

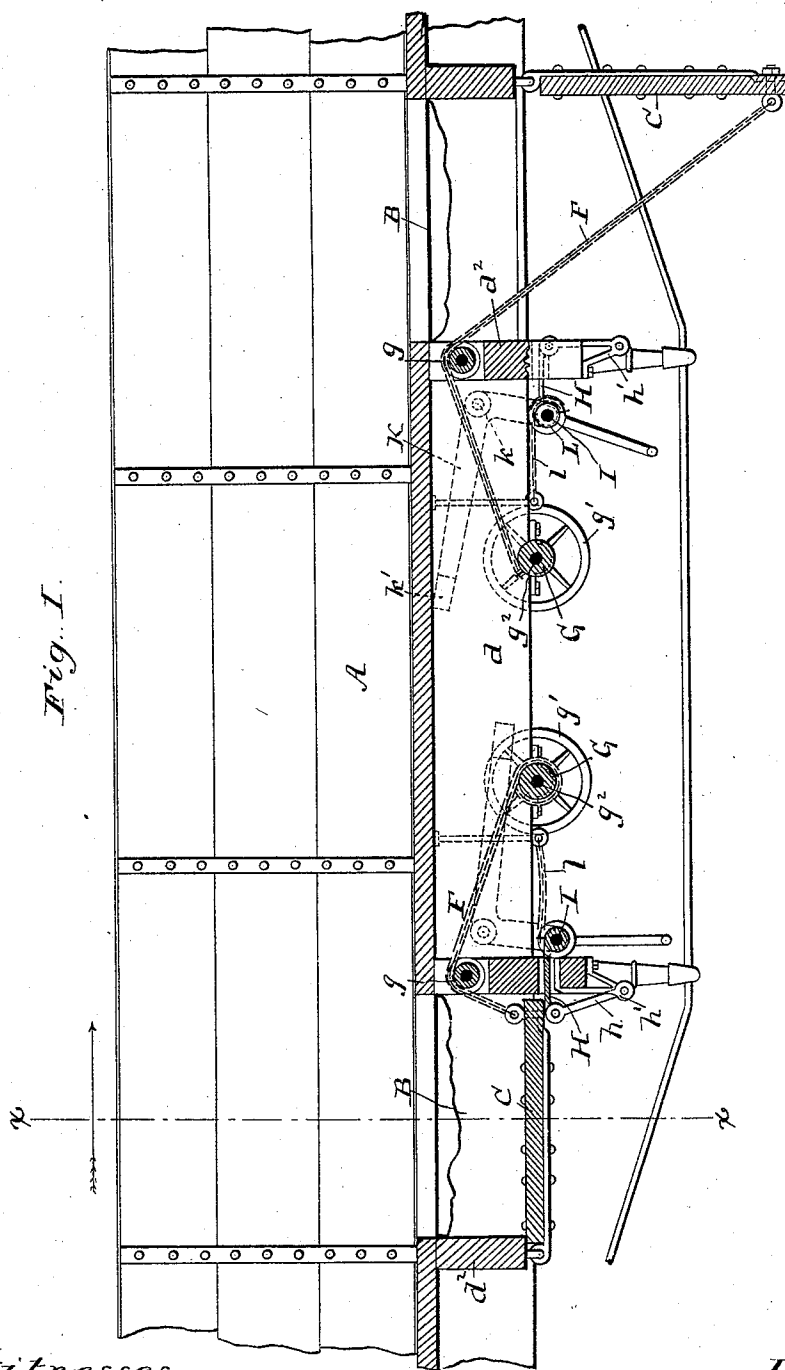
(No Model.)

3 Sheets—Sheet 1.

J. E. SIMONS.  
FREIGHT CAR.

No. 534,584.

Patented Feb. 19, 1895.



Witnesses.

W. R. Edlin.

Oliver H. Bailey.

Inventor

James E. Simons  
By S. W. Ladd,  
his attorney.

