No. 815,943. PATENTED MAR. 27, 1906.

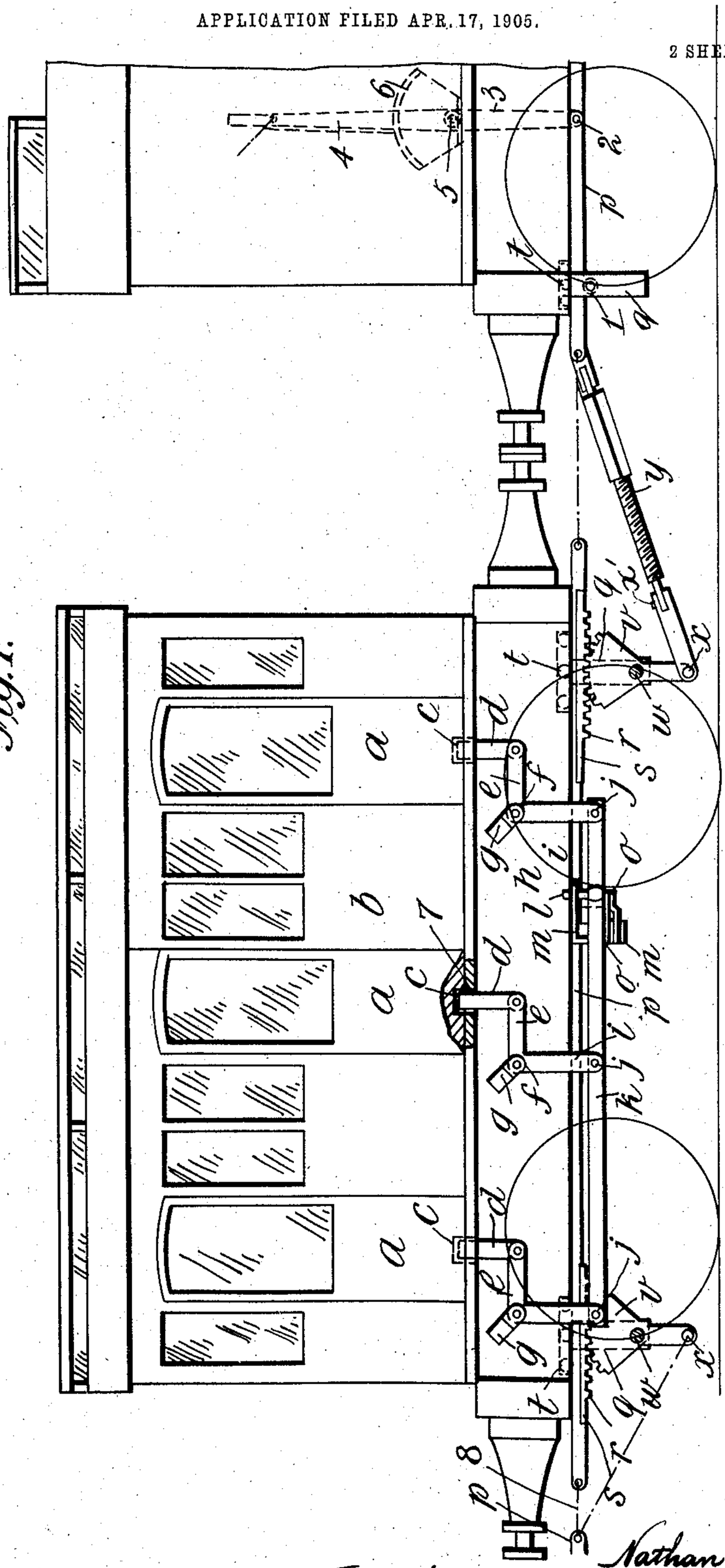
N. DEWHURST, J. W. MOORE & R. T. GRIFFITHS.

SIMULTANEOUS LOCKING OF DOORS OF RAILWAY CARRIAGES.

APPLICATION FILED APR. 17, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
Percy M. Goodwin.
Robt. Hunter

Inventors
Nathan Dewhurst.
John William Moore
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by Benj. V. Lind. Attorney.

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2 SHEETS—SHEET 2.

