

J. M. WILCOX.
PNEUMATIC CUT-OFF FOR DUMP CARS.
APPLICATION FILED JAN. 25, 1910.

1,029,247.

Patented June 11, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

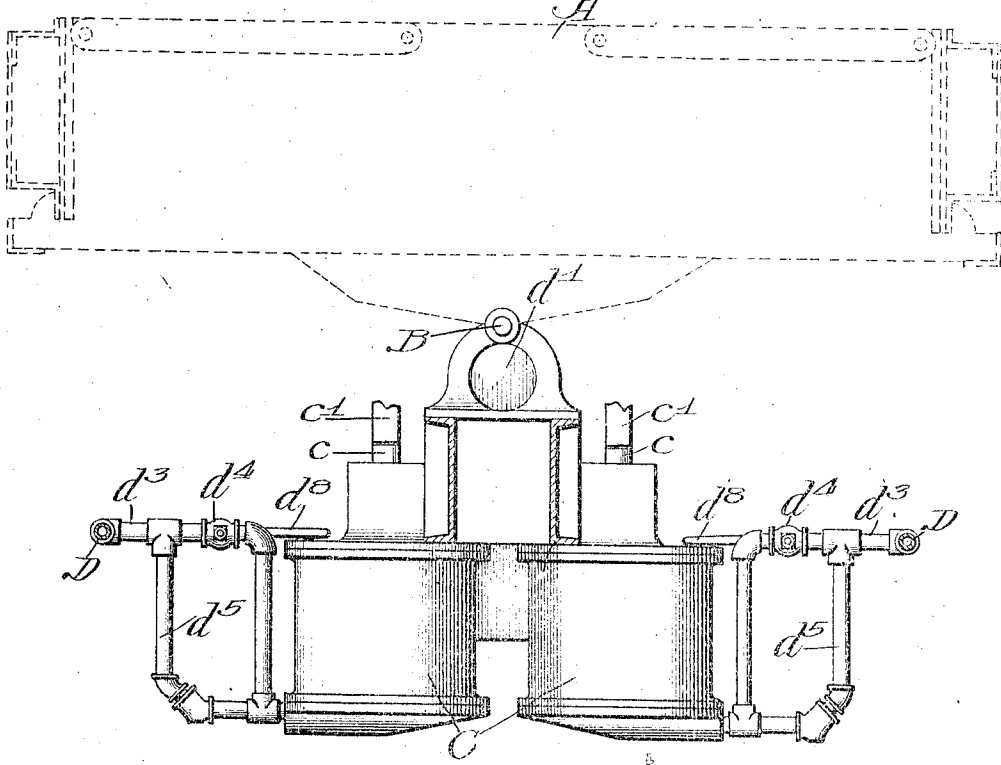
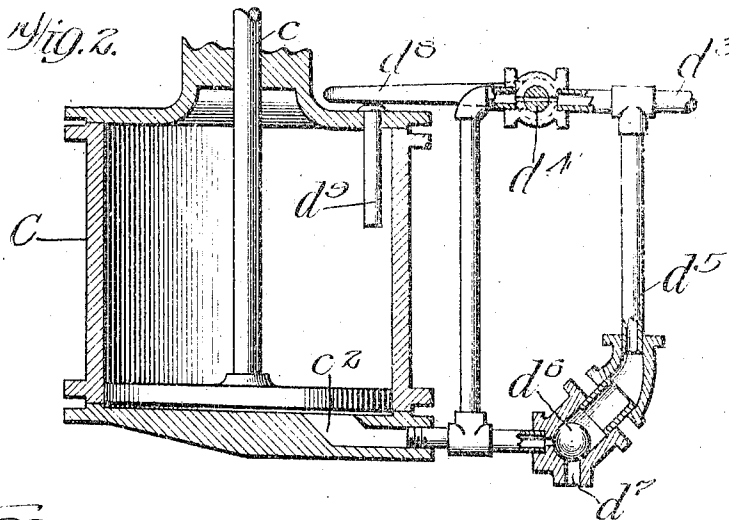


