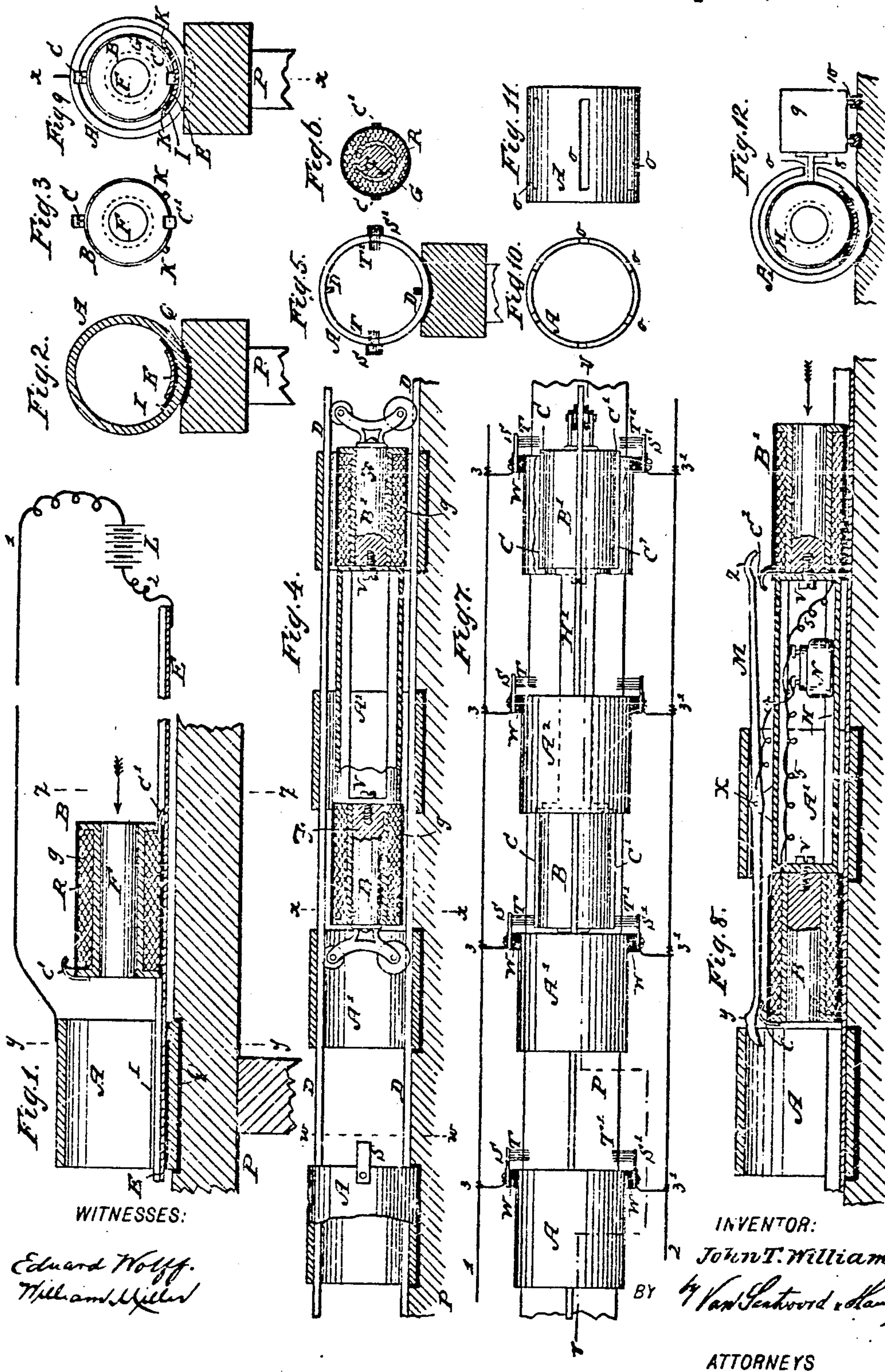


(No Model.)

