No. 865,920. PATENTED SEPT. 10, 1907.

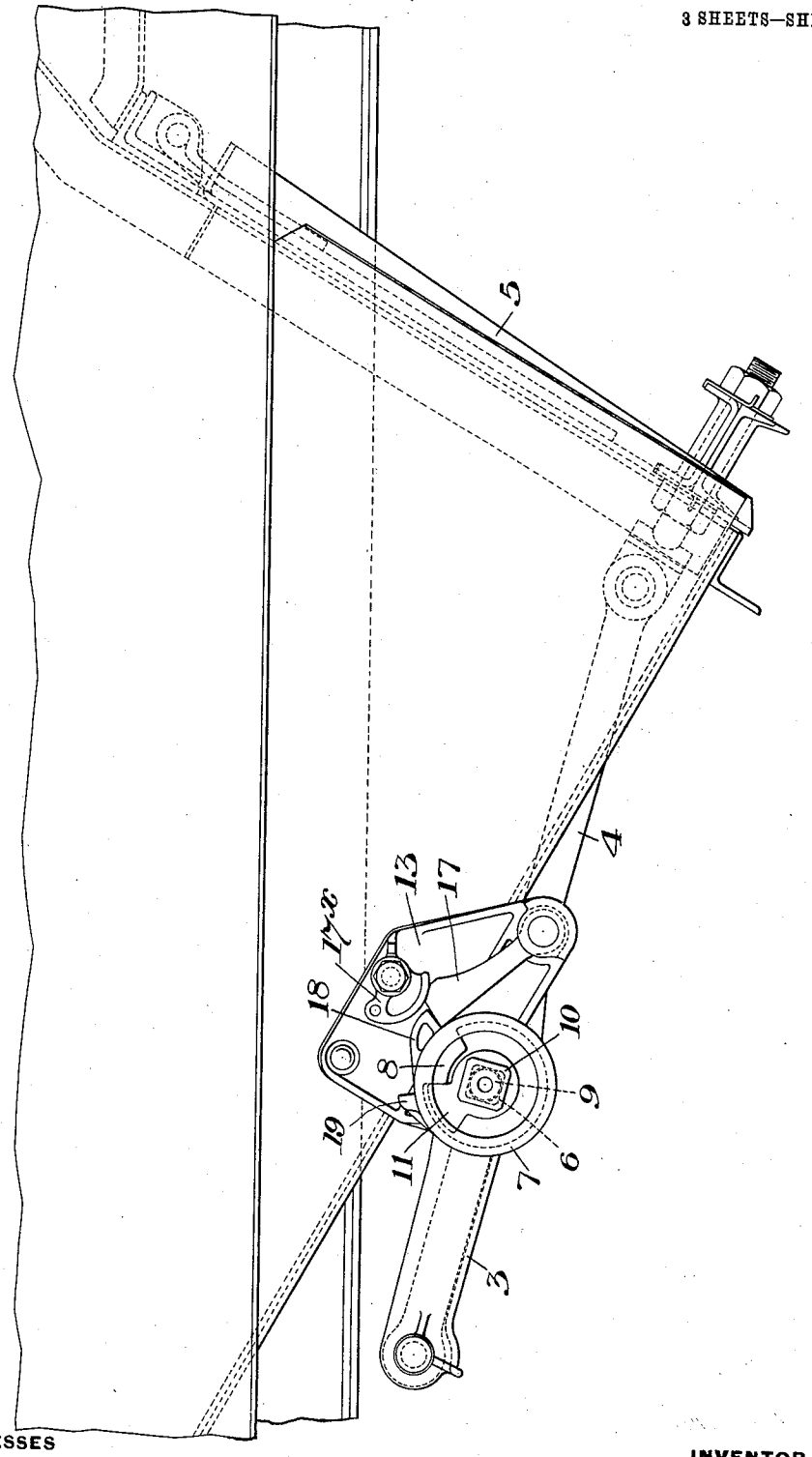
C. A. LINDSTRÖM.

SAFETY CLUTCH FOR CAR DOOR MECHANISMS.

