

No. 843,788.

PATENTED FEB. 12, 1907.

A. F. BATCHELDER.
ELECTRIC LOCOMOTIVE.
APPLICATION FILED DEC. 11, 1905.

3 SHEETS—SHEET 1.

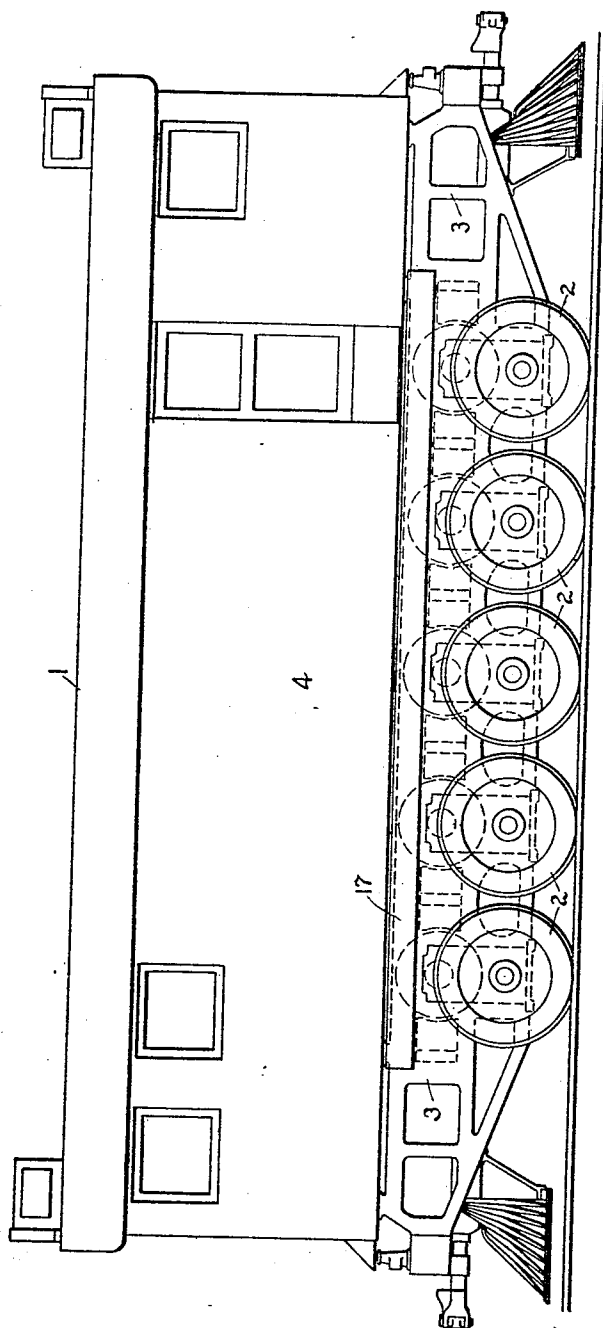


Fig. 1.

Witnesses:

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Helen Oford

Inventor:

Asa F. Batchelder.