J. T. WILLIAMS.
PORTELECTRIC.

No. 436,281.

Patented Sept. 9, 1890.



UNITED STATES PATENT OFFICE.

JOHN T. WILLIAMS, OF MOUNT VERNON, NEW YORK.

PORTELECTRIC.

SPECIFICATION forming part of Letters Patent No. 436,281, dated September 9, 1890.

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To all whom it may concern:

Be it known that I, JOHN T. WILLIAMS, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented new and useful Improvements in Portelectrics, of which the following is a specification.

This invention relates to portelectrics; and it consists, among other things, of improvements whereby the electro magnet or magnets by means whereof the traveling car or carriage has motion imparted to it are mounted upon and travel with the car or carriage, the several improvements being hereinafter fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section taken on the line xx of Fig. 9. Fig. 2 is a cross-section taken on the line yy of Fig. 1. Fig. 3 is an end view of the electro-magnet B, looking in the direction of the arrow placed on the magnet in Fig. 1. Fig. 4 is a longitudinal section on the line vv of Fig. 7, showing two electro-magnets attached to the carriage. Fig. 5 is a cross-section taken on the line ww of Fig. 4. Fig. 6 is a cross-section of the electro-magnet B, taken on the line xx of Fig. 4. Fig. 7 is a top view of the portelectric having two electro-magnets attached to the car or carriage. Fig. 8 is a central longitudinal section of a modification, wherein the source of electricity, as well as the electro-magnets, are carried on the carriage. Fig. 9 is a cross-section taken on the line zz of Fig. 1, looking toward the electro-magnet B. Fig. 10 is a cross-section of one of the stationary cylinders or rings, A, through which the carriage travels, made in sections united together to form a ring or cylinder having slots therein to allow the air to escape through the same as the carriage approaches the ring. Fig. 11 is an elevation of a cylinder or ring whose sides are provided with slots to allow the free escape of air from the inside of the cylinder. Fig. 12 shows an arm extending from the carriage through a continuous slot in the cylinder or ring and attached to a body or vehicle outside of the ring.

Similar letters and figures indicate corresponding parts in the drawings.

The letter A designates one of a series of

stationary cylinders or rings, of iron or other magnetizable metal, suitably supported, along with the guide-rails D D, upon a frame P, from which the rings are insulated by india-rubber or other suitable insulating material Q. A conductor of electricity E extends through the rings A and is insulated therefrom by the insulating-strip I.

The letter B designates an electro-magnet, which is constructed and arranged in such a manner that it can pass into the ring A, the ends of its coil of wire being attached to the contact-pieces C C'. (See Fig. 1.)

The letter F designates the core of the electro-magnet, and G designates the wire or the space occupied by it. The core may consist of a number of iron wires or may be in one piece.

The electro-magnet B is surrounded by a covering of insulating material R, to which the contact-pieces C C' are connected, and its exterior is also provided with guides K K, adapted to slide in the rings A on either side of the conductor E to keep the electro-magnet in proper position in passing through the rings.

A battery or other source of electricity L having been provided, and the conductor E having been connected with one pole thereof by means of wire 2, and the ring A having been connected with the other pole of the battery through wire 1, as shown in Fig. 1, if now the electro-magnet B is moved in the direction of the arrow thereon until the contact-piece C comes in contact with the metal of ring A a circuit will be closed through wire 1, metal ring A, contact-piece C, wire G of electro-magnet B, contact-piece C', conductor E, and wire 2 to battery L. This will cause the electro-magnet B to be drawn into the cylinder or ring A until their ends are in such relative positions that the contacts will be broken and the electro-magnet will move on as far as its momentum will carry it. If now a series of such cylinders or rings A be arranged in succession at such intervals apart as to allow a free escape of the air ahead of the electro-magnet and to allow the electro-magnet to be again vitalized through the next rings A before its momentum is exhausted, it is evident that a continuous motion may be imparted to the electro-magnet

through the whole series of cylinders or rings A, and if a car or carriage be provided adapted to move with the electro-magnet, a suitable track being provided on which the carriage and electro-magnet shall be properly guided, it is manifest that their forward movement will continue until the last ring A in the series has been reached by the electro-magnet.

