

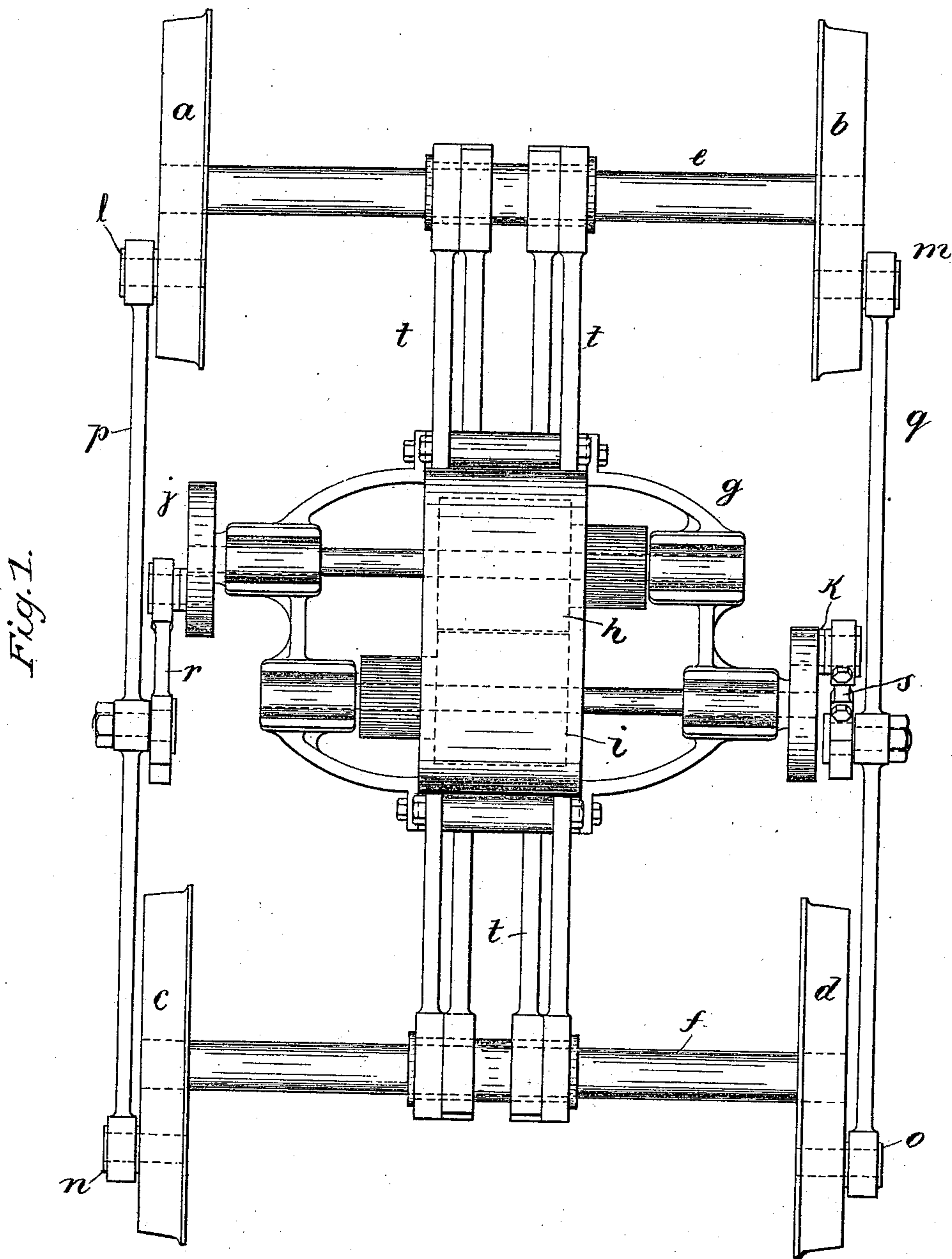
(No Model.)

2 Sheets—Sheet 1

E. H. PORTER.
ELECTRIC LOCOMOTIVE.

No. 544,685.

Patented Aug. 20, 1895.



WITNESSES:

A. L. Gaff.

Beatrice Williams.

