

A. N. Allen & R. H. Dewey's *Improvement*
Magneto-Electric Gas Lighting
App's.

116660

PATENTED JUL 4 1871

Fig. 1.

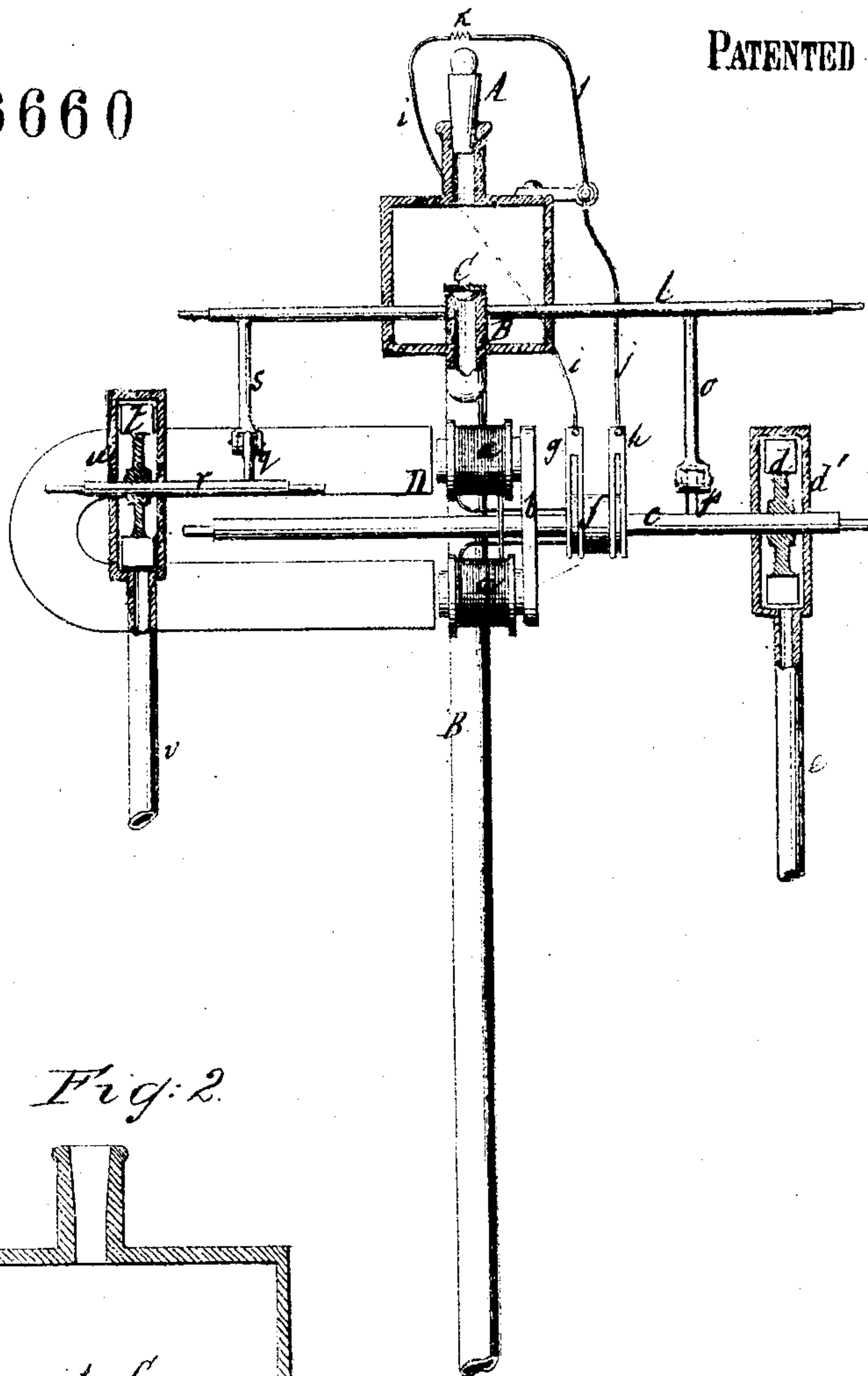


Fig. 2.

