

No. 761,699.

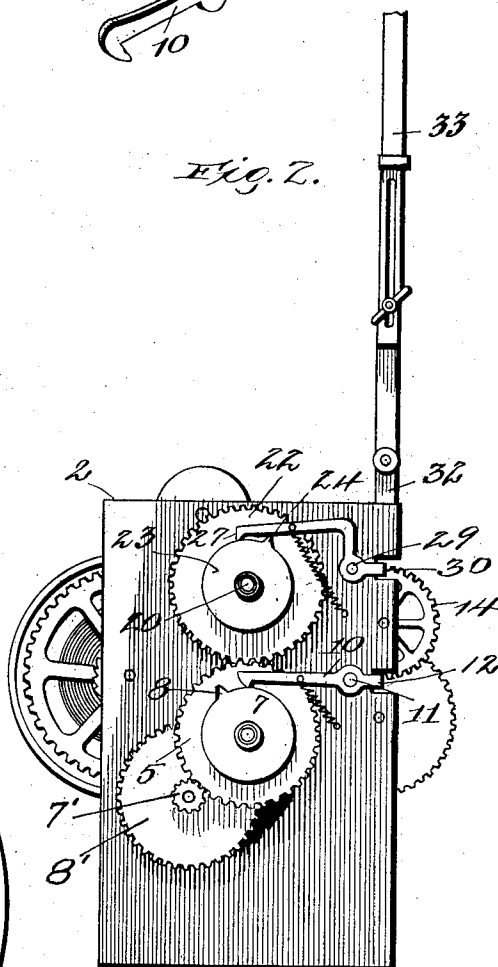
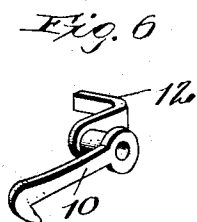
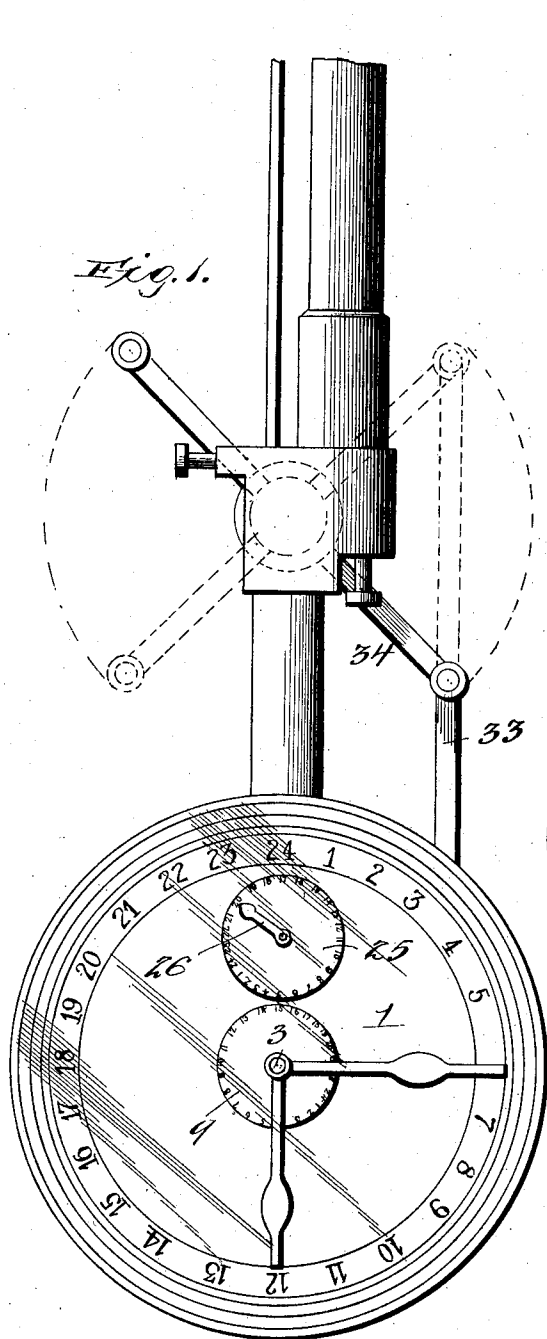
PATENTED JUNE 7, 1904.

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TIME GAS LIGHTING MECHANISM.