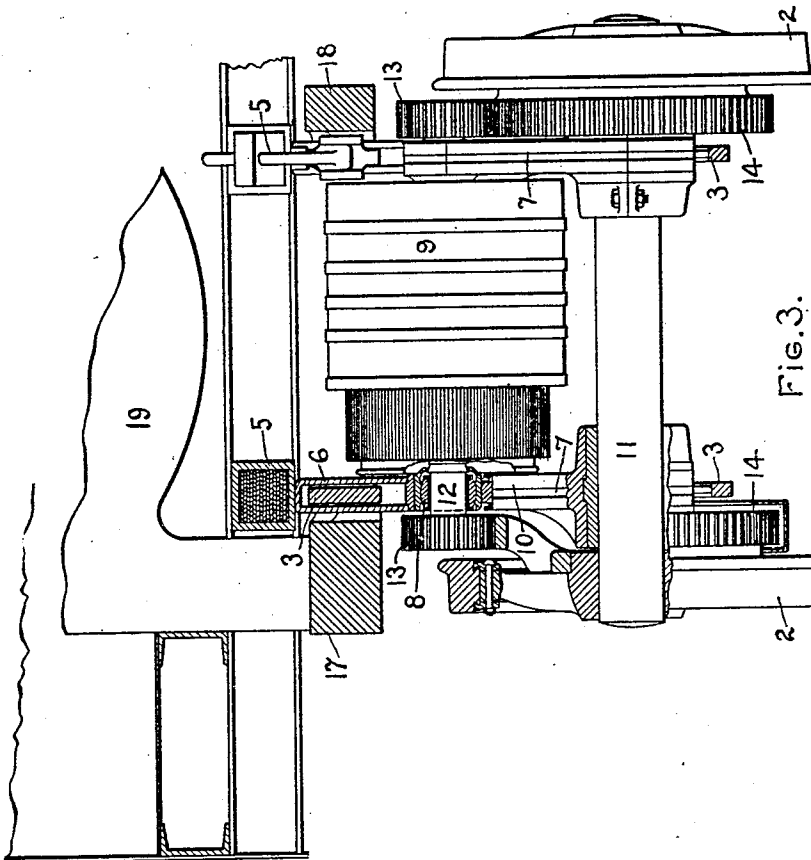
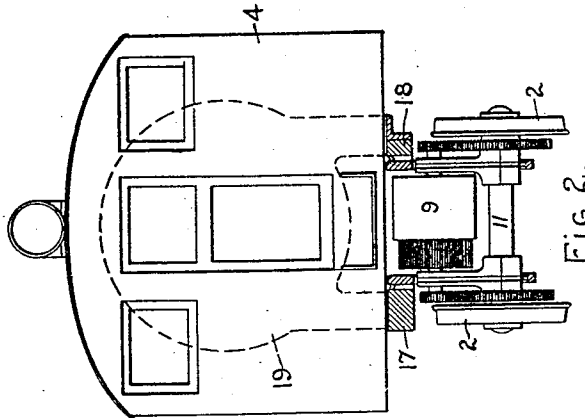
by Albert H. Davis
ATTY.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

