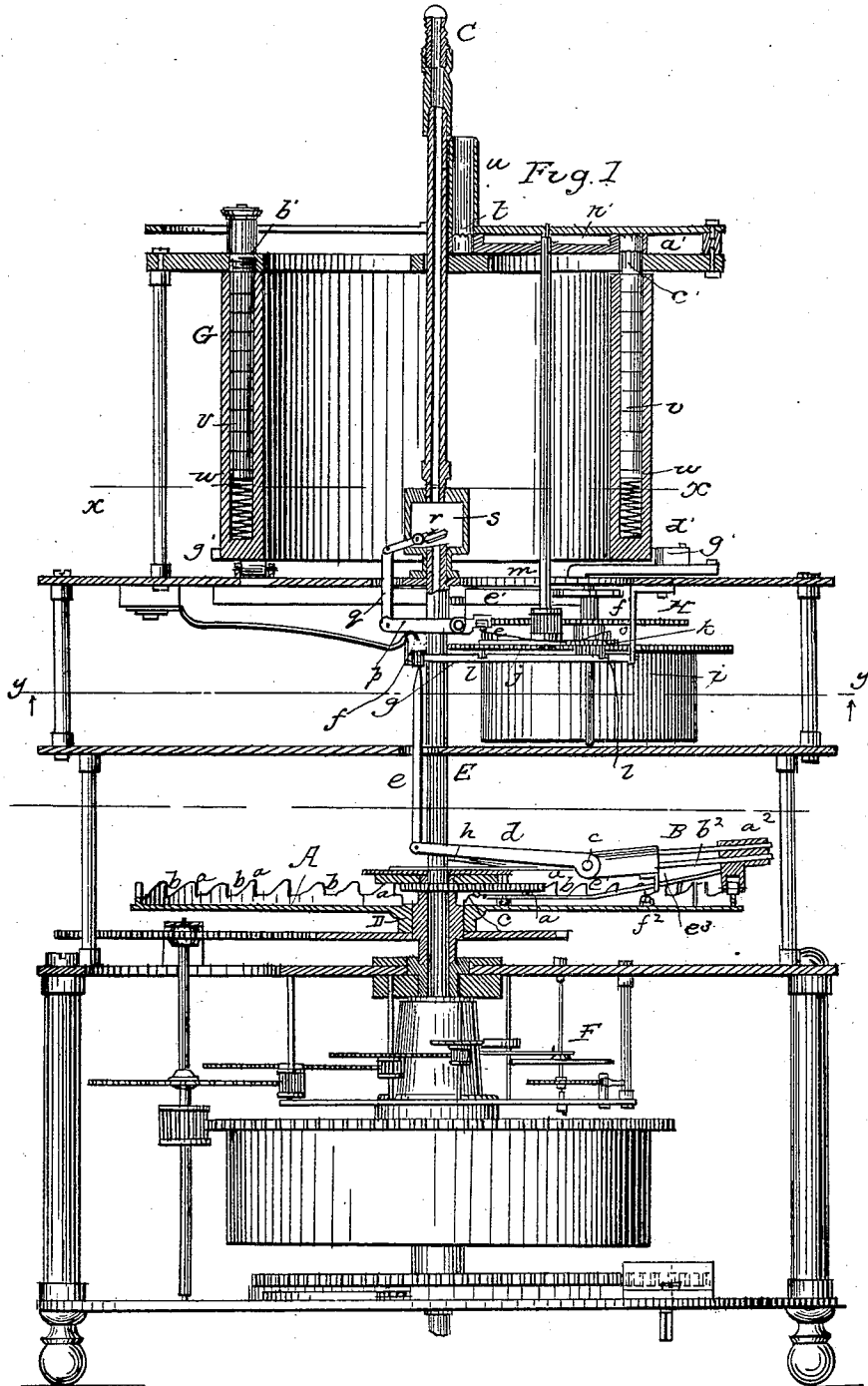


ALLEN & DEWEY.

