

W. H. DARLING.
ELECTRIC LOCOMOTIVE.

Patented Jan. 21, 1890.



Inventor
Wm N. Darling
By His Attorneys
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UNITED STATES PATENT OFFICE.

WILLIAM H. DARLING, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO LEO BOCK, JR., AND GARDNER P. HARRINGTON, BOTH OF SAME PLACE.

ELECTRIC LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 419,753, dated January 21, 1890.

Application filed March 23, 1889. Serial No. 304,457. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DARLING, of New York city, State of New York, have invented certain new and useful Improvements in Electric Locomotives, of which the following is a specification.

My invention contemplates the application of electric solenoid-cylinders to locomotives of the ordinary type. The electric cylinders will occupy the same position as the ordinary steam-cylinder and the contact mechanism, by which the solenoids are energized to effect the reciprocation of the armature traveling thereon, will be operated by a rod corresponding with the ordinary valve-rod.

The ordinary construction of stationary engines with electric cylinders is shown in Patent No. 357,374, granted to myself and Leo Bock, Jr., February 8, 1887, to which reference is made for the circuit-connections and contact mechanism, their illustration herein being unnecessary.

In the accompanying drawings, Figure 1 is a side elevation of an ordinary type of locomotive with an electric cylinder shown in longitudinal section. Fig. 2 is a detail front view, partly broken away and in section, showing the manner of mounting and securing the electric cylinders in place and the manner of ventilating them by drafts of air passing up the ordinary smoke-stack.

As shown in the drawings, I prefer to construct the saddle A, upon which the front of the boiler is mounted, as shown in Fig. 2—that is to say, I cast it hollow, preferably in one piece. The outer vertical face of its lateral extensions *a a* are flanged at the front and rear, and the cylinder jackets or casings B, carrying the electric solenoids C, are secured thereto by bolts *b*, Fig. 2. The interior of the jacket B, containing the solenoid, is therefore in communication with the interior of the hollow saddle, and to afford a perfect ventilation of the parts I extend up from the hollow saddle a pipe or shaft *a'* through the front end of the boiler-case and up into the ordinary smoke-stack, as illustrated.

D is a reciprocating solenoid-armature, and its piston-rod *d* is connected with the slide *d'*, from which the connecting-rod *d²* runs to the driving-wheel *d³*.

E is a contact inclosing-case corresponding with the ordinary valve-box, and the contact-slide therein is operated by the rod *e*.

Apertures *b'* may be provided in the cylinder-head for the admission and circulation of air.

The electric solenoid or cylinders operate their armatures reversely, as do the steam-cylinders of an ordinary locomotive.

All the mechanism for operating the slides is exactly as in an ordinary locomotive.

The boiler-case F may be of the ordinary cylindrical shape to preserve the resemblance to steam-locomotives, and the space therein may be utilized for storage. I may place therein storage-batteries to furnish all or part of the energy to drive the electric locomotive, or where the source of energy is carried elsewhere—in a tender, for instance—weights to give the desired traction to the locomotive may be placed in the boiler-case. The switching mechanism may of course be located in the cab.

Ordinary link-motion reversing-gear may be employed in precisely the same way as in a steam-locomotive, as will fully appear from the prior patent above mentioned.

I claim as my invention—

1. In an ordinary type of locomotive, the combination of a hollow saddle A, the electric cylinders, their casing bolted to the lateral extensions of the hollow saddle, and the pipe or shaft *a'* for the circulation of air.

2. In an electric locomotive, the combination, with the hollow saddle, of the electric cylinder carried in a casing bolted to and communicating with the hollow saddle, the air-outlet, *a'*, leading from the hollow saddle, and the air-apertures in the cylinder-heads.

3. In an electric locomotive, the combination of the hollow saddle or portion A, its lateral extensions *a*, the electric cylinders, and the cylinder-casings bolted to the lateral extensions *a*, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

WILLIAM H. DARLING.

Witnesses:

EDWARD C. DAVIDSON,
H. E. COOPER.