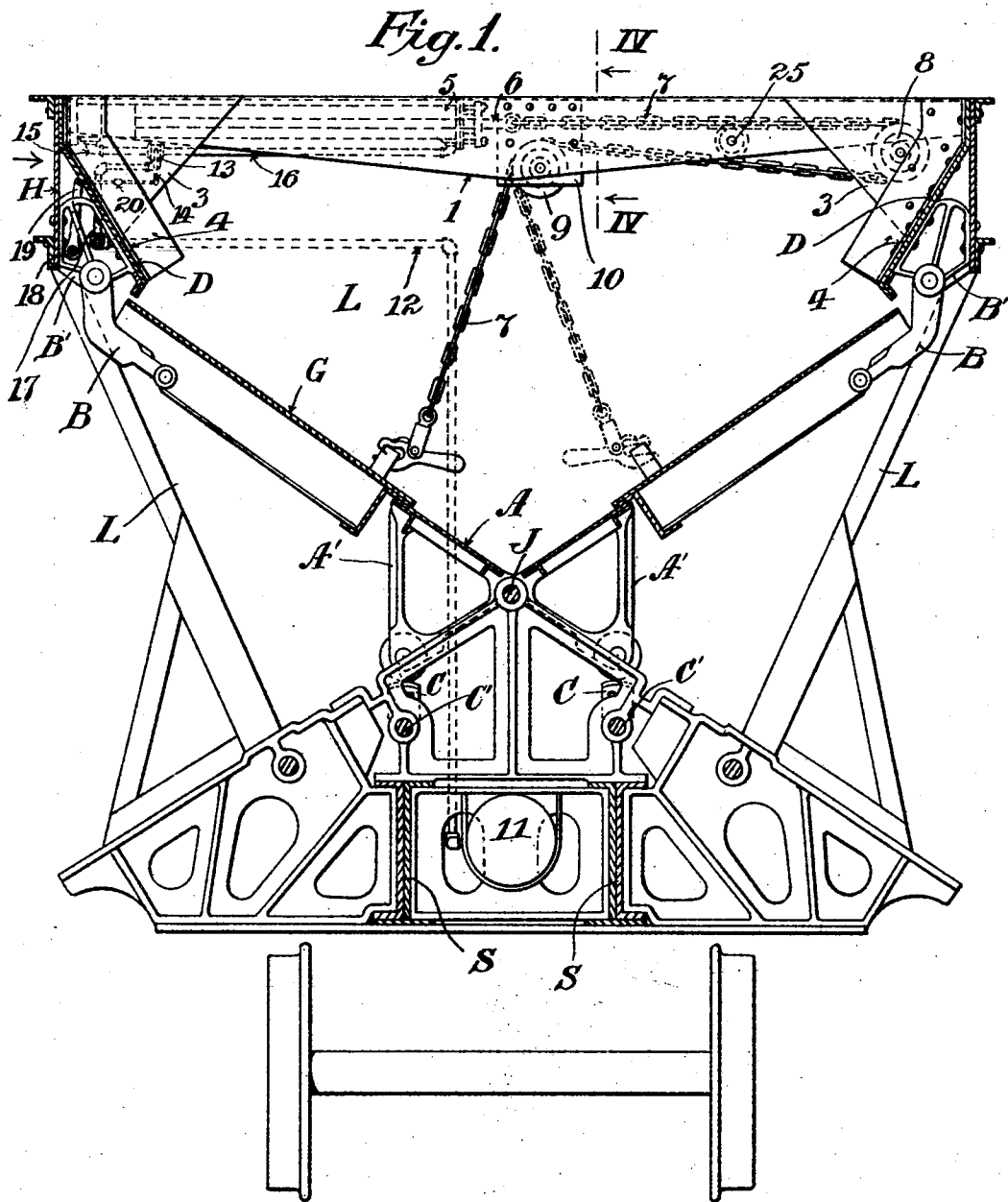


E. W. GOODWIN.
VALVE REPLACING APPARATUS.
APPLICATION FILED AUG. 10, 1907.

941,873.

