No. 826,873.

PATENTED JULY 24, 1906.

S. OTIS.

DUMP CAR.

APPLICATION FILED APR. 20, 1906.

Fig. 1.

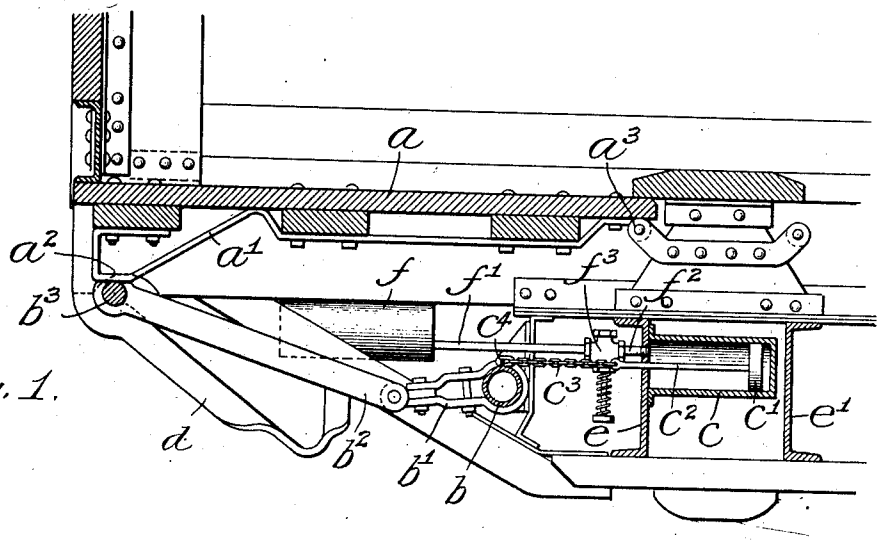

Fig. 2.

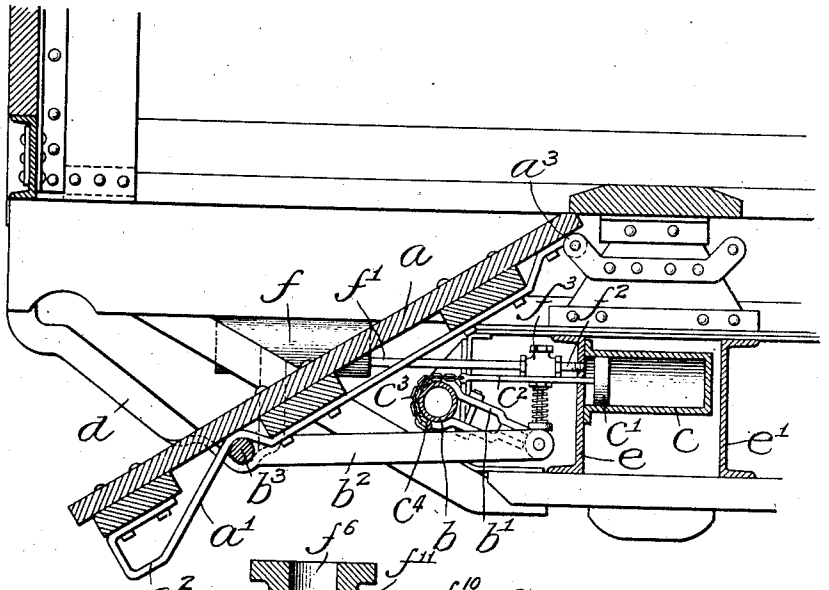

Fig. 3.

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DUMP-CAR.

No. 826,873. Specification of Letters Patent. Patented July 24, 1906.

Application filed April 20, 1906. Serial No. 312,817.

To all whom it may concern:

Be it known that I, SPENCER OTIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dump-Cars, of which the following is a specification.

My invention relates to dump-cars, and has for its object to provide an improved operating means for the dumping-doors whereby the doors are automatically closed after the load has been discharged from them.

In the accompanying drawings, Figure 1 is a transverse section of a portion of a dump-car, showing the dumping-door in closed position. Fig. 2 is a view similar to Fig. 1, showing the dumping-door open. Fig. 3 is a sectional detail showing the valve.