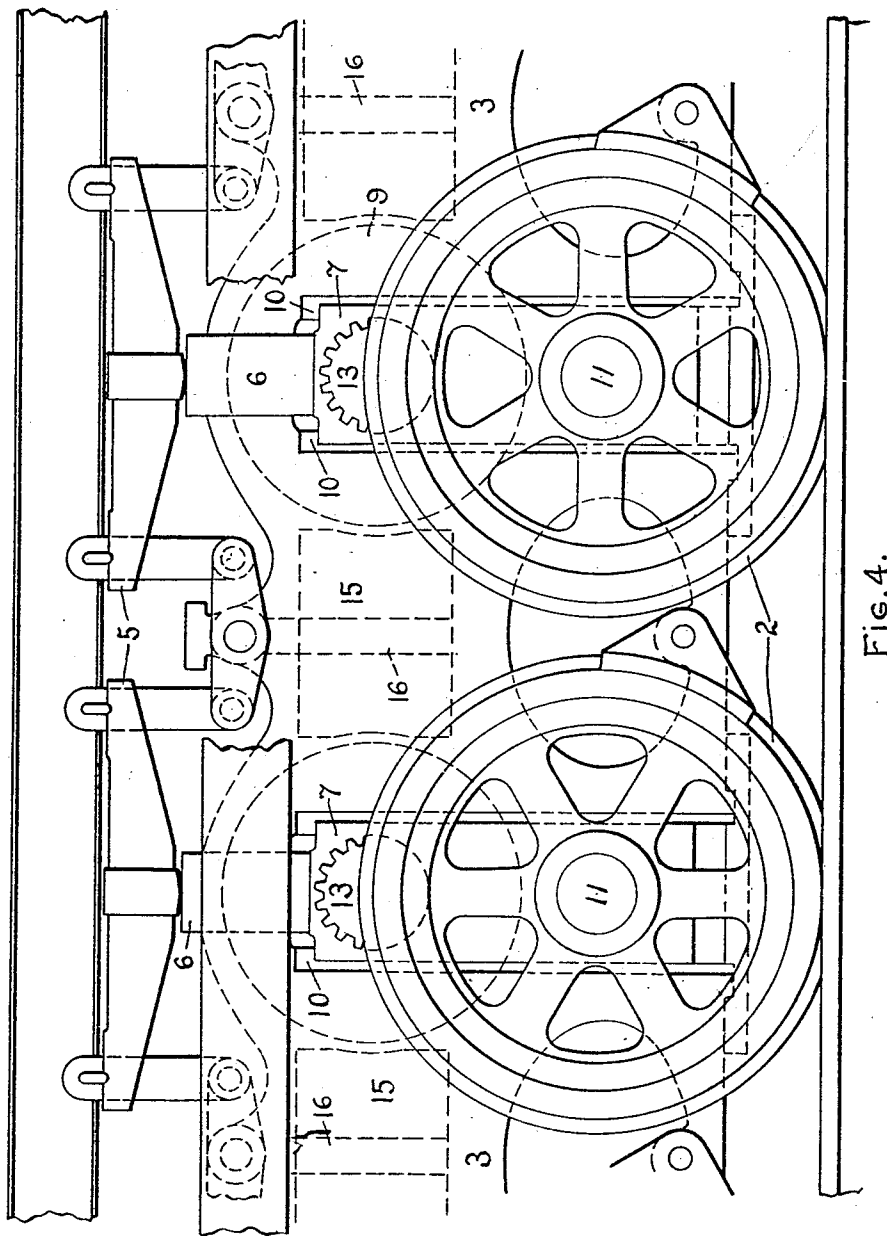


Fig. 4.

Witnesses:
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UNITED STATES PATENT OFFICE.

ASA F. BATCHELDER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC LOCOMOTIVE.

No. 843,788.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed December 11, 1905. Serial No. 291,195.

To all whom it may concern:

Be it known that I, ASA F. BATCHELDER, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Electric Locomotives, of which the following is a specification.

In my prior application, Serial No. 265,240; I have shown an electric locomotive wherein the motor-armatures are mounted directly upon the driving-axles and the field-magnet structure includes portions of the locomotive-frame, together with pole-pieces supported by said frame in operative relation to the several armatures. In this arrangement the speed of the armatures is determined by the speed at which it is desired to operate the drivers, and variation of power can be procured only by altering the dimensions of the motor parts within the restricted limits imposed. Cases may arise in which it is desired to employ a greater power than can be obtained by means of armatures mounted directly upon the axles, even though the armatures be made as large as possible under the circumstances. This increase in power may be secured without enlarging the dimensions of the motors by mounting the armatures independently of the axles and designing them to run at a higher speed than the speed of the drivers, the proper speed of the drivers being obtained through speed-reducing gearing.

In one of its aspects the present invention may be considered as relating to improvements in the locomotive disclosed in my prior application, such that the motor-armatures are adapted to be geared to the driving-axles, while at the same time a field-magnet structure similar to that shown in my prior application may be employed.

Considered in other aspects the present invention comprises novel features of construction and arrangement of parts of a locomotive, to be hereinafter described, and particularly pointed out in the claims.

The present invention will be more fully understood from the following description thereof, taken in connection with the accompanying drawings, wherein—

Figure 1 shows in side elevation a loco-

motive constructed and arranged in accordance with the present invention. Fig. 2 is an end elevation of such locomotive, certain parts being broken away to more clearly show novel features of construction. Fig. 3 is a section taken transversely of the locomotive adjacent one set of drivers and the operating-armature associated therewith; and Fig. 4 is an enlarged side elevation of a portion of the locomotive-frame, showing the manner of supporting it upon the drivers.

Reference being had to the drawings, 1 indicates a locomotive having drivers 2, a frame 3, and a cab 4, arranged upon the frame. The frame is supported in the usual manner through springs and equalizing mechanism 5, carried by yokes 6, which are in turn borne upon journal-boxes or bearing members 7. These parts may have any usual or desired construction, except that the journal-boxes or bearings members are made elongated, so as to provide bearings 8 for the motor-armatures 9, and the frame is preferably made rather deep, so that the pedestals or guides 10 may extend throughout the entire length of the journal-boxes or bearing members in order to maintain them securely in alinement. The armature-bearings are preferably located directly over the respective axles 11 and at some distance therefrom, so as to afford ample clearance for the armature. I also prefer to arrange the journal-boxes inside of the driving-wheels and to provide each of the armature-shafts 12 with two pinions 13, which mesh with gears 14, secured, respectively, to the inside of the corresponding driving-wheels. This construction and organization of journal-boxes and gearing forms a compact and balanced arrangement, but it is of course understood that the journal-boxes may be otherwise situated and the driving connections between the armatures and axles be altered without departing from the present invention as viewed in some of its aspects. The pole-pieces 15 are preferably supported upon cross members 16 of the frame, as in the construction shown in my prior application, although it is of course evident that a different arrangement of field-magnet structure may be employed without departing from the scope of the present invention.

