No. 713,031. Patented Nov. 4, 1902.

T. F. WESTENHOLZ.

APPARATUS FOR AUTOMATICALLY LIGHTING OR EXTINGUISHING GAS LAMPS.

(Application filed June 26, 1902.)

(No Model.) 2 Sheets—Sheet 1.

FIG 1

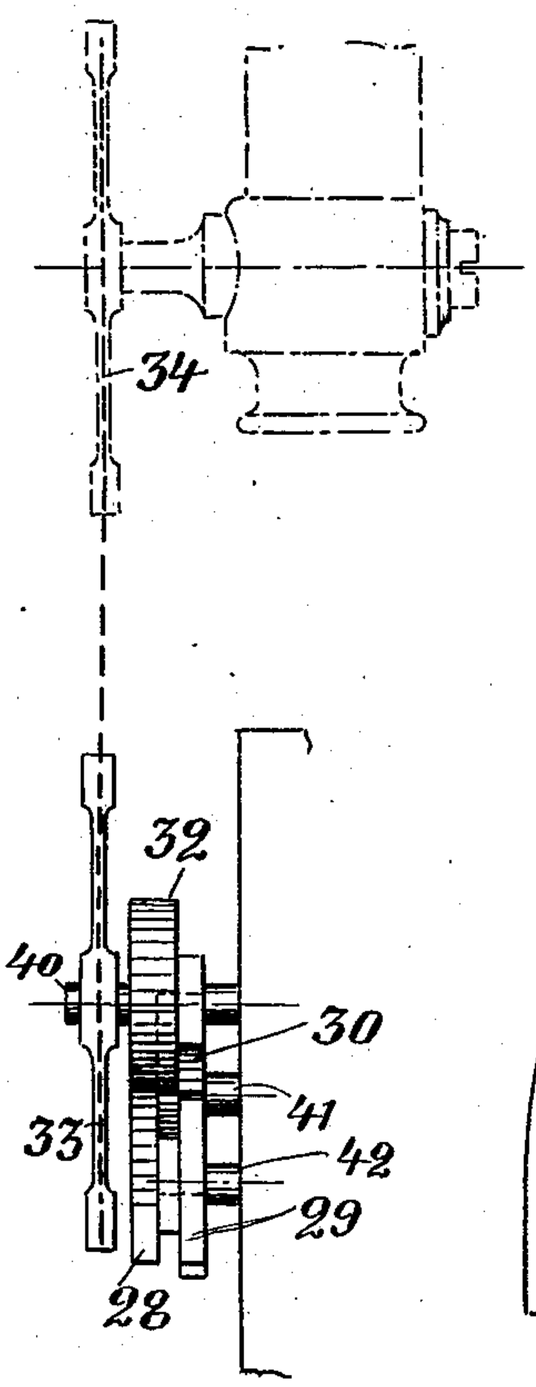

FIG 2

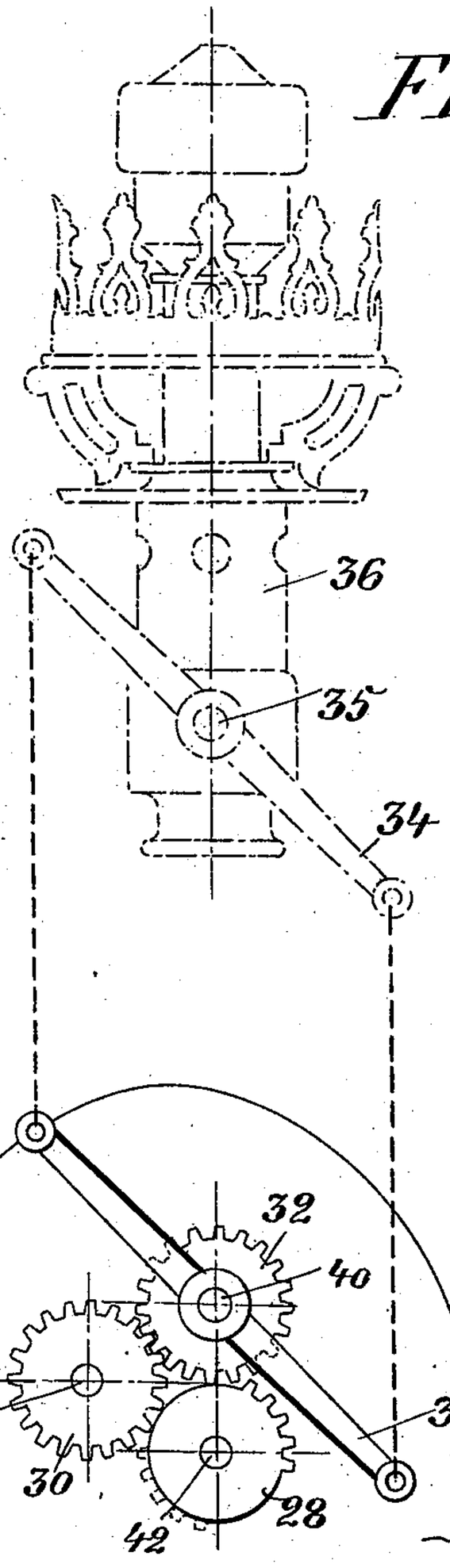

FIG 3