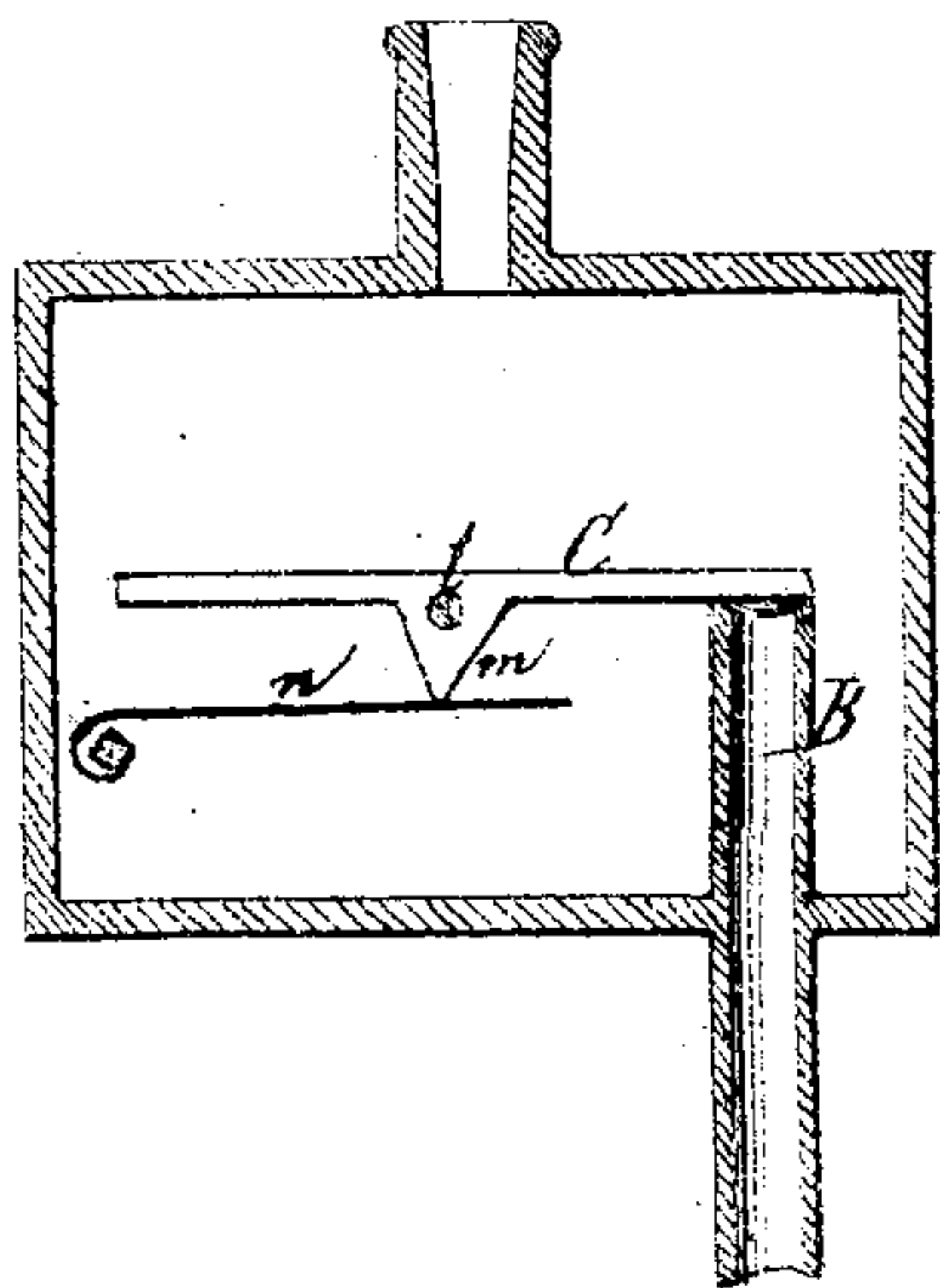