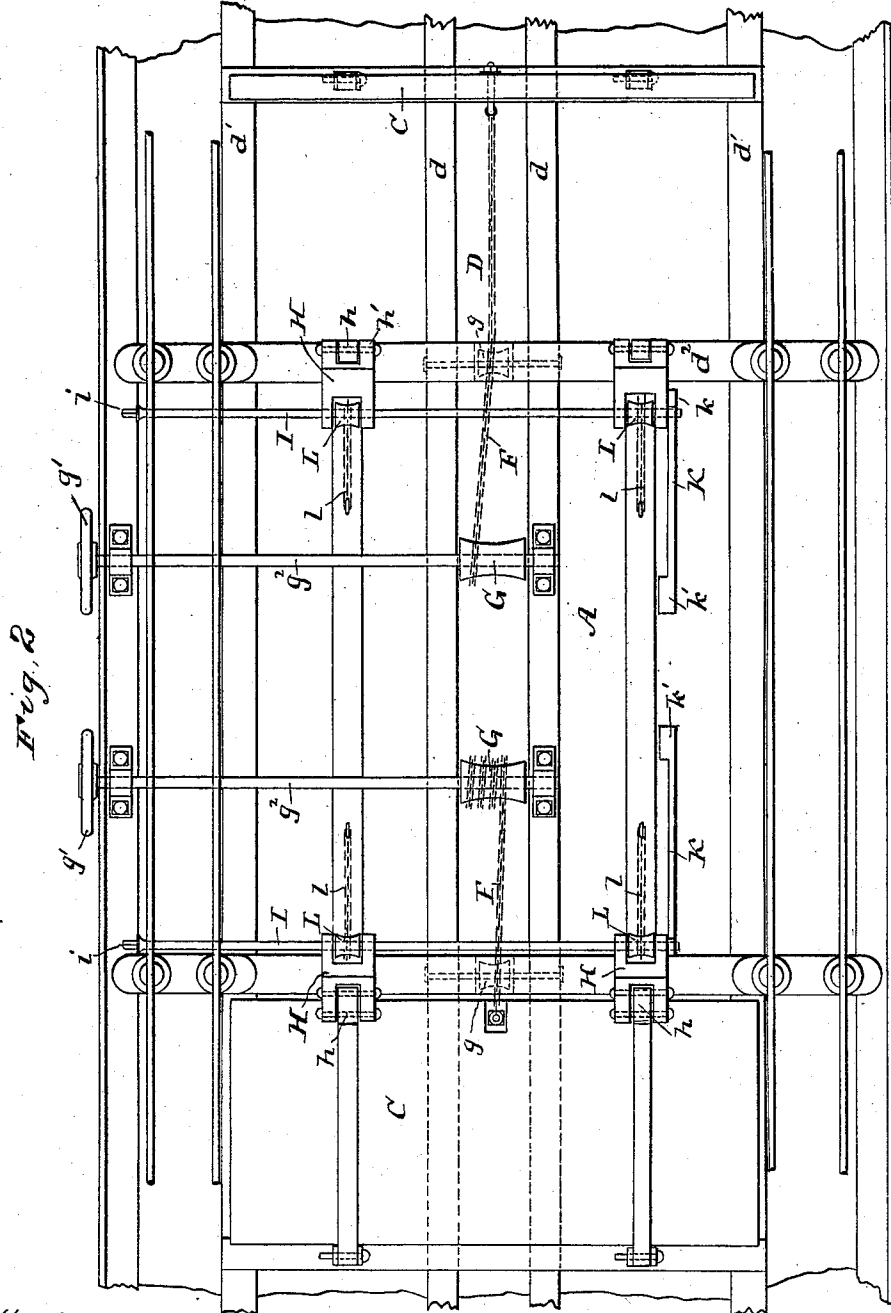
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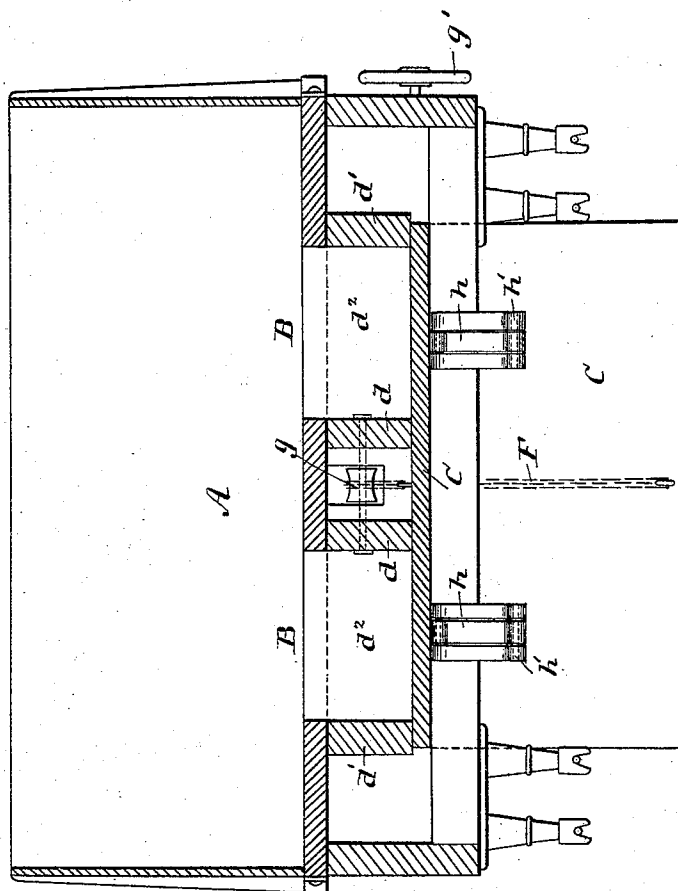
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Fig. 3.



