

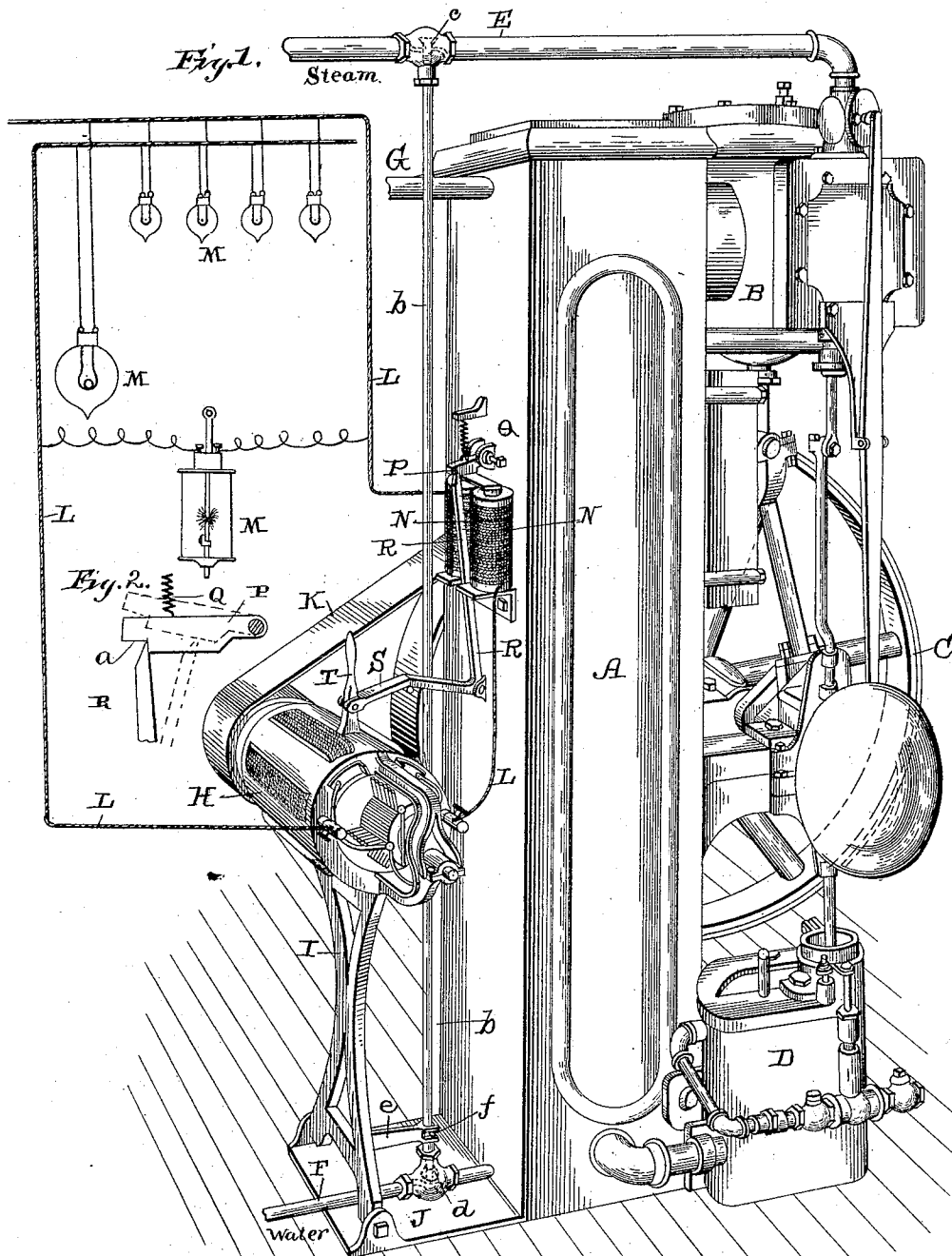
(No Model.)

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AUTOMATIC ELECTRIC LIGHTING APPARATUS.

No. 487,109.

Patented Nov. 29, 1892.



WITNESSES.

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AUTOMATIC ELECTRIC-LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 487,109, dated November 29, 1892.

Application filed June 6, 1892. Serial No. 435,746. (No model.)