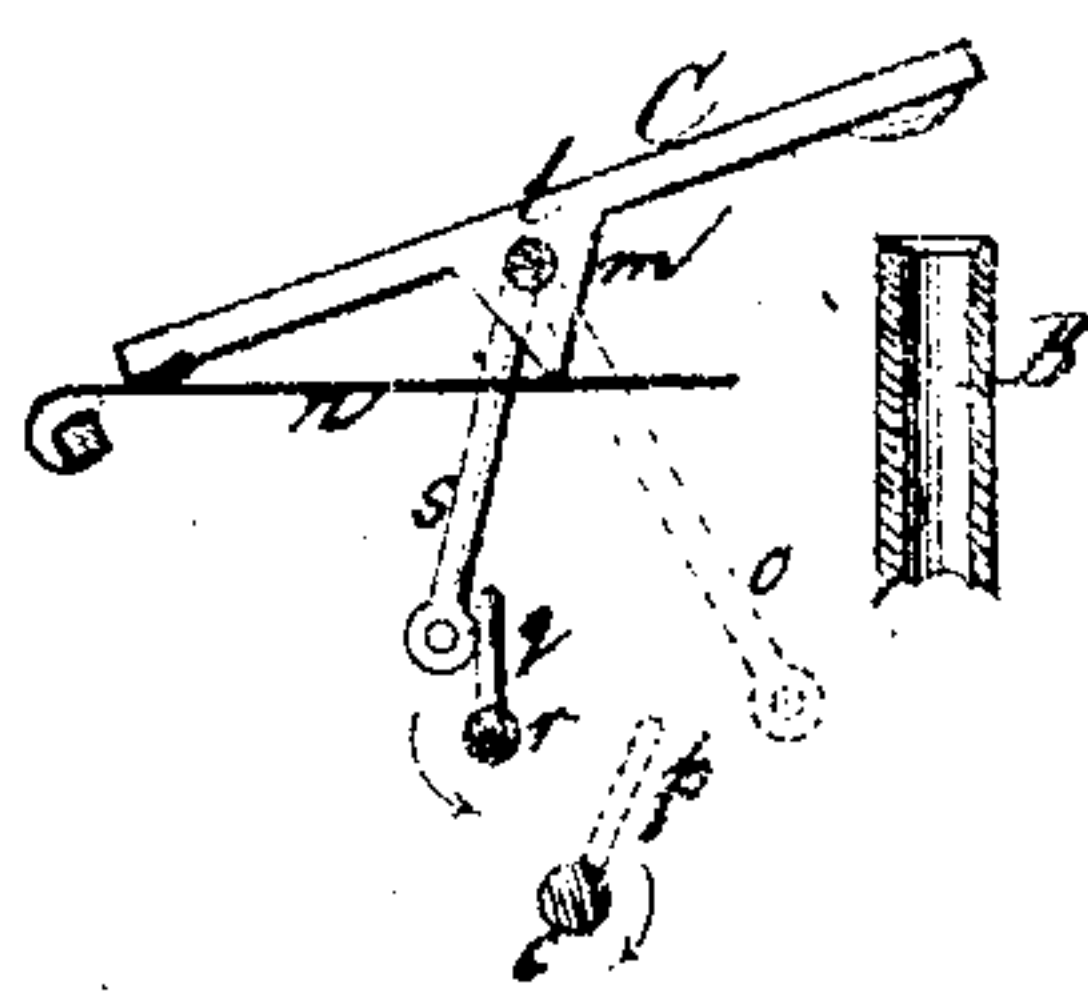


