

No. 847,956.

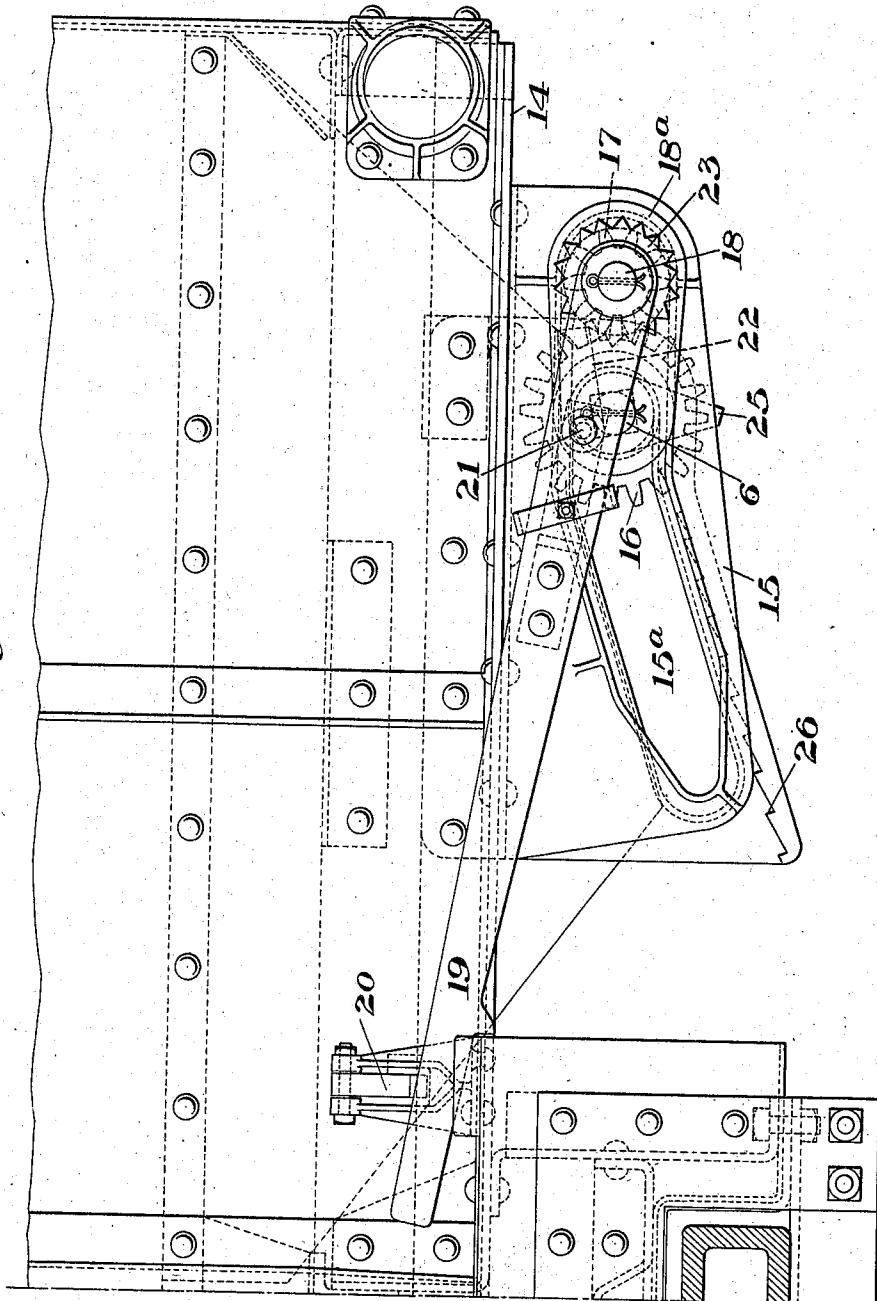
PATENTED MAR. 19, 1907.

C. A. LINDSTRÖM & J. F. STREIB.
CAR DOOR SHAFT OPERATING MECHANISM.

APPLICATION FILED OCT. 5, 1906.

5 SHEETS—SHEET 2.

Fig. 3.