Patented Nov. 30, 1909.
3 SHEETS—SHEET 1.



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by *Arthur Jones* attys.

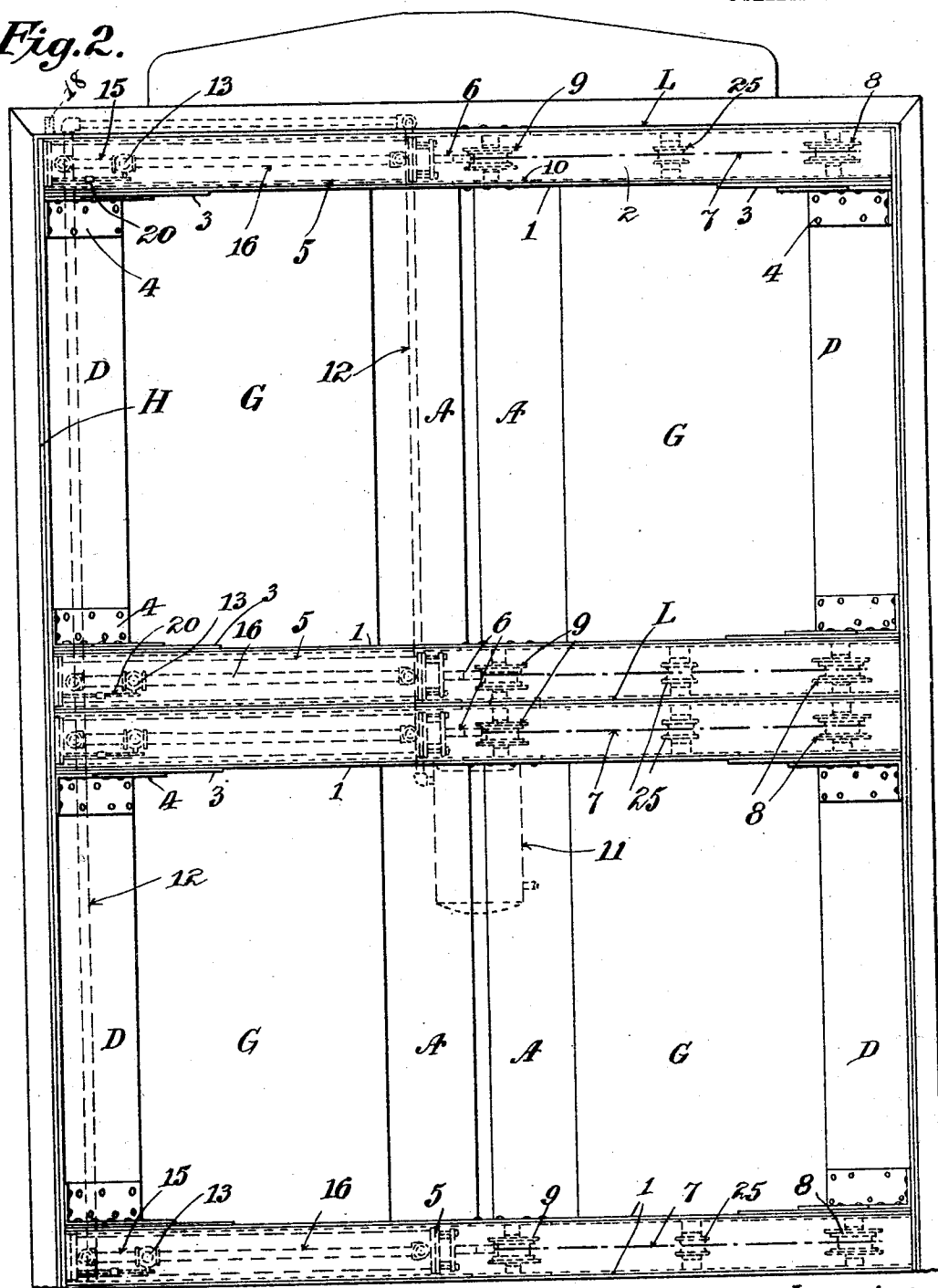
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