Fig. 3.



Witnesses.
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A.M. Allen & R.H. Dewey's Improved Magneto-Electric Gas Lighting Apparatus.

Fig. 4

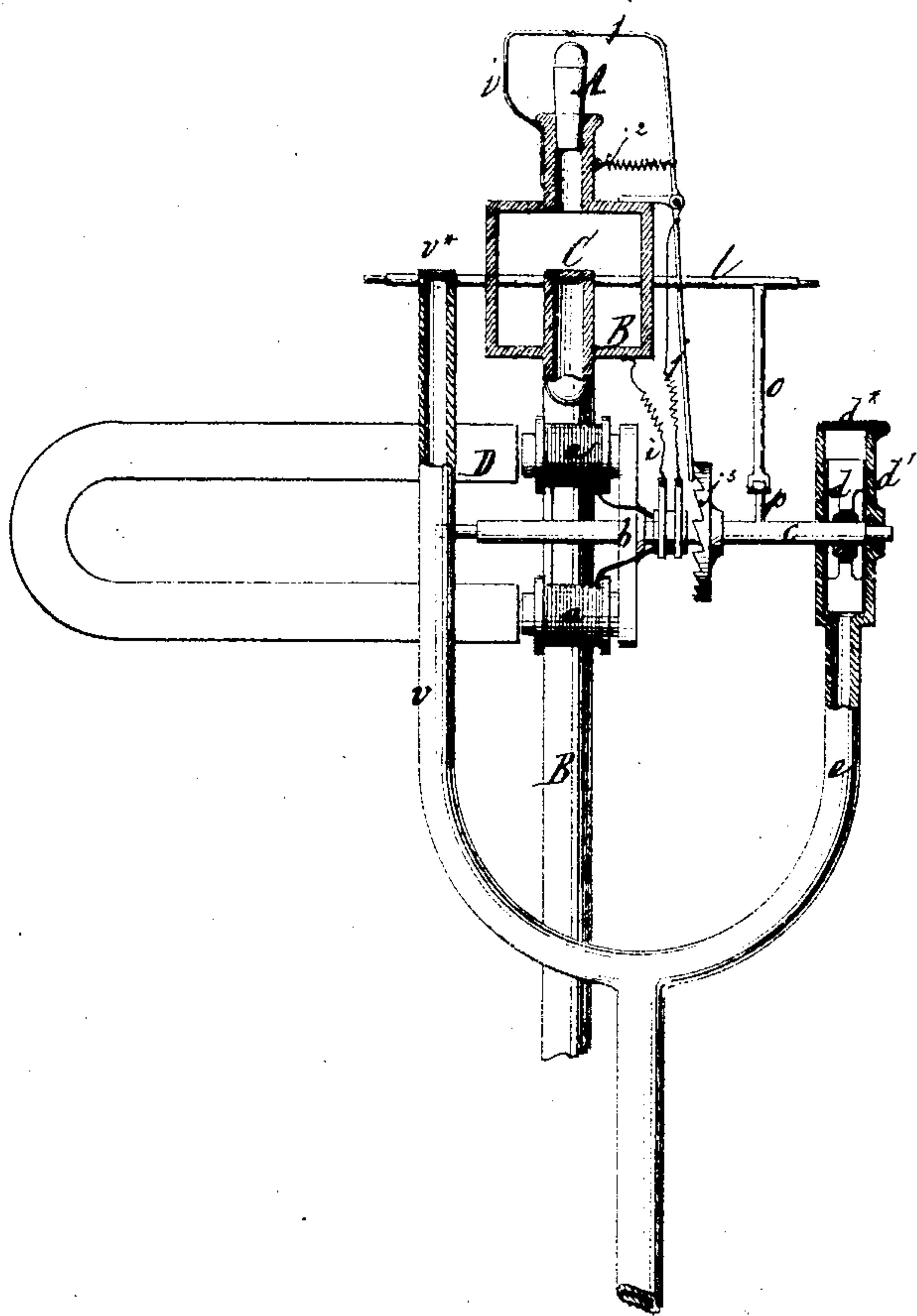


Fig. 6.