APPLICATION FILED JAN. 14, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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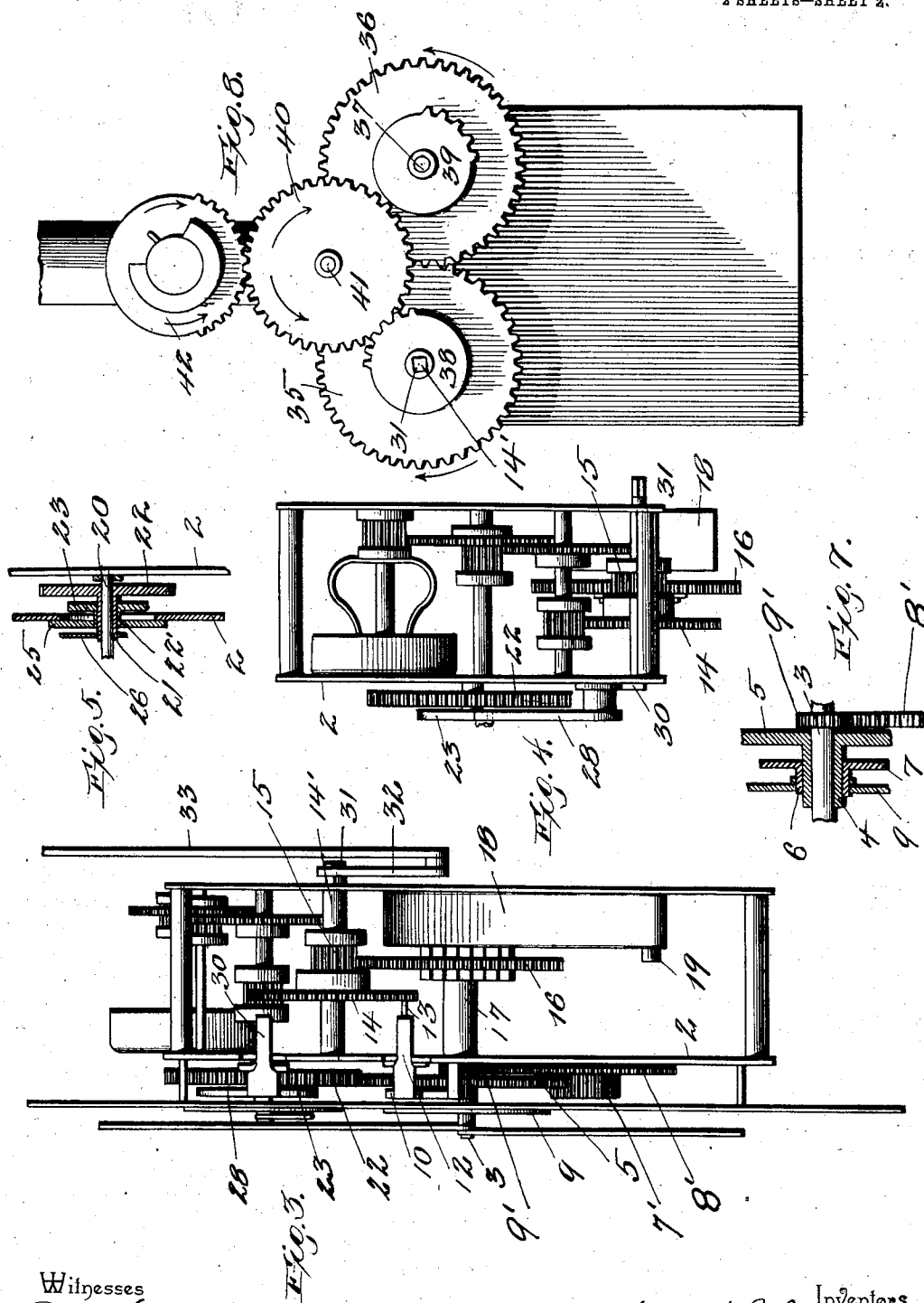
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UNITED STATES PATENT OFFICE.

GEORGE P. NEY AND JOHN RAU, OF BALTIMORE, MARYLAND.

TIME GAS-LIGHTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 761,699, dated June 7, 1904.

Application filed June 14, 1902. Serial No. 111,743. (No model.)

To all whom it may concern:

Be it known that we, GEORGE P. NEY, a subject of the Emperor of Germany, and JOHN RAU, a citizen of the United States, both residing in the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Devices for Lighting and Extinguishing Street-Lamps; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of the specification.

This invention relates to improvements in a motor mechanism adapted to be put in operation by a time mechanism for igniting and extinguishing gas-lamps, and more particularly to a mechanism specially adapted to open and close a gas-cock, provided with a rocker-arm adapted to be rocked to open and close the passage from the pipe to the burner.