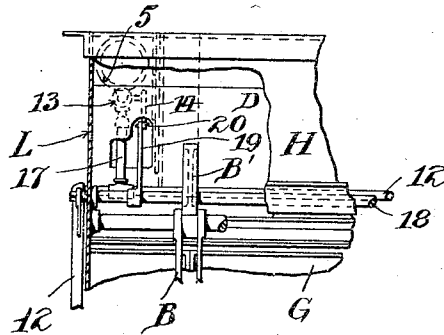
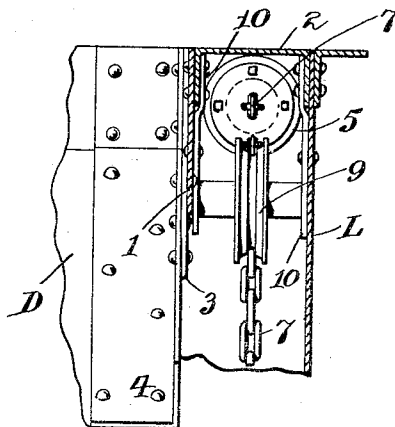


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD W. GOODWIN, OF BENSONHURST, NEW YORK, ASSIGNOR TO GOODWIN CAR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF ILLINOIS.

VALVE-REPLACING APPARATUS.

941,873.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed August 10, 1907. Serial No. 387,979.

To all whom it may concern:

Be it known that I, EDWARD W. GOODWIN, a resident of Bensonhurst, in the borough of Brooklyn, city and State of New York, and whose post-office address is No. 17 Battery Place, borough of Manhattan, New York city, State of New York, have invented certain new and useful Improvements in Valve-Replacing Apparatus, of which the following, taken in conjunction with the accompanying drawings, is a full, clear, and concise specification.

My invention relates to valve-replacing apparatus for railway dumping cars, and more particularly for dumping cars of the well-known Goodwin type.

The invention consists in the combination with such and similar cars, of valve-replacing cylinders having pistons adapted for connection with the dumping valves thereof, and in the relative arrangement and combination of the several parts and accessories as will be hereinafter fully described and more particularly pointed out in the accompanying claims.

In the drawings which form a part hereof, Figure 1 is a vertical transverse section of a Goodwin car employing my invention, certain unessential and usual parts of the car construction being omitted for clearness; Fig. 2 is a top plan view of the car of Fig. 1; Fig. 3 is a side elevation of one corner of the car of Figs. 1 and 2, with the end of the side girder broken away to expose the hinge block and the cylinder operating connections; Fig. 4 is a cross-section through the housing taken on line IV, IV of Fig. 1 and in the direction of the arrows.

Referring first to the general construction of the car illustrated in the above figures, the cargo-receptacle is formed by the end and cross bulkheads by retaining walls L, L, by the inclined side-walls or floors D D, by the gravity dumping valves G and by the center detent valves A. The outermost of these valves are double hinged, by means of pivoted hinge-links B, to the hinge-blocks B' which latter are securely fastened in the angle between the inclined side-floors D and the vertical side-girders H. The detent valves A hinge on the central shaft J, and when closed, support the free inboard ends of the valves G as shown in the drawing. They are in turn supported in this position by strut brackets A' A' which rest upon the

detents C C of the rock-shafts C' C', in such manner that by appropriately rocking either or both of the said shafts, all the valves may be released and the cargo discharged. The weight of the cargo receptacle is carried by the two center sills S S, through the bulkheads and bolsters in the usual manner.

