(No Model.)

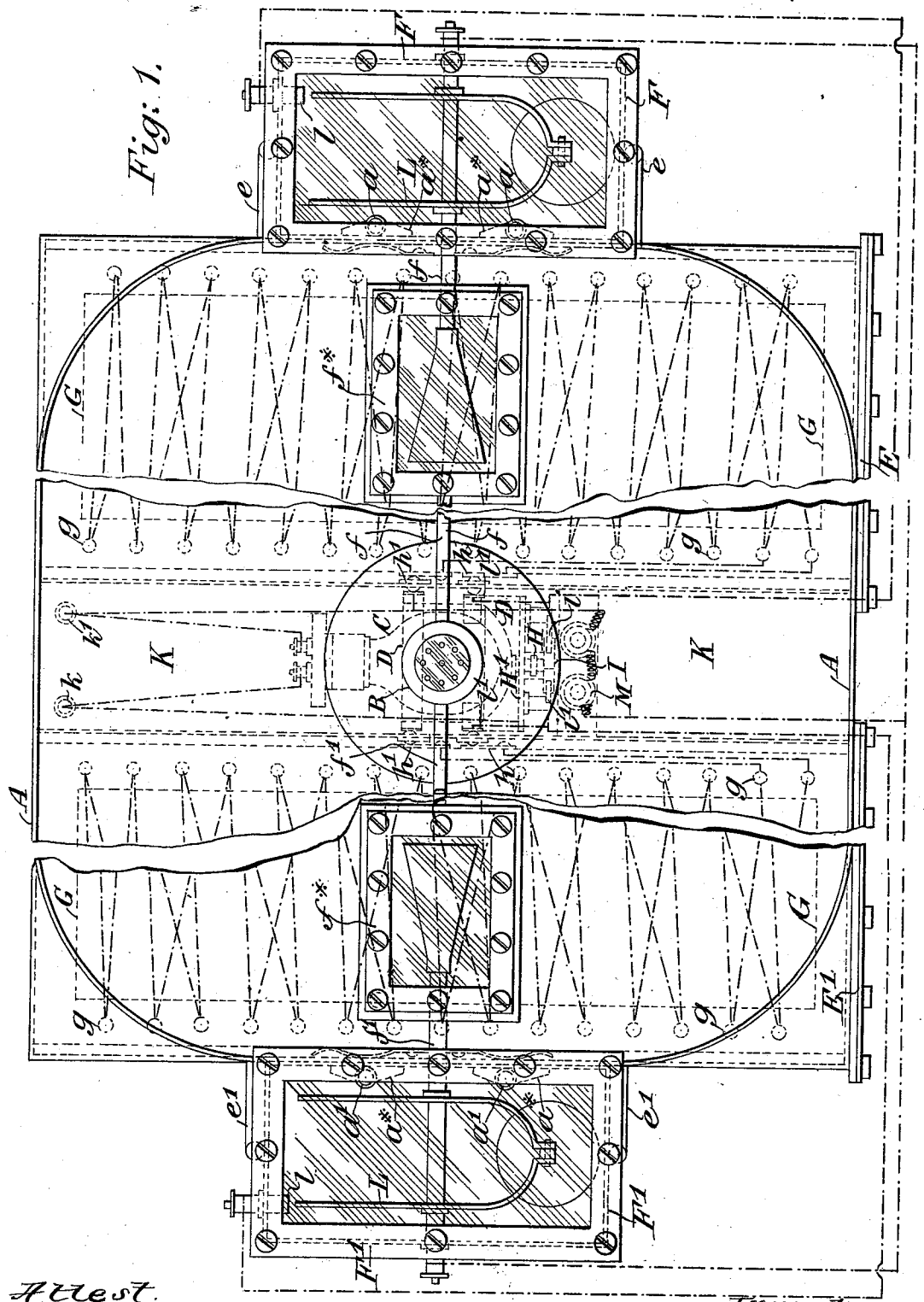
4 Sheets—Sheet 1.

P. E. SINGER.

LUMINOUS FOUNTAIN.

No. 507,600. Patented Oct. 31, 1893.