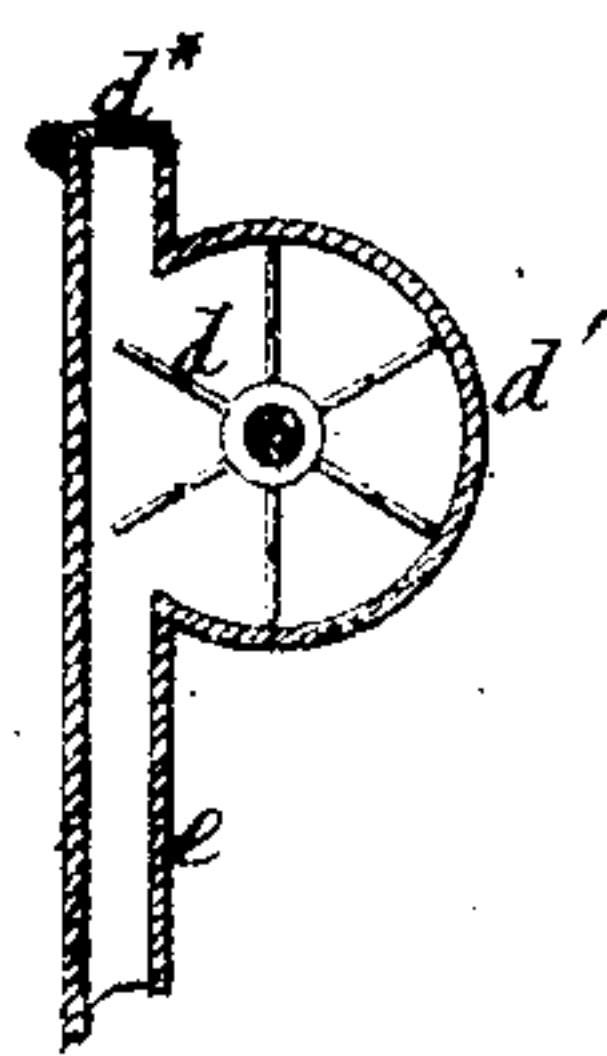


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Fig. 5.



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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN MAGNETO-ELECTRIC GAS-LIGHTING APPARATUS.

Specification forming part of Letters Patent No. 116,660, dated July 4, 1871.

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 Improved Magneto-Electric Gas-Lighting Apparatus; 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 sectional front view of this invention. Fig. 2 shows the gas-valve detached, when it is closed, in a larger scale than the previous figure. Fig. 3 shows the gas-valve when open. Figs. 4, 5, and 6 are modifications, which will be explained as the description progresses.

Similar letters indicate corresponding parts.

This invention relates to an apparatus for lighting gas by electric sparks produced by a magneto-electric machine, to the helices of which motion is imparted by the action of a current of air, while the valve through which gas is admitted to the burner is also opened and closed by the action of a current of air.

In the drawing, A designates a gas-burner, to which gas is admitted through a pipe, B, which pipe is opened or closed by a valve, C. The gas is lighted by sparks produced by a magneto-electric machine, D, the helices *a a* of which are mounted on an arm, *b*, secured to an arbor, *c*. On this arbor is also mounted a bucket-wheel, *d*, which may be inclosed in a stationary case, *d'*, and which is acted on by a current of air admitted through the pipe *e*. On the arbor *c* is also mounted the commutator *f*, and from the commutator-springs *g h* extend wires *i j* up over the gas-burner, where they are connected by a coil, *k*, of thin platina wire. When a current of air is admitted through the pipe *e* the arbor *c* revolves and an electric current is passed through the wires *i j*, whereby the platina coil is rapidly brought to a red heat, and, if gas is made to issue from the burner, the red-hot platina wire causes the gas to ignite. The valve C which serves to open and close the gas-pipe B is mounted on an arbor, *l*, and it is constructed with a toe, *m*, on which bears a spring, *n*, (see Figs. 2 and 3,) and which is so situated in relation to the arbor