The apparatus for replacing the valves when they have been opened as above described, comprises one or more cylinders and pistons each confined within a chamber or housing which is formed as a structural part of the cargo receptacle. The controlling or operating means for the apparatus are confined within the angular space between the inclined side-floors and the girders, outside of the receptacle and in a position in which they may be manipulated from either end of the car. In the form of my invention herein illustrated, the housing is formed by a cross-member 1, spanning the cargo receptacle adjacent and parallel to one of the bulkheads and joined to that bulkhead by means of a channel-beam 2, which is riveted, by each of its down-turned flanges, respectively to the tops of the bulkhead and cross-member, thus forming a roof for the housing as shown in Fig. 4. The bottom of the housing is open in order to allow access to the cylinder and piston, as well as to provide an exit for the valve chain. At one end the housing is in open communication, with the exterior angular space referred to, through an opening or past the end of the side-floor D. This opening is shown in Fig. 3 as consisting of a hole cut or punched near the end of the side-floor D, and occupied by the pipe 17 and link 20.

The ends of cross-member 1 are rigidly joined to the side-floors D and side-girders H by means of the flat angle-plates 3 which are securely riveted to the cross-member and fastened to the side-girder H and also to inclined side-walls D, by means of the bent angle-bars 4, the said angle-plate 3 being of greater depth than the cross-member, and of triangular shape as shown, so that it forms a substantial bracket support for the ends of the same and likewise serves as a guard-plate to obstruct escape of cargo through the above mentioned opening which, as stated, leads from the inside the cargo receptacle to the outside thereof.

The cylinder 5 is securely fastened within

the housing adjacent the opening and its piston 6 is connected with a flexible member or chain 7 which is trained first over the sheave 8 at the opposite end of the housing and then over the central sheave 9, the end of the chain hanging over the sheave being supplied with a hook or equivalent means adapted for attaching it to one of the other of the valves, *i. e.*, the valve on either side of the center detent valves A. The sheaves above mentioned are journaled upon arbors carried by the sides of the housing, and the central sheave has its arbor specially supported by means of two vertical interior straps 10 which may project somewhat below the cross-member, being securely riveted at their tops to the channel-beam 2, the securing rivets extending also through the cross-member 1 and end bulkhead, respectively. As thus arranged the piston-rod of the cylinder may have a stroke equivalent to the distance through which the valves have to be moved in order to be closed, and may at the same time be confined to the space afforded by the wall of the cargo receptacle. A supporting roller 25 is also used between the two sheaves for preventing the upper stretch of chain from interfering with the lower stretch. The cylinder is supplied with compressed air or other fluid pressure from the reservoir 11, located between the center sills S S, through the supply pipe 12 and a three-way cock 13, the latter being of ordinary construction and provided with the usual lever or handle 14 by means of which air may be admitted behind the piston, through branch pipe 15, or in front of the piston through branch pipe 16, to thereby project or retract the piston-rod. The reservoir 11 is supplied with compressed air from the air-brake train-line, not shown, in any convenient manner.

In the form of my invention which I have illustrated in the present drawings, there is one cylinder, as above described, for each end of the valve to be closed, the housings for each cylinder being substantially identical, and the supply pipe 12 extends longitudinally into the angular space beneath and along the inclined side-floor D and supplies compressed air to each of the said cylinders or to as many of them as may be installed upon the car, the connections being taken off by means of branch-pipes such as shown at 17 (Fig. 3). The part of the pipe 12 which is confined within the angular space is supported in openings in the webs of the hinge-blocks B' above referred to.

The desired operation of the several pistons is accomplished by a longitudinal rock-shaft 18, likewise journaled within or upon the hinge-blocks B', and provided with crank-arms 19 which are connected by the links 20 with the levers 14 of the three-way cocks. The end of the shaft is accessible at

the end of the car as shown in Fig. 2, so that the operator may manipulate all of the cocks simultaneously from the car platform and produce simultaneous operation of both or all of the cylinders, this being an important feature of my invention. Thus, by turning the shaft 19 in one direction, compressed air may be admitted through cock 13 and pipe 15, to force the piston outwardly so that the valve chain may be hooked to the open valve. Turning the rock-shaft 19 in the opposite direction admits compressed air through pipe 16 and draws the piston back, which replaces or closes the side dumping valve G in obvious manner. The arrangement of the replacing apparatus within the housing as shown, and at the upper margin of the cargo receptacle, adapts it for occupying the least possible space, and the arrangement of the housing with its deflecting and supporting angle-plates 3 permits the operation to be carried on from the exterior and at the same time prevents leakage of the cargo. The chains also hang directly from their pistons within the car and can be inspected and greased without difficulty, and various other advantages are secured which will be manifest to those skilled in the art.

