

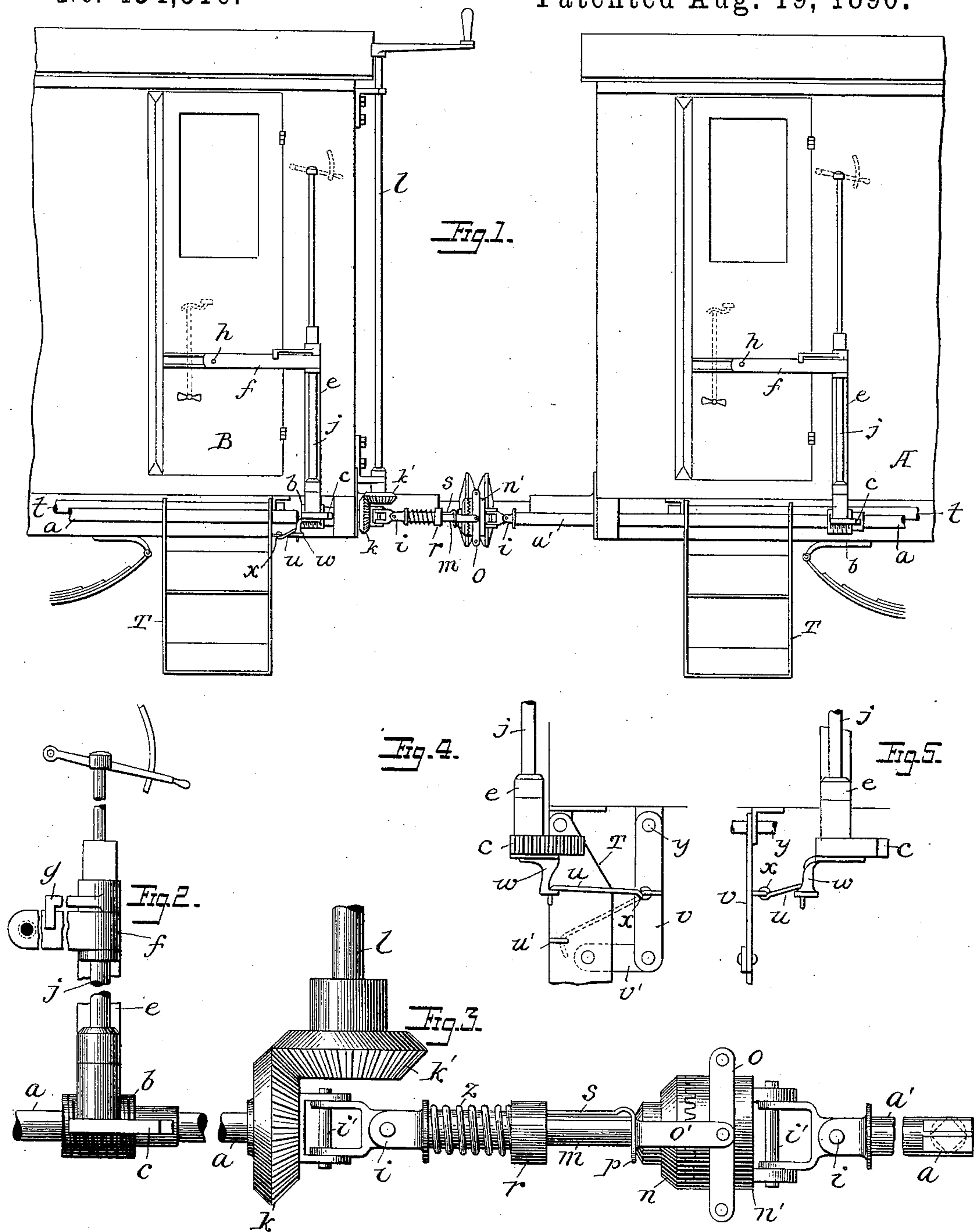
(No Model.)

E. O. LEINBROCK.

CLOSING DEVICE FOR THE DOORS OF RAILWAY CARS.

No. 434,516.

Patented Aug. 19, 1890.



WITNESSES

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CLOSING DEVICE FOR THE DOORS OF RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 434,516, dated August 19, 1890.

Application filed November 15, 1889. Serial No. 330,501. (No model.) Patented in Germany July 14, 1889, No. 50,965, and in England August 27, 1889, No. 13,519.

To all whom it may concern:

Be it known that I, ERNST OSKAR LEINBROCK, manufacturer, a subject of the King of Saxony, and a resident of the town of Gottleuba, in the Kingdom of Saxony, and in the Empire of Germany, have invented certain new and useful Improvements in or relating to the Closing and Securing of the Doors of Railway Passenger-Carriages, (for which I have applied for Letters Patent of Great Britain, No. 13,519, dated August 27, 1889, Germany, No. 50,965, July 14, 1889,) of which the following is a specification.

In the accompanying drawings, in which like letters indicate like parts, Figure 1 is a partial side view of two railway-carriages embodying my improvements. Fig. 2 is an elevation of the vertical shaft and door-closer. Fig. 3 is an enlarged view of the shaft-coupling. Figs. 4 and 5 are enlarged views of the step-adjusting device.

The object of the invention is to enable all the carriage-doors in a train to be closed from one point and to secure them against unauthorized opening when the train is in motion.

