(No Model.)

2 Sheets—Sheet 1.

G. W. BAILEY.

WATER CONVEYER.

No. 431,542. Patented July 8, 1890.

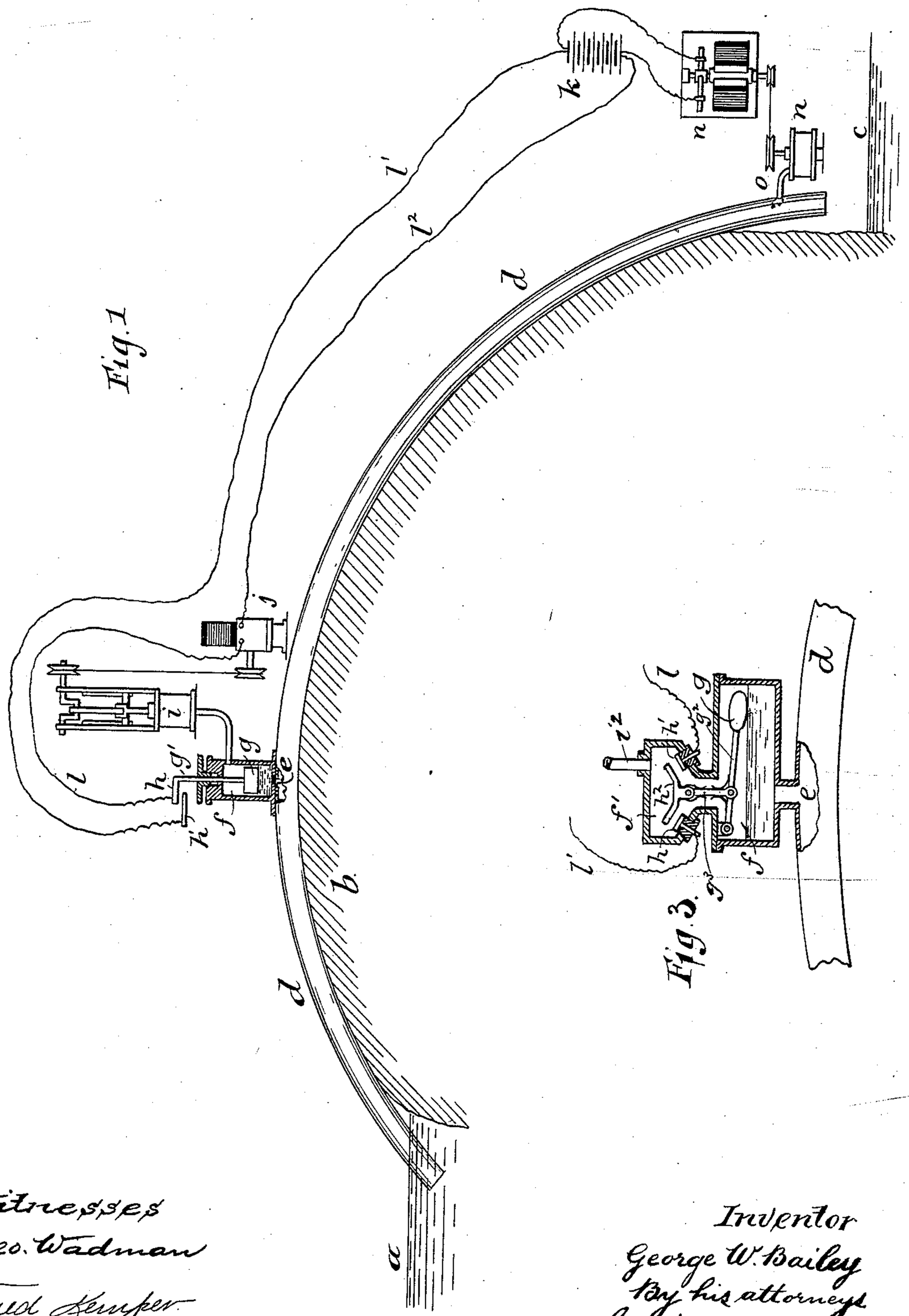

Fig. 1.

Fig. 3.