Fig. 1.



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Geo. H. Bolts
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Inventor:
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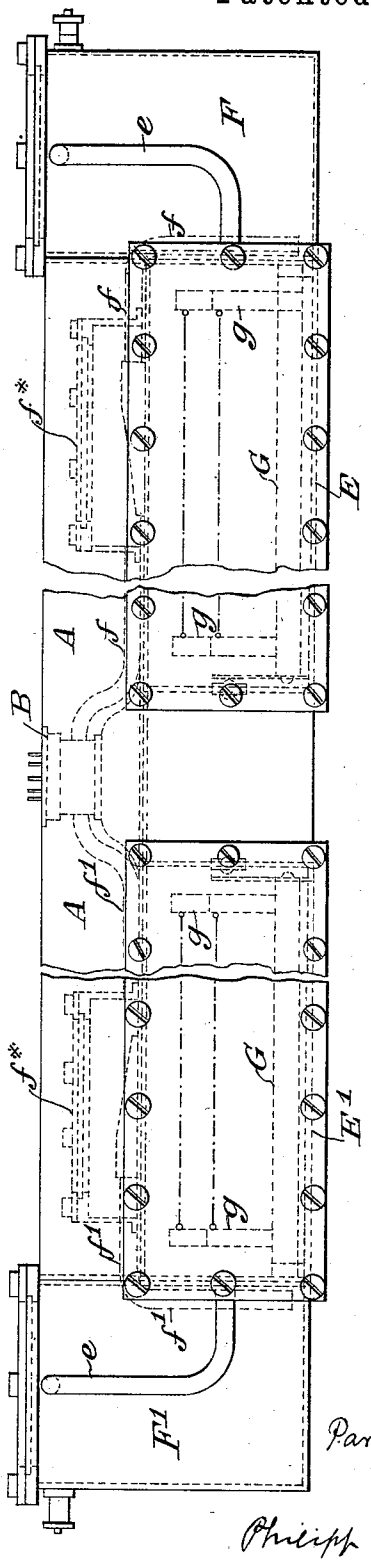

Fig: 2.

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Figs: 3.

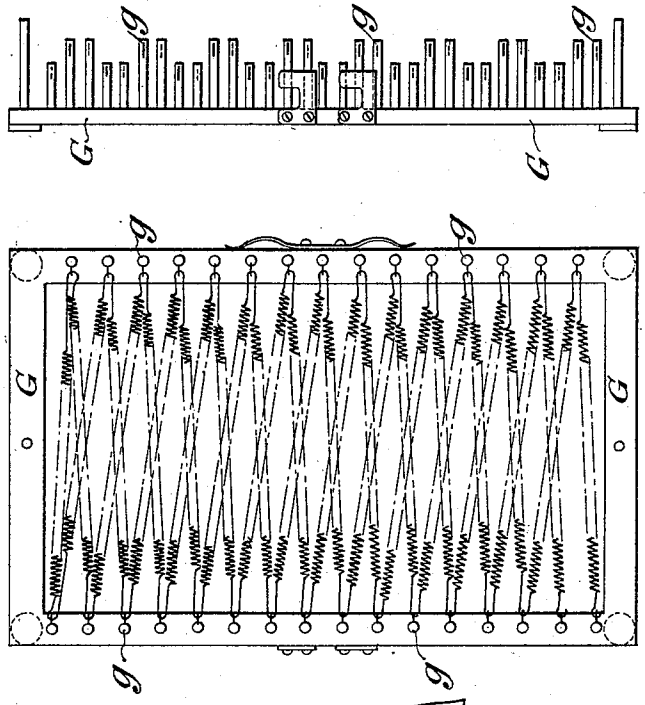
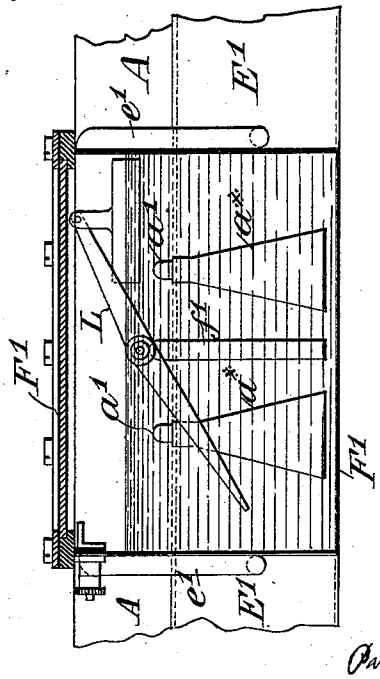


Fig: 8.