Apparatus for Lighting and Extinguishing Gas.

No. 101,806.

Patented April 12, 1870.



Witnesses.
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Fig. 2

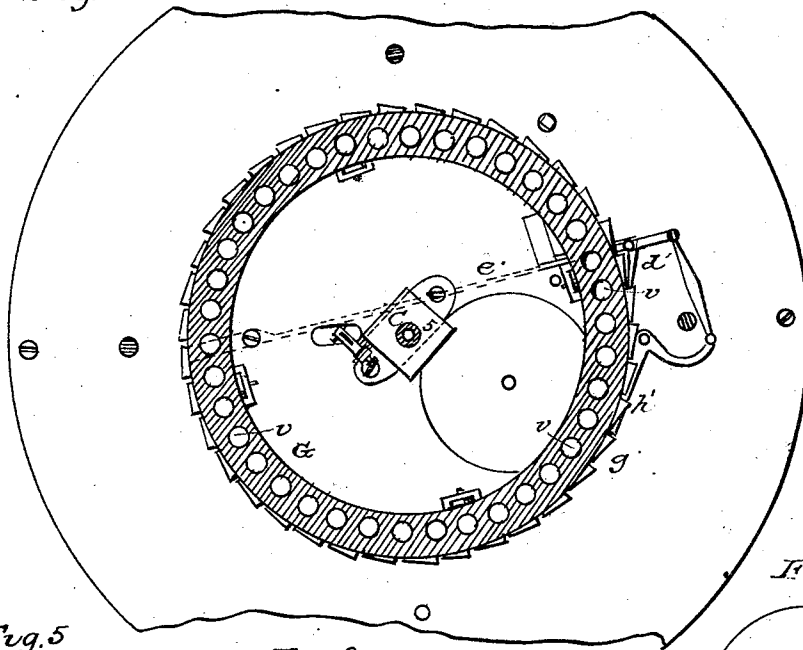


Fig. 5



Fig. 3

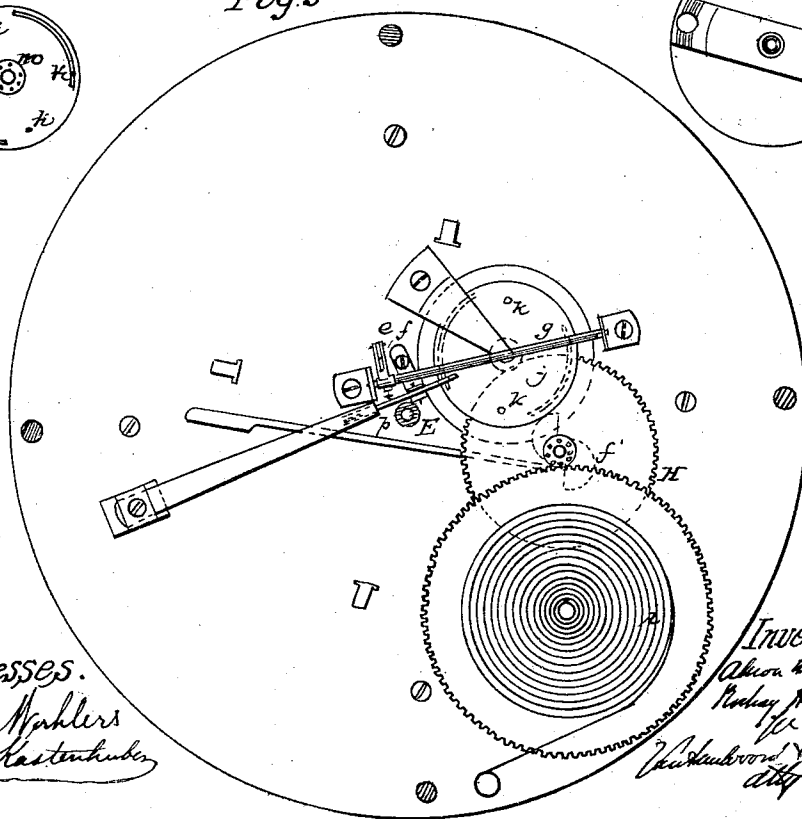
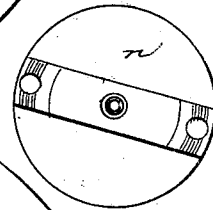


