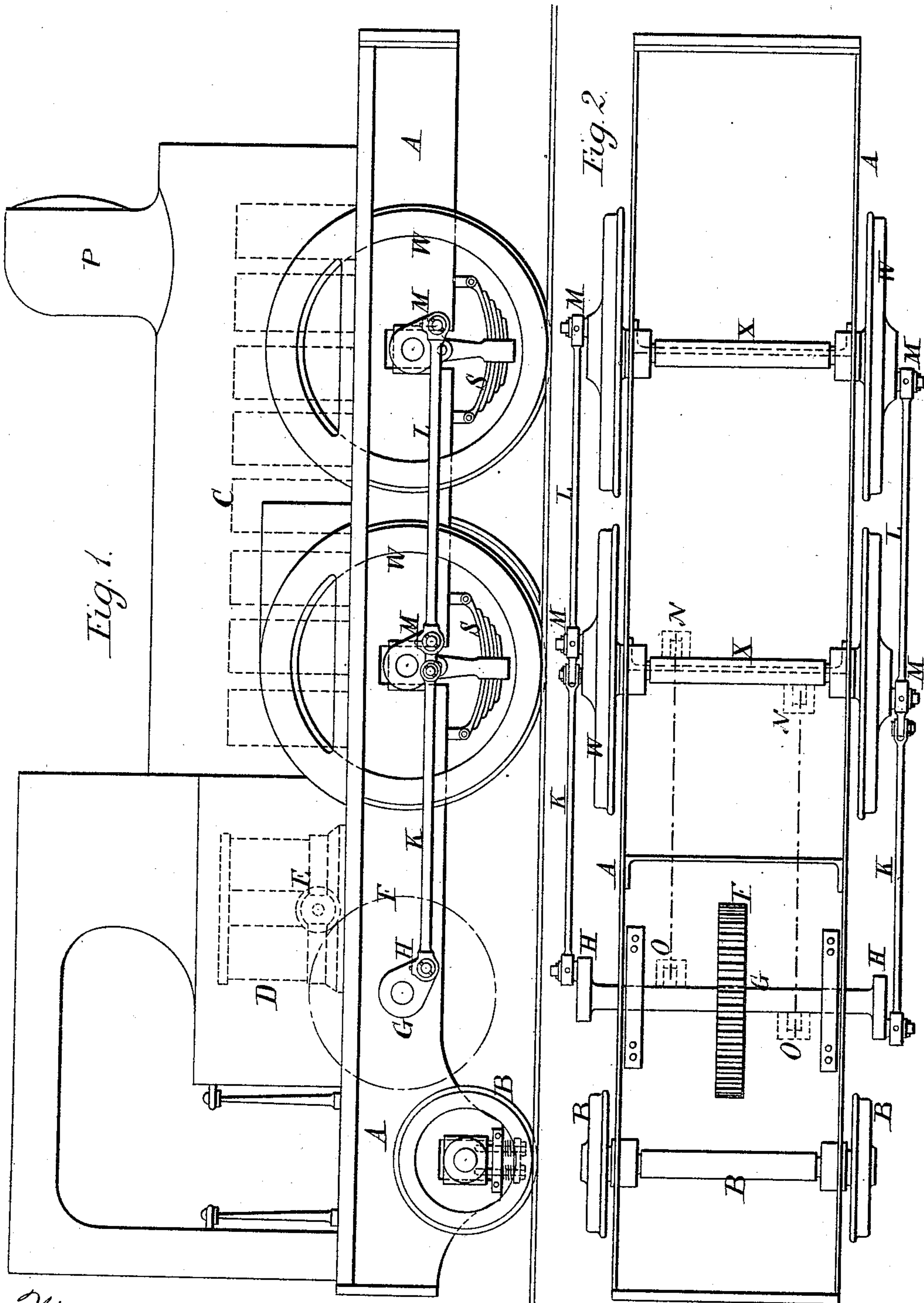


(No Model.)

E. H. MORGAN.
ELECTRICALLY DRIVEN LOCOMOTIVE.

No. 466,180.

Patented Dec. 29, 1891.



Witnesses:
J. A. Rutherford
J. G. Myers Jr.

Inventor:
E. H. Morgan.
By James L. Norris,
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UNITED STATES PATENT OFFICE.

EVERARD HOME MORGAN, OF DOVER, ENGLAND.

ELECTRICALLY-DRIVEN LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 466,180, dated December 29, 1891.

Application filed March 9, 1891. Serial No. 384,343. (No model.)

To all whom it may concern:

Be it known that I, EVERARD HOME MORGAN, civil engineer, a citizen of England, residing at 18 Maison Dieu Road, Dover, in the county of Kent, England, have invented a new and useful Improvement in Electrically-Driven Locomotives, of which the following is a specification.

My invention relates to means of utilizing all the main parts of an ordinary locomotive, except the steam boiler and engine, for its conversion into a locomotive driven by electricity, as I shall explain, referring to the accompanying drawings.

Figure 1 is a side elevation, and Fig. 2 is a plan of the under frame of a locomotive converted according to my invention into one electrically driven.

I retain all the main frame A, the driving-wheels W, their axles X, and springs S; also, the running wheels and axles B, if there are such. In the place usually occupied by the boiler and engine I place secondary or storage batteries C and a dynamo-electric machine D, worked by the electricity from these batteries. On the axis of the dynamo-machine I fix a pinion E, gearing with a wheel F upon a transverse shaft G, which I mount in suitable bearings on the frame A. On the shaft G, I fix cranks H, corresponding with the cranks M on the wheels W, and connect these cranks by connecting-rods K in addition to the ordinary coupling-rods L.

I have shown in the drawings two pairs of coupled wheels W; but obviously when there is only one pair of driving-wheels and no coupling-rods L the connections of the cranks H to the wheel-cranks remain the same. I have also shown in the drawings the arrangement existing in many locomotives having outside

cylinders and outside cranks and connecting-rods. When the cranks on the driving-axle are inside, as indicated by the dotted lines N, I make the shaft G with corresponding cranks O, which are connected to N.

The batteries C may be inclosed under a roof, as shown, surmounted by a hood P, containing an electric light.

Instead of connecting the gear E and F directly, they may obviously be connected through intermediate gear, according as it may be necessary to suit the speed of the driving-wheels to that of the dynamo-machine.

In cases where the electricity is supplied from a conductor extending along the line the storage-batteries C may be dispensed with.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

The combination, with the ordinary frame and drive-wheels of a locomotive, of a storage-battery C and dynamo D, arranged in the space usually occupied by the boiler and engine, a pinion E on the axis of the dynamo, a transverse shaft G, provided with a pair of cranks and a gear-wheel F, engaging the pinion on the axis of the dynamo, the cranks M on the axle of the driving-wheels, and the connecting-rods K between the cranks on the transverse gear-wheel shaft and the cranks on the axle of the driving-wheels, substantially as described.

In testimony whereof I have signed my name to this specification, in presence of two subscribing witnesses, this 21st day of February, A. D. 1891.

EVERARD HOME MORGAN.

Witnesses:

ERNEST E. PAIN,

FREDK. J. SERGEANT.