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LUMINOUS FOUNTAIN.

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Fig: 6.

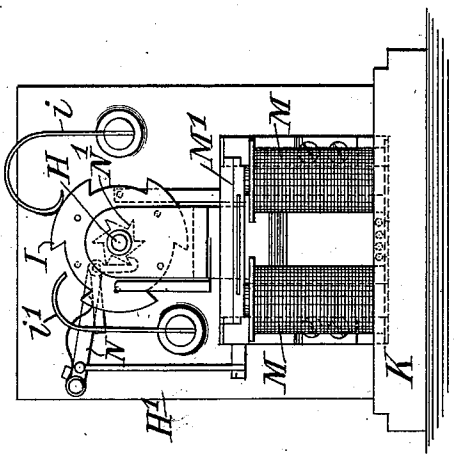


Fig: 4.

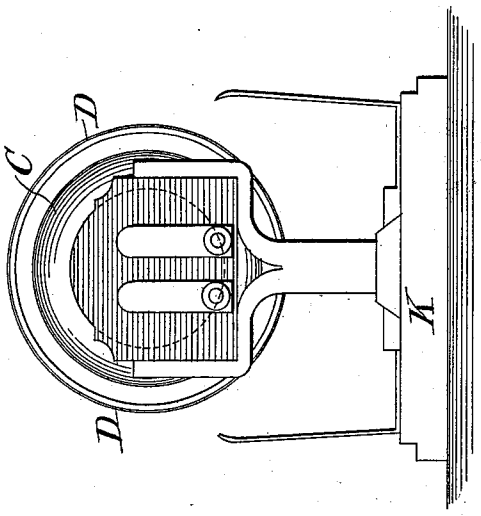


Fig: 5.

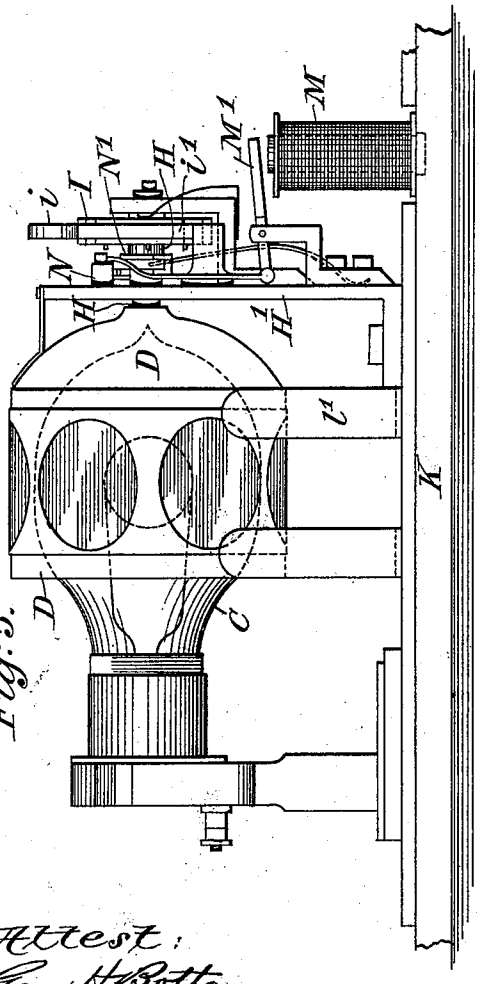
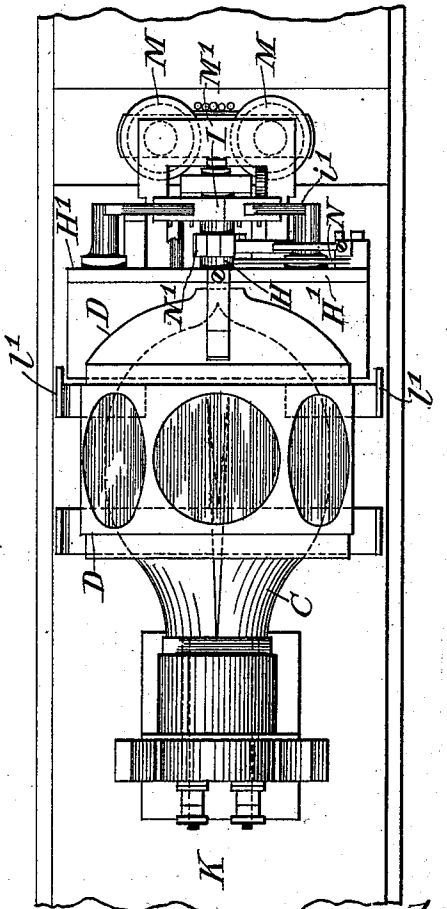