To all whom it may concern:

Be it known that I, LEONIDAS G. WOOLLEY, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Automatic Electric-Lighting Apparatus; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in automatic electric-lighting apparatus; and it consists in the construction and arrangement of parts which will be fully described hereinafter, and more particularly referred to in the claims.

The primary object of my invention is to provide an automatic electric-lighting apparatus to be used for lighting residences, stores, public buildings, &c., the same being so constructed and arranged that by the operation of a single lever the inlet-valve to a motor is opened and a dynamo thrown into operation by the tightening of the operating-belt thereof.

Another object of my invention is to automatically cut off the flow to the motor of steam or other actuating power when the last light in the circuit is put out, thus stopping the motor without any attention or operation whatever, and at the same time slacken the belt to prevent it from becoming stretched by remaining tight when not in operation.

A further object of this invention is in the specific construction and arrangement of parts, to be fully specified hereinafter.

In the accompanying drawings, Figure 1 is a perspective view of my invention complete. Fig. 2 is a detailed view of the tripping mechanism for stopping the apparatus.

I here show the motor as consisting of a condensing-engine of the most improved form, but which constitutes no part of my present invention, and hence only the visible operating parts thereof will be described. However, I do not limit myself to the use of a condensing-engine as a motor, for, as will fully appear hereinafter, any desired form of motor may be used.

Referring now to the drawings, A indicates the condenser of the engine, B the cylinder,

C the driving or balance wheel, and D an air-pump for causing a vacuum in the condenser-pipes, all of which are common to the best types of condensing-engines, and to which I do not make any claim. Steam is fed to the engine under low pressure through the pipe E and water admitted to the condenser A through the pipe F and passes therefrom through the pipe G.

A dynamo H, preferably of the shunt type, is rigidly secured to the upper end of a pivotal support I, which has its lower end pivotally connected to an extension J from the lower end of the condenser, or may be pivotally connected directly to the floor by omitting the extension J, as will be readily understood. Passing around the drive-wheel C of the engine and the armature-pulley of the dynamo is a driving-belt K, which operates the said armature and produces a current in the dynamo in the ordinary manner. Connected with the poles of the dynamo is the circuit wire or wires L, and placed within the said circuit are the arc or incandescent lights M. Also placed within this circuit is an electromagnet N, placed upon a bracket supported by the condenser A, and above this magnet is an armature P. This armature is held normally from the magnet when a current is not passing through it by means of a suitable spring Q. An L-shaped lever R is pivoted at its apex to the condenser below the said magnet, the inner vertical end thereof extending up to and engaging a shoulder *a*, formed upon the said armature, when it is thrown inward, as hereinafter specified. Connected to the outer end of the lower portion of the said L-shaped lever is a rod or link S, which has its opposite end pivotally connected to an operating lever or handle T, projecting from the dynamo.

Extending parallel with the condenser A is a valve-rod *b*, which has its outer end projecting into the motor-feeding pipe E and provided with a valve *c* for allowing or preventing a flow of steam to the engine by opening or closing the valve-seat in the ordinary manner. The lower end of the valve-rod is also provided with a valve *d* for cutting off or allowing a flow of water to the condenser. These valves are oppositely placed in the said pipes, so that when the valve-rod *b* is moved

up both valves will be opened and allow a flow of steam through the pipe E to the cylinder and a flow of water to the condenser through the pipe F, and when the rod is moved down both valves will be closed, thus cutting off the flow of both the steam and the water. This valve-rod is moved by means of an inwardly-extending arm *e* at the lower end of the dynamo pivotal support I. The inner end of the said arm *e* is bifurcated, as shown, to straddle the rod *b*, and provided with longitudinal slots in the bifurcated ends to receive a pin *f*, extending from the rod *b*.

The steam-pipe E for feeding the engine is intended to be connected with the heating apparatus of the building, or with a radiator thereof, thus specifically adapting the apparatus for use in private residences, stores, public buildings, &c., without any expense whatever in the way of fuel. If desired, however, the engine can be supplied with steam from a boiler of its own at very small expense, as only a very low pressure is required.