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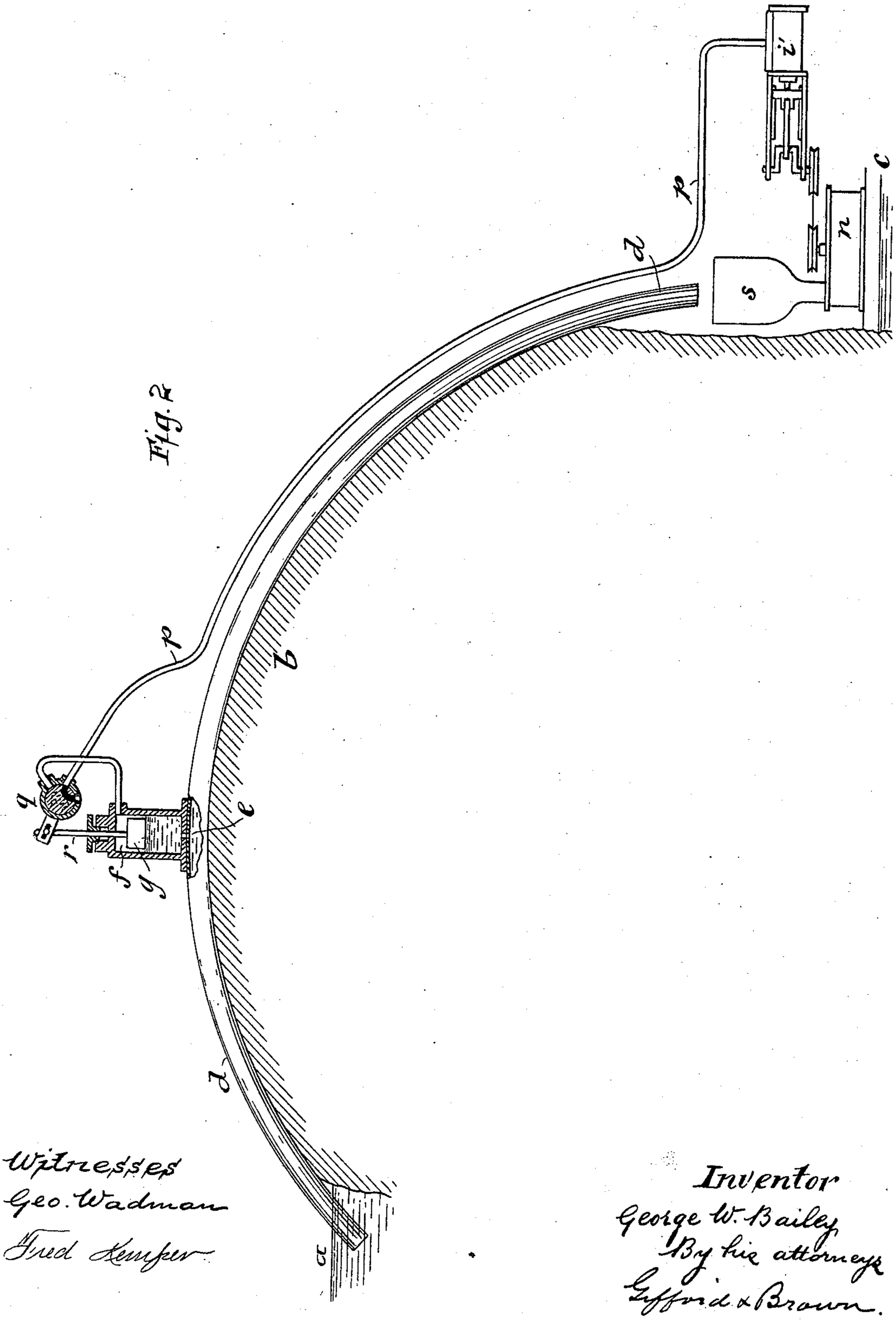

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UNITED STATES PATENT OFFICE.

GEORGE W. BAILEY, OF BROOKLYN, NEW YORK.

WATER-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 431,542, dated July 8, 1890.

Application filed May 1, 1890. Serial No. 350,126. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BAILEY, of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Water-Conveyers, of which the following is a specification.

In the drawings I have shown in Figure 1 a diagram of the arrangement of the various parts as preferably employed in carrying out my invention, and in Figs. 2 and 3 diagrams of modified arrangements.

The object of the invention is to convey water from a river or reservoir to a lower level without the necessity of cutting or tunneling the bank; and it consists in combining, with a siphon-pipe, certain mechanisms hereinafter more particularly referred to, whereby the air is kept exhausted from the bend of the siphon by means of power obtained from the falling water.

a is a body of water.

b is the bank of the river or reservoir containing the same.

c is the level to which it is desired to convey the water.

d is a siphon-pipe dipping at one end into the water *a* and extending thence upward over the bank and downward to the lower level *c*. By exhausting the air from this pipe the water will flow through it on the principle of a siphon, but continued operation will cause the accumulation of air at the bend of the siphon to such an extent that finally it will fail to operate; and it is to provide for the removal of this air as fast as it accumulates which is the object of my invention, as I will now proceed to describe, referring first to the arrangement shown in Fig. 1.

e is a hole connecting the interior of the pipe at the top of the bend with chamber *f*. Within this chamber is placed a float *g*, which is connected by the stem *g'*, (passing through a stuffing-box in the wall of the chamber *f*), or in any other suitable manner with one of two electrical contact-points *h h'*, so that when the float *g* falls the contact will be made between said points, and when the float *g* is raised the contact will be broken.

i is an air-pump adapted to exhaust air from the bend of the siphon-pipe.

j is an electric motor arranged to drive the air-pump.

k is a storage-battery which is connected with the electric motor by the wires *l l' l²*, so that when the current is closed in those wires the electric motor *j* will be operated to drive the air-pump so as to exhaust the air from the bend of the siphon. The wires *l* and *l'* are connected, respectively, with the contact-points *h* and *h'*.

