

(No Model.)

E. HOPKINSON.  
ELECTRIC CRANE.

No. 522,835.

Patented July 10, 1894.

Fig 1.

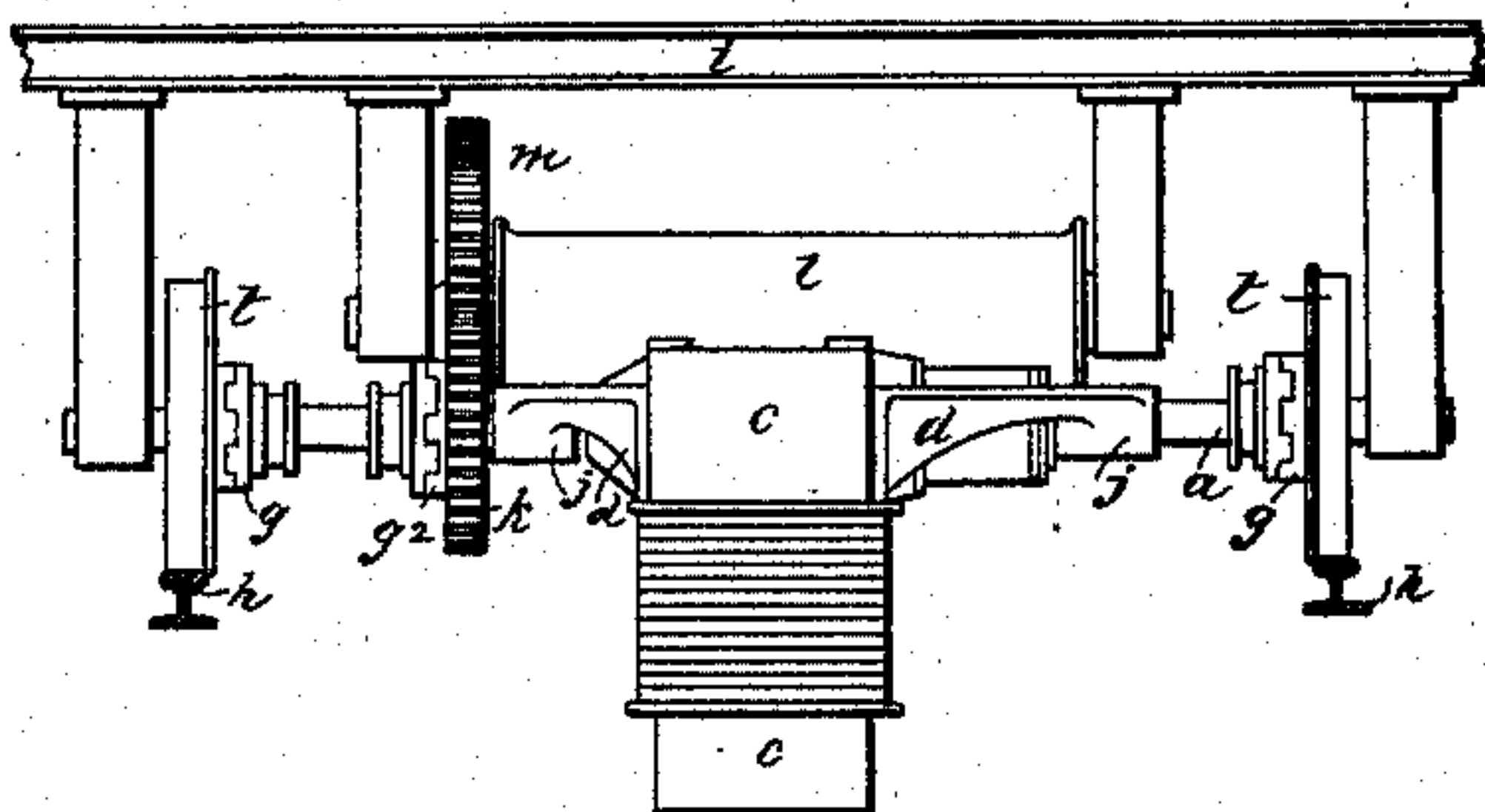
