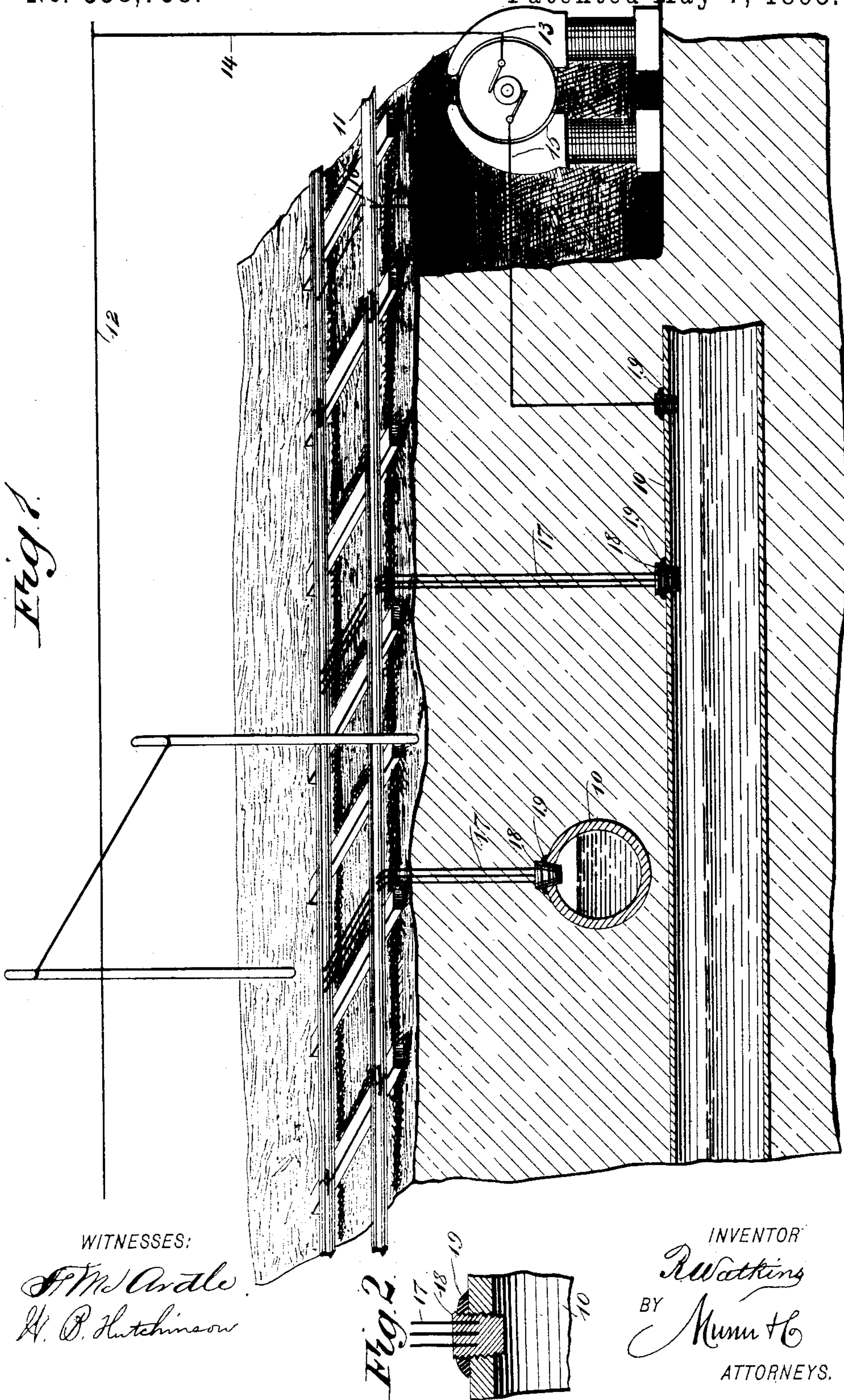


(No Model.)

