(No Model.) 2 Sheets—Sheet 1.

W. W. STONEY, C. E. CROSBY & I. L. CRIPPEN.

AUTOMATIC DOOR RELEASE FOR DUMP CARS.

No. 564,805. Patented July 28, 1896.

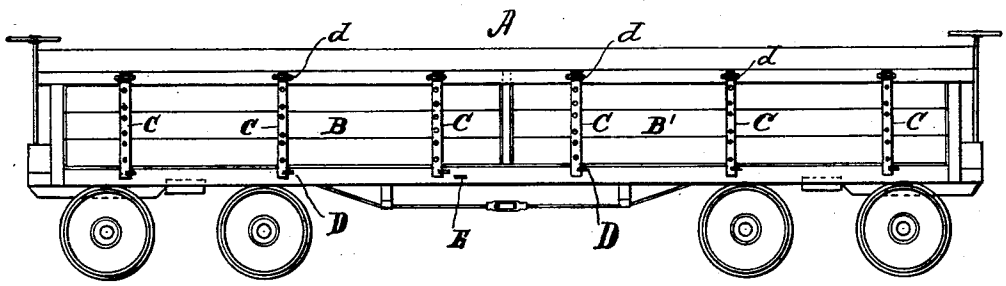

Fig 1.

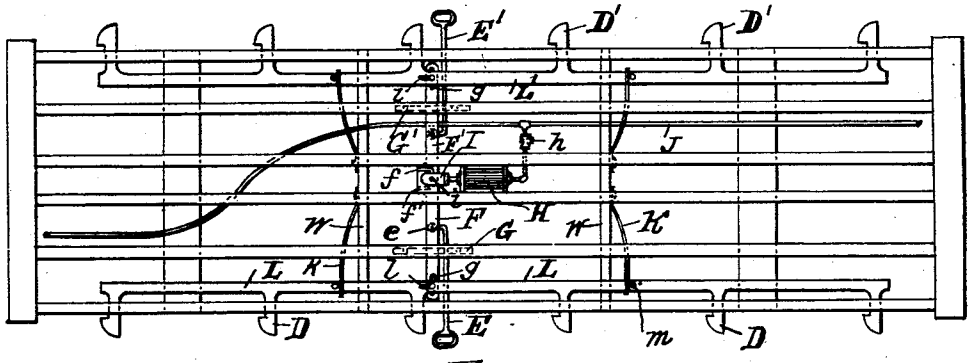

Fig 2

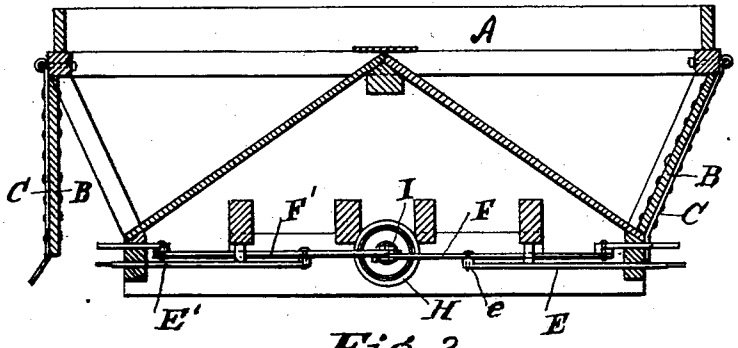

Fig 3.

WITNESSES

M. McDonald.

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ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

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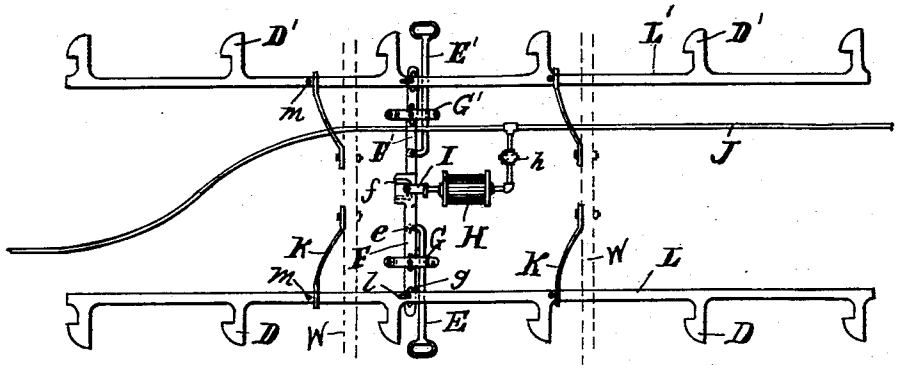

Fig 4.

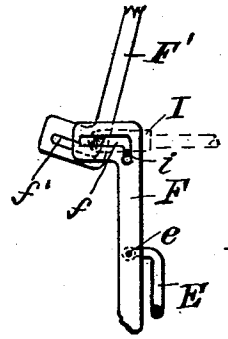

Fig 5.

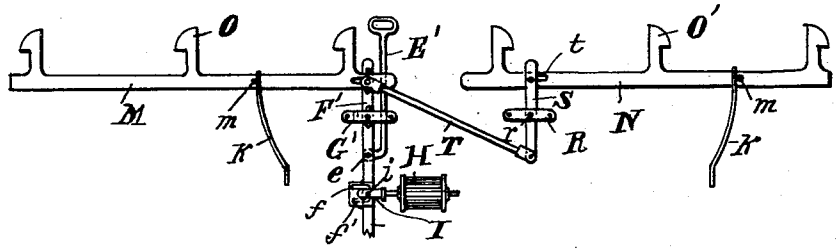

Fig 6.

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UNITED STATES PATENT OFFICE.

WILLIAM W. STONEY, CHARLES E. CROSBY, AND IRA L. CRIPPEN, OF INDIANAPOLIS, INDIANA.

AUTOMATIC DOOR-RELEASE FOR DUMP-CARS.

SPECIFICATION forming part of Letters Patent No. 564,805, dated July 28, 1896.

Application filed October 28, 1895. Serial No. 567,193. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM W. STONEY, CHARLES E. CROSBY, and IRA L. CRIPPEN, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Automatic Door-Releases for Dump-Cars; and we do 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 the letters of reference marked thereon, which form a part of this specification.

Our invention relates to a mechanical device by which the retaining-latches for dumping-doors attached to gravel-cars in a railway-train are automatically operated to release the doors simultaneously throughout the train or in any number of cars, as may be desired; and it consists of a series of air-cylinders having pistons and connecting-rods, pipes and hose connections, and levers operated by air-pressure acting upon the pistons in the cylinders, as will be more fully described hereinafter, and pointed out in the claims.

In the present state of the art a number of railway-cars composing a train hauled by a locomotive are used in hauling and distributing gravel or other ballast along the roadway. Each car usually has suitable doors so arranged that when unlatched or released the weight of the load forces them open, thereby dumping the load without requiring manual or other labor. The manner of constructing the latches for these doors requires that each car be manipulated separately by hand, requiring additional labor and considerable loss of time. This loss of time, when considered as so much cost, is accumulative and very expensive, and it is very desirable that more economical arrangements be provided for quickly disposing of the loads.

The object of our invention is to provide a means whereby dumping of the loads may be accomplished without delay and with very little expense, thereby effecting a great saving to railroads in the expense of grading and ballasting the roadway.

Our invention is simple in design, inexpensive to manufacture, economical, and durable in use.

Referring to the drawings accompanying, Figure 1 represents a side view in outline, showing dumping-doors hinged at the side of a railway-car. Fig. 2 is an inverted plan of a car-body, showing the general arrangement of our device; and Fig. 3 is a cross-section of the car. Fig. 4 is a detailed plan of our device. Fig. 5 is an enlarged view of the cutting-out arrangement, and Fig. 6 shows a modified mode of construction which is sometimes desirable.

In the drawings, L, L′, M, and N are slidable bars having hook-catches D D′ and O O′. These bars are attached to the under side of the car A, preferably to the framework, in such manner as to permit the catches to protrude outward and engage with a hasp attached to dumping-doors B or B′. In lieu of the hasp we usually extend downward the end of each hinge C as a matter of convenience and economy. An air-cylinder H is attached to the under side of the car-body at a convenient point, preferably near the center of the car, and contains a packed piston connected to a rod in the usual manner, and to the end of the rod is a cross-head I, having an opening in the outer end for the reception of a lever. This cross-head is of the form usually termed a "jaw," and has a hole through the two sides of the same for the reception of the pivotal bolt or pin *i*.

Suitable levers F F′ are pivoted in brackets G and G′, attached to the framework on the car. These levers are connected at their inner ends with the cross-head I and at their outer ends with the slidable bars. They are provided with longitudinal slots *g*, permitting them to be moved, to a limited extent, transversely with the car-body. Pull-rods E and E′ are attached to the levers F F′ by means of pin *e*, and extend outward beyond each side of the car and are provided with a handle at the outer end for hand manipulation. The slidable bars L, L′, M, and N are provided with longitudinal slots, as *l* and *t*, which permit the bars and catches to latch automatically when the doors are closed without necessitating the movement of all the connecting-levers and piston. Suitable

springs K are secured to the timbers W of the car-body, and their outer ends engage with a pin or stop-block *m*, attached to these slidable bars. These springs constantly hold the catches securely, so that they cannot accidentally release the doors. The levers F F′ at their ends connecting the cross-head I have an L-shaped end provided with a like slot *f f′*, so that when either rod is drawn outward toward the side of car the pin *i* is brought into the part of the said slot longitudinally with the car and piston-rod and may travel therein freely without actuating the lever.

We preferably construct our device as shown in Fig. 4; but in some cases, owing to the peculiar manner in which some cars are designed, we find it an advantage to construct as shown in Fig. 6, in which the slidable bars M and N move in opposite direction by means of the connecting-rod T and the lever S, pivoted at *r* in the bracket R. The air-cylinder H has a pipe connecting thereto provided with a stop-cock *h* and connecting with a main air-supply pipe J, which is provided at each end of the car with suitable flexible connections with the adjoining cars. These main supply-pipes are furnished with air at the locomotive in the usual manner, a reservoir being used sufficiently large to fill all the pipes in the train. Connecting with the air-reservoir and main supply-pipes J on the locomotive is a suitable valve or cock by which air may be admitted to the pipe and discharged therefrom at the will of the operator. Air being admitted through the pipes to the cylinder H, the piston moves outward and with it the connecting ends of the lever F F′, which in turn actuate the slidable bars having the hooked catches, releasing the hasps on the doors and permitting them to open by gravity, thereby discharging the load on the car. When desirable to dump to one side of all or any one car, the pull-rod E or E′, as may be desirable, is drawn outward, and with it the connecting-lever, permitting the pivot-pin *i* through the end of the cross-head I to travel in the slot *f* or *f′* without moving that lever or dumping that side so manipulated.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. An automatic release mechanism for latches of dumping-doors of railway gravel or ballast cars, comprising in combination an air-supply pipe attached to the car-body, an air-cylinder having a movable packed piston contained therein, said cylinder being attached to the car-body and connected by an air-pipe having a stop-cock to the said main supply-pipe, said piston is provided with a connecting-rod extending through one end of the cylinder, and has at its outer end suitable cross-head and pivot-pin; a series of longitudinally-slidable bars having catches thereon engaging with suitable hasps or lips attached to hinged doors on said car; a series of transverse levers connecting at one end with the said piston and at the other with the said slidable bars, said levers are pivoted in brackets attached to the car-body, and where connected to the slidable bars and brackets as well as the end attached to the actuating-piston, are provided with longitudinal slots permitting them to slide transversely with said piston and slidable bars; a series of pull-rods having handholds connected to the said transverse levers so that the said levers may be moved endwise transversely with the car-body; a series of springs attached to the said car-body and compressed and in connection with said slidable bars so that said bars are constantly held at one extremity of their travel except when actuated against their compression by means of said levers when desired, substantially as and for the purpose shown and described.

2. In a mechanism for automatically releasing dumping-doors of railway gravel-cars, having slidable bars provided with latching-catches, levers connecting thereto, an air-cylinder having piston and rod connected to said levers, air-supply pipes connecting to said cylinder, the combination of an L-shaped end on said levers at point of connection with said piston-rod, said L-shaped end provided with L-shaped slot, part of each slot is longitudinal with the said lever while the other part is transverse, or longitudinal with the traveling of said piston-rod, substantially as shown and described.

3. In an automatic mechanism for releasing the doors of railway dumping-cars, having longitudinally-slidable bars carrying latching-catches, the combination of a reverse-lever S pivoted to a car-frame having one end connected to the slidable bar N, and its opposite end connected to the connecting-rod T being connected to the slidable bar M, said bar M being movably connected to an actuating-lever F′ pivoted in a bracket G′ and in connection at its opposite end with the cross-head I by means of the pivot-pin *i*, said cross-head being connected to a piston-rod and piston in an air-cylinder H, substantially as and for the purpose shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

WM. W. STONEY.
CHARLES E. CROSBY.
IRA L. CRIPPEN.

Witnesses:
JNO. S. THURMAN,
EDWIN EATON.