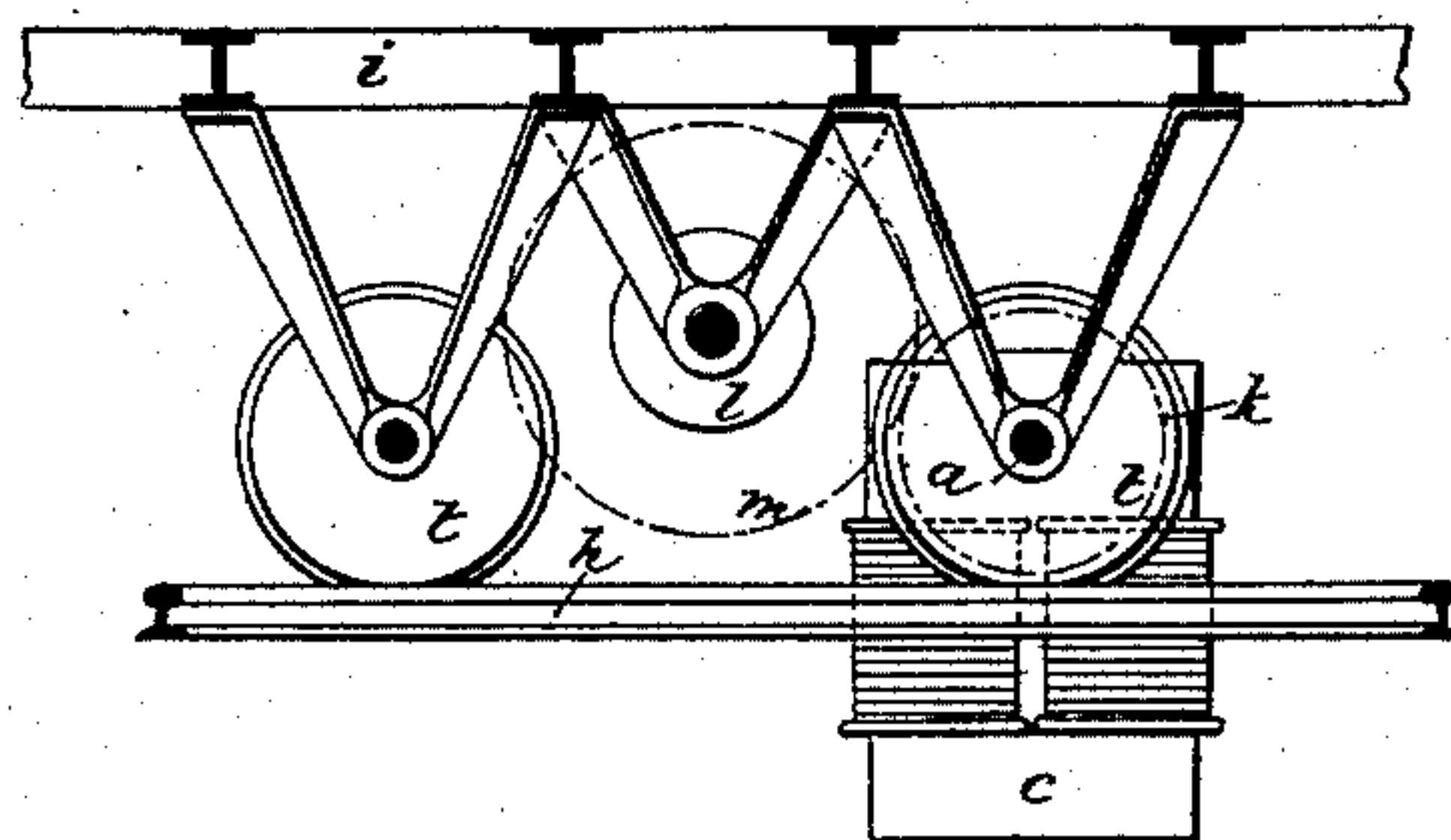


Fig. 2.



Witnesses.

H. R. Edelman.

Per J. L. L.

Inventor.

Edward Hopkins

by J. L. L.

his atty.

