

No. 831,013.

PATENTED SEPT. 11, 1906.

G. LENTSCHAT.
DISTANT ACTING ELECTRICAL GAS IGNITER.
APPLICATION FILED JULY 24, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

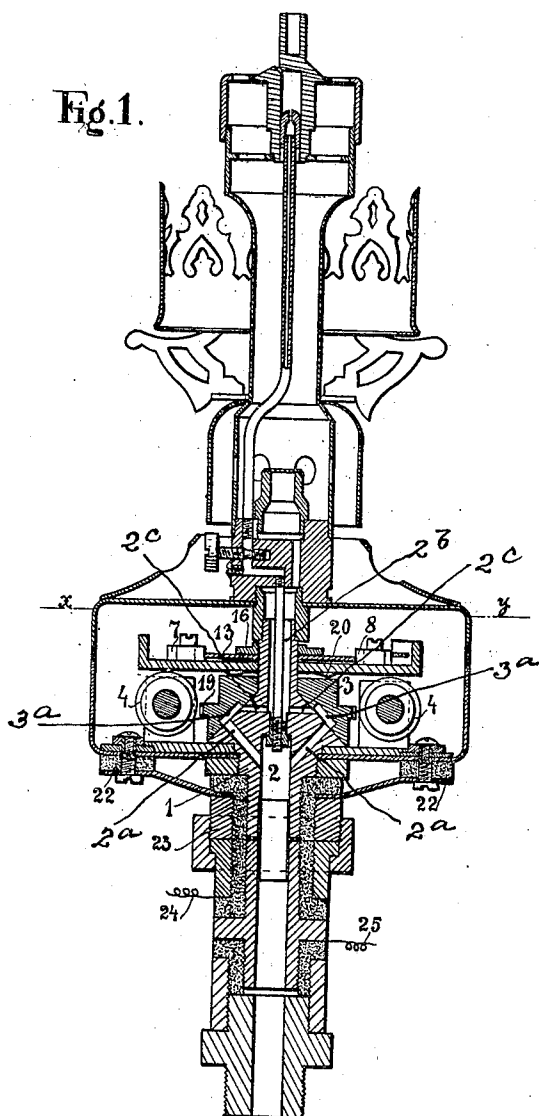
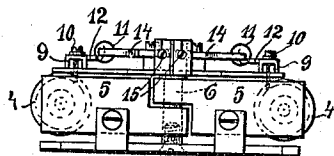


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

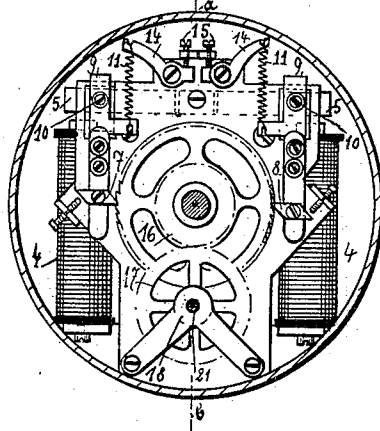


Fig. 5.

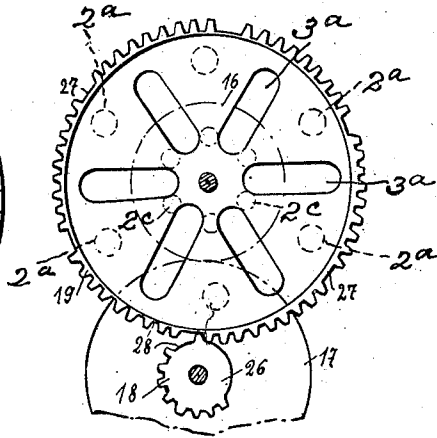


Fig. 4.

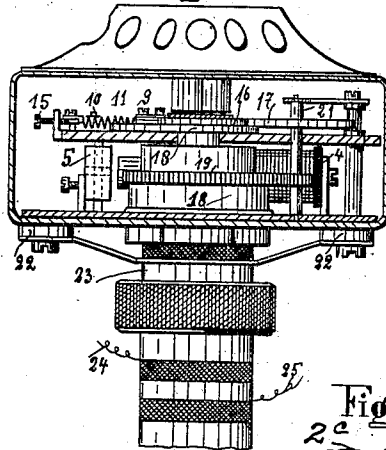


Fig. 6.

