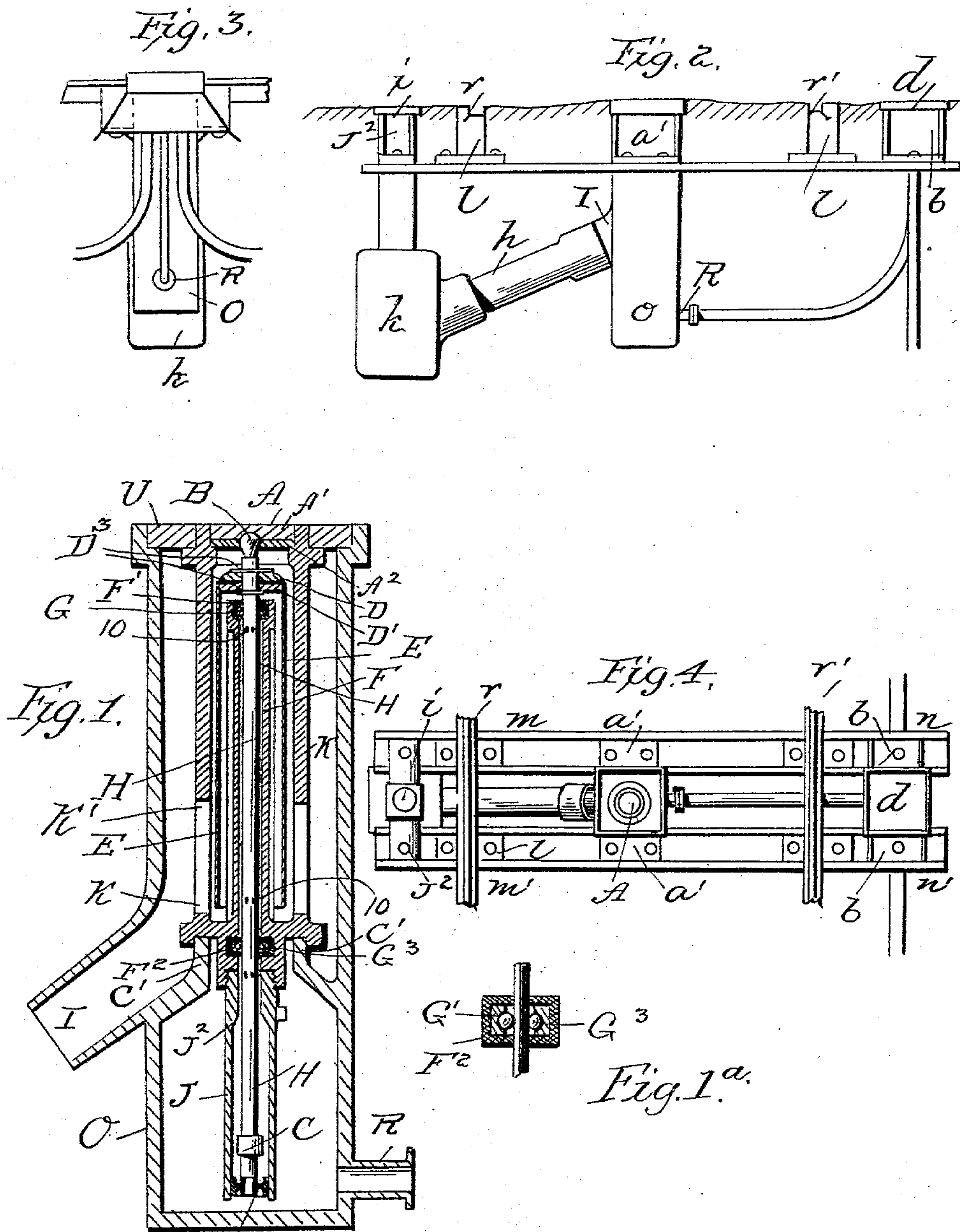


(No Model.)

E. CHABEAULT.  
ELECTRIC TRACTION.

No. 548,627.

Patented Oct. 29, 1895.



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# UNITED STATES PATENT OFFICE.

EMILE CHABEAULT, OF MARSEILLES, FRANCE.

## ELECTRIC TRACTION.

SPECIFICATION forming part of Letters Patent No. 548,627, dated October 29, 1895.

Application filed August 17, 1894. Serial No. 520,607. (No model.)

*To all whom it may concern:*

Be it known that I, EMILE CHABEAULT, a citizen of France, residing at Marseilles, France, have invented certain Improvements in Electric Traction, of which the following is a specification.

In the drawings, Figure 1 shows a vertical section of a current-furnisher with automatic lifting devices and pneumatic protection against the accumulation of water. Fig. 1<sup>a</sup> is a detail view. Fig. 2 is a transverse section of the track, showing the arrangement of one of the current-furnishers. Fig. 3 is a side view of Fig. 2. Fig. 4 is a plan view of Fig. 3.

As will be seen from Figs. 2, 3, and 4, the current-furnishers are arranged between the rails. They are at a little less distance from each other than the length of one car. Said current-furnishers are constructed as follows:

A is a circular plate formed of two superposed pieces A' A<sup>2</sup>. The upper piece is of steel and the lower piece of bronze.