Fig. 6



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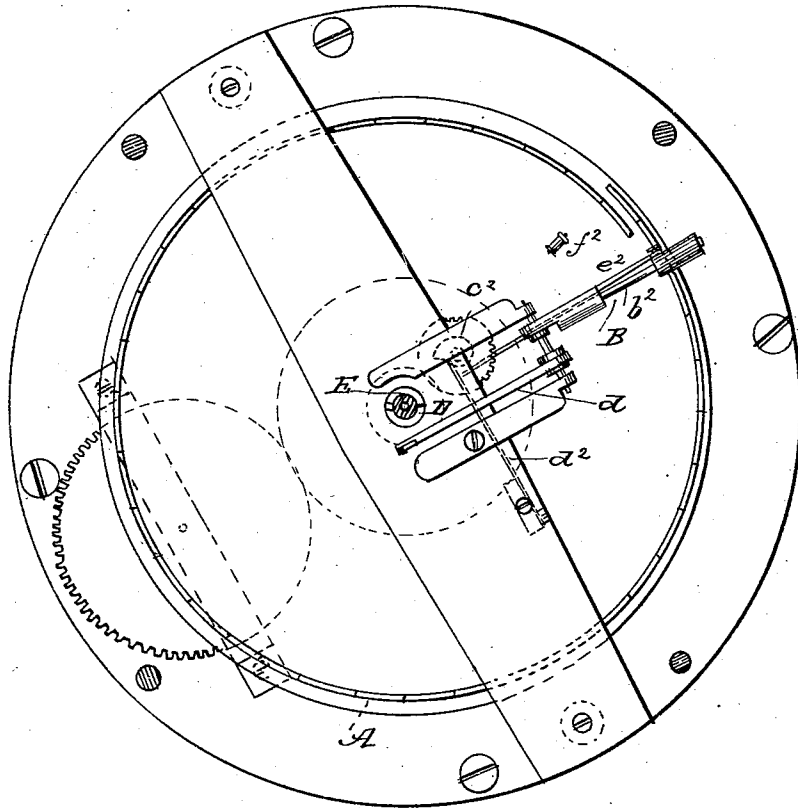
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Fig. 4.



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ALMON N. ALLEN AND RODNEY H. DEWEY, OF PITTSFIELD, MASSACHUSETTS.

Letters Patent No. 101,806, dated April 12, 1870.

IMPROVEMENT IN APPARATUS FOR LIGHTING AND EXTINGUISHING GAS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that we, ALMON N. ALLEN and RODNEY H. DEWEY, of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and useful Improvement in Lighting and Extinguishing Gas by Machinery; and we do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a vertical central section of this invention.

Figure 2 is a horizontal section of the same, the line *x x*, fig. 1, indicating the plane of section.

Figure 3 is a similar section, taken in the plane indicated by the line *y y*, fig. 1, and looking in the direction of the arrows opposite to that line.

Figure 4 is a similar section of the same, the plane of section being indicated by the line *z z*, fig. 1.

The remaining figures are details, which will be referred to as the description progresses.

Similar letters indicate corresponding parts.

This invention relates to an apparatus which is brought into connection with a stop-cock or valve, admitting gas to a burner, and driven by a spring or any other suitable power, and which is so constructed that it opens the stop-valve at the proper time in the evening and shuts it again at the proper time in the morning, and that at the moment the stop-valve is opened in the evening, a match or fuse is ignited and brought in the proper position to light the gas.

The operation of our apparatus depends principally upon what we term the day-and-night track A, which is constructed with a raised rim, forming a spiral, and divided off into a series of cams *a*, with intervening depressions *b*.