In the drawings, *a* represents a dumping-door hinged at a^3 to or near the center sill of the car.

b is a rotatable shaft extending longitudinally of the car suitably mounted in the car-frame. This shaft is connected by a crank-arm *b'* and a link or push arm b^2 to a transversely-moving bar b^3. The bar b^3 engages a track attached to the under side of the door, which track comprises an inclined portion *a'* and a horizontal portion a^2. When in closed position, the door engages the horizontal portion of the track a^2 to hold the door closed. As the bar is withdrawn from horizontal portion by the rotation of the operating-shaft it travels on the inclined portion, permitting the door to open by the weight of the load thereon. These parts are well known in the art and are described merely for the purpose of a clear understanding of my invention. It will be understood that any other convenient means for operating the door may be substituted for them.

It is desirable in cars of this type to provide some means whereby the door may be closed automatically after the discharge of its load. For this purpose I have shown a cylinder *c*, having a piston *c'* connected to the rotatable operating-shaft by a piston-rod c^2 and a flexible connection c^3. This cylinder may be conveniently mounted between the longitudinally-extending beams *e e'*, forming a part of the center sill.

f represents a reservoir for compressed air which may be supplied with compressed air from any suitable source. This reservoir is connected by pipes *f' f²*, between which is mounted a valve f^3, with the operating-cylinder *c*. It will be readily understood that when air is admitted to the operating-cylinder through the pipes from the reservoir the piston will be caused to travel in the cylinder, thereby rotating the operating-shaft and causing the door to close.

In order that the air may be admitted to the cylinder automatically at the proper time, I provide the valve f^3. (Shown in detail in Fig. 3.) This valve has passage-ways f^4 f^5, connecting the pipes *f' f²*. Between these passage-ways is interposed a valve f^{10}, normally seated so as to close communication between the pipes *f' f²*. This valve is held to its seat by a spring f^8, surrounding the valve-stem f^7 and interposed between the head f^9 on the end of the valve-stem and the valve-casing. A passage-way f^6 provides communication between the pipe f^2 and the atmosphere when the parts are in normal position. The valve f^3 is so arranged that the head f^9 on the valve-stem is contacted by the end of the crank-arm f^2 or the adjacent end of the push-bar b^2 when the door reaches its lowermost point in opening. The valve will thus be raised from its seat and caused to rest in an upper seat f^{11}, opening communication between the pipes *f' f²* and closing communication between the pipe f^2 and the atmosphere. The valve will be held in its upper position by the pressure of the air coming from the reservoir *f*, and the tension of the spring f^8 should be so adjusted that when the pressure in the cylinders is equalized the tension of the spring will be sufficient to pull the valve away from its upper seat to its lower seat, thus closing communication between the pipes *f' f²*. By this operation of the valve, as will be readily understood, compressed air will be admitted from the reservoir *f* to the cylinder *c* when the door reaches its lowermost position. This will cause the piston *c'* to move inwardly, thus rotating the shaft and closing the door.

It will be understood that I have provided a dump-car with a door-operating mechanism which comprises an automatically-operated closing device which is tripped, and thus started in operation by the opening movement of the door. The door is closed, therefore, automatically without further attention on the part of the operator. It will be understood, of course, that the car may be provided with the usual hand-operating devices attached to the end of the operating-shaft, though I have not illustrated such de-

vices, as they are commonly known and well understood in this art. These hand-operating devices may be used if for any reason the automatic devices should fail to work.

I claim—

1. A dump-car having a bottom provided with a dumping-door, automatic means for closing the door, and means operated by the opening movement of the door for tripping the door-closing means.

2. A dump-car having a bottom provided with a dumping-door, means for opening the door, automatic means for closing the door, and means operated by the opening movement of the door for tripping the door-closing means.

3. A dump-car having a bottom comprising a dumping-door, a rotatable shaft mounted on the car-frame, connections between the shaft and the door whereby the door is operated by the shaft, a cylinder having a piston flexibly connected to the shaft, and means operated by the door for admitting air under pressure to the cylinder for closing the door.

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