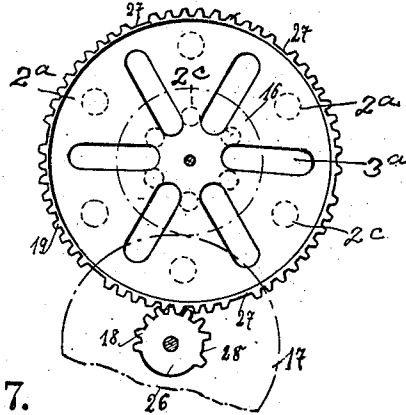
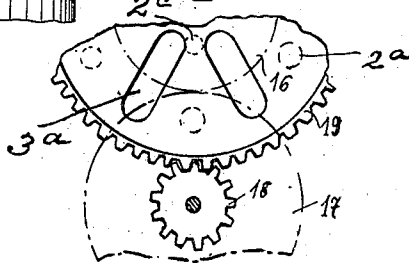


Fig. 7.



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UNITED STATES PATENT OFFICE.

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DISTANT-ACTING ELECTRICAL GAS-IGNITER.

No. 831,013.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed July 24, 1906. Serial No. 327,468.

To all whom it may concern:

Be it known that I, GEORG LENTSCHAT, a subject of the German Emperor, and a resident of Hohen-schönhausen, near Berlin, Germany, have invented new and useful Improvements in Distant-Acting Electrical Gas-Igniters, of which the following is a specification.

The present invention relates to the class of distant-acting electrical gas-igniters, specially street-lamps, in which the passages of the pass-valve are alternatively opened or closed by means of a ring which may be rotated by electromagnetic means.

According to my invention I rotate said ring indirectly by means of a gear, although I know that such ring can be directly rotated. The advantages which I hereby attain are to employ a proportionally low electromagnetic force to rotate the said ring, to regulate *ad libitum* the gas-passages, and to switch a number of gas-flames on one circuit without altering the gas-igniter, so that I can simultaneously ignite several flames and extinguish the same in series.

In the accompanying drawings, in which like characters refer to like parts throughout the different views, I have illustrated my invention.

Figure 1 shows a longitudinal section through the apparatus with burner. Fig. 2 shows a front view of the armature and its diagram. Fig. 3 shows a cross-section on lines *xy* of Fig. 1. Fig. 4 shows a cross-section through the casing on lines *ab*, whereby the driving-gears are drawn in a front view. Figs. 5 and 6 show the driving-gears for the simultaneous ignition and serial extinguishing of gas-flames in a position corresponding to the simultaneous ignition and serial extinguishing of the gas-flames. Fig. 7 shows a modified form of the driving-gears.

The cock-valve consists of a stationary tapered cock 1, providing a passage 2, communicating with the gas-feeding pipe, and of a rotary and movable tapered ring 3, which fits the cock 1 gas-tight. A spring 20 serves for a still better fitting of the gas-cock 1 and the covering-ring 3.

The cock 1 is provided with six concentrically-arranged tapered bore-holes 2^a and another centrally-arranged passage 2^b, which contains the ignition-pipe branch of

the passage 2 of the cock 1. Above the six concentrically-arranged tapered bore-holes 55 are six horizontally-placed radial bore-holes 2^c, which may communicate with each other by a channel (not shown) and which are in communication with the gas-pipe feeding the burner. The ring 3 is provided with six longitudinal cuttings 3^a, which if the cock-valve is open serve for a communication between the two series of bore-holes and feed the gas to the burner. The electrical equipment consists of two electromagnets 4, with two 65 armatures 5. The two armatures 5 have a common axis of motion 6.

The mechanism which transfers the motion of the armature 6 to the ring 3 consists of gear-wheels 16 17 18 19 and of a ratchet-wheel 13, which advances one tooth at each 70 closing of the current. This advancing motion is caused by the following operation: The magnetic coils 4 take the current, attract the armatures 5, and advance the pawls 9, fastened on the same by screws 10. The 75 front of the pawls is U-shaped, and they carry on their back ends two ratchets 7 and 8. If the armature 5 is attracted, the ratchet 7 rotates the ratchet-wheel 13 half a tooth, 80 while the ratchet 8, situated in the middle between two teeth, laps over the next tooth and rotates the ratchet-wheel 13 half a tooth during the armature reaction. The armature reaction is effected by a spring 11, which 85 is fastened with one end on an arm 12 of the pawl 9 and with the other end on a lever 14. The tension of the springs 11 can be regulated by means of lever 14 and set-screws 15.