Fig: 7.



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by
Philipp Munson & Phelps
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UNITED STATES PATENT OFFICE.

PARIS E. SINGER, OF LONDON, ENGLAND.

LUMINOUS FOUNTAIN.

SPECIFICATION forming part of Letters Patent No. 507,600, dated October 31, 1893.

Application filed December 28, 1892. Serial No. 456,535. (No model.)

To all whom it may concern:

Be it known that I, PARIS EUGENE SINGER, of 6 Victoria Road, Kensington, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Luminous Fountains, of which the following is a specification.

The object of this invention is to produce, by the aid of electricity, an automatic luminous fountain, in which one charge or supply of water is made available for continued use.

In the accompanying drawings,—Figure 1 shows in plan view my improved construction of fountain, and Fig. 2 is a front view of the same. Fig. 3 shows one form of serpentine wire for heating the air, used as a motor. Figs. 4. 5. 6 and 7. show a removable table on which the electrical devices for transmitting and switching the electric current are mounted, and Fig. 8 is a sectional view of a water chamber fitted with a circuit breaker used in switching the current.

The fountain is constructed on well known lines, that is to say, there is a central electric light surrounded by an intermittently rotating screen, furnished with colored glass for tinting the light transmitted to the lens, which forms the closed end of a jet tube, which tube carries a glass nozzle projecting from the center of the fountain basin. In the present instance, I employ electricity as a motor for projecting a stream of water through the fountain nozzle, and maintaining the jet by returning the water again and again to the ascending channel.

A, Figs. 1 and 2, is the fountain basin; B the jet pipe fitted at its lower end with a lens, and at its upper end with a glass nozzle.

C is the electric lamp, situate within the drum D, which forms a revolving screen fitted with variously colored glasses.

Below the basin A, are two air chambers E E′; communicating by pipes *e e′* with closed water chambers F F′. These water chambers connect with the pipe B by means of pipes *f f′*, a valve box *f** being interposed between the length of each pipe, to receive a lip valve of well known construction, which is fitted to that portion of the pipe that connects directly with the water cistern. The air chambers E E′ are each fitted with a frame G, carrying pins *g* for receiving a naked wire arranged as shown at Fig. 1, or better, a serpentine helix, as indicated in the detached views Fig. 3. A detachable air-tight door serves to close each air chamber when the frame is inserted. The ends of this wire or helix are attached to insulated stud *h h′*. The stud *h* of the chamber E is connected to a brush *i* of a disk commutator I, keyed to shaft H, mounted on a brass bracket frame H′. This bracket frame is bolted to a removable table K, shown detached, and in full size, at Figs. 4. 5. 6 and 7. To this table are also fitted the terminals *k k′*, connected with the main source of electricity. The stud *h′* of the air chamber E is connected directly with the terminal *k′*. Similarly, the stud *h* of the air chamber E′ is connected with the brush *i′*, and the stud *h′* of that chamber is connected with the terminal *k′*. Mounted in each water chamber is a rocking lever L (see the sectional view Fig. 8), connected with an electro magnet M, the wire from which leads to the terminal *k′*. This magnet, when energized, serves to actuate the commutator I, as will be presently explained. Each water chamber is fitted with a stud *l*, which connects by a wire with a spring *l′*, that bears upon the stud *h* of the air chamber with which the water chamber is in connection. The lever L, carries at one end, a float which is borne up by the water in the chamber and sinks with it. On its descent to a given level, the other end of the lever will come into contact with the insulated stud *l*, and thus the lever will be brought into the electric circuit.