17, and 18 are additional masses of magnetic material carried by the locomotive-frame and arranged in the magnetic circuit of the field structure.

5 19 indicates diagrammatically a motor-generator set mounted directly upon the locomotive-frame or upon the members 17 and 18.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

10 1. In an electric locomotive, a driving-axle, a locomotive-frame, bearing members journaled on said axle and supporting said frame, a motor having an armature revolubly supported by said bearing members, and a
15 driving connection between said armature and said axle.

2. In an electric locomotive, a driving-axle, a locomotive-frame, bearing members journaled upon said axle and supporting said
20 frame, an electric motor having an armature journaled in said bearing members, and a driving connection between said armature and said axle.

3. In an electric locomotive, a driving-axle, a locomotive-frame, bearing members
25 journaled on said axle and supporting said frame, a motor-armature supported by said bearing members in operative relation to the axle, pole-pieces carried by said frame, and a
30 driving connection between said armature and said axle.

4. In an electric locomotive, a driving-axle, a locomotive-frame, members journaled on said axle and supporting said frame, an
35 electric motor having an armature journaled in said members above and in alinement with said axle, and a driving connection between said armature and said axle.

5. In an electric locomotive, a driving-
40 axle, a locomotive-frame, bearing members journaled at one end upon said axle and arranged to support said frame at the other end, an electric motor having an armature journaled in said bearing members at points in-
45 termediate the ends thereof, and a driving connection between said armature and said axle.

6. In an electric locomotive, a plurality of driving-axes, a locomotive-frame, bearing
50 members on the several axes adapted to support said frame, motor-armatures journaled in said bearing members in operative relation to the axes, pole-pieces carried by said frame in operative relation to said arma-
55 tures, and driving connections between the several armatures and axes.

7. In an electric locomotive, a locomotive-frame, a driving-axle provided with wheels at its opposite ends, bearing members journaled
60 on said axle and adapted to support said frame, a motor having an armature journaled in said bearing members, and intermeshing gears located respectively on said wheels and

on opposite ends of the shaft of said arma-
65 ture.

8. In an electric locomotive, a locomotive-frame, a driving-axle provided with wheels at its opposite ends, bearing members journaled on said axle and adapted to support
70 said frame, a motor-armature having its shaft journaled in said bearing members, intermeshing gears located respectively on said wheels and on opposite ends of said armature-shaft, and pole-pieces carried by said frame in operative relation to said armature. 75

9. In an electric locomotive, a locomotive-frame, a driving-axle provided with wheels at its opposite ends, bearing members journaled on said axle intermediate said wheels and adapted to support said frame, a motor
80 having an armature-shaft journaled in said bearing members, and intermeshing gears located respectively on said wheels and on opposite ends of the armature-shaft.

10. In an electric locomotive, a locomotive-frame, a driving-axle provided with wheels at its opposite ends, bearing members journaled at one end on said axle intermediate
85 said wheels and supporting said frame at the other end, a motor having an armature-shaft journaled in said bearing members and in alinement with said axle, and intermeshing gears located respectively upon said wheels and upon opposite ends of the armature-shaft. 95

11. In an electric locomotive, a locomotive-frame, a driving-axle, bearing members journaled at one end upon said axle, yielding supports for said frame at opposite ends of said
100 members, guides on said frame on opposite sides of said bearing members, a motor having its armature journaled in said members, and a driving connection between said armature and said axle.

12. In an electric locomotive, a locomotive-frame, driving-axes, bearing members journaled upon said driving-axes at their lower
105 ends and adapted to support said frame at their other ends, motors having armatures revolubly supported by said bearing members, and driving connections between said armatures and said axle. 110

13. In an electric locomotive, a locomotive-frame, driving-axes, bearing members journaled at their lower ends upon said axes and
115 arranged to yieldingly support said frame at their upper ends, motor-armatures supported in operative relation to the axes by said bearing members, pole-pieces carried by said frame in operative relation to the armatures, 120 and driving connections between said armatures and said axes.

14. In an electric locomotive, a locomotive-frame, driving-axes, bearing members journaled at their lower ends upon said axes and
125 arranged to yieldingly support said frame at

5 their upper ends, motors having armatures supported in operative relation to the axles by said bearing members, driving connections between said armatures and said axles, and guides on said frame arranged to maintain said bearing members in vertical alignment.

In witness whereof I have hereunto set my hand this 9th day of December, 1905.

ASA F. BATCHELDER.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.