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# UNITED STATES PATENT OFFICE.

JAMES E. SIMONS, OF MCKEE'S ROCKS, PENNSYLVANIA.

## FREIGHT-CAR.

SPECIFICATION forming part of Letters Patent No. 534,584, dated February 19, 1895.

Application filed August 13, 1894. Serial No. 520,222. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES E. SIMONS, a citizen of the United States, residing at McKee's Rocks, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Freight-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The present invention relates particularly to any class of freight or dump cars which are or can be provided with drop doors in the floor for discharging their load, and the object of the present invention is to provide a construction which will admit of the doors being secured and locked and held against accidental unfastening, and which will not admit of them being left partly open thereby permitting the contents of the car to sift out through a crack.

A further object in view is to provide a construction which shall bring every part of the device beneath the car floor whereby repairs can be made if necessary without disturbing the load. Further the construction admits of the discharge doors being located at any point of the car. For example by moving the doors nearer to the ends of the car than is ordinarily the case the unloading of the car is facilitated and the mutilation of the floor very much diminished.

With these ends in view the invention consists of a car door having a lifting chain and hand wheel for operating the same placed beneath the car, together with a latch or locking bolt or plate having an inclined face which admits of its automatic retraction when the door is raised or swung into a closed position, said latch or lock plate carrying a shaft with chain connecting the same to the car frame and also a weighted lever by means of which the latch may be retracted when it is desired to unlock the door, and at all other times the latch is securely held in its projected position for holding the door.

In the present case I illustrate the invention as applied to drop doors arranged beneath

a freight car, but it will be seen that the device may be employed for locking any doors to freight cars and it is not limited in its application to the specific arrangement herein-after shown.

In the accompanying drawings:—Figure 1 is a longitudinal sectional view of so much of a freight car as is necessary to illustrate the invention. Fig. 2 is an inverted view of the bottom of a freight car showing the doors and the operating devices therefor. Fig. 3 is a sectional view taken on the line  $x-x$  of Fig. 1.

The car A is provided with the discharge openings B B in its floor, there preferably being a pair of these near each end of the car, each pair being closed by a single door C. It will be observed that there is formed between each pair of discharge chutes a channel, D, between the car timbers  $d$ , and the lifting chain F for each door passes from its drum G over the sheave or pulley  $g$  down to the door C. The discharge chutes from the level of the car floor down to the level of the doors C, are closed in by the floor girders  $d$ , before referred to, and the girders  $d'$ , together with the cross timbers  $d''$ , and the lifting chain F which comes within the channel between a pair of chutes is thus entirely removed from contact with the load. The doors C are preferably hinged at their edges nearest to the ends of the car, and transverse to the car, and swing up toward the middle of the car so that the operating devices can all be located beneath the car.