The object of this invention is to simplify and cheapen mechanisms of this character and provide one that will be thoroughly reliable in operation and not likely to get out of order and to improve the adjusting means so that the mechanism can be readily set from the front of the clock to light and extinguish the lamp at a predetermined time.

Other objects and advantages resulting from the construction shown and about to be described will become apparent in the course of the following description and the points of novelty will be set forth in the claims.

In the drawings, Figure 1 shows the face of a clock with setting-dials thereon, and a burner-cock adapted to be operated by the mechanism in their proper relative positions, the burner proper being omitted. Fig. 2 is a view showing the setting-dials and clock-dials removed and the burner-cock omitted. Fig. 3 is a side elevation of the mechanism. Fig. 4 is a top plan view of the same, clock-dial, setting-dials, and hands being omitted. Fig. 5 is a detail sectional view showing the manner of mounting the upper setting-dial upon its stud. Fig. 6 is a detail perspective view of one of the pawls adapted to be oper-

ated to release the lighting and extinguishing mechanism. Fig. 7 is a detail sectional view showing the manner of mounting the lower dial upon its stud, and Fig. 8 is a rear view of a modified means for opening and closing the gas-cock.

The portion of the clock or time mechanism illustrated forms no part of the invention, and just so much thereof as is necessary to show the relation of our motor mechanism thereto is illustrated. Any ordinary clock mechanism, preferably of the eight-day variety, may be employed in connection with the motor mechanism about to be described, as the stud or arbor upon which the hands are mounted serves to transmit motion in a manner that will hereinafter be described to the specially-devised motor mechanism that opens and closes the gas-cock at a predetermined time.

Referring to the drawings, the numeral 1 indicates a twenty-four-hour dial, which is used in carrying out the invention. This dial is suitably supported on and spaced from the front plate 2 in the usual well-known manner and is provided with the usual central opening for the passage of the arbor or hand-post 3 of the ordinary clock mechanism.

In carrying out the invention we surround the hand-post by a sleeve 4, preferably integral with the gear-wheel 5, and surrounding this sleeve is a second sleeve 6, formed integrally with a disk 7, provided with a tripping-tooth 8, as more clearly shown in Figs. 2 and 7.

The numeral 9 indicates the lower setting-dial, which will be hereinafter referred to as the "extinguishing-dial," and this is so mounted on the sleeve 6 of the disk 7 that both the dial and disk move together in setting the lower dial for the obvious purpose of bringing the tripping-tooth thereon to any desired point to operate upon the pawl to operate the motor mechanism at a predetermined time. The gear-wheel 5, the setting-dial 9, and disk 7 revolve with the continuously-revolving element of the clock mechanism that revolves once in twenty-four hours, or, in the present instance, the sleeve 4; but it will be understood that the dial and disk together are capable of a movement independent of the sleeve

4 for setting purposes, the engagement between the parts being frictional.

The wheel 5 is in gear with a reducing-pinion 7' of wheel 8', which latter wheel is in gear with pinion 9', keyed to the hand-shaft, as is shown in Figs. 2, 3, and 7 taken together. By this arrangement of gear-wheels the hand-shaft transmits movement through pinion 9' to the wheel 8' and through pinion 7' to the wheel 5, thus causing said wheel 5 to revolve once in twenty-four hours, while the hand-shaft is making twenty-four revolutions.

The numeral 10 designates a pawl mounted on a short stud 11, secured to the front plate, and is provided with a rearwardly and laterally extending arm 12, (shown clearly in Fig. 6,) adapted to be engaged by the pin or engaging device 13 on the pin-wheel 14, mounted upon a shaft 14', journaled in suitable bearings in the front and rear plates and in gear by means of pinion 15 with a wheel 16. This wheel 16 is mounted on the winding and power shaft 17 of the motor mechanism, to which is attached one end of a spring 18, and the other end of the spring is permanently attached to a post 19 on the rear plate. The wheel 16 is provided with the pawl usually employed on the striking side of the clock mechanism to keep the spring wound after the winding thereof, and in the present instance the power of this spring is utilized to raise and lower the arm of the gas-cock or operate the mechanism shown in the modification Fig. 7, as will presently be more fully described.