# UNITED STATES PATENT OFFICE.

EDWARD HOPKINSON, OF MANCHESTER, ENGLAND.

## ELECTRIC CRANE.

SPECIFICATION forming part of Letters Patent No. 522,835, dated July 10, 1894.

Original application filed July 21, 1888, Serial No. 400,198. Divided and this application filed March 15, 1894. Serial No. 503,782. (No model.) Patented in England March 14, 1888, No. 3,981.

*To all whom it may concern:*

Be it known that I, EDWARD HOPKINSON, a subject of the Queen of Great Britain and Ireland, residing at Salford Iron Works, Manchester, in the county of Lancaster, England, have invented certain Improvements in Electric Cranes, (for which I have obtained a patent in Great Britain, No. 3,981, dated March 14, 1888,) of which the following is a specification.

The present application for Letters-Patent of the United States is a division and continuation of my original application filed July 21, 1891, Serial No. 400,198, in which are described and claimed arrangements for mounting the propelling electric-motors of locomotives, train-cars, cranes and other vehicles.

The present invention relates to electric cranes and similar apparatus, and consists in mounting the motor on one of the axles of the carriage, the armature being built on the axle and the field-magnet being supported in such manner as to have freedom of angular motion around the axle, and in combining with such motor, clutches or equivalent means for connecting the axle with the traveling wheels or with the lifting barrel at will, so that the same motor can be used for both traversing and lifting.

The invention is illustrated in the accompanying drawings, in which—

Figures 1 and 2 are respectively a side and an end elevation of an electric motor constructed and combined with the carriage or truck of a traveling crane in accordance with the invention.

*a* represents one of the axles of the carriage; *b*, the armature built thereon, and *c* the magnets and pole-pieces, journaled by means of collars *j* on the axle or shaft by which the magnets and pole-pieces of the motor are supported.

In the form of motor illustrated in the drawings the center of gravity of the motor is beneath the axle, and the weight of the pole-

pieces and magnets maintains them in an approximately vertical position, while permitting the desired freedom of angular motion.

The chain-barrel *l* of the crane is carried in suitable bearings from the frame-work and is driven by any convenient train of gearing from the motor axle. The traversing wheels *tt* of the crane are mounted loosely on the axle *a* but are connected to and disengaged from it by clutches *g* or other equivalent device.

Although it is not necessary it is in some cases most convenient to have a separate clutch as at *g*<sup>2</sup> or other arrangement for putting the lifting barrel in and out of gear with the motor. In the drawings the motor axle runs in journals carried by the frame-work *i i*. When it is desired to traverse the crane along the rails *h h* the motor is started and the clutches *g g* are thrown into gear. The lifting barrel *l* is shown driven from the axle *a* by the pinion *k* and the wheel *m*. The pinion *k* is shown in the drawings as riding loosely on the axle but is fitted to a clutch *g*<sup>2</sup> so that when this is in gear the barrel is driven, while in order to stop the barrel the said clutch *g*<sup>2</sup> is thrown out of gear. By these means both the traversing and the lifting operations may be performed at one time, but this is a matter of detail which may be modified according to the manner in which the apparatus is designed to operate.

What I claim is—

1. In electric traveling cranes or the like in which the armature shaft of the motor forms one axle of the carriage the combination with the motor, traveling wheels and lifting barrel, of clutches by which the said axle can be connected to or disconnected from the traveling wheels and be connected to or disconnected from the lifting barrel, thereby enabling the same motor to be used both for traveling and lifting, substantially as hereinbefore described.

2. In electric traveling cranes or the like, the combination with an axle of the carriage



and with the traveling wheels and lifting barrel, of an electric motor having its armature built upon said axle, and its magnet and pole pieces suspended therefrom by means of  
5 supports journaled on the axle, and means for connecting said axle at will with either the traveling wheels or the lifting barrel, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of 10  
two subscribing witnesses.

EDWARD HOPKINSON.

Witnesses:

ED. BOUTFLOWER,  
*Notary Public, Manchester.*

JAS. S. BROADFOOT,  
*His Clerk.*