The operation of my invention is as follows: When the apparatus is to be started, it is only necessary to pull out on the handle T, which moves the dynamo away from the engine, thus tightening the belt, and at the same time, through the medium of the arm *e*, moves the valve-rod *b* up, opening the valves at each end thereof, thus admitting steam to the engine and water to the condenser. The dynamo is held out long enough for a current to be generated therein, after which the armature P is depressed, thus forming a lock for the upper end of the lever R, which holds the dynamo out and the belt tight, as will be understood. A current from the dynamo passing through the electro-magnet N, the armature thereof is held in this depressed position as long as the circuit in which it is placed remains closed. When, however, the circuit is broken, which occurs when the last light is extinguished, the armature P thereof is no longer attracted and is drawn up by the spring Q, which allows the upper end of the lever R and the dynamo to move inward. The inward movement of the dynamo, through the medium of its pivotal support I and arm *e*, throws the valve-rod *b* down, thus closing the valves thereof and shutting off both steam and water. From this description it will be seen that when all the lights in the circuit are out the apparatus is automatically stopped without any attention whatever and the belt thrown out of tension.

While I have described the motor consisting of a condensing-engine and the valve-rod having two valves, I do not limit myself to this construction, for a high-pressure engine or a gas-engine may be used and the same result accomplished without departing from the spirit of my invention. In the case of a high-pressure engine the valve-rod will have only one valve and will control the flow of steam to the cylinder, and should a gas-en-

gine be used the rod *b* will be made to cut off the flow of gas.

From this description it will be seen that I produce an electric-lighting apparatus or plant which does not require the attention of a skilled engineer to run it or to take care of it. Owing to the construction herein shown, the apparatus is almost entirely automatic in starting and completely automatic in stopping. Because of these facts and the still further fact that the engine can get its supply from the heating apparatus of the building, it is especially adapted to be used in residences, stores, public and other buildings with very little expense of maintainance.

I do not limit my invention to the operating of lights, for it will be readily understood that the circuit can be made to include electric motors as well as electric lights, or both lights and motors, and the operation of the invention remain unaffected in either case.

Having thus described my invention, I claim—

1. An electric-lighting apparatus comprising a motor, a motor-valve-controlling mechanism, a movable electric generator driven by the motor, an operating connection between the said valve mechanism and generator, an external circuit including electric lights or motors, and an electric device within the circuit for locking and releasing the said valve mechanism, substantially as specified.

2. An electric-lighting apparatus comprising a motor, a motor-valve-controlling mechanism, a movable generator driven by the motor, an external circuit including electric lights or motors, an electrically-operated device within said circuit, an operating connection between said movable generator and valve mechanism, and the said valve mechanism having a movable part locked and released by the said electrically-operated device, substantially as set forth.

3. An electric-lighting apparatus comprising a motor, a motor-valve-controlling apparatus, a movable generator driven by the motor, an operating connection between said generator and valve mechanism, an external circuit including electric lights or motors, an electrically-operated device within the said circuit, and a lever having one end locking the said generator against movement and the other end engaging the said electrically-operated device, substantially as described.

4. An electric-lighting apparatus comprising a motor, an electric generator, a belt connecting the motor and the said generator, an electric circuit including electric lights or motors, an electro-magnet within said circuit, an armature therefor, and a motor-valve-controlling and belt-tightening mechanism having one part thereof engaged by the said armature for locking and releasing it, substantially as specified.

5. An electric-lighting apparatus comprising a motor, a pivotal support carrying a dy-

namo, an electric circuit including electric lights or motors, an electro-magnet within the said circuit, an armature therefor, a motor-valve rod, a connection between the said rod and the said pivotal support, and a lever having one end engaging the said armature and its opposite end connected with the dynamo and motor, substantially as described.

10 6. An electric-lighting apparatus comprising a condensing-engine having a steam-pipe and a water-pipe, a pivotal support carrying a dynamo, a belt connecting the dynamo and motor, a rod carrying a valve for the steam-pipe and a valve for the water-pipe, a connec-

tion between the said support and the said 15 valve-rod, an electric circuit including electric lights or motors, an electro-magnet within the circuit, an armature therefor, and a lever mechanism between the dynamo and the magnet, one end thereof engaging the armature 20 for locking and releasing it, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

LEONIDAS G. WOOLLEY.

Witnesses:

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J. M. NESBIT.