Said day-and-night track is turned by a chronometer-movement or other suitable mechanism, and the cams *a* act on a lever, B, which controls the position of the stop-valve that admits gas to the burner C.

If one of the cams passes under this lever, the stop-valve is shut and kept shut until the lever drops into the succeeding depression *b* on the day-and-night track, when the stop-valve is opened and gas admitted to the burner.

The cams *a* and depressions *b* are adjusted according to the varying length of day and night throughout the year, and the day-and-night track is propelled with such a velocity that the lever B will arrive at and be raised by the cams *a* at the proper time in the morning, and then be allowed to drop into the succeeding depressions at the proper time in the evening,

and thereby the gas is turned off in the morning and turned on and lighted in the evening throughout the whole year, by automatic action of the apparatus, which requires no attention but that it shall be wound up at the proper intervals, and that it shall be kept supplied with matches or fuses.

By referring to the drawings, it will be noticed that the day-and-night track A is mounted on a hollow arbor, D, through which passes the gas-pipe E.

The lever B has its fulcrum on a rock-shaft, *e*, on which is mounted a lever, *d*, that connects by means of a rod, *e*, and lever *f*, with the escapement-arbor *g*.

A spring, *h*, which acts on the lever *d*, keeps the lever B depressed against the scalloped edge of the day-and-night track.

The day-and-night-track arbor derives its motion from a chronometer-movement F, and the escapement-arbor *g* controls the motion of a train of wheels, H, which is driven by a spring, *i*, entirely detached from the chronometer-movement.

The escapement-wheel *j* is provided with four pins *k*, which are arranged in pairs, two at a greater distance from the center of the wheel than the others, and which, by striking against the escapement-arbor, prevent the escapement-wheel from assuming a continuous revolving motion.

Said escapement-arbor is provided with four indentations, *l*, and as the lever B rises and falls by the action of the day-and-night track, an oscillating motion is imparted to the escapement-arbor and one of the pins *k*, (in the escapement-wheel,) after the other is allowed to pass through the indentations *l*.

By this arrangement the escapement-wheel assumes an intermittent rotary motion, which, however, is not uniform, since the pins *k* in the escapement-wheel are not at equal distances apart, the arc inclosed between two succeeding pins being in one case about eighty degrees and in the other about one hundred degrees, as seen in Figure 5 of the drawing.

The escapement-wheel is mounted on an arbor, *m*, to the top end of which is secured the friction-disk *n*, and on the upper surface of said escapement-wheel are formed two cams, *o*, which act on the valve-lever *p*.

This lever connects by a rod, *q*, with the stop-valve *r*, that serves to shut off the gas, and which is inclosed in a valve-chamber, *s*, from which rises the pipe leading to the burner.

As the day-and-night lever B drops into one of the depressions *b*, the escapement-wheel turns for an arc of one hundred degrees, (more or less,) one of the cams *o* is carried under the valve-lever *p*, and the valve is opened.

At the same time the friction-disk *n* (which is

mounted on the arbor of the escapement-wheel) also turns for an arc of one hundred degrees, and the fuse contained in one of its cells is ignited by the action of friction-pins t , secured in the top plate of the apparatus.

The flame of the ignited fuse passes up through a pipe, u , situated close to the gas-burner, and the gas issuing from the burner is lighted.

The fuses are contained in the magazine G , which is constructed in the form of an annular cylinder, and provided with cells v , each capable of containing a number of fuses, and each provided with a spring follower, w , which forces the fuses up against the covering-plate a' .

This covering-plate is stationary, and it is provided with two apertures, $b^1 c^1$, one of which serves to introduce a fresh supply of fuses into the empty cells, while the other aperture allows the fuses from one of the cells to discharge one after another into the cells of the friction-disk n .

In order to allow the apparatus to work correctly, the fuses must be made of a uniform thickness, equal to the depth of the cells in the friction-disk.