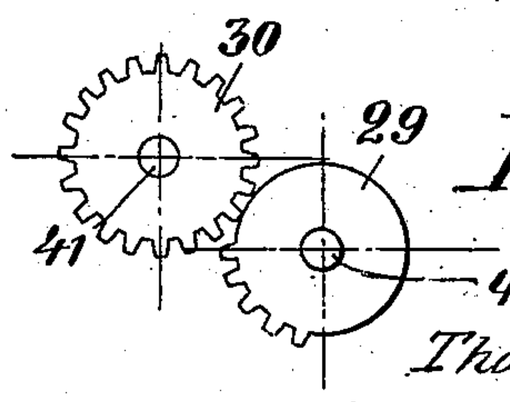

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FIG 4

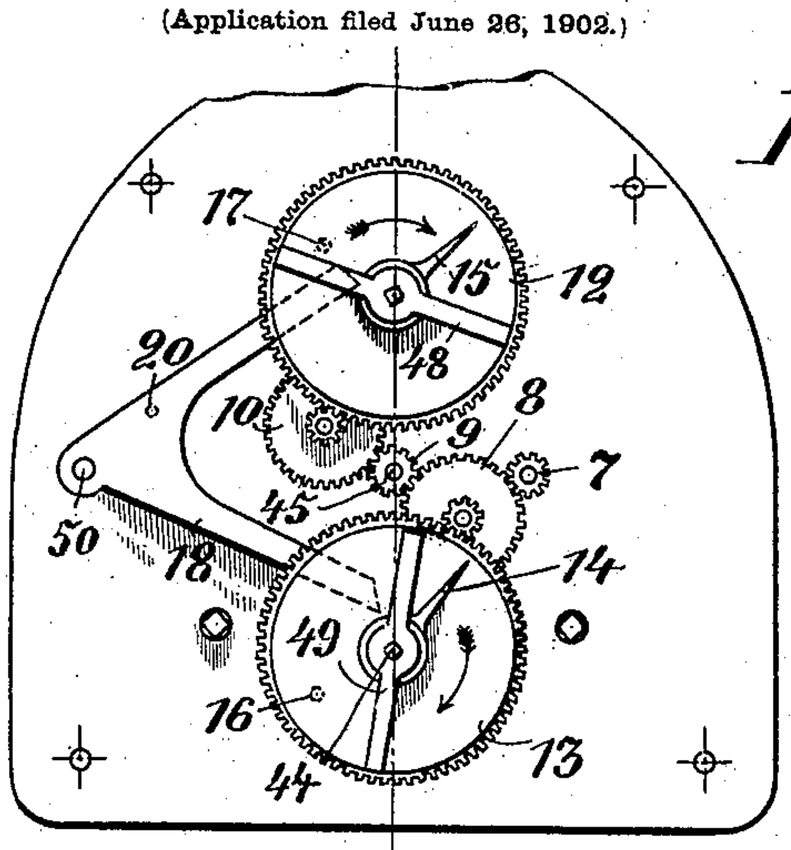


FIG 5

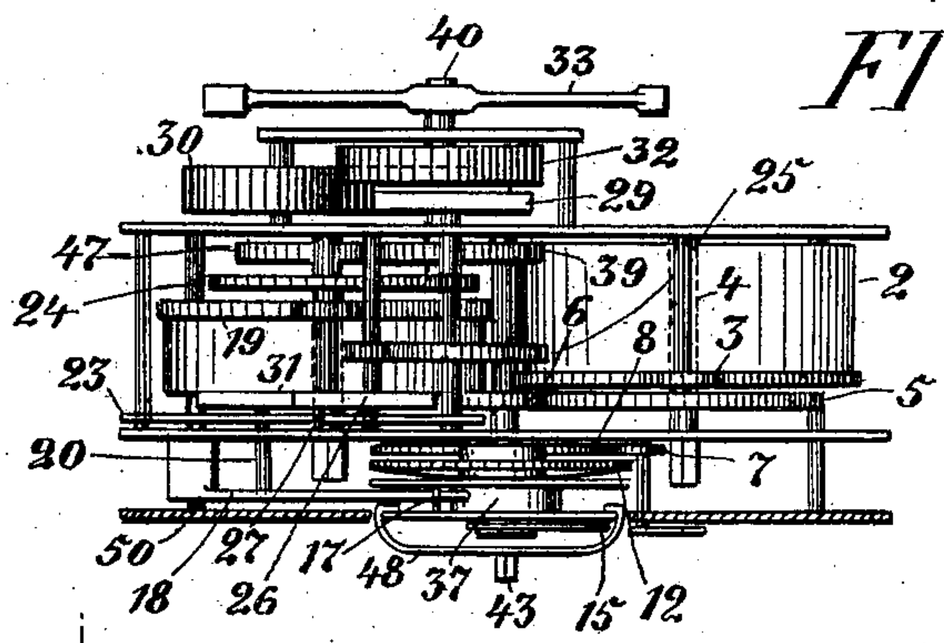


FIG 6

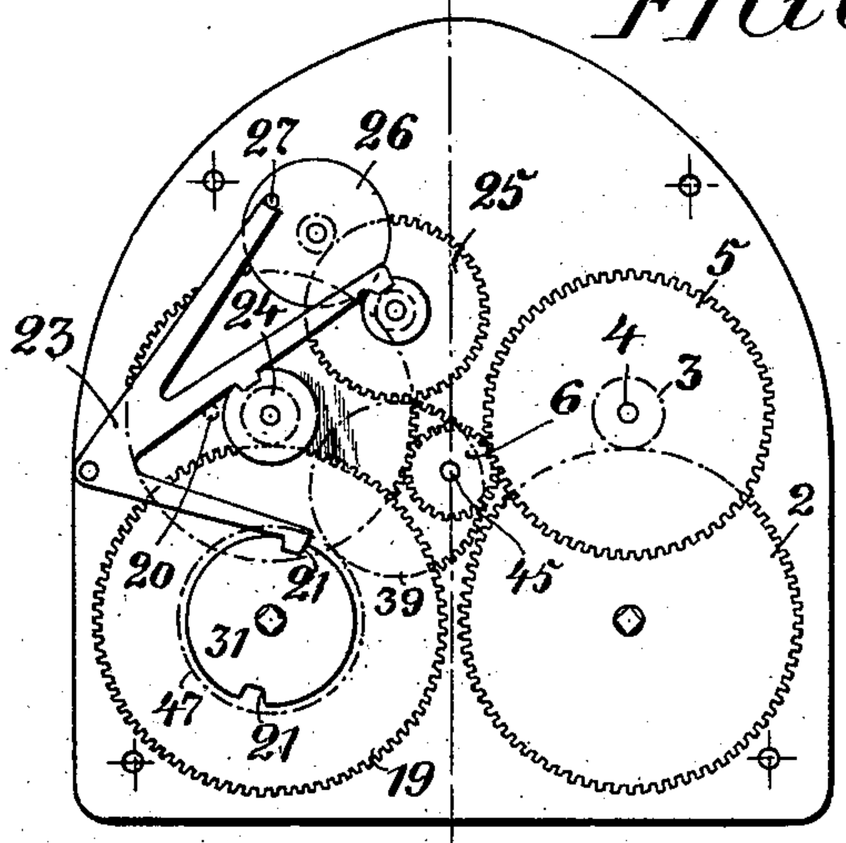
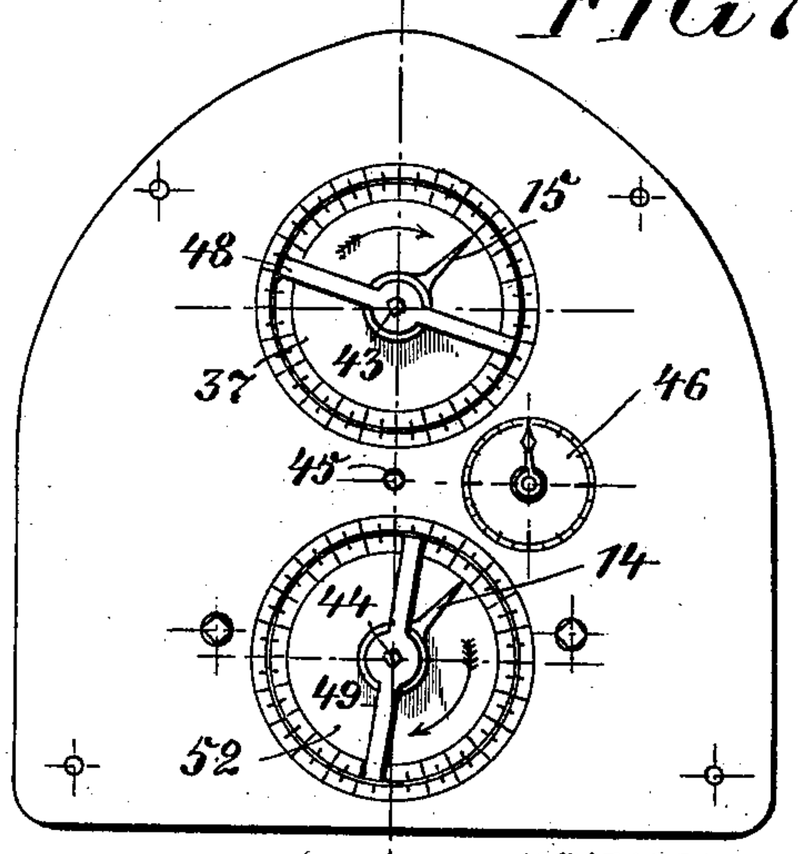


FIG 7



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APPARATUS FOR AUTOMATICALLY LIGHTING OR EXTINGUISHING GAS-LAMPS.

SPECIFICATION forming part of Letters Patent No. 713,031, dated November 4, 1902.

Application filed June 26, 1902. Serial No. 113,304. (No model.)

To all whom it may concern:

Be it known that I, THOMAS FREDERIK WESTENHOLZ, engineer, manager of the Strandvej Gas-Works, Hellerup, near Copenhagen, Denmark, have invented certain new and useful Improvements in Apparatus for Automatically Lighting or Extinguishing Gas-Lamps, of which the following is a full, clear, and exact specification.