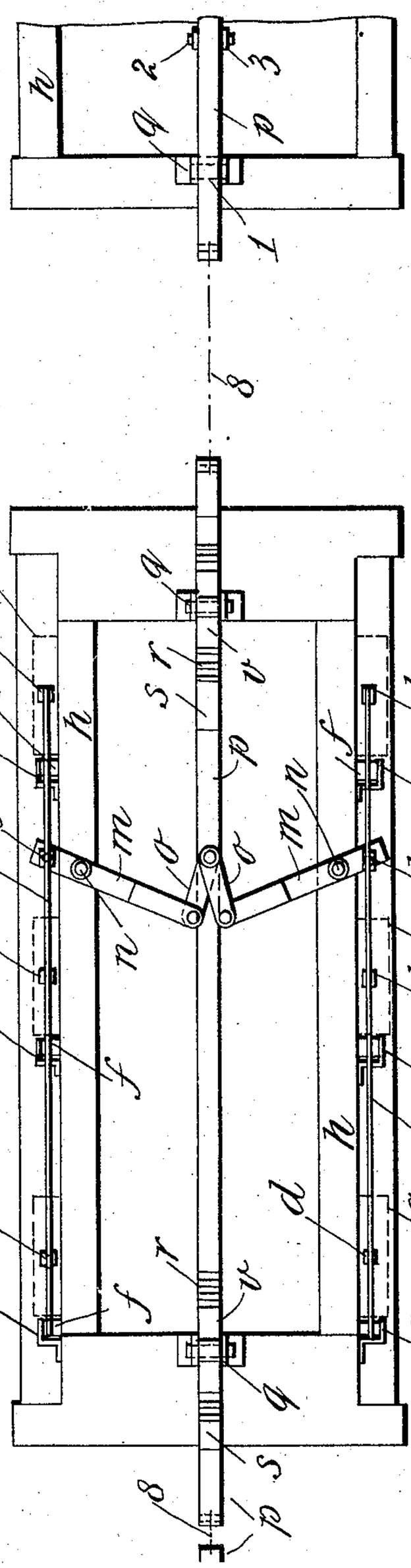

Fig. 2.

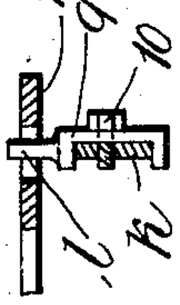

Fig. 3

Witnesses.
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UNITED STATES PATENT OFFICE.

NATHAN DEWHURST, JOHN WILLIAM MOORE, AND ROBERT TAYLOR GRIFFITHS, OF ACCRINGTON, ENGLAND.

SIMULTANEOUS LOCKING OF DOORS OF RAILWAY-CARRIAGES.

No. 815,943. Specification of Letters Patent. Patented March 27, 1906.

Application filed April 17, 1905. Serial No. 256,045.

To all whom it may concern:

Be it known that we, NATHAN DEWHURST, residing at 39 Lodge street, JOHN WILLIAM MOORE, residing at 10 Lodge street, and ROBERT TAYLOR GRIFFITHS, residing at 39 Lodge street, in the city of Accrington, county of Lancaster, England, subjects of the King of Great Britain and Ireland, have invented certain new and useful Improvements in and Relating to the Simultaneous Locking of Doors of Railway-Carriages, of which the following is a specification.

This invention relates to a simple and efficient means or apparatus whereby all the doors of the carriages of a passenger-train can be simultaneously locked from the guard's van, thereby preventing when the train is in motion the doors from opening, and consequently in many cases loss of life or damage to such door as may happen to be open.

In carrying the said invention into effect reference is to be had to the accompanying sheet of explanatory drawings, in which—

Figure 1 is a side elevation of so much of a train as is necessary to illustrate the invention. Fig. 2 is an under side plan view thereof, (connection between carriages left out for clearness,) and Fig. 3 is a detail view hereinafter referred to.

Like characters of reference indicate corresponding parts.

The doors *a* of the passenger-carriage *b* are provided at their lower ends with a slot *c*, adapted to receive the locking-bolts *d*, carried by the arm *e* of bell-crank levers *f*, pivoted in brackets *g* on the underframe *h*. The lower arms *i* of the bell-crank levers *f* are connected at *j* to a side rod *k*, (one on either side of the carriage,) so that the said bell-cranks can be operated at one and the same time. Connected to the rod *k* at any suitable part is a stud or projection *l*, engaging with a horizontal lever *m*, pivoted at *n* to the underframe and at its outer end connected to a link *o*, pivotally attached to a central bar *p*, extending lengthwise of the carriage and guided in brackets *q*, depending from the underframe. At both ends of said central bar or rod *p* is arranged a rack *r*, formed on a plate *s* and let into said rod, so that in event of teeth breaking a fresh rack-plate can easily be inserted, and to permit the easy movement of the central rod *p* any suitable form of roller-bearings *t* is provided, as in Fig. 1.

