown in Fig. 8 then when a desired reduction of the normal pressure takes place the bell descends and the blade 31 engages the face of a tooth on the wheel 23 and rotates the wheel and drum the distance of one
100 tooth, the drum assuming the position shown in Fig. 9 thus opening the by-pass openings to the gas and allowing it to flow through the pipe 17 to the lamp. Upon the
105 normal pressure being regained the bell 6 rises again to its original position the blade 31 riding over the back of the teeth similarly as described in reference to the link 29. To extinguish the lamp the pressure is again
110 reduced to a predetermined degree, the bell descends causing the blade to rotate the wheel the distance of one tooth, which causes the drum to rotate and close the openings 24 and 20 to the interior of said drum and outlet 16 respectively and thus cutting off the gas supply extinguishes the lamp. When
115 the normal pressure is regained the bell will again rise to its original position.

When the apparatus is arranged to be operated by increased pressure the blade is either removed or slung up and retained as indicated in Fig. 4.

What I do claim as my invention and desire to secure by Letters Patent is:—

125 1. In apparatus of the kind described, a horizontal drum open at the rear end, an inner drum fitting said drum and open at the front end, an opening being provided in the bottom of the said outer drum for the 130

passage of gas therethrough, an opening being provided in the top of the said outer drum for the passage of gas therein, and by-pass openings being provided at intervals
5 in the said inner drum in line with the said openings in the outer drum, and a spindle projecting from the end of said inner drum through the front of said outer drum, substantially as described.

10 2. In apparatus of the kind described, the combination of a horizontal drum, a vertically movable bell over said drum, an inner drum fitting said horizontal drum and provided with by-pass openings, a spindle fitted
15 to said inner drum and projecting through the end of said horizontal drum, a toothed wheel upon said spindle every other tooth of said wheel corresponding to a by-pass opening in said inner drum, and means for
20 operating the said toothed wheel the dis-

tance of one tooth when the bell rises by the increase of pressure or falls by the decrease of pressure, substantially as set forth.

3. In apparatus of the kind described, means for limiting the rise and fall of the
25 bell top, comprising a gas chamber, a bridge in said gas chamber, a cylinder screwed into said bridge and provided with a slot, a post guided in said cylinder, and supporting the bell top, a stop projecting from said post
30 and through the said slot, and an adjustable nut upon the cylinder upon which the said stop engages, substantially as set forth.

In testimony whereof, I have signed my name to this specification in the presence of
35 two subscribing witnesses.

T. M. SANDIFORD.

Witnesses:

GEO. H. CULLEN,
SYDNEY H. HEGGS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."