APPLICATION FILED JUNE 15, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

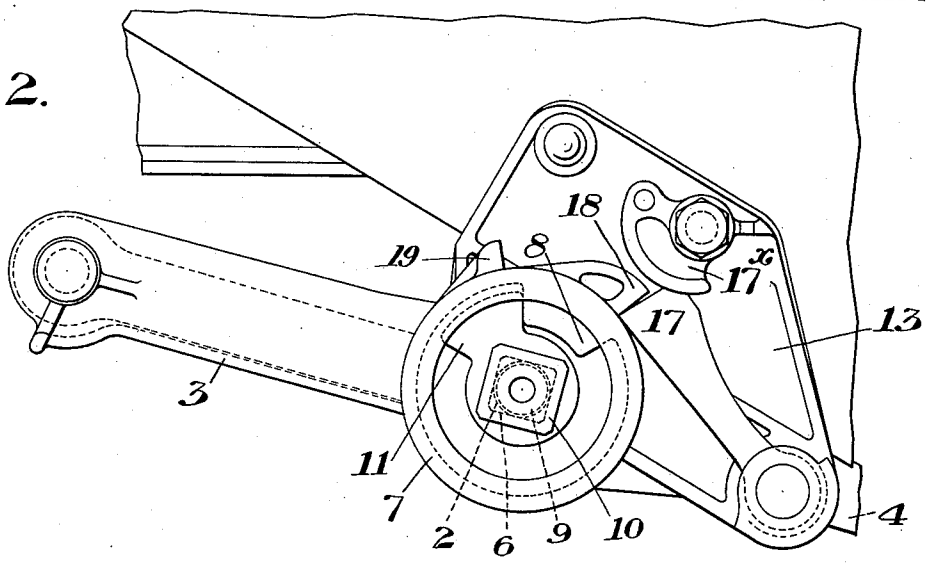


Fig. 3.

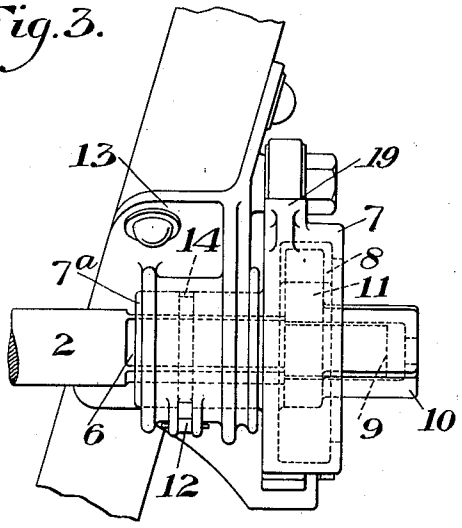


Fig. 4.

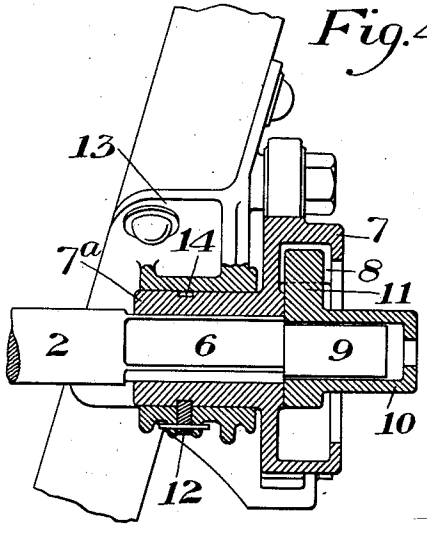
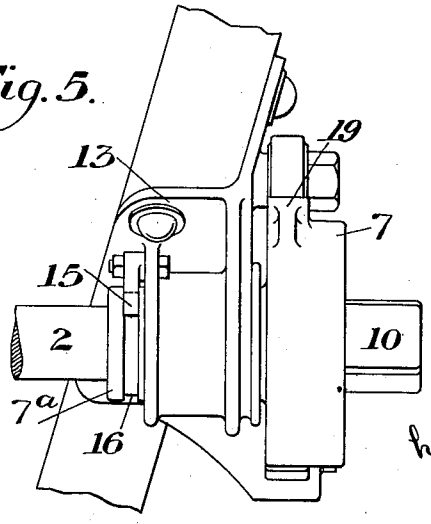