The invention is carried into effect by means of coupled shafts *a*, placed along the carriages, which turn arms *g*, each of which is so placed against one carriage-door that it cannot be opened. Upon the horizontal shaft *a* is a worm *b* for each door, which gears with a toothed segment *c*, secured to the lower end of a vertical shaft *d*, which may be carried in any suitable bearings *e e*. At the upper end of the shaft *d* is placed the arm *g*, movable in vertical direction, and under it is bent round the shaft *d* the end of a flat plate *f*, which at its other end, by means of a pin *h*, slides in a groove in the door. When the shaft *d* is revolved to close and lock the door, the arm *g* engages with the plate *f*, which in turn engages and closes the door. When the shaft *d* is turned in the other direction, the plate *f* is released from the arm *g*, and the door may be opened and closed at will. The rotation of the shaft *a* is effected by means of two miter or bevel wheels *k k'*, one of which is on the vertical shaft *l*, at the upper end of which is arranged a handle or a hand-wheel.

To transmit the rotary movement from shaft

to shaft the shafts *a* are connected by means of a clutch-coupling. On the bevel-wheel *k*, by means of a universal joint *i i'*, a shaft *m* is fixed which carries on its other end a toothed disk *n*. A similar disk *n'* is connected by means of a universal joint *i i'* with a tube *a'*. This tube *a'*, if round, is squared at its free end, but it may also be square for its entire length. This tube *a'* is passed over the end of the shaft *a* of the next carriage, and as the end of the shaft *a* is also square the rotation of the one shaft *a* is transmitted to the other shaft *a* by means of the described coupling. Both the said toothed disks *n n'* are connected so as to be capable of being dislodged by means of a ring *o*, extending loosely round the periphery of the disk *n'*. On the ring *o* one arm *o'* of a fork *p* is pivoted, the prongs of which embrace the shaft *m* behind the toothed disk *n*. On this fork *p* a handle *s* is fixed, which rests on the shaft *m*. To prevent the separation of the fork *p* from the shaft *m*, on the latter is placed a movable ring *r*, which by a spiral spring *z* is always pressed toward the fork, in consequence of which the ring *r* is pressed over the handle *s*, thus securing it. In the drawings the spring *z* is shown extended.

To dislodge the coupling the ring *r* is moved toward the left in the drawings, compressing the spring *z* until the handle *s* is free. The fork *p* is now turned on its pivot by means of the handle *s* from the horizontal to the vertical position, so as to be clear of the shaft *m* and disk *n*, and the two toothed disks *n n'* can now be taken apart. The universal joints *i i'* enable this coupling to give in every direction and follow the eventual middle space between the carriages by means of the tube *a'*, which slides lengthwise on the shaft *a*.

Beneath every carriage-door are the steps *T*, suspended on the special shaft *t*, and brought forward when the doors are opened with the arms *g*, and by the same movement of the shaft *a*, while they change their vertical position into an oblique one and are ready for use. This movement is produced in the following manner: Attached to the segment *c* is the angle-plate *w*, with a hole in its horizontal end. One end of the rod *u* forms a

hook which is placed in this hole, while the other is at x hinged to the vertical link v . The link v is at y loosely suspended on a bolt or pivot, and carries on the other end rectangularly to it the second link v' , also turning on a bolt or pivot, and which also turns on another bolt attached to the side of the steps T . If the angle-plate w , attached to the segment c , is turned, the link v will, by means of the rod u , be brought from its vertical position into an oblique one and push the steps T also into an oblique position with the aid of the cross-link v' . Thus it will be seen that when the doors are opened the steps are simultaneously brought forward into position for use, and when the doors are closed the steps are swung back under the car, as shown in Fig. 4, the parts w and u operating as a crank and pitman to communicate movement from the vertical shafts to the steps.

If the hook of rod u is taken out of the hole of the angle-plate w , the link v and the angle-plate w are disconnected and the steps remain in the vertical position, even though the angle-plate be turned. This may be needed when the train enters a station having elevated platforms where the steps could not be brought forward. They could be disconnected at a previous stopping-point.

In Fig. 4 I have shown the rod u (in dotted lines) hooked into a lug u' on the step to protect it from injury when it is not connected with the door-opening device.

Without limiting myself to the precise construction shown, I claim—

1. In a device for operating doors on a series of cars, the revoluble shafts a , yielding couplings between the shafts, means for operating the shafts, and connections between the shafts and the doors, substantially as described.

2. In a device for operating doors on a series of cars, the shafts a , yielding couplings between the shafts, connections between the shafts a and the doors, and a transverse shaft geared to one of said shafts a and provided with a handle, substantially as described.

3. In a device for operating car-doors, the shafts a and the yielding couplings comprising the telescopic joint, the universal joints, and the intermediate clutch, substantially as described.

4. In a device for operating doors on a series of cars, the revoluble shafts a and the yielding coupling including a clutch, and a clutch-locking device, substantially as described.

5. In a car-door-operating device, the longitudinal shafts a , the yielding couplings therefor, the vertical shafts having arms g , and connections between the vertical and longitudinal shafts, substantially as described.

6. In combination with a car-door, the vertical shaft, the arm thereon adapted to engage the door, the segment-gear c , and the worm b , engaging said segment-gear, substantially as described.

7. In combination with a car-door and mechanism for operating the same, a swinging step, and a detachable connection between the door and step, whereby the step may be operated simultaneously with the door, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST OSKAR LEINBROCK.

Witnesses:

RÜD. SCHMIDT,
EMIL DOMSCH.