As is known, workmen are at present employed for the lighting and extinguishing of gas-lamps. In most places the lamps are lighted at dusk. Many are put out at midnight, the rest at dawn. As before stated, the lighting and extinguishing are undertaken by workmen, (lamp lighters and extinguishers,) and this labor costs a good deal in proportion to its simplicity, as each lamp district has to be gone over three times during the twenty-four hours by the lamplighter. In addition, seeing that all the lamps have to be lighted at a particular time and each lamplighter, as a rule, has a great number of lamps to look after and a long distance to cover, the lighting has to be begun half or a whole hour beforehand. The opposite holds goods as regards extinguishing, whereby a great quantity of gas is used for which the gas-works get no payment. To relieve these inconveniences is the object of the invention submitted herewith, whereby the lighting and extinguishing is performed automatically at a predetermined hour, so that the daily lighting and extinguishing by hand is rendered unnecessary. It is intended to accomplish this by connecting a clockwork with the gas-cock, so that the latter is opened and shut by the former, thus setting in motion a cog-wheel, chain-pulley, lever, or such like acting on the cock.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 shows a side view of the mechanism for the shifting of the cock; Fig. 2, a front view of the same. Fig. 3 is a detail view of the shifting-wheels. Fig. 4 shows the part of the clockwork in front of the cover-plate with the dials off. Fig. 5 shows the clockwork seen from above; Fig. 6, the same seen from in front with the cover-plate off, and Fig. 7 is a front elevation of the front plate and dials.

The apparatus consists of two parts—a clockwork and a lighting and extinguishing appliance.

The power is conveyed from the spring-box 2 with its spiral spring by means of the wheels 3 and 5 to the wheel 6. The wheels 3 and 5 are mounted upon the shaft 4. The wheel 6 moves the minute-wheel 7 through the intermediate wheels 9 and 8, Fig. 4. Said wheel 6 is further in connection with the time-wheels 12 and 13 through the wheel 9, which is mounted upon the same shaft 45 as wheel 6 and the intermediate wheels 10 and 8. The minute-wheel 7 carries a minute-hand which rotates on the dial 46, Fig. 7. The hour-wheels 12 and 13 carry the hour-hands 15 and 14. These hands make one revolution in twenty-four hours. Each has, besides, a loose double disk 37 and 52, provided with a friction-spring, and in the disks are disconnecting-pins 17 and 16. On the disks 37 and 52 revolving the pins 17 and 16 lift a double arm or levers 18, which can be turned around the shaft 50. This lever is provided with a pin 20, which raises the triple arm 23, described below, whereby the lighting and extinguishing apparatus is set in motion.

By placing the loose disks 37 and 52 in relation to the hands 15 and 14 the pins 17 and 16 cause the double-arm lever 18 to be raised at any previously-determined hour.

The opening and shutting of the cock takes place as follows: On the spring-box wheel 19 is put a cog-wheel 47, geared with cog-wheel 39. Behind and joined to this wheel two other wheels 28 and 29 are placed. (See Figs. 2 and 3.) As is seen from the drawings, the teeth on each of these wheels are removed from a part of the periphery, the tooth-sections left being diametrically opposite each other. The cog-wheel 28 is geared with another wheel 32, fastened to the axle 40. On this axle a double arm 33 is placed, conveying the movement by means of chains to a similar arm 34 on the cock 35 in the burner 36. Of course the movement can be conveyed from the axle 40 to the cock in many other ways, and the arrangement here described must be considered as only a form of carrying it out. It may be mentioned that the movement can be conveyed by a crank mech-