The magazine G has an intermittent rotary motion, which is imparted to it by a lever-pawl, d^1 , that connects with a strong spring, e^1 , which bears a cam, f^1 , mounted on one of the arbors of the train of wheels H .

The motion of this cam is so timed that it releases the spring e^1 whenever one of the cells in the magazine has been emptied, and said magazine is carried round for one tooth of a ratchet-wheel, g^1 , the teeth of which correspond in position to the cells in the magazine.

By this arrangement one of the cells after the other is brought under the discharge-opening c^1 in the covering-plate, and the empty cells pass in succession under the supply-opening b^1 , so that they can be conveniently filled with fuses.

When the day-and-night lever B is raised by one of the cams a , the escapement-wheel turns over an arc of eighty degrees, the valve-lever p drops between the cams o , and the gas is shut off. At the same time the friction-disk n is carried round over an arc of eighty degrees, and its empty cell is carried over the discharge-opening c^1 in the covering-plate, so that a fresh fuse is carried up into said cell of the friction-disk.

These motions take place in the morning.

In the evening the gas is turned on as the day-and-night lever drops into the succeeding depression b , and at the same time the friction-disk describes an arc of one hundred degrees, the fresh fuse is ignited by the action of the friction-pins t , and the flame of the ignited fuse lights the gas issuing from the burner, as previously described.

The lever-pawl d^1 , which serves to impart motion to the magazine G , is connected to a finger-piece, h^1 , so that, if the cam f^1 has arrived in the proper position, a revolving motion can be imparted to the magazine by hand, and by these means the operation of supplying the cells with fuses is materially facilitated.

It will be readily seen that by providing the day-and-night track with three hundred and sixty-five

cams, one for each day in the year, the gas can be lighted and extinguished at the required time by the automatic action of our apparatus, which requires no further attention but that it shall be wound up at the proper time, and that a sufficient supply of fuses shall be kept in the magazine.

The day-and-night track A is made in this example in the form of a spiral, so that sufficient room is obtained for three hundred and sixty-five cams and depressions, without increasing the diameter of said track beyond the desired limit.

The head a^2 of the day-and-night lever moves in a radial direction on guide-rods b^2 , and it is caused to follow the spiral day-and-night track by the action of a cam, c^2 , which bears on a spring, d^2 , (see fig. 4,) that connects with said head by a rod, e^2 .

When the head a^2 has reached the inner end of the spiral track, the day-and-night lever is raised by a toe, e^3 , (see fig. 1,) coming in contact with a projection, f^2 , on the surface of the day-and-night track, and at the same time the spring d^2 is released by the cam, and the head a^2 is carried out to the starting-point of the spiral track.

If desired, the day-and-night track may be made in the form of an endless chain, or in any other form which will produce the required effect.

What we claim as new, and desire to secure by Letters Patent, is—

1. The method herein described of igniting and extinguishing gas automatically by the action of the day-and-night track A , or any equivalent mechanism, in combination with a mechanism for carrying and igniting a match or fuse at the proper intervals, substantially as herein set forth.

2. The day-and-night track A , having cams and depressions corresponding to the variable length of the days and nights in different seasons, in combination with the lever B , which controls the position of the valve admitting gas to the burner, substantially as described.

3. The magazine G , in combination with the day-and-night track A and with the lever B which controls the position of the gas-cock or valve, substantially as set forth.

4. The escapement-wheel j , carrying cams o , in combination with the valve-lever p and friction-disk n , substantially as described.

5. The cam f^1 and spring e^1 , in combination with the magazine G , substantially as set forth.

6. The movable head a^2 and cam c^2 , in combination with the spiral day-and-night track A , substantially as described.

7. The toe e^3 and projection f^2 , in combination with the movable head a^2 of the day-and-night lever, with the spring d^2 , cam c^2 , and spiral day-and-night track A , substantially as set forth.

This specification signed by us this 21st day of October, 1869.

ALMON N. ALLEN.
RODNEY H. DEWEY.

Witnesses:

E. M. WOOD,
EMORY H. NASH.