The numeral 20 indicates the upper setting-dial post firmly secured to the front plate and surrounded by a short sleeve 21, integral with a gear-wheel 22, which is in gear with and is revolved by said wheel 5 once in every twenty-four hours, the wheel 5 getting its movement from the clock mechanism, as above described; but said wheel 22 revolves in the opposite direction from the wheel 5, as obvious. Surrounding the sleeve 21 is a short sleeve 22' and having integral therewith a disk 23, provided with a tripping-tooth 24, similar to the tooth 8 on the disk 7, as clearly shown in Fig. 2. Mounted upon the sleeve 22' and adapted to turn therewith is the upper setting-dial 25.

Fitted tightly on the end of the sleeve 21 is a pointer 26, which turns with the wheel 22, so as to indicate at all times the position of the tripping-tooth 24 on disk 23 with relation to the markings on the dial 25. The manner of assembling the gear-wheel 22, disk 23, and dial 25 is similar to the manner in which the corresponding parts are mounted or arranged on the main shaft 3—that is, the setting of the dial will not disturb the wheel 22, but simply turn the dial and disk 23 until any particular number on said dial is brought opposite the pointer, and thereafter the motion of the wheel 22 will cause all of the parts to move together, and when the lighting-point is

reached the tripping-tooth 24 on the disk 23 will engage the inclined end 27 of pawl 28. This pawl is mounted upon a short stud 29 on the front plate and is provided with an arm 30, similar to the arm 12 of pawl 10, which arm is adapted to engage the pin 13 to arrest the movement of the pin-wheel 14 after it has made a half-revolution to either light or extinguish gas, according to the original setting of the mechanism. As the wheels 5 and 22 revolve in opposite directions, the ends of the pawls 25 are differently-shaped, as shown, so that the inclined portion of the pawl end will be engaged by the tooth to effect an easy lifting movement. This pin 13 on the pin-wheel 14 is at all times in engagement with one or the other of the arms 12 and 30, depending upon whether or not the last operation was one to extinguish the light or lamp; and this wheel makes a half-revolution with each operation of the motor mechanism, and its movement is arrested by engagement of its pin with one or the other of the pawl-arms.

The shaft 14', carrying the pin-wheel, is squared at its end, as indicated by the numeral 31, and adapted to enter the squared opening in the lower end of the operating-arm 32, to the upper end of which is pivotally secured the lower end of an extensible link 33, having its upper end pivotally or otherwise secured to one end of the rocker-arm 34 of the burner.

The setting-dials are identical and correspond with the main clock-dial and both dials move together. The lower one, with the hour-hand of the clock, makes a revolution every twenty-four hours, and the upper dial by reason of its gear with the lower dial makes a revolution in the same time. The pointer of the setting-dial when the dial is being set—say, for instance, to extinguish the light—will remain stationary; but when the said dial is adjusted at the desired point both dial and pointer move together thereafter. The operation of the lower dial is the same with relation to the hour-hand, as the number upon said dial which comes opposite said hand will indicate the time when the motor mechanism is to be operated. It will be understood, of course, that the friction with which the dials and sleeves engage their shafts will be sufficient to cause the dial to revolve with said shafts and to overcome the resistance offered by the tripping-tooth on the disks 7 and 23; but they can be readily adjusted upon the shafts by using sufficient force.

Referring particularly to the modification Fig. 8, the shaft 14' is provided with a gear-wheel 35, in mesh with a similar wheel 36, mounted upon a stud 37 on the rear plate. Rotating with the wheels 35 and 36 are mutilated gears 38 and 39, which revolve with said wheels and are adapted to engage at different times the gear-wheel 40, mounted upon a short stud 41, secured to the rear plate. The wheel 41 in operation engages the teeth on a

5 mutilated gear 42, which actuates the gas-cock to open or close the same. When the mutilated gear 38 is in engagement with the wheel 40, the releasing of the motor mechanism in the manner described will partially revolve the wheel 40 and move the same sufficiently to open or close the gas-cock, as the case may be, and this operation will cause the teeth of the wheel 38 to pass out of engagement with the teeth of the wheel 40, and by reason of the gear between the wheels 35 and 36 the teeth of the wheel 39 will be brought in a position to engage the wheel 40 upon the next operation of the device for the purpose of partially rotating said wheel in the opposite direction from that in which it has just moved, thus similarly moving the wheel 42. It will be understood that neither the wheel 41 nor 42 ever make a complete revolution, every movement being more in the nature of an oscillation of sufficient length to open and close the burner.