WITNESSES

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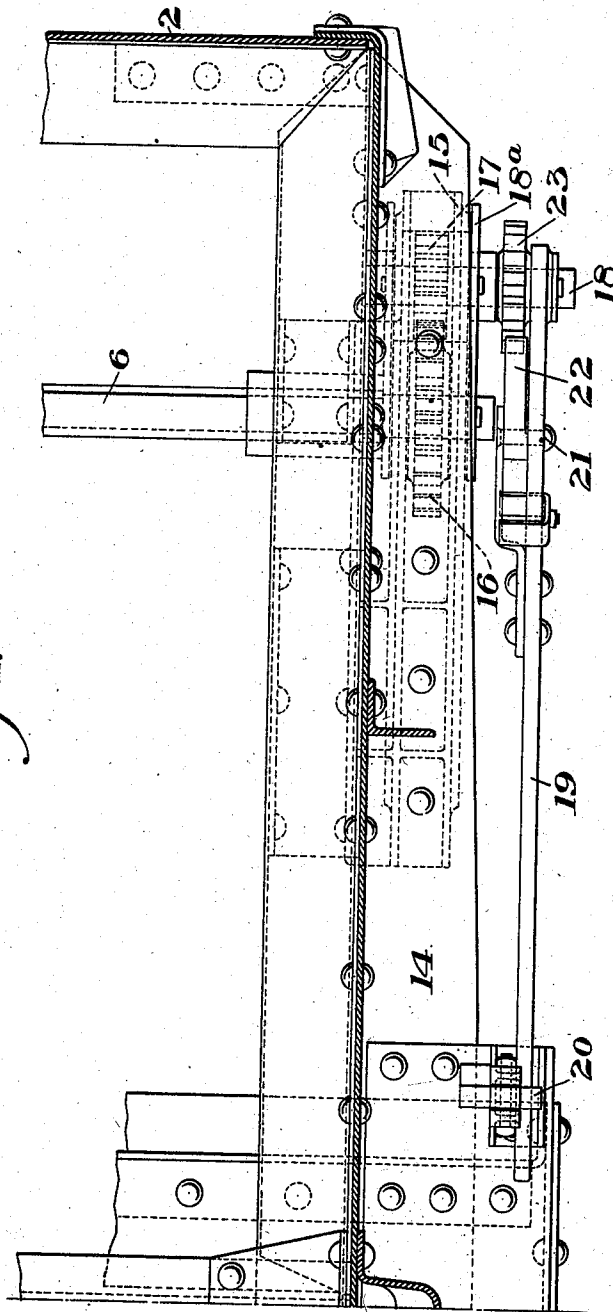
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6 SHEETS—SHEET 3.

Fig. 4.



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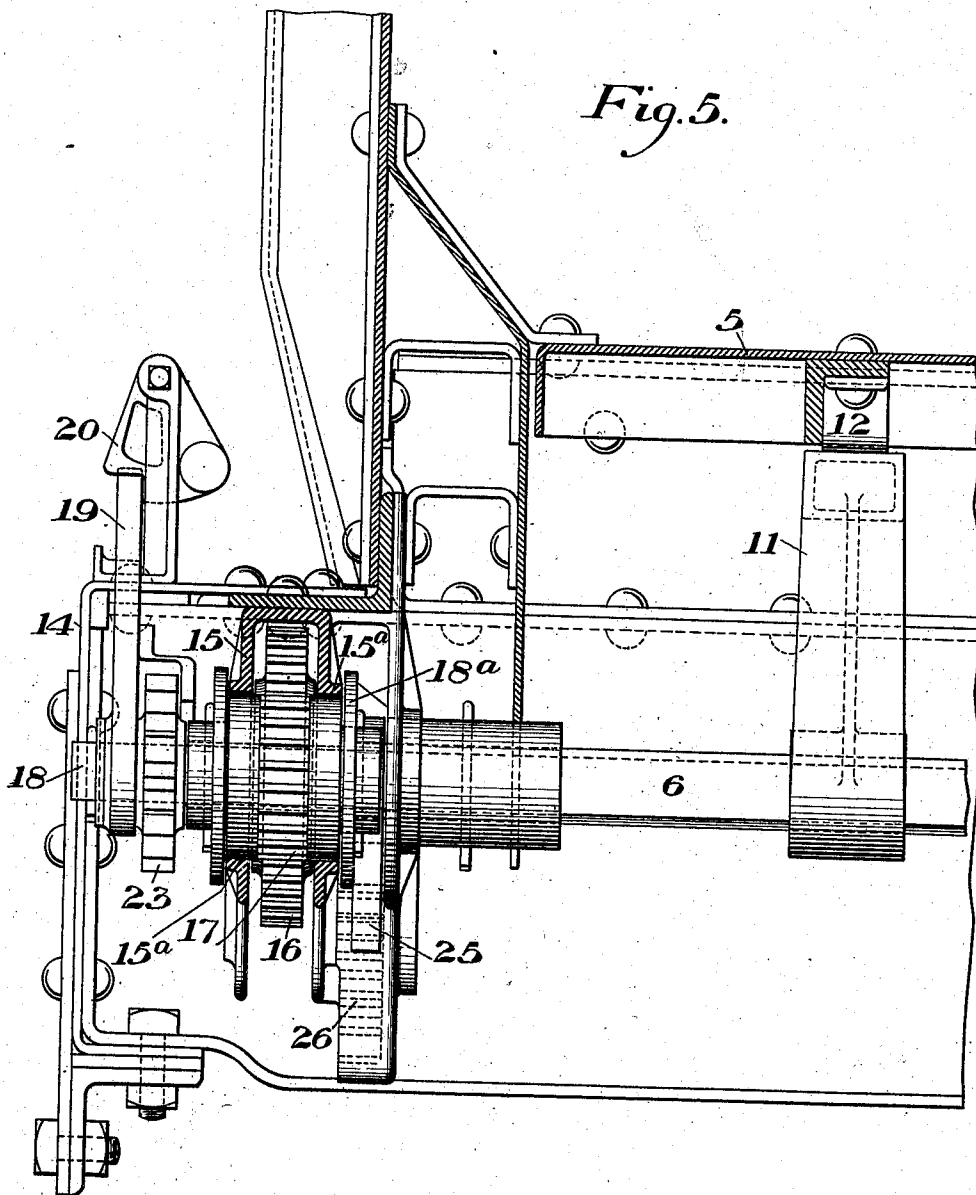
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5 SHEETS—SHEET 4.