anism, endless chain, rack, or such like. The movement-shifting mechanism in the same way could be quite dispensed with and the cock and spring-box be connected, by means of a rod and crank, in such a way that this latter is fastened as an eccentric to the spring-box and conveyed to an arm on the cock-plug. The mutilated cog-wheel 29, immediately behind the mutilated cog-wheel 28, is geared with a cog-wheel 30 on the axle 41. The wheel 30 meshes with the wheel 32. The mutilated wheel 28 during each of its revolutions engages the wheel 32, causing the same to rotate partially. The mutilated wheel 29, however, does not engage the wheel 32, as may be seen by inspecting Fig. 1. The wheel 29 engages the wheel 30. When the clockwork at a previously-adjusted hour moves the axle 42 part of a revolution, the wheels 28 and 29 are each also moved part of a revolution. Should there now be a part of the toothed edge of the wheel 28 in connection with wheel 32, this latter is moved a part of a revolution, and this movement is conveyed, by means of the arms and chains, to the cock which is opened. By the next revolution of the axle 42 wheels 28 and 29 are again moved a partial revolution; but when this happens the tooth edge of wheel 29 will be put in gear with wheel 30, while wheel 32 is beyond the reach of the teeth of wheel 28. The movement of wheel 29 turns the wheel 30, and therefore wheel 32 gets a movement in the opposite direction it formerly had, and the cock is thereby also moved in the opposite direction—that is to say, it is closed.

In Fig. 3 the connection between the mutilated cog-wheel 29 and the intermediate wheel 30 is shown. On the spring-box wheel 19 there is also a disk 31, the periphery of which is provided with two notches 21. Wheel 19 is connected with wheels 24 and 25, on the shafts of which wheels there are disks of which each is provided with two similar notches. Finally the fourth wheel 26 is provided with a stop-pin 27. The clockwork is set so as to light at the desired hour by turning the handle 43, which is attached to a disk 37 by means of a bow 48, until the hour desired on the adjustment-dial 37 be on front of the hand 15. In the same way the clockwork is set so as to extinguish by turning the handle 44, which is similarly by means of a bar 49 connected with the adjustment-dial 52. The minute-hand and hour-hand are set by turning the shaft 45. When at a previously-fixed hour the clockwork lifts the double arm 18 by means of the pin 17, Fig. 4, the triple arm 23 is also raised. The other part of the motor is thus set free, and the spring in the spring-box 19 will now turn the same, causing the wheels 28 and 29, Figs. 2 and 3, to make a partial revolution. The movement will last until the arm 18 and also the arm 23 fall. This will happen when the next notch in the disk 31 comes under the stop on the lowermost of the three arms on the lever 23.

The apparatus here described has thus two different adjusting arrangements, the one regulating the lighting and the other the extinguishing, and while all the working parts of the clockwork constantly rotate in the same direction the cock is made to turn alternately in the one or other direction by means of the movement-shifting wheels 28 29 30 32.

It is at once clear that the apparatus here described can also be employed for other objects than there is referred to here without departing from the principle which forms the basis of the invention.

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

1. An apparatus for the automatic lighting and extinguishing of gas-lamps, comprising a burner, a valve for controlling the flow of gas to the same, a pair of parallel rocking beams connected together for operating said valve, gearing provided with mutilated cog-wheels for the purpose of operating said levers in opposite directions, and dial mechanism adjustable at will, for governing the moments when said mutilated cog-wheels are brought into action for the purpose of operating said lever, the arrangement being such that said valve may be opened or closed at predetermined moments indicated by said dial mechanism.

2. An apparatus for the automatic lighting and extinguishing of gas-lamps, comprising a burner, a valve for controlling the flow of gas to the same, a pair of parallel rocking beams connected together for operating said valve, gearing provided with mutilated cog-wheels for operating said levers in opposite directions, motor mechanism for actuating said gearing, tripping mechanism for automatically stopping and starting said gearing, and time mechanism adjustable at will for actuating said tripping mechanism at predetermined periods.

3. An apparatus for the automatic lighting and extinguishing of gas-lamps, comprising a burner, a valve for controlling the flow of gas to the same, mechanism for automatically opening and closing said valve, mutilated gears for actuating said mechanism in opposite directions, motor mechanism for actuating said mutilated gears, a tripping device for automatically throwing said motor mechanism into and out of action relatively to said mutilated gears, and time-controlled mechanism adjustable at will for actuating said tripping mechanism at predetermined periods.

THOMAS FREDERIK WESTENHOLZ.

Witnesses:
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