M′ is an armature pivoted between brackets fitted to the bracket frame H′, and connected with a pawl lever N on the bracket frame, which takes into a ratchet wheel N′ keyed on the shaft H. This shaft has also keyed to it the drum or screen D. As, therefore, the electro-magnet M is excited, it will attract the armature M′, and cause it to drive round the ratchet wheel the distance of one tooth, thereby moving round the screen a corresponding distance, and bringing about a change of color in the light that strikes upon the lens of the tube B. The water chambers F and F′, which are air tight, connect respectively with the basin A by means of pipes *a a′*, which are fitted with lip valves *a**, opening toward the chambers, as shown best at Fig. 8. In order to set this fountain in action, the water chambers are filled through the basin A, the lamp circuit is completed, and

a current is admitted to, say, the air chamber E. As the coil of wire contained in this chamber becomes heated, the inclosed air is rarefied, and escaping into the adjoining water chamber F by the pipes *e*, puts pressure upon the water contained in the chamber F, and forces the same through the pipe *f* (divided by the valve box *f**) into the jet pipe B, whence it is discharged into the air, as a jet. This action of the rarefied air will be maintained until the water chamber is near exhaustion. At this time, the lever L will be tripped, and contact will be made with the stud *l*. The electric current will then flow through the coils of the electro magnet M; the armature M′ will be attracted, and the pawl lever caused to act upon the ratchet wheel N′, thereby shifting the commutator, and bringing the brush *i*′ into circuit. The effect of this movement of the commutator shaft, will be not only to shift round the drum or screen, but to bring into circuit the coil in the air chamber E′. The heat generated in this chamber will act upon the water contained in the chamber F′, and the like action to that described will then follow, the supply to the pipe B being maintained until this chamber is, in its turn, exhausted. While this action is proceeding, the coil of wire in the chamber E will have had time to cool down, and the exhaustion of water from the chamber F′ will cause the switching of the current again into the coil of the air chamber E.

I may remark, that if it is found desirable, a third arrangement of air and water chambers may be employed, to secure an extended time for cooling in the air chambers. The mode of switching the current to the third coil in succession being obvious, no further explanation of that multiplication will be needful.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination of a plurality of inclosed air chambers and water chambers, the water in the water chambers being exposed to the intermitted pressure of the air in the air chambers, naked electric conductors in the air chambers for varying the pressure of the air therein, a main line circuit and commutator in connection with said conductors, appliances operated automatically by, and at a suitable phase of, said pressure, for actuating said commutator, to throw the electric conductors of some of the air chambers out of, or others into, the main circuit, discharge ports in said water chambers for the discharge of water therefrom into and through pipes leading to a source of water supply in connection with said water chambers, and a valve apparatus for closing said chambers against the supply during the discharge of water from such chambers, substantially as described.

2. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers for heating the air therein, a main line circuit and commutator in connection with said conductors, electrical connections operated automatically from each of the water chambers, for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, connections between the air chambers and their respective water chambers, for conducting the air, when heated, from the former into the latter, discharge ports in said water chambers, for the discharge of water therefrom, into and through pipes leading to a jet nozzle, a source of water supply in connection with said water chambers and valve apparatus for closing said chambers against the supply during the discharge of water from such chambers, substantially as described.

3. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers, for heating the air therein, a main line circuit and commutator in connection with said conductors, an electro-magnet and connections for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, electrical connections operated automatically from each of said water chambers, for energizing said magnet, connections between the air chambers and their respective water chambers, for conducting the air, when heated, from the former into the latter, discharge ports in said water chambers for the discharge of water therefrom, a source of water supply in connection with said water chambers, and valve apparatus for closing said chambers against the supply during the discharge of water from such chambers, substantially as described.

4. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers, for heating the air therein, a main line circuit and commutator in connection with said conductors, electrical connections operated automatically from each of the water chambers, for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, an electric lamp, a screen rotatable about said lamp, connections between said commutator and screen, for rotating the latter, connections between the air chambers and their respective water chambers, for conducting the air, when heated, from the former into the latter, discharge ports in said water chambers, for the discharge of water therefrom, a source of water supply in connection with said water chambers, and valve apparatus for closing said chambers against the supply, during the discharge of water from such chambers, substantially as described.

5. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers for heating the air therein, a main line circuit and commutator in connection with said conductors, an electro magnet and connections for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, electrical connections operated automatically from each of said water chambers, for energizing said magnet, an electric lamp, a screen rotatable about said lamp, connections between said commutator and screen, for rotating the latter, connections between the air chambers and their respective water chambers, for conducting the air, when heated, from the former into the latter, discharge ports in said water chambers, for the discharge of water therefrom, a source of water supply in connection with said water chambers, and valve apparatus for closing said chambers against the supply, during the discharge of water from such chambers, substantially as described.

6. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers, for heating the air therein, a main line circuit and commutator in connection with said conductors, an electro-magnet, a pawl and ratchet mechananism operated thereby, for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, electrical connections operated automatically from each of said water chambers, for energizing said magnet, connections between the air chambers and their respective water chambers, for conducting the air, when heated, from the former into the latter, discharge ports in said water chambers for the discharge of water therefrom, a source of water supply in connection with said water chambers, and valve apparatus for closing said chambers against the supply during the discharge of water from such chambers, substantially as described.

7. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers for heating the air therein, a main line circuit and commutator in connection with said conductors, an electro magnet for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, a branch circuit for each set of air and water chambers in connection with said magnet, a rocking circuit closer (fitted with a float) for each branch circuit, and operated automatically from the water chamber, to close the circuit through and energize the magnet, connections between the air chambers and their respective water chambers for conducting the air, when heated, from the former into the latter, discharge ports in said water chambers for the discharge of water therefrom, a source of water supply in connection with said water chambers, and valve apparatus for closing said chambers against the supply during the discharge of water from such chambers, substantially as described.

8. The combination of a plurality of inclosed air chambers, an inclosed water chamber for each air chamber, naked electric conductors in the air chambers, for heating the air therein, a main line circuit and commutator in connection with said conductors, electrical connections operated automatically from each of the water chambers, for actuating said commutator, to throw the conductors of some of the air chambers out of, and others into, the main line circuit, connections between the air chambers and their respective water chambers, for conducting the air, when heated, from the former into the latter, discharge ports and pipes in said water chambers for the discharge of water therefrom, a source of water supply, connections between the water supply and said discharge pipes, and valve apparatus for closing said pipes against the supply during the discharge of water from such chambers, substantially as described.

9. In a fountain, the combination of an electric lamp, a screen rotatable about said lamp, an electric circuit, an electro magnet in said circuit, connections between said screen and magnet for actuating said screen, a water chamber, a float in said water chamber, a circuit closer, and connections between said float and circuit closer, for actuating the latter, to close the circuit through said magnet, substantially as described.

10. In a fountain, the combination of an inclosed air-heating chamber, an inclosed water chamber therefor, naked electric conductors in the air chamber, for heating the air therein, a main line circuit in connection with said conductors, an electric lamp, a screen rotatable about said lamp, an electromagnet, connections between said magnet and screen, for rotating the latter, a branch circuit in connection with said magnet, a circuit closer operated automatically from the water chamber, to close said circuit, connections between said air and water chambers for conducting the air, when heated, from the former into the latter, discharge ports in said water chamber, for the discharge of water therefrom, a source of water supply in connection with said chamber, and valve apparatus for closing said chamber against the supply, during the discharge of water from such chamber substantially as described.

PARIS E. SINGER.

Witnesses:
H. K. WHITE,
THOMAS LAKE.