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

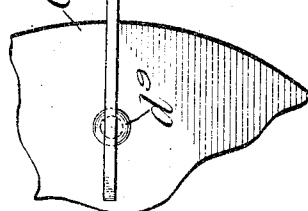
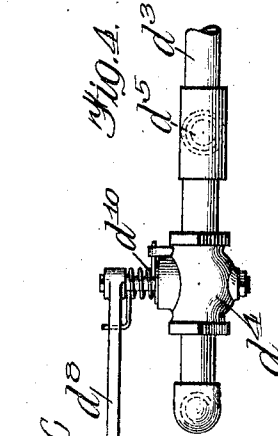
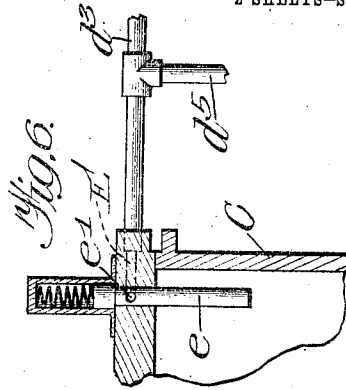
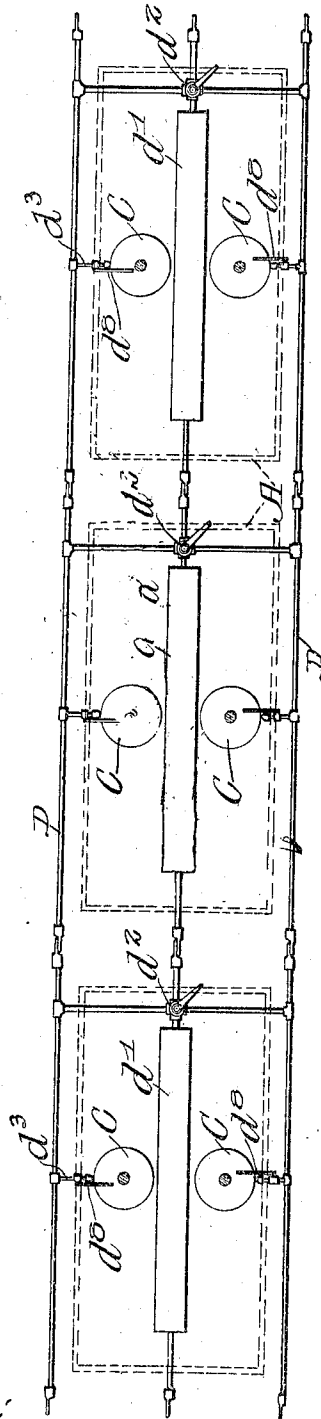
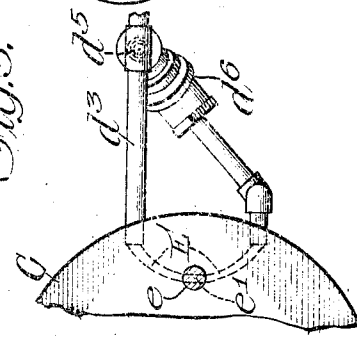


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN M. WILCOX, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE KILBOURNE & JACOBS MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

PNEUMATIC CUT-OFF FOR DUMP-CARS.

1,029,247.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed January 25, 1910. Serial No. 540,040.

To all whom it may concern:

Be it known that I, JOHN M. WILCOX, a citizen of the United States of America, and resident of Chicago Heights, Cook county, Illinois, have invented a certain new and useful Improvement in Pneumatic Cut-Offs for Dump-Cars, of which the following is a specification.