My present improvement consists in a portable electric constructed and operated on this principle, and in Figs. 4 and 7 I have shown an arrangement wherein a portelectric car or carriage is constructed and adapted to continue a direct movement by the use of two such electro-magnets having a car or carriage attached to them.

Referring to Figs. 4 and 7, the letters A A' A² designate three such cylinders or rings of magnetizable metal, and II designates a car or carriage adapted to move on the guide-rails D D through said rings. The car or carriage II is constructed of two electro-magnets B B'—one at each end—and of an intermediate section of non-magnetic material H', the carriage being secured at its ends by screws V or other suitable fastenings to the cores F of the electro-magnets.

The rings A A' and the other similar rings in the series are provided with brushes T T' for making contact with the contact pieces or strips C C', which are attached, respectively, to the inside and outside ends of the wires of the said electro-magnets. The brushes T T' are fixed on supports S S', which are mounted on the inner ends of the rings A A' A² by means of insulated connections of india-rubber or other suitable insulating material W. The electrical connections by this arrangement are as follows, namely: Wire 1 represents the wire from the positive pole of a battery or other source of electricity, and wire 2 the negative wire. Wire 1 has a connection by wires 3 with each of the supports S for the series of brushes T, and wire 2 has similar connection by wires 3' with each of the supports S' for the series of brushes T'. In the positions shown in Fig. 7 a current would be established from wire 1, through wire 3, brush-support S, brush T, contact piece or strip C, wire of magnet B, contact piece or strip C', brush T', brush-support S', and wire 3', to wire 2. This current will draw the carriage II by the magnetic pull of magnet B into the ring A'. The current in magnet B will be maintained while the brushes T T' of the ring A' remain in contact with the contact pieces or strips C C' of magnet B, and when this circuit is broken the magnet B' of the carriage will be in position to perform the same operation with reference to the ring A², and when the action at the ring A² ceases the magnet B will be in position to be acted on in the same manner in connection with the ring A, and so on, the magnets B and B' being so separated relative to the rings as to assure their alternate action continuously.

In Fig. 8 I have shown a modification of

this invention wherein the battery or source of electricity is carried in the car or carriage II and the alternate closing of the circuits in the electro-magnets of the carriage is accomplished by means of an oscillating lever M, which is pivoted at the middle of its length to the carriage on the pivot X, and whose forward end is provided with a projecting shoulder Y and its rear end with an upturned projection Z.

When the carriage II is in the position shown in Fig. 8, the end Y of lever M comes in contact with the cylinder or ring A, and is pressed downward thereby against the contact-piece C on the magnet B, which is in electrical connection with the outer end of the coil of said magnet. This allows a current to pass through magnet B as follows, namely: from one pole of battery N, through wire 4, to lever M, contact-piece C, outer end of coil of magnet B, and through said coil and return-wire 5 to the opposite pole of battery. This current will draw the carriage II in the direction of the arrow at one end of Fig. 8 until the forward end Y of the lever passes through ring A, when it is released. At this moment, however, the other end Z of said lever strikes against the ring A' and is pressed downward against contact-piece C' of magnet B', said contact-piece C' being connected with the outer end of the coil of magnet B', and in consequence a current is established through magnet B' as follows, namely: from one pole of battery N, through wire 4, to lever M, through the said lever to its end Z, through contact-piece C' to the coil of magnet B', through said coil, and through wire 5 to the battery. This current imparts an additional impulse to the carriage, and by providing a series of said iron cylinders or rings, as before explained, a similar continuous movement of the carriage through them will be obtained.