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

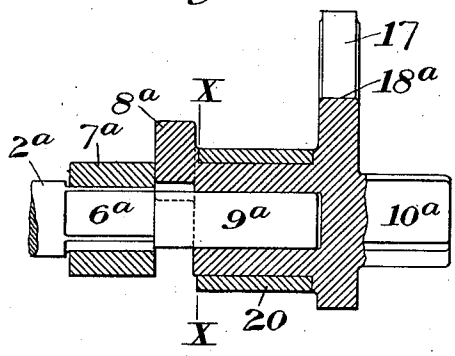


Fig. 7.

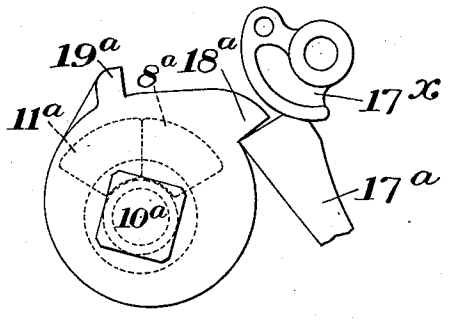


Fig. 9.

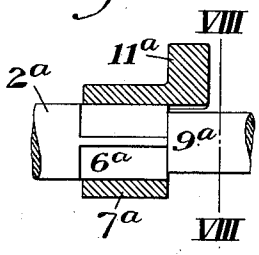


Fig. 8.

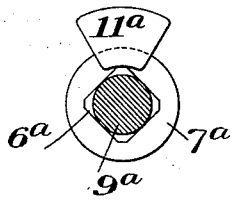


Fig. 10.

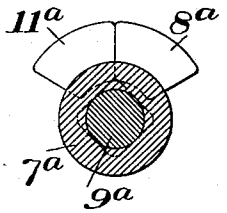


Fig. 13.

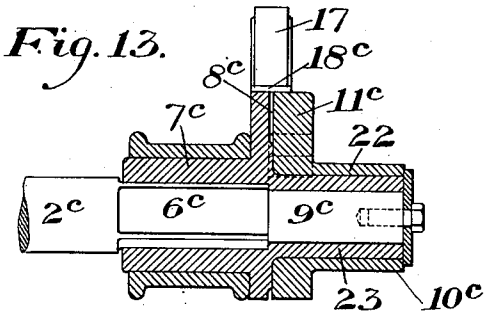


Fig. 14.

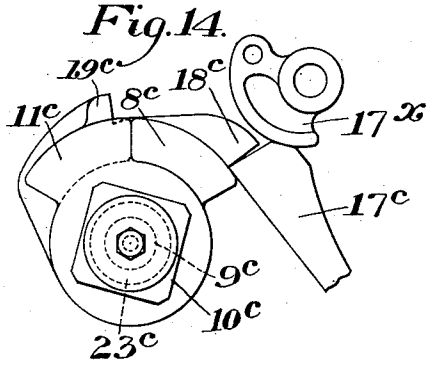


Fig. 11.

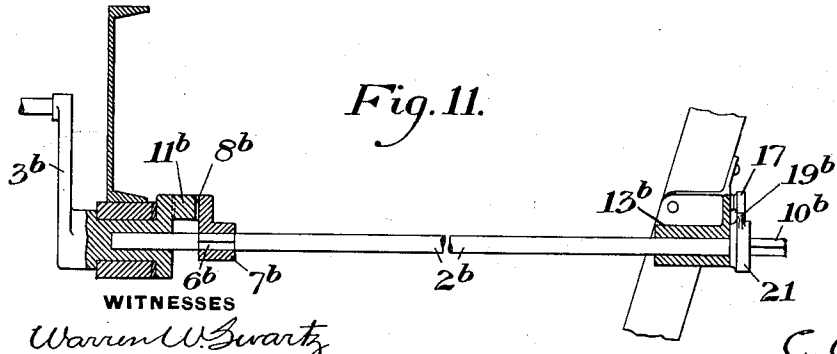
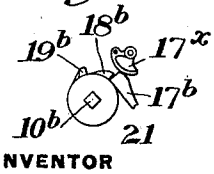


Fig. 12.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTRÖM, OF ALLEGHENY, PENNSYLVANIA.