The motion of the ratchet 7 and 8 is transmitted to the ring 3 by means of the ratchet-wheel 13 and the toothed wheels 16 17 18 19. The first toothed wheel 16 is firmly connected with the ratchet-wheel 13 and rotatable 90 around the prolongation of the cock 1. The toothed wheels 17 and 18 are firmly mounted on a rotary shaft 21. The fourth toothed wheel 19 is firmly mounted on the ring 3 or, as shown in the drawings, a part of the ring 100 itself.

One of the two conducting-wires of each of the two electromagnets is connected to the casing, while the two other wires of the electromagnets are connected to the two insulated clamps 22. These clamps 22 are 105 connected by metal straps with the screws 23

and with the working conductor 24, while the derivation through the casing connects to the conductor 25.

If the distant-acting gas-igniter is used to ignite or extinguish a number of gas-flames or street-lamps, the gearing, as shown in Fig. 7, must be used. This gearing differs from the one shown in Figs. 5 and 6 in so far as the wheel 18 has been provided with teeth on its full circumference. If now by causing a number of closings of the current the ratchet-wheel 13 is rotated, this movement will be equally transmitted to the ring 3 by means of the gearing 16 17 18 19, and consequently the gas-outlets of the cock 1 are closed and opened by means of the ring 3.

If the distant-acting igniter is employed to ignite several gas-flames at the same time, but extinguish said flames at different times, as it is the case with street-lamps with night and day lanterns, it is necessary for the use of the mechanism as above described to apply two separate circuits. In order to prevent this and still to connect all mechanisms up to one circuit, I have constructed the toothed wheel 18 in such a manner that by taking away a part of the teeth a larger space 26 is produced, the size of which is such that at one full revolution of the toothed wheel 18 the bore-holes of the cock 1 will relate in the same position to each other. By this construction it is possible to allow a simultaneous ignition of the gas-flames, while the extinguishing of the same may take place at different times.

The small spaces in the toothed wheel 19 of the ring 3 and in the toothed wheel 18, which are referred to in the drawings by the numerals 27 and 28, serve for the purpose of overcoming little inaccuracies in the working of the teeth. It is thought that the position of the toothed wheel 18, Fig. 5, is for evening flames, that of Fig. 6 for night flames, both mechanisms being switched on one circuit with closed valve-cocks, this being the case during the day-time. The bore-holes of cock 1 are shown in dotted lines, while the cuttings of the ring are illustrated by full lines.

The operation is as follows: If by a certain number of circuit-closings—fifteen are necessary in the drawn illustration—the toothed wheels 18 have made one-third of a revolution, they will turn the toothed wheels 19 of the ring 3, Figs. 5 and 6, so that the cuttings of the ring 3 communicate with the bore-holes of the cock. The gas can pass to the burner and will be ignited by the day flame. Evening and night flames are consequently ignited at the same time. Fifteen more circuit-closings are necessary to turn the ring 3, Fig. 5, far enough to attain the same position as before the ignition of the lanterns. The gas-passages are blocked while all lanterns, the toothed wheels 18 of which show such adjustment, would be blown out, (evening lan-

terns.) In the mechanisms in which the toothed wheels 18 are adjusted, as in Fig. 6, it will be clearly understood that the movements of the armatures do not affect the position of the ring 3 to the cock, as the large space 26 of the toothed wheel 18 passes the toothed wheel 19 without rotating the same. The lanterns of a city which is switched on such circuit would have its lanterns alight, (night lanterns.) If the circuit is again closed, the large spaces 26 of the toothed wheels 18, adjusted as in Fig. 5, pass the toothed wheels 19 of the rings 3 without rotating the same. Consequently the cock-valves are closed, while the toothed wheels 19, provided that the toothed wheels 18 are adjusted as in Fig. 6, bring the ring 3 in a position to block the bore-holes and to close the cock. In order to ignite the lanterns in series at different times and to extinguish the same simultaneously, all that is necessary is to use the same arrangement reversed.