Fig. 5.



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5 SHEETS—SHEET 5.

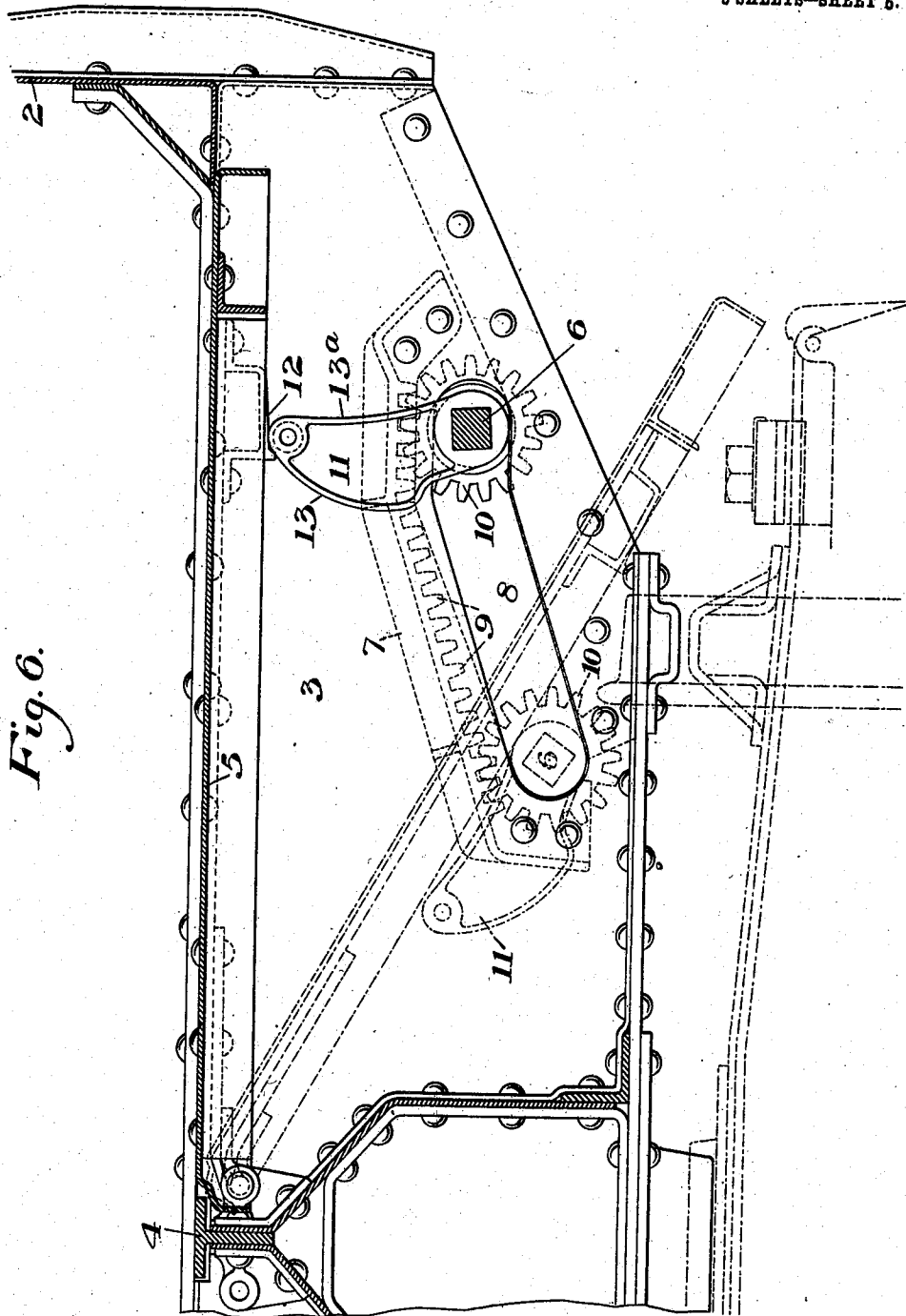


Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTRÖM, OF ALLEGHENY, AND JOHN F. STREIB, OF AVALON, PENNSYLVANIA, ASSIGNORS TO PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

CAR-DOOR-SHAFT-OPERATING MECHANISM.

No. 847,956.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed October 5, 1906. Serial No. 337,530.

To all whom it may concern:

Be it known that we, CHARLES A. LINDSTRÖM, of Allegheny, Allegheny county, Pennsylvania, and JOHN F. STREIB, of Avalon, Allegheny county, Pennsylvania, have invented a new and useful Car-Door-Shaft-Operating Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a car, showing our invention applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of one-half of the car. Fig. 4 is a plan view of one-half of one end portion of the car with the car-body in section. Fig. 5 is an enlarged section on the line V V of Fig. 1, and Fig. 6 is an enlarged section on the line VI VI of Fig. 1.

Our invention has relation to mechanism for operating car-door shafts of the type commonly known as "creeping shafts"—that is to say, shafts which move bodily underneath the doors during the opening and closing of the same. While we have illustrated the invention as applied to a creeping shaft of the particular arrangement described and claimed in the copending application of John F. Streib, one of the applicants herein, Serial No. 337,529, filed October 5, 1906, our invention is applicable to various other arrangements.

The object of our invention is to provide a simple and efficient lever and gear movement by means of which a creeping shaft may be moved from one position to the other, also to provide means whereby the door may be locked at any desired partially-open position.

With these objects in view our invention consists in the novel construction, arrangement, and combination of parts, all substantially as hereinafter described, and pointed out in the appended claims.

In the accompanying drawings the numeral 2 designates the side of the car, and 3 are the diaphragms or transoms between which are hinged to the center sill 4 the downwardly-opening doors 5, which constitute the major