Reverting to the main figures, it will be seen that the lighting-dial is set at "20," which corresponds to eight o'clock in the event of the ordinary twelve-hour dial, and the lower or extinguishing dial is shown set to extinguish the light at "4," which corresponds to four o'clock. Assuming that the last operation has been one that has operated the motor mechanism to light the gas, the pin 13 will be in engagement with the arm 12 of the lower pawl 10, as shown in Fig. 3. This will prevent any movement of the shaft 14' until the tripping-tooth 8 on the disk 7 engages the end of the pawl 10 and lifts said pawl sufficiently to release the pin 13, when obviously the shaft 14' and the wheel 14 thereon will be caused to rotate under the influence of the spring 18 until the pin 13 engages the arm 30 of the upper pawl, when the movement of the mechanism will be again arrested after the light is extinguished.

It will be understood that the burner with which the described mechanism is used is of the "pilot" variety, or one in which the gas is never entirely extinguished, there being left burning a very small jet, which ignites the main body of gas when the cock is open.

Minor modifications involving any mechanical skill may be made in the construction of the mechanism described without departing from the spirit of the invention. For instance, it is obvious that depressions in the peripheries of the disks 7 and 23 may be substituted for the tripping-teeth 8 and 24 shown and the pawls adapted to drop into the depressions to release the motor mechanism instead of being raised, as is necessary in the construction shown.

We claim—

1. The combination with a continuously-moving element of a time mechanism, of a gear-wheel and a tripping device actuated by said element, a setting device having connec-

tion with the tripping device whereby said device is turned with the setting device, a shaft in proximity to the gear-wheel and carrying a wheel in gear with the gear-wheel first mentioned, said shaft also carrying a tripping device, a releasing and arresting device for each of the tripping devices, a motor mechanism, an engaging device actuated by the motor mechanism and adapted to alternately engage the releasing and arresting devices for the purpose of arresting the movement of the motor mechanism, and be released from such engagement at predetermined times to permit the operation of the motor mechanism, substantially as described.

2. The combination with the hand-shaft of a time mechanism, of a gear-wheel and a tripping device rotating with said shaft, a setting device having connection with the tripping device whereby it is turned with the setting device, a shaft in proximity to the hand-shaft and carrying a wheel in gear with the gear-wheel first mentioned and also a tripping device, a releasing and arresting device for each of the tripping devices, a motor mechanism, an engaging device actuated by the motor mechanism and adapted to alternately engage the releasing and arresting devices for the purpose of arresting the movement of the motor mechanism, and be released from such engagement at predetermined times, to permit the operation of the motor mechanism, substantially as described.

3. The combination with the hand-shaft of a time mechanism, of a setting device and a tripping device carried thereby, a gear-wheel carried by the shaft and adapted to move with the tripping device, a shaft carrying a setting device and a tripping device and also a wheel in engagement with the wheel on the hand-shaft, whereby the setting devices and the tripping devices are rotated at the same time, a releasing and arresting device for each of the tripping devices and adapted to be operated by said tripping devices at predetermined times, a suitable motor, an engaging device actuated by the motor and adapted to engage alternately the releasing and arresting devices and to be disengaged from said devices at predetermined times to permit a movement of the motor mechanism, a gas-cock, and suitable connections between said cock and the motor whereby said cock is operated with each operation of the mechanism, substantially as described.

4. The combination with the hand-shaft of a time mechanism, of a setting-dial, a tripping device, a gear carried thereby, the tripping device, setting-dial and gear-wheel being adapted to move together on said shaft, a shaft or stud mounted in proximity to the hand-shaft and carrying a similar tripping device and setting-dial, connections between the hand-shaft and last-mentioned tripping device and dial whereby the same are revolved when

the hand-shaft revolves, a motor, an engaging device actuated thereby, a releasing and arresting device for each tripping device adapted to be operated to engage the engaging device of the motor and arrest the movement of said motor, and to release the said engaging device at predetermined times for the purpose specified, a gas-cock, suitable connections between the operating-shaft of the motor and the gas-cock whereby the same is opened by the movement of one of the releasing and arresting devices, and closed upon the movement of the other of said devices, substantially as described.

5. In a device of the character described, the combination with the operating-shaft of a motor mechanism, of a gear-wheel, a mutilated gear carried thereby, a second wheel suitably

supported upon the frame and in gear with the first-mentioned gear-wheel and also carrying a mutilated gear, a third wheel mounted in proximity to the first-mentioned wheels and adapted to be engaged by one or the other of the mutilated gears for the purpose of oscillating said wheels in opposite directions, a gas-cock having teeth in engagement with the third wheel whereby the cock is opened or closed when said wheel is oscillated.

In testimony whereof we affix our signatures in the presence of two witnesses.

GEORGE P. NEY.
JOHN RAU.

Attest:

GEORGE WARD,
EUGENE WEST.