SAFETY-CLUTCH FOR CAR-DOOR MECHANISMS.

No. 865,920. Specification of Letters Patent. Patented Sept. 10, 1907.

Application filed June 15, 1906. Serial No. 321,794.

To all whom it may concern:

Be it known that I, CHARLES A. LINDSTRÖM, of Allegheny, Allegheny county, Pennsylvania, have invented a new and useful Safety-Clutch for Car-Door Mechanisms, 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 side elevation of a portion of a hopper car showing my invention applied thereto; Fig. 2 is a side view on a larger scale showing part of the operating gear in connection with a device embodying my invention: Fig. 3 is an end view of the same; Fig. 4 is a sectional view of Fig. 3; Fig. 5 is a view similar to Fig. 3 but showing a minor modification; Figs. 6 to 10 are detail views showing modifications of the device as a whole; Figs. 11 and 12 show further modifications in the device as a whole; and Figs. 13 and 14 show minor modifications in my preferred construction.

My invention has relation to a safety device or clutch for use in connection with freight car drop door operating mechanism. Heretofore the door operating gears have usually been held in their closed position and been operated by shafts with ratchets or other devices all connecting together as a single unit, to release which device the operator placed a wrench on the square at the end of the shaft. As soon as the dog and the pawl or other locking device is released, the weight of the load on the doors acting back through the door-operating mechanism often causes the wrench to be thrown from the operator's hands before he has a chance to remove it from the square. This throw is often very violent, causing injury to the operator by striking him or by knocking him over the trestle or other supports upon which the car stands, and upon which he must stand in order to operate the doors.

The object of my invention is to provide an improved safety clutch connection between the door-operating shaft and the part to which the wrench is applied by the operator, such connection being so arranged as will permit the shaft to be released to open the doors, after which the shaft is free to move without effect upon the wrench, thereby obviating all danger of injury by reason of the wrench being thrown in the manner above described.

My invention is applicable to various forms of drop-door operating mechanism. In the accompanying drawing I have shown it applied in several different ways and its application in other forms will be apparent to those skilled in the art. In these drawings the numeral 2 designates the door-operating shaft connected in any suitable manner to the crank arm 3, having an operating rod connection 4 with the door 5. The shaft 2 has a squared or angular portion 6, upon which is a clutch 7 rotating with the shaft. In the form shown in my preferred constructions Figs. 1 to 5, this clutch has a sleeve portion 7^a, which is fitted over the squared portion of the shaft and a casing portion having an interior segmental lug 8. The end portion 9 of the shaft 2 is cylindrical, and has loosely seated thereon a clutch member composed of a wrench-seating portion 10, and a projecting arm or lug 11, the latter being within the casing portion of the clutch member 7 and arranged to coact with its lug 8 in the manner to be described.

The loose clutch member is prevented from falling out of the casing by the rim 7^b and the clutch member 7 is prevented from endwise movement in any suitable manner as by means of a key 12, seated in the bracket 13 and engaging the circumferential groove 14 in the exterior surface of the sleeve portion 7^a, as shown in Fig. 4, or by means of a pivoted latch 15 engaging a groove 16 in the projecting end portion of said sleeve, as shown in Fig. 5, or in any other suitable manner.

17 is the usual form of safety pawl, arranged to engage a lug or tooth 18 on the clutch member 7 to insure the locking of the door in closed position. This locking is, however, mainly effected by the crank 3 coming to and below the center line of the shaft 2 when the door is closed, as shown in Figs. 1 and 2.

17× is the usual safety dog which prevents the pawl 17 from working out of the tooth 18 when in the closed position. One or more additional teeth 19 may be used to assist in closing the door, and said teeth will permit the operator to change the position of the wrench on the square if desired.