The cylinders or rings A can be made with longitudinal slots o to facilitate the escape of air from the rings when a carriage enters them, so that the carriage will not meet with much resistance of the air in passing through them. The slots o can be made in the rings after the rings are prepared, or the rings can be made of longitudinal sections 7 put together to form a ring in such a manner as to leave slots o between the sections.

The carriage II is provided with wheels 8, which may be placed at its ends for supporting and guiding it on the rails D D.

It is obvious that if a cylinder or ring having a longitudinal slot therein (see Fig. 10) extending through the cylinders or rings from end to end be used it would admit of arms or other projections being attached to the car or carriage that would pass freely through such slots of the cylinders or rings and serve to impart motion to a body or vehicle exterior of the apparatus itself to which the arms might be attached. Such a construction is shown in Fig. 12, where the carriage H is within a slotted cylinder or ring A, an arm 8,

which projects from the carriage, extending through the continuous slot *o* to a vehicle *9*, arranged to travel on a parallel track *10* outside of the ring *A*, so that the carriage *II*, moving within the series of rings *A*, is enabled to communicate motion to a body or vehicle outside of said rings.

In the drawings the electrical connections between the rings *A A' A²*, &c., and the electro-magnets are arranged in such manner that they are operated as the electro-magnets enter or begin to enter the rings; but the contact-pieces *C C'* can, without departing from my invention, be arranged in such manner that contact will not be made with the rings until the electro-magnets have entered the rings a little distance—say half-way to the middle of the length of the rings, more or less.

What I claim as new, and desire to secure by Letters Patent, is—

1. A series of magnetizable cylinders or rings, in combination with an electro-magnet constructed and adapted to pass through the same, a battery or other source of electricity for charging the magnet, and suitable electrical connections, substantially as shown and described.

2. In a portelectric, a series of stationary magnetizable rings, a car or carriage containing one or more electro-magnets, a battery or other source of electricity, and rails or guides extending through the series of rings for supporting and guiding the carriage in its movement, the battery, rings, carriage, and electro-magnets being in electrical connection with each other, substantially as shown and described.

3. In portelectrics, the carriage *II*, containing the electro magnet or magnets by the vitalizing of which motion is imparted to it, a series of stationary magnetizable rings through which the carriage is adapted to pass, and rails or guides extending through said rings for guiding and supporting the carriage, the carriage and magnets being in electrical connection with each other and with a battery or other source of electricity, substantially as shown and described.

4. In portelectrics, the rings *A*, one or more, provided with brushes *T T'*, in combination with a carriage containing one or more electro-magnets, contact-pieces connected with the coils of said magnets, a battery or other source of electricity, and electrical conductors connecting the poles of said battery with the electro-magnets through said brushes and contact-pieces, substantially as shown and described.

5. The combination of the rings *A A'* of a portelectric, a car or carriage containing an electro magnet or magnets, and a battery or other source of electricity with a lever pivoted to the carriage and operated by the rings to close an electric circuit from the battery through the rings, the carriage, and lever, substantially as shown and described.

6. In portelectrics, the combination of a car or carriage containing an electro magnet or magnets, stationary magnetizable rings through which the car or carriage is adapted to pass, a battery or other source of electricity for charging the magnet, and suitable electrical connections, said rings being provided with slots through their sides to facilitate the escape of air from the rings as the car or carriage goes through them, substantially as described.

7. In portelectrics, a car or carriage containing an electro magnet or magnets, in combination with a battery or other source of electricity for charging the magnet, suitable electrical connections, and stationary magnetizable rings through which the car or carriage is adapted to pass, said rings being provided with longitudinal slots through their sides, and the car or carriage being provided with an arm adapted to pass freely through said slots to engage a vehicle or body outside of the rings, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN T. WILLIAMS.

Witnesses:

H. A. EAGER,
CHAS. H. CROSBY.