l that when the valve is brought in the position shown in Fig. 2 the spring acting on the toe has a tendency to keep the valve closed down upon the mouth of the pipe; but if the valve is turned open, and as soon as the point of the toe has passed the line of equilibrium, the spring *n* throws the valve up to the position shown in Fig. 3. From the arbor *l* extends an arm, *o*, and if the arbor is caused to revolve a pin, *p*, projecting from this arbor strikes the arm *o* and imparts to the arbor *l* a partial revolution, and by this motion of the arbor *l* the valve C is partially opened, carrying the toe *m* beyond the line of equilibrium, so that the spring *n* throws the valve up to the position shown in Fig. 3, and the arm *o* clears the pin *p* and allows the arbor *c* to revolve freely. As the valve C is opened, the gas issuing from the burner A strikes the coil of platina wire and it is ignited. The motion of the arbor *c* is then stopped and the gas is kept burning as long as it may be desired. When the gas is to be extinguished the gas-valve C is closed by the action of a pin, *q*, which projects from an arbor, *r*, and acts on an arm, *s*, extending from the arbor *l*, as shown in Figs. 1 and 3. On the arbor *r* is mounted a bucket-wheel, *t*, inclosed in a stationary case, *u*, and a current of air admitted through a pipe, *v*, imparts to said bucket-wheel and to the arbor *r* the required rotary motion. When the pin *q* strikes the arm *s* the arbor *l* is turned so as to close the valve C, and as soon as the toe *m* on said valve has passed the line of equilibrium the spring *k* takes effect and the valve extends down upon the gas-pipes, carrying the arm *s* clear of the pin *q*. At the same time the arm *o* is turned back in the path of the pin *p* of the arbor *c*, so that the gas can be let on and ignited, as before stated.

In practice, we propose to use a magneto-electric machine of the most approved construction, and we do not wish to be confined to the precise construction shown in Fig. 1 of the drawing.

When our invention is to be applied for lighting and extinguishing the gas in the streets of a city, an apparatus substantially such as herein described will be put up in each gas-post, and the air-pipes *e* and *v* are connected with a reservoir containing air under pressure, or with the air-trunk of a large fan-blower or any other machine capable of impelling air either by force or by suction, and, if the gas is to be lighted, the

air-pipes *e* leading to the several gas-posts are opened for a short time until all the flames are burning, and then said pipes are closed. When the gas is to be extinguished the air-pipes *v* are opened and the valves *C* in the several gas-posts are closed. In Fig. 4 we have shown an apparatus in which the gas-valve is opened by an impelled current of air, and closed by a current of air produced by suction. In this case the pipes *e* and *v* are branches of one and the same pipe *e**, which connects with an air-pump capable of producing an impelled current of air or a current by suction. Only one bucket-wheel is used, and the case *d'* of this wheel is closed at one end by a valve, *d**. The pipe *v* is also closed by a valve, *v**, which is mounted on the spindle *l* carrying the gas-valve *C*. When a current of air is forced through the pipe *e** the bucket-wheel *d* revolves and the valve *v** is forced open, so that the gas-valve is opened by the action of the tappet *p* on the arm *o*, assisted by the pressure of the air having a tendency to open the valve *v**. If the gas-valve is to be closed the current of the air in the pipe *e** is reversed, (being now produced by suction,) the valve *d** on the wheel-case *d'* closes, causing the gas-valve *C* to close at the same time. The valve *d** on the wheel-case is shown in Fig. 5, and the valve *v** on the pipe *v* in Fig. 6. The last-named valve moves in a casing, *v²*, which is provided with a stop near its outer end to prevent said valve from opening too far.

The magneto-electric machine shown in Fig. 4 differs somewhat from that shown in Fig. 1, the wire *j* being hinged at *j** and exposed to the

action of a spring, *j²*, and a ratchet-wheel, *j³*, so that its point is alternately brought in contact with the wire *i* and then removed therefrom, and every time the two wires are separated a spark is produced which serves to ignite the gas issuing from the burner. In this case the coil *k* of platina wire can be dispensed with.

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

1. The method, substantially as herein described, for admitting gas to a burner, and igniting the same, by a magneto-electric machine connected with the burner and actuated by a current of air, which also serves to open the gas-valve, as set forth.

2. The air-pipe *c* and bucket-wheel *d*, in combination with the arbors *e* *l*, magneto-electric machine *D*, gas-valve *C* and burner *A*, substantially as shown and described.

3. The arbor *r* and bucket-wheel *t*, in combination with the arbor *l*, valve *C*, and burner *A*, substantially as set forth.

4. The toe *m* and spring *n*, in combination with the valve *C*, arbor *l*, arms *o* *s*, and pins *p* *q*, projecting from the arbor *c*, substantially as described.

5. The method, substantially as described, of extinguishing gas-flames by means of a current of air acting on the valve which controls the flow of gas to the burner, as set forth.

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