To open the door, the parts being in the position shown in Figs. 1, 2, 6, 7 and 11, the dog 17× is knocked out. If then the pawl 17 cannot be lifted out of engagement with the tooth 18 by the hand by reason of the load resting on the pawl, due to crank arm 3 not having been placed over the center when the door was closed, the operator engages his wrench with the wrench-seating portion 10 and turns backwards, engaging the lug 8 with the opposite side of the lug 11 and continues to turn until the crank arm 3 is passed over the center, when, all load will be taken off of pawl 17 and it may be disengaged without the door opening up. The operator now turns to wrench-seating portion in the opposite direction until the lug 11 engages with the opposite side of lug 8 and continues to turn sufficiently to raise the crank arm 3 over the center line of the shaft 2. The load acting on the door now opens the latter and causes a partial revolution of the crank arm 3 and the shaft 2 without turning the wrench-seating portion 10, upon which the operator's wrench is seated, by reason of the engaging lug 8 moving away from the lug 11 without moving the clutch member. It will be apparent that no matter how quickly the load may act upon the door after it has been released, there will be no danger to the operator and he can remove his wrench at leisure.

In the modified construction as shown in Figs. 6, 7, 8, 9 and 10, the loose clutch member 20 is journaled in the bracket 13^a and the cylindrical portion 9^a of the

shaft 2^a is journaled in the said member; the lug 11^a is on the inside of the bracket 13^a and the wrench-seating portion 10^a and the teeth 18^a and 19^a are on the outside. The squared portion 6^a of the shaft 2^a with the clutch 7^a and its lug 8^a are also inside of bracket 13^a in a position suitable for engagement between the lugs 8^a and 11^a. The parts in these figures which correspond to similarly operating parts in the first described construction are given similar reference numerals, as will be seen, with the addition of the exponent *a*.

In the modification, Figs. 11 and 12, the shaft 2^b with the squared portion 6^b for the clutch member 7^b with the lug 8^b and the wrench-seating portion 10^b, as well as the portion 21 fixed to said shaft and containing the teeth 18^b and 19^b, form the loose member of the clutch; the lug 11^b being part of the crank arm 3^b in which the inner end of shaft 2^b is journaled.

In the modification, Figs. 13 and 14, the loose part 22 of the clutch containing wrench-seating portion 10^c and lug 11^c, is journaled on an extension 23 of the clutch 7^c, which carries the lug 8^c and the teeth 18^c and 19^c for the pawl 17^c.

Such modifications of my invention as are herein illustrated and described, but not specifically claimed, form the subject matter of divisional applications Serial Nos. 351,819 and 351,820, filed January 11th, 1907.

It will be obvious that my invention is susceptible to various modifications and hence I do not wish to limit myself to the particular form of device which I have shown and described.

What I claim is:—

1. In a door operating mechanism, a door-operating shaft, a bracket, a clutch member fast to said shaft and rotatably seated in said bracket, and a coöperating loose clutch member loosely connected to said shaft; substantially as described.

2. In a door-operating mechanism, a door operating shaft having an angular portion, a bracket, a clutch member secured to the shaft, and rotatably seated in the bracket, means for preventing endwise movement of the clutch member, and a coöperating cluth member loosely mounted on the end portion of the shaft; substantially as described.

3. In a car door operating mechanism, a door-operating shaft, a bracket, a clutch-member fixed to said shaft within the bracket, and formed into a casing portion having an internal clutch lug, and a plurality of external pawl teeth, a pawl for engagement with the said teeth, and a coöperating clutch-member loosely mounted on the shaft and having a clutch arm working within the casing portion of the fixed clutch member; substantially as described.

4. In car door operating mechanism, a door-operating shaft, a bracket, and coöperating fast and loose clutch members, one of which is rotatable in the said bracket; substantially as described.

5. In car door operating mechanism, a door-operating shaft, a bracket, a clutch member loosely connected to the shaft and journaled in the bracket, and a coöperating clutch member fixed to the shaft; substantially as described.

In testimony whereof, I have hereunto set my hand.

CHARLES A. LINDSTRÖM.

Witnesses:
K. L. ROBINSON,
GEO. H. PARMELEE.