What I claim as new, and desire to secure by a United States Letters Patent, is—

1. In a distant-acting electrical gas-igniter with gas-passages alternately closed and opened by a rotary ring, the combination of a cock, gas-passages in said cock, a rotary ring 3, a toothed wheel 19 firmly connected with said ring, a ratchet-wheel 13, two electromagnets, means for operating said ratchet-wheel from the electromagnets, a toothed wheel 16 firmly connected with said ratchet-wheel, a toothed wheel 17 in gear with the toothed wheel 16, and a toothed wheel 18 mounted to turn with the toothed wheel 17 and in gear with the toothed wheel 19 on the rotary ring, substantially as set forth.

2. In a distant-acting electrical gas-igniter with gas-passages alternately closed and opened by a rotary ring, the combination of a cock, gas-passages in said cock, means to simultaneously close or open said gas-passages of several such igniters, all switched on one circuit, a rotary ring 3, a toothed wheel 19 firmly connected with said rotary ring, two electromagnets and their armatures, a ratchet-wheel 13 operated by the armatures of said electromagnets, a toothed wheel 16 firmly connected with said ratchet-wheel, a toothed wheel 17 in mesh with the toothed wheel 16, and a toothed wheel 18 rotating with the toothed wheel 17 and gearing with the toothed wheel 19 substantially as set forth.

3. In a distant-acting electrical gas-igniter with gas-passages alternately closed and opened by a rotary ring, the combination of a cock, gas-passages in said cock, means to simultaneously open or close the said passages of several such igniters, all switched on one circuit, a rotary ring 3, a toothed wheel 17, a wheel 18 mounted to turn with the toothed wheel 17, the said wheel 18 being partly provided with teeth and coöperating with a toothed wheel 19 firmly mounted on

the rotary ring 3, means to adjust the coöperation of said toothed wheels corresponding to the simultaneous opening and serial closing of the gas-passages of the cocks of several
 5 gas-igniters, two electromagnets and their armatures, a ratchet-wheel 13 operated by the armatures of said electromagnets, a toothed wheel 16 firmly connected with said ratchet-wheel 13 and in mesh with the toothed
 10 wheel 17 substantially as set forth.

4. In a distant-acting electrical gas-igniter with gas-passages alternately closed and opened by a rotary ring, the combination of a cock, a ratchet-wheel 13 freely mounted on
 15 a prolongation of said cock, two electromagnets 4, two armatures 5, a shaft 6, on which said armatures are turnably mounted, two pawls 9, fixed on said armatures, two ratchets 7 and 8 mounted on said pawl, and operat-
 20 ing said ratchet-wheel 13 and means to advance said ratchet-wheel half a tooth by the attracting of one armature and half a tooth by the reaction of the second armature, substantially as set forth.

25 5. In a distant-acting electrical gas-igniter, a stationary cock having a passage for communication with the gas-feeding pipe, the said cock being provided with a series of concentrically-arranged inclined gas-passages
 30 leading from the first-mentioned passage through the cock to the outer face thereof, the said cock being further provided with a

series of horizontally-arranged gas-passages located above the inclined passages and opening at their outer ends at the outer face of the
 35 cock and in communication at their inner ends with the gas-pipe feeding the burner, a ring mounted to turn on the said cock and provided with a series of longitudinal grooves adapted to establish communication between
 40 the two series of gas-passages to feed the gas to the burner, and electrically-operated means for rotating the said ring to connect or disconnect the said gas-passages.

6. In a distant-acting electrical gas-igniter, 45 the combination of a cock, gas-passages in said cock, a rotary ring mounted to turn on the cock and controlling the said gas-passages, the said ring being provided with teeth, a ratchet-wheel mounted to turn on the cock, 50 electromagnetic means for operating the ratchet-wheel, a wheel partly provided with teeth, and coöperating with the toothed ring to turn the same, and means for driving the said wheel from the ratchet-wheel, substan- 55 tially as set forth.

In testimony whereof I have hereunto signed my name, this 5th day of July, 1906, in the presence of two subscribing witnesses.

GEORG LENTSCHAT.

Witnesses:

HENRY HASPER,
 WOLDEMAR HAUPT.