portion of the floor of the car. The diaphragms 3 are preferably of the deep hollow form described and claimed in the pending application of Charles A. Lindstrom, one of the applicants herein, Serial No. 330,808, filed August 16, 1906.

6 designates the creeping shaft, which is arranged underneath the doors. As shown in Fig. 1, one of these shafts is provided for each series of doors, there being four shafts in all, one at each side of the car and extending from the center to the end of the car at each end.

In the particular arrangement of the shaft shown the inner ends are slidably mounted in slotted brackets 7, which are secured to the transom 3, which are formed with corresponding slots 8. The bracket 7 is formed with rack-teeth 9 at the upper edge of the slot for engagement with the teeth of a pinion 10 on the said shaft. The intermediate transoms are formed with corresponding slots, and one or more of them may be provided with the bracket 7 and rack 9, as shown in Figs. 1 and 2. Secured to each shaft 6 are a series of door-operating arms 11, there being preferably two of these arms for each door. The normal positions of these arms (that is to say, their positions when the doors are closed) is shown in Fig. 1, in which their free end portions are in engagement with wear-plates 12, secured to the under side of the doors. Each of said arms is formed with the convex edge 13 and approximately flat opposite edge 13^a.

Secured to the end sill 14 of the car is a bracket 15, having a slot 15^a therein, which is of corresponding form to the slot 8 in the bracket 7 and through which extends the end portion of the shaft 6. Secured to the end portion of this shaft within bracket 15 is a gear-wheel 16, whose teeth engage the teeth of a pinion 17, which is fixed to a stub-shaft 18. The cylindrical end portion of the shaft 6 and the stub-shaft 18 are journaled in the box or carriage 18^a, which is arranged to slide in the slot 15^a. Loosely fulcrumed on the projecting end portion of the stub-shaft 18 is an operating-lever 19, whose free

end portion is normally secured in the position shown in Fig. 3 by means of a gravity-latch device 20. Pivoted to the lever 19 at the point 21 is a pawl 22, whose free end engages the teeth of a ratchet-wheel 23, which is also fixed to the stub-shaft 18.