Electricity is stored in the storage-battery *k* by means of a dynamo machine *m*, driven by a turbine wheel *n*. The water for driving this turbine wheel is taken near the lower end of the siphon-pipe from the stream of water falling within, the siphon-pipe *d* being tapped by a branch pipe *o*, leading to the turbine for that purpose.

It is unnecessary to illustrate in detail the construction of the turbine or the dynamo or the storage-battery or the electric motor or the air-pump, because it will be understood that any ordinary construction of those mechanisms will answer the purpose.

The operation is as follows: When the siphon-pipe is in perfect operation, the water will rise up in the chamber *f* sufficiently to raise the float *g* and break the current of electricity by separating the contact-points *h* and *h'*. Under these circumstances there will be no current to drive the electric motor *j*, and consequently the air-pump will not operate. As fast as any air accumulates in the bend of the siphon-pipe, it will rise up into the chamber *f*, and the level of the water will fall therein until the float has descended far enough to bring the contact-points *h* and *h'* together, so as to close the current. This will start the electric motor *j* in operation so as to drive the air-pump and exhaust the air from the chamber *f*. This operation will continue until the air has been exhausted sufficiently to raise the level of the water and with it the float, so as to separate the contact-points *h* and *h'*. In this manner the air-pump and electric motor will be required to operate only to a very slight degree, in order to keep the bend of the siphon free from the accumulation of air. At the same time an ample accumulation of electricity will be maintained in the storage-battery *k* by the continuous operation of the turbine *n* and dynamo *m*.

In Fig. 3 I have shown a modified arrange-

ment to be substituted for the chamber *f* and mechanism for controlling the contact-points of Fig. 1, whereby the contact-points are located within the chamber *f*. *f'* is a supplemental chamber connected with the top of chamber *f*. The float *g* is mounted on a lever g^2, which is provided with an arm g^3, projecting up into the supplemental chamber *f'*. An electrical conducting cross-head h^2 is mounted on this arm, and the inside contact-points *h* and *h'* are electrically connected with the outside wires *l* and *l'*. The pipe i^2 connects the supplemental chamber *f'* with the air-pump. When the air accumulates in the chamber *f*, the float will fall and the current will be closed by contact between cross-head h^2 and contact-points *h h'*. This will start the electric motor and air-pump in operation. When the air is exhausted sufficiently from chamber *f*, the float will be raised by the water and lift the cross-head h^2 off of the contact-points *h h'*, so as to break the current and allow the electric motor and air-pump to stop.

In the modification of Fig. 2 the electrical apparatus is entirely dispensed with. The air-pump is placed near the turbine, as at *i'*, and exhausts the air from the chamber *f* through the air-tube *p*. The height of the water in the chamber *f* at the bend of the siphon is made to control the air-exhaust as follows: *q* is a three-way cock arranged to connect the air-pipe *p* either with the chamber *f* or with the open air. The position of this cock is controlled by the stem *r*, to which it is pivoted, and which is secured to the float *g* within the chamber *f*. When the float falls, it turns the cock so as to connect the tube *p* with the chamber *f*. When the float is raised by the water, it turns the cock so as to connect the pipe *p* with the open air, under which conditions the air-pump simply exhausts from the open air.

In Fig. 2 I have shown the siphon-pipe as discharging into a funnel *s*, by which it is delivered to the turbine. By this arrangement the turbine will receive the power of the whole stream, and from the turbine this power may be divided up and applied in any way required, only a small fraction of it being required to operate the air-pump.

I do not desire to limit myself to the details of construction or arrangement so far as the same is shown, since I am aware that the same may be varied and to some extent omitted without departing from the principle of my invention.

I claim—

1. In combination, the siphon-pipe, the float-chamber connected therewith, the float and the contact-points controlled by said float, the air-pump, the electric motor, and the electric connections, substantially as described.

2. In combination, the siphon-pipe, the float-chamber, the float, the electric connections, means connected with the float for controlling the current, the air-pump, the electric motor, the storage-battery, the dynamo-machine, and mechanism for communicating power from the flow of water in the siphon to the operation of the dynamo-machine, substantially as described.

3. In combination, the siphon-pipe, an air-pump arranged to exhaust air from the bend of the siphon, means for driving the air-pump by power obtained from the flow of water in the siphon, and means whereby the operation of exhausting the air is controlled by the level of water at the bend of the siphon, substantially as described.

4. In combination, the siphon-pipe, the air-pump, the electric motor, the electric circuit, contact-points in said circuit, and means whereby the contact of said points is controlled by the level of water at the bend of the siphon, substantially as described.

GEORGE W. BAILEY.

Witnesses:
S. O. EDMONDS,
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