Carried by brackets *q* are sectors *v*, pivoted at *w* to said brackets and connected at their lower ends *x* to one end of a screwed coupling *y*, connected at the other end to the central rod *p* of the guard's carriage *z*, which works freely between the roller-bearing *t* and a lower roller-bearing 1 in a bracket *q*. The coupling is so pivoted to the brackets *q* and the rod *p* as to move vertically. The coupling *y* is in sections, certain of said sections being pivoted one to the other, as at *x'*, to move horizontally. By this arrangement an approximate universal movement is given to the coupling. Connected at 2 to the rod *p* on the guard's van is the lower end 3 of a lever 4, pivoted at 5 to a sector 6 in said van, so that on said lever 4 being operated the toothed sector *v*, through the medium of the universal coupling *y*, moves the rod *p* in the direction of the arrow, and so through the medium of the link *o*, lever *m*, stud *l*, and rod *k* to rock the bell-crank levers *f* and withdraw the bolts *d* from the slots *c* in the carriage-doors, allowing the same to be swung open, the outer ends of the bolts *d* resting within the slots 7 in the frame of the carriage.

In the case of the guard's van it is unnecessary to provide rack and sector, yet, if desired, the lever 4 may be provided at its lower end with a sector to engage the central rod, and in some cases—that is to say, where the carriages are not turned round end for end—the rack and sector may be dispensed with and a simple central bar and attendant parts only used, in which case the ends of the bars are connected by a suitable universal coupling, (indicated by a dot-and-dash line 8, as in Figs. 1 and 2.) Further, to allow of free movement all the pivotal joints are preferably provided with ball or other suitable antifriction-bearings. To lock the doors, the same being shut, the reverse of the operation above set forth takes place.

In the event of a collision occurring it is necessary that some means (non-access being had to the guard) should be provided for unlocking the doors. To this end the stud or pin *l* is provided with a channel-shaped extension 9, as in Fig. 3, and connected to the side rod *k* by means of a set-screw 10 or equivalent device, so that should the central rod or levers *o* and *m* or other parts become damaged the stud *l* can be easily freed from engagement with the lever *m*, leaving the side rod *k*

free to be moved by hand, and to thereby unlock the doors of the carriage.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination with a car having a plurality of doors on either side, a rod movable longitudinally of the car, bell-levers pivoted to the car, latches on one end of the levers engaging the door, bars connecting the opposite end of the levers, a connection between the bar and rod, and means for reciprocating the rod.

2. In combination with a car having a plurality of doors on either side, a rod movable longitudinally of the car, bell-levers pivoted to the car, latches on one end of the lever engaging the door, bars connecting the opposite end of the levers, levers pivoted intermediate their length to the car, an end of each lever being pivotally secured to a bar, the opposite end of the lever having pivotal connection with the rod and means for reciprocating the rod.

3. In combination with a car having a plurality of doors on either side, a rod movable longitudinally of the car, bell-levers pivoted to the car, latches on one end of the lever engaging the door, bars connecting the opposite end of the levers, levers pivoted intermediate their length to the car, a pin movably held by each bar, a lever pivotally held by the pin, the opposite end of the lever having pivotal connections with the rod, and means for reciprocating the rod.

4. In combination with a car having a plurality of doors on either side, a rod movable longitudinally of the car, bell-levers pivoted to the car, latches on one end of the levers engaging the door, bars connecting the opposite end of the levers, levers pivoted intermediate their length to the car, an end of each lever being pivotally secured to a bar, the opposite end of the lever being pivotally attached to an end of a link, the opposite end of the link being pivoted to the rod, and means for reciprocating the rod.

In testimony whereof we have affixed our signatures in presence of two witnesses.

NATHAN DEWHURST.
JOHN WILLIAM MOORE.
ROBERT TAYLOR GRIFFITHS.

Witnesses:
WM. H. RAWSON,
GEORGE SPIERS.