B is a steel cap-piece carrying a knob, around which the plate A may turn.

H is a steel tube, upon the extremity of which the cap-piece B is located. Said tube is perforated at 10 to let the air circulate from the lower part J to the upper part F.

D D' are rubber washers at the upper part of the tube H and maintained in position by flanges D<sup>3</sup> upon the tube H.

E is a metallic sleeve, the upper edges of which are bent in, forming a flange, which is pressed between the two washers D D'.

F is a cast-iron tube formed in one piece with the cylinder K. At the end of this tube insulating-blocks F' F<sup>2</sup> are arranged. G G' are steel rings fixed at the center of said insulating-blocks. Said rings are provided with an interior groove, in which tempered-steel marbles G<sup>3</sup> are located, which serve as guides for the tube H, as shown in Fig. 1<sup>a</sup>.

C is a bronze sleeve fixed at the lower end of the tube H. This forms a contact-piece to come in contact with the inside wall of the depending sleeve J at the point J<sup>2</sup> when the armature A has been lifted by the electric magnet fixed to the vehicle.

V is a piston fixed at the bottom of the tube H and insulated therefrom.

J is a supplemental cylinder surmounting

the lower end of the tube H, and in which the piston V operates.

The cylinder J constitutes at its narrow part J<sup>2</sup> a cylindrical contact-piece, with which the washer C comes in contact when the rod H is raised, and at its widest part it forms the above-mentioned cylinder, in which the piston V moves. The cylinder K, of cast-iron, is provided with lateral slits K' for the escape of the water and the mud. At its upper part it forms a support upon which the plate A and the inner edges of the cover U rest.

O indicates a cast-iron box forming the casing of the current-furnisher. The inside of this box carries the circular rim C' C', which forms a support upon which the cylinder K rests. Said box is provided with supports a' a', which serve to fix the same upon the sleepers of the track.

I is an elbow-pipe for the escape of the mud and water.

R is a flange-tube for the passage of the shunt-cable.

The above-described current-furnishers are arranged in the center of the track and at a distance apart equal to the length of the slide or contact rod on the car.

The track is formed by rails r r', fixed upon the sleepers m n m' n' by means of rail-chairs l l l l.

The current-furnisher is fixed at the center of the sleepers upon which it rests by the supports a' a'.

Outside and on one of the sides of the track the manhole i for cleaning is located, which is fixed upon the sleepers by means of the supports J<sup>2</sup> J<sup>2</sup>. The manhole connects with reservoir k, and the tube h from the current-furnisher also connects with the reservoir. On the other side of the track the assembling-box d is fixed to the sleepers by means of the supports b b. Three conductor-tubes extend to this assembling-box and are connected together therein.

The main conductor is formed of pieces of cable, the length of which pieces is sufficient for connecting two consecutive boxes. These pieces of cable are united in the assembling-boxes, and the shunt is branched off at their junction and extends to the current-furnisher.

It will be understood that the head A, with



the tube H, is to be lifted when the car passes over it by the attraction of a suitable magnet on the car excited by a battery or by a shunt from the main current, this feature being, broadly, old. I have therefore not shown the magnet nor the vehicle herein. When so lifted, the head A is held up by engaging the current-gatherer on the car mechanically, and the contact-collar on the rod H is thus held in engagement with the contact-point J<sup>2</sup>, so that the current from the main line will be directed through the tube H and head A into the current-gatherer and motor on the car in the ordinary way. When the car passes, the current-furnisher A H falls.

It will thus be seen that when a current-furnisher is lifted it becomes active—that is, it transmits the current; but as soon as it releases the current-gatherer it resumes the position shown in Fig. 1. The piece C is not in contact with the piece J, and consequently it becomes inert, thus avoiding all liability to accident.

If the cylinder K, the reservoir k, and the tube h were full of water, the current-furnisher would work all the same and as safely as if the said parts were empty, for it will be easily seen that the water can never reach the upper part of the tube G by reason of the bell-shaped cover E, which is full of air. Said imprisoned air has always the same volume, as when the cover E rises gradually its volume increases; but the piston V rises also, forces the air through the perforated rod H, and fur-

nishes a volume of air equivalent to that generated by the displacement of the cover E. As there is always the same volume of air, it prevents the water from rising in the cover E.

Having thus described and specified my invention, what I claim is—

1. In combination in an electric railway, the current furnishers including the contacts, the bell shaped cover E, the perforated rod H, the piston V and the cylinder in which the same moves, substantially as described.

2. In combination in an electric railway, the current furnisher including the case, the plate A, the perforated rod H connected thereto, the cover connected to the rod, the lower supplemental cylinder, the piston on the rod moving in the cylinder, and the contact c on the rod arranged to contact with a part of the supplemental cylinder, substantially as described.

3. In combination with the case, the vertically movable current furnisher plate, a piston, a cylinder therefor and the connection between the piston and current furnisher plate adapted to operate the piston to force air into the upper part of the casing of the current furnisher to force the water therefrom, said cylinder being in communication with the upper part of the casing.

In witness whereof I have hereunto set my hand in presence of two witnesses.

E. CHABEAULT.

Witnesses:

P. KUNZ,

AURIGO.