When the lever 19 is released from the latch 20 and moved upwardly through the arc of a circle, the ratchet 23 is rotated by the pawl 22, thereby rotating the pinion 17 and the gear-wheel 16. This rotates the shaft 6, its pinion or pinions 10 traveling in the racks 9, and the shafts 6 and 18, together with the carriage 18^a, move out of the horizontal upper portion of the slot 15^a and down the inclined portion of the said slot. During this movement the convex edges 13 of the door-supporting arms 11 ride on the under side of the doors, which are gradually lowered to the position shown in dotted lines in Fig. 6 until they rest upon the shaft 6. Further movement of the lever 19 moves the arms 11 into the position shown in dotted lines in said figure.

For the purpose of locking the door in partially-open position a pawl 25 is loosely hung on the cylindrical end portion of the shaft 6. In the closed position of the doors this pawl loosely depends through a slot in the bracket 15, and as the shaft 6 and gear-wheel 16 move down the slot 15^a this pawl rides over a series of fixed ratchet-teeth 26 on said bracket. The pawl can be thrown over into engagement with any one of these teeth 26 to thereby lock the door in partially-open position. To close the doors, the lever 19 is moved in the reverse position, and as soon as the convex edges 13 of the arms 11 come in contact with the under side of the doors the latter are gradually raised thereby to their closed positions, it being understood that the shafts 6 and 18 during this operation move upwardly in the slot 15^a to their normal positions, as shown in Fig. 3. It will be seen that a single lever controls the operation of a series of doors through the mechanism described.

The advantages of our invention consist in the provision of door-operating means whereby we obviate the use of the usual chains attached to the doors. Such chains are objectionable in that they are in the way of the discharge of the lading and are, furthermore, subject to breakage. The mechanism described has a simple and positive action, the doors being supported during their opening and closing movements.

Those features of the arrangement herein shown and described which have relation to the manner of supporting and arranging the creeping shaft and its door-carrying arms form, as above stated, the subject-matter of a copending application, in which they are

more fully described and claimed, the present invention having relation to the lever and gear mechanism for operating the creeping shaft.

Various changes may be made in the details of construction and arrangement without departing from the spirit and scope of our invention, since

What we claim is—

1. In car-door-operating mechanism a creeping shaft, a lever, and a pawl-and-ratchet device operated by the lever and geared to the creeping shaft; substantially as described.
2. In car-door-operating mechanism, a creeping shaft, a gear-wheel thereon, a stub-shaft arranged to move with the creeping shaft, a pinion on the stub-shaft engaging the gear-wheel, an actuating-lever, and a pawl-and-ratchet mechanism operated by the lever for rotating the stub-shaft and pinion; substantially as described.
3. In car-door-operating mechanism, a creeping shaft having door-supporting means, a gear-wheel on the shaft, a stub-shaft mounted to move with the creeping shaft, a pinion on the stub-shaft meshing with the gear-wheel, an actuating-lever, and a pawl-and-ratchet device operated by said lever for rotating the pinion; substantially as described.
4. In car-door-operating mechanism, a creeping shaft, a slotted bracket in which said shaft is mounted at one end, a stub-shaft, bearings for said shafts arranged to move in the slot of the bracket, intermeshing gearing on said shafts, and lever-operated means for actuating the gearing; substantially as described.
5. In car-door-operating mechanism, a creeping shaft, a stub-shaft mounted to move with the creeping shaft and geared thereto, an actuating-lever fulcrumed to the stub-shaft, and pawl-and-ratchet means operated by the lever for rotating the stub-shaft and gearing; substantially as described.
6. In car-door-operating mechanism, a creeping shaft, a stub-shaft mounted to move with the creeping shaft and geared thereto, a slotted bracket in which said shafts are mounted to move, said bracket having teeth thereon, a pawl carried by the creeping shaft and arranged to engage in said teeth, and means for actuating said shafts; substantially as described.
7. In car-door-operating mechanism, a creeping shaft, a slotted bracket in which said shaft is mounted to move, a stub-shaft also mounted to move in the slot of the bracket, and geared to the creeping shaft, lever mechanism for moving the creeping shaft, and means for locking the creeping shaft at different positions; substantially as described.

8. In car-door-operating mechanism, a creeping shaft, a slotted bracket in which the shaft is mounted, an actuating-lever fulcrumed eccentrically of said shaft, intermediate gear between the lever and the shaft arranged to move with said shaft, and means for locking the creeping shaft at different positions; substantially as described.

In testimony whereof we have hereunto set our hands.

CHARLES A. LINDSTRÖM.
JOHN F. STREIB.

Witnesses:

K. L. ROBINSON,
H. B. FISHER.