The drum G, before referred to, is carried by a shaft  $g^2$  which extends out to the side of the car and is provided with a hand wheel  $g'$  for operating the same.

H H are sliding latch plates, there being a pair of them for each door, placed respectively in line with the center of each discharge chute. Each plate has a broad faced link  $h$  hinged at its upper end to the front of the latch plate H and at its bottom end to a bracket  $h'$  carried by the car frame. When the latch is in its projected position this link  $h$  presents an inclined face against which the door strikes when it is being raised and forces the latch back until the door passes it.

Journalled in the rear ends of the pair of latch plates H of the door there is a rod I, which at one end extends out to the side of

the car and has a square head *i* which admits of a crank being applied thereto for turning the rod or shaft. At the opposite end this rod or shaft engages with the short arm of a bell crank lever K, which lever is fulcrumed to the car frame at *k* and the long arm of the bell crank lever is weighted as at *k'*. The shaft I is provided with small winding drums L from which chains *l* extend back and are fastened at their rear ends to the car frame.

The operation of the device is as follows: Assuming that a door is opened and it is desired to close it, the hand wheel *g'* is turned thereby causing the chain F to wind up on the drum G and raise the door. In rising, the door strikes the inclined face of the link *h* and pushes back the locking plates H H until the door passes them. When this occurs the weighted lever K, operating through the shaft I, causes the latch plate to be projected out beneath the door thereby locking it in its closed position. It is thus securely held closed until the locking plates are designedly withdrawn. It will be observed that no strain comes on the chain F when a door is closed and the door cannot by accident partially open, and further that it is not supported unless it is entirely closed. Hence it cannot be left partially closed so that material can sift out and be lost. When it is desired to discharge the load a crank handle is applied to the end of the shaft I and by turning the same the chains *l* are wound upon their drums L. This causes the shaft I to be drawn back toward the fastened ends of the chains *l* thereby drawing the locking plates H back into their slots until the door is released and drops by gravity. The rearward movement of the shaft I raises the weighted end of the bell crank lever K so that as soon as the hold on the hand crank operating the shaft I is released the weight *k'* falls and throws the shaft I and the locking plates forward unwinding the chains *l* from their drums.

What I claim as new is—

1. A freight car having a hinged door and a reciprocating latch therefor in combination with a crank shaft carried by the latch, said crank shaft having a chain connected with

the car frame, together with a weighted lever adapted to be raised by the withdrawal of the latch, as and for the purpose set forth.

2. A freight car having a hinged door and a reciprocating latch therefor, with means for automatically projecting the latch plate, in combination with an inclined link plate hinged to the forward end of the latch plate and to the car frame and adapted to form an inclined face against which the door strikes when the same is being shut, as and for the purpose set forth.

3. A freight car having a hinged door in its floor with a hand wheel shaft and chain for raising the same, in combination with a horizontally sliding latch plate having an inclined link connected to its forward end and to the car frame, and a shaft carried by the rear end of the latch, the chain connecting said latch shaft to the car frame, and the weighted lever connected to the latch shaft and adapted to return the same and the latch plate to their normal positions, as and for the purpose set forth.

4. A freight car having a pair of discharge chutes in its floor, with a single hinged door for the same, in combination with a lifting chain placed in the channel between the chutes, a sheave for the chain, and a hand wheel shaft, all beneath the car, as and for the purpose set forth.

5. A freight car having a pair of discharge chutes in its floor, with a single hinged door for the same, in combination with a lifting chain placed in the channel between the chutes, a sheave for the chain, and a hand wheel shaft, together with a pair of latch plates carrying a crank shaft, chains connecting said latch shaft to the car frame, and weight connected to the latch shaft and raised by the winding or turning of the same, all beneath the car and adapted to operate as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAS. E. SIMONS.

Witnesses:

H. L. FISHER,  
W. G. HALL.