My invention relates to dump cars of that particular character in which pneumatically-operated devices are employed for operating the tilting body of the car. In dump cars of this kind upright cylinders have been used, one at each side of the car, and the piston of each cylinder has been connected with one side of the tilting body of the car. Suitable connections have been employed for supplying air to said cylinders, and for controlling the admission of air thereto, whereby it was possible to tilt the body of the car to either side, for the purpose of dumping the load, or for the purpose of righting the car. In each case, however, the arrangement was such that the air would enter the cylinder and continue to do so until the exhaust was established. Ordinarily, this meant that the air pressure would remain in communication with the cylinder until the air was discharged from the feed pipe by the manual operation of a valve at some point in the system. Consequently, there was a considerable waste of air, and certain other objections, incident to the use of dump cars constructed on the old plan.

The object of my invention is, therefore, the provision of a pneumatically-operated dump car having means for automatically cutting off the air as soon as the body of the car is operated or tilted to the desired position, the arrangement being such that the movement of the piston serves to operate the automatic cut-off mechanism, whereby the air pressure is disconnected from the cylinder as soon as, or a little before, the body reaches a position suitable for dumping.

It is also an object to provide a dump car of this kind in which the air will be automatically cut off when the car is righted or restored to its normal position, whereby the pressure will be disconnected from the cylinder as soon as, or a little before, the body of the car assumes a horizontal position,

thus insuring against the wasteful use of the air which was heretofore the case with dump cars of this kind.

A further object is to provide an improved arrangement whereby the air is automatically discharged from the operating cylinder as soon as the pressure is cut off or disconnected from the feed pipe.

It is also an object to provide certain details and features of improvement tending to increase the general efficiency of a pneumatically operated dump car of this particular character.

To the foregoing and other useful ends, my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings—Figure 1 is an end view, with certain portions broken away, of a dump car embodying the principles of my invention. Fig. 2 is an enlarged sectional view of one of the cylinders of said dump car, showing the manner in which the air is automatically cut off when the piston moves to the top of the cylinder, and the manner in which the air is automatically discharged from the cylinder when the pressure is cut off or disconnected from the feed pipe. Fig. 3 is a diagram of several dump cars connected together, illustrating the system of piping which my invention involves, whereby the cars may be dumped either separately or together, each car, however, serving automatically to cut off the air entering its cylinders, both when the car is dumped and when the body thereof is righted or restored to its normal position. Fig. 4 is an enlarged detail plan view of the automatic cut off valve. Figs. 5 and 6 are detail fragmentary views showing another form of my invention.

As thus illustrated, the tilting car body A may be of any suitable, known or approved construction, and may be mounted upon a truck of any suitable character. As shown, it tilts about a longitudinal axis B, in the usual and well understood manner. The upright cylinders C are disposed at opposite sides of the truck, and their piston rods *c* have suitable connections *c'* (which are shown broken away for convenience of illustration) with the bottom of the car body. These connections are of such character, preferably, that if the piston at the left is operated while the body is in a hori-

zontal position, as illustrated, the said body will be dumped to the right—that is to say, it will be tilted over to the right for the purpose of discharging its load at that side. However, if the load has been discharged to the left of the car, so that the left hand side of the car body is down, then the actuation of the piston in the cylinder at the left in Fig. 1, will operate to restore the car body to its normal horizontal position. In other words, either cylinder can be used for either dumping or righting the body of the car, in the well known manner.

Each cylinder is provided with an admission opening c^2 , which is also a discharge opening, at the bottom thereof, as shown in Fig. 2. The feed pipes D (see Fig. 3) are connected by pipes d' with reservoirs d'' , and the supply of air from the reservoirs to the said feed pipes is controlled by the valves d^2 , one for each car. The branch pipes d^3 are connected through the cut-off valves d^4 with the opening c^2 , one for each cylinder, and for each valve d^4 there is a by-pass pipe d^5 , which latter contains a check valve d^6 . This check valve prevents the admission of air through the by-pass to the cylinder and normally prevents the escape of air through the discharge opening d^7 . The valve d^4 is operated by an arm d^8 , which latter is in turn operated by a vertically movable pin d^9 . This pin is operated by the piston head, when the latter moves upward, and the air is thereby automatically cut off or disconnected from the cylinder. The pressure in the by-pass pipe d^5 keeps the valve d^6 normally closed, but this valve opens as soon as the pressure is disconnected or cut off from the feed pipes, and the air from the cylinder then escapes through the opening d^7 . Thus the upward operation of the piston, whether for dumping or righting the car body, serves automatically to cut off the air, and thus the air is not wasted by allowing it to enter after the operation of dumping or righting is completed, as was formerly the case.