Having described my invention, what I claim and desire to secure by United States Letters Patent is:

1. The combination in a dumping car having a cargo receptacle provided with gravity dumping valves, of a valve replacing means comprising a cylinder and piston mounted upon a retaining wall of the cargo receptacle, a chain connected to said piston adapted for attachment to a valve, a cross member spanning said cargo receptacle and a sheave for said chain supported at the center of said cross-member.

2. In a dumping car having a cargo receptacle provided with dumping valves, the combination of a plate member secured adjacent to one of the walls of the cargo receptacle and forming a housing therewith, a cylinder and piston within said housing, a sheave centrally supported above said dumping valves and a chain on said sheave operated by said cylinder and piston and adapted for attachment to the said dumping valves.

3. In a dumping car having a cargo receptacle and dumping valves, the combination with one of the bulkheads of said receptacle, of a cross-brace parallel thereto, a cylinder and piston confined between said parts, and a flexible member connected with said piston adapted for attachment to a dumping valve for replacing the same in closed position.

4. In a dumping car having a cargo receptacle and dumping valves therefor, the combination with one of the bulkheads, of a cross-member forming therewith a trans-

verse housing, a cylinder and piston secured at one end of said housing, a sheave at the other end thereof, a central sheave and a flexible member connected to said piston, trained over said sheaves and adapted for attachment to a dumping valve.

5. In a dumping car having inclined side floors and dumping valves, the combination with one or more valve-replacing cylinders and pistons therefor provided with means for connection to said valves, means for supplying fluid pressure to said cylinders and a controlling shaft for such pressure supply located beneath said inclined side floors and having operating means at the end of the car.

6. In a dumping car having side girders and inclined side floors inboard thereof, the combination of a valve-replacing cylinder and piston, a fluid pressure supply pipe therefor, with the valve hinge-blocks secured between said girders and floors and a shaft controlling the supply of pressure to the cylinders journaled upon said hinge-blocks.

7. In a dumping car having a cargo receptacle and bottom dumping valves, a valve-replacing cylinder and piston above said valves, a housing therefor within said cargo receptacle having communication with the exterior thereof, in combination with an operating shaft for said cylinders on the exterior of the receptacle and adapted to control the operation of the cylinder through said communication.

8. In a dumping car having side walls or floors constituting a part of the cargo receptacle, the combination with a housing opening through one of said side walls, of a valve-replacing cylinder and piston within said housing, a supply pipe for said cylinder having a cock within said housing, a shaft located exterior of said side floors and connecting means from said shaft to said cock.

9. In a dumping car having cross bulkheads and inclined side-walls or floors constituting parts of the cargo receptacle, the combination with a cross-member forming a housing with one of said bulkheads, a cylinder and piston therein, the said housing having open communication with the exterior of the receptacle through the side wall, of a cock for said cylinder, a longitudinal exterior shaft for operating the same and connecting means between said shaft and cock occupying the said opening.

10. In a dumping car having side and end walls the combination with members forming a housing having open communication at one end with the outside of the car wall, a valve replacing cylinder and piston within the housing, and exterior operating means therefor having an operative connection therewith through said open communication.

11. In a dumping car, a valve-replacing cylinder and piston, an open bottom housing therefor comprising a cross-member, supporting angle plates secured to the ends of said member and to the side walls of the car and extending below said member for obstructing entrance of cargo into said housing.

12. In a dumping car having dumping valves, a plurality of cylinders and pistons and attachments thereto adapted for closing said valves, in combination with a longitudinal shaft operatable from the end of the car for simultaneously controlling the operation of said cylinders and pistons.

In testimony whereof, I have signed my name to the specification in the presence of two subscribing witnesses.

EDWARD W. GOODWIN.

Witnesses:

JOHN M. GOODWIN,
CLARENCE JOHNSON.