INVENTOR

E. H. Porter.

BY

Edward P. Thompson
ATTORNEY

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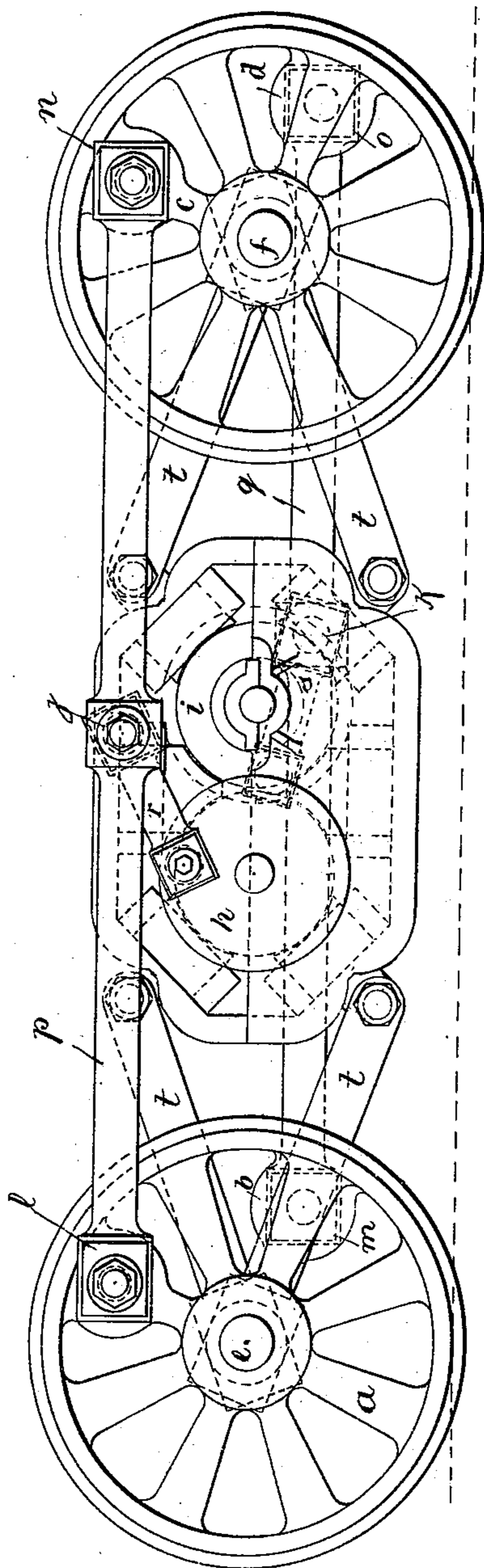


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWIN H. PORTER, OF RADFORD, VIRGINIA.

ELECTRIC LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 544,685, dated August 20, 1895.

Application filed June 22, 1894. Serial No. 515,371. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. PORTER, a citizen of the United States of America, and a resident of Radford, in the county of Montgomery and State of Virginia, have invented certain new and useful Improvements in Electric Locomotives, (Case No. 2,) of which the following is a specification.

My invention relates to an electric car or locomotive and particularly to transmitting the power from the motor to the driving-wheels in such a manner that their speed may be reduced in relation to the speed of the motor.

In order that the invention in all its details may be understood, it is described by reference to the drawings.

Figure 1 is a plan of so much of the locomotive as involves my invention. Fig. 2 is a side elevation. The dotted lines represent portions which are not visible in the actual machine when looked at from the same direction.

The device involving my invention consists of the combination of the driving-wheels *a*, *b*, *c*, and *d*, the first two being located on the axle *e* and the other two on the axle *f*; a motor *g*, having two armatures *h* and *i*, whose axles are provided with cranks *j k*, respectively; cranks *l m n o* upon the respective drivers; connecting-rods *p q*, joining the pairs of driving-cranks upon the respective sides of the locomotive, and connecting-rods *r s*, connecting the respective driver-connecting rods with the respective armature-cranks, and braces *t*, supporting the motor *g* upon the car-axles *e f*, so that the motor is located between the two axles. It is necessary for the connecting-rods *r s*, joining the armature-cranks with the connecting-rods *p q*, to be in length equal to the radius of the driving-wheel cranks—that is, twice the radius of the armature-cranks.

The machine is so constructed that the armature-cranks are one-half of the length of the driving-cranks, and the mechanism, on account of its construction, is such that when the armature-cranks make a given number of revolutions the driving-cranks will make but half that number.

The *modus operandi* is as follows: When the motor is set in motion by the electric current, the cranks *j* and *k* are set in rapid rotation. This motion is communicated to the connecting-rods *p q* of the drivers, whereby the driving-wheels are turned through one revolution during the time that the cranks *j k* make two revolutions. The distance between the center of the motor-shaft and the center of the driving-shaft should be equal to the length of the main connecting-rod between the driving-wheel crank-pin and the point of attachment of the supplementary connecting-rod *r* less the radius of the armature-crank. The centers of the driving-wheels and the motor armature-shafts should be in a straight line parallel to the main connecting-rod. This last-named condition is true if the crank-pins on the driving-wheels and the pin on each side connecting-rod are in straight lines; but for the successful operation of the invention it will do no harm if the pins near the centers of the connecting-rods are out of line with the pins on the cranks of the driving-wheels, provided the axles of the armatures are correspondingly out of line with the line which passes through the axes of the driving-wheels.

I claim as my invention—

1. The combination, in an electric locomotive, with the driving axles of the locomotive, of cranks of a given radius carried thereby, main connecting rods joining those cranks which are on different axles, a pair of armatures of an electric motor having cranks of half the length of the former, and connecting rods joining the armature cranks to the main connecting rods and having the same radius as the cranks of the driving wheels of the locomotive, the centers of the said driving axles and of the armature axles being in a straight line parallel to the said main connecting rods.

2. In an electric locomotive the combination with driving axles of the locomotive, of cranks of a given radius carried thereby, main connecting rods joining those cranks which are on different axles, a pair of armatures of an electric motor, having cranks of

half the length of the former and connecting rods joining the armature cranks to the main connecting rods and having the same radius as the cranks of the driving wheels of the locomotive.

5 In testimony that I claim the foregoing as my invention I have signed my name, in pres-

ence of two witnesses, this 14th day of June, 1894.

EDWIN H. PORTER. [L. S.]

Witnesses:

CHAS. M. CALDWELL,
CARROLL B. MOUNT.