R. WATKINS.
PREVENTING ELECTROLYSIS OF STREET PIPES.

No. 538,758.

Patented May 7, 1895.



UNITED STATES PATENT OFFICE.

RICHARD WATKINS, OF SACRAMENTO, CALIFORNIA, ASSIGNOR OF ONE-HALF
TO JOHN W. GUTHRIE, OF SAME PLACE.

PREVENTING ELECTROLYSIS OF STREET-PIPES.

SPECIFICATION forming part of Letters Patent No. 538,758, dated May 7, 1895.

Application filed June 25, 1894. Serial No. 515,708. (No model.)

To all whom it may concern:

Be it known that I, RICHARD WATKINS, of Sacramento, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Preventing Electrolysis of Street-Pipes, of which the following is a full, clear, and exact description.

It has been found that where electricity is used as a motive power in street railways and the rails or other devices used to return the circuit, that the ground becomes charged with electricity and that electrolytic action is set up in the street, which quickly destroys the water, gas, and other pipes which come within its influence.

The object of my invention is to provide a simple and inexpensive means for preventing this action and preserving the pipes, which means includes the use of the said pipes for return conductors and also conductors of low resistance connecting the track rails with the said pipes.

To this end my invention consists of a method of and apparatus for preventing electrolysis of street pipes, which method and apparatus will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in both the views.

Figure 1 is a broken sectional elevation showing the manner in which my method is carried out and shows also a diagram of the electric circuit, and Fig. 2 is an enlarged detail view of the means of connecting the return conductors with a pipe.

The water pipes 10 are arranged in the street in the usual way, and the connections with them will be hereinafter described, but it will be understood that the connections may be made in a similar way with gas or other pipes and with the same effect. The pipes are shown in proximity to the rails 11 of an electric railroad, above which is the usual trolley line 12, but the connections may be made with this line and pipe when the line is in a conduit, as well as when the line is above ground.

The current is supplied by a generator 13, which connects in the usual way by means of a wire 14 with the trolley line 12, and the gen-

erator also connects by wires 15 and 16 with the rails and with the water pipes. The rails are also connected with the water pipes, at frequent intervals and at the points where the connection can be most easily made, by means of conductors 17, which should be large so that the current will flow easily through them, and they are brazed or otherwise firmly secured to the rails so as to make a good contact therewith; and the connection between the conductors 17 and the pipe is preferably by means of a plug 18 into which the conductors extend and to which they are firmly fastened, this plug being screwed into the pipe, but without the use of lead, and to make sure that it is tight solder 19 is applied to the joint.

It will be seen from the above description that the current will pass from the generator 13 through the wire 14, the trolley line 12, the motor on the car, the rails 11, the conductors 17, plug 18, water or other pipe 10, and the wires 16 and 15, back to the generator. The current therefore returns freely through the several return conductors and there is no chance for electrolytic action.

I do not confine my invention to the precise connections and means of connection described and illustrated, for it is obvious that the arrangement may be varied greatly without departing from the principle of the invention, which consists in utilizing the street pipes for return conductors.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The method herein described of preventing electrolysis of metal street pipes located adjacent to electric railways, which consists in connecting the said pipes with the return conductor proper by means of metallic conductors, and also connecting said pipes with the generator forming a part of the electric circuit, whereby the said pipes receive and conduct the surplus electricity, which would otherwise indirectly charge the earth adjacent to or surrounding the pipes, thereby preventing electrolytic action, as specified.

2. The combination, with the generator, the rails and the street pipe and the trolley line, of an electrical connection between one pole of the generator and the trolley line, connec-

tions between the rails and the street pipe, and connections between the street pipe and the other pole of the generator, substantially as described.

- 5 3. The combination, with the street pipe, having a connection with a source of electrical supply, and the rails, of conductors con-

nected to the rails, plugs screwed into the pipe and connections between the plugs and conductors, substantially as described.

RICHARD WATKINS.

Witnesses:

TIMOTHY J. PENNICK,
EDWIN H. MCKEE.