The cut off valve has a spring d^{10} (see Fig. 4) which operates to keep the arm d^8 pressed down against the head or top of the pin d^9 , whereby the mechanism is always in condition to be operated as soon as the piston head moves upward a distance. As shown, the air will be cut off before the piston head reaches the limit of its upward movement; thus economy is secured in the use of the air, and a considerable saving is obtained.

Each car may be provided with a reservoir d' , containing compressed air, whereby the cars can be operated separately or together, depending upon the requirements and the character of the work. If desired, several cars can be connected together and dumped simultaneously by the operation of

one valve, in a manner that will be readily understood. Or, if necessary, any particular car can be cut out or disconnected and operated by itself, in the manner explained. And by introducing cut out valves between the cars each car in a connected train can be dumped separately and independently of the others.

Broadly considered, my invention, it will be seen, contemplates the automatic cutting off of the air from the operating cylinder upon the tilting of the car body in either direction, and for either purpose—that is to say, for either dumping the load or righting the car. As shown, the automatic cut off is operated by the piston in the cylinder, but it is obvious that other connections or arrangements may be employed for causing the cut-off to be operated upon the movement of the body, or by the operation of dumping the load in any other suitable manner, or upon the restoration of the car to normal position. As I say, therefore, my invention contemplates broadly a pneumatically operated dump car in which the air is automatically cut off by the operation of the car.

As shown in Figs. 5 and 6, the top of the cylinder is cast with a passage E which connects with the feed pipe, and the pin e is provided with an opening e' , which latter controls the said passage. In this way the automatic cut off valve is mounted directly in the top of the cylinder, and no external connections are necessary. A spring can be used for keeping the said pin normally depressed. When the piston moves upward, and the pin is also moved upward thereby, the air coming through the passage E is cut off, and the pressure is disconnected from the cylinder.

It will be understood, of course, that I do not limit myself to the use of air, as any other fluid can be used which will serve the purpose.

What I claim as my invention is:

1. In a dump car, a tilting body, an upright cylinder at each side of the car, pistons in said cylinders, suitable means between said pistons and the said body, whereby the body may be tilted and then restored to normal position, means for admitting air to the said cylinders, and automatic means operated for cutting off the air upon the moving of the car body both to tilt the same and to restore said body to normal position.

2. In a dump car, a tilting body, a cylinder and piston connected with said body, for operating the latter, said cylinder having an opening at one end thereof, a passage communicating with said opening to supply air to said cylinder, a cut off valve for said passage, a by-pass around said cut off valve, a check valve in said by-pass to prevent the air from passing through the by-pass to the

cylinder, said by-pass provided with an exhaust opening normally closed by said check valve, and means for reducing the pressure in the pipe, whereby the check valve is then
5 operated by the pressure in the cylinder, causing the exhaust of air therefrom through said openings.

3. In a dump car, a tilting body, a cylinder and piston connected with said body; for
10 operating the latter, a pin at the top of the cylinder adapted to be actuated by the upward movement of the piston head, means for supplying air pressure to the cylinder

to operate said piston upwardly, a cut-off valve for controlling the admission of pressure to the cylinder, operated by said pin, whereby the pressure is cut off when the piston reaches a predetermined point in its upward movement.

Signed by me at Chicago, Illinois, this 20
21st day of January, 1910.

JOHN M. WILCOX.

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