

J. E. TESSEYMAN & F. L. IRWIN.

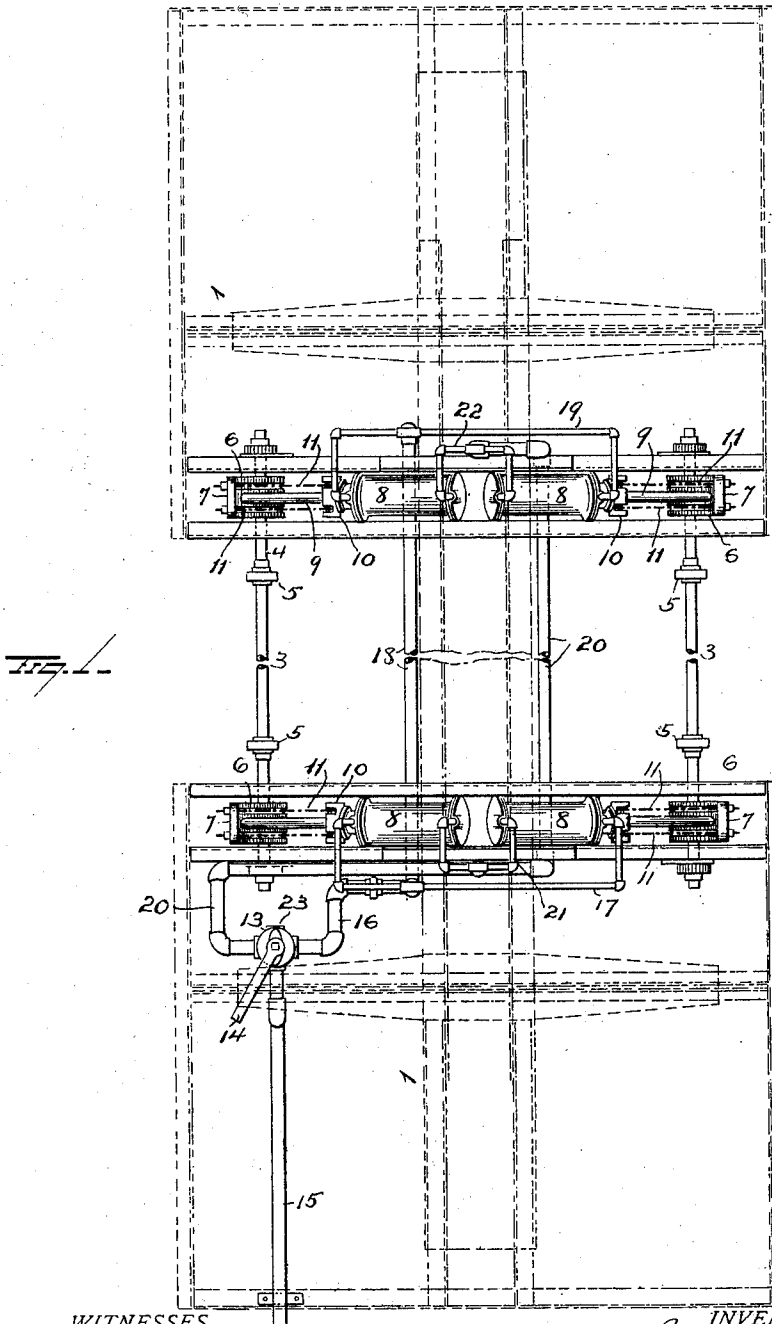
DUMP CAR.

APPLICATION FILED APR. 27, 1910.

976,411.

Patented Nov. 22, 1910.

3 SHEETS-SHEET 1.



WITNESSES
E. Nottingham
G. J. Downing

INVENTORS
J. E. Tesseyman and
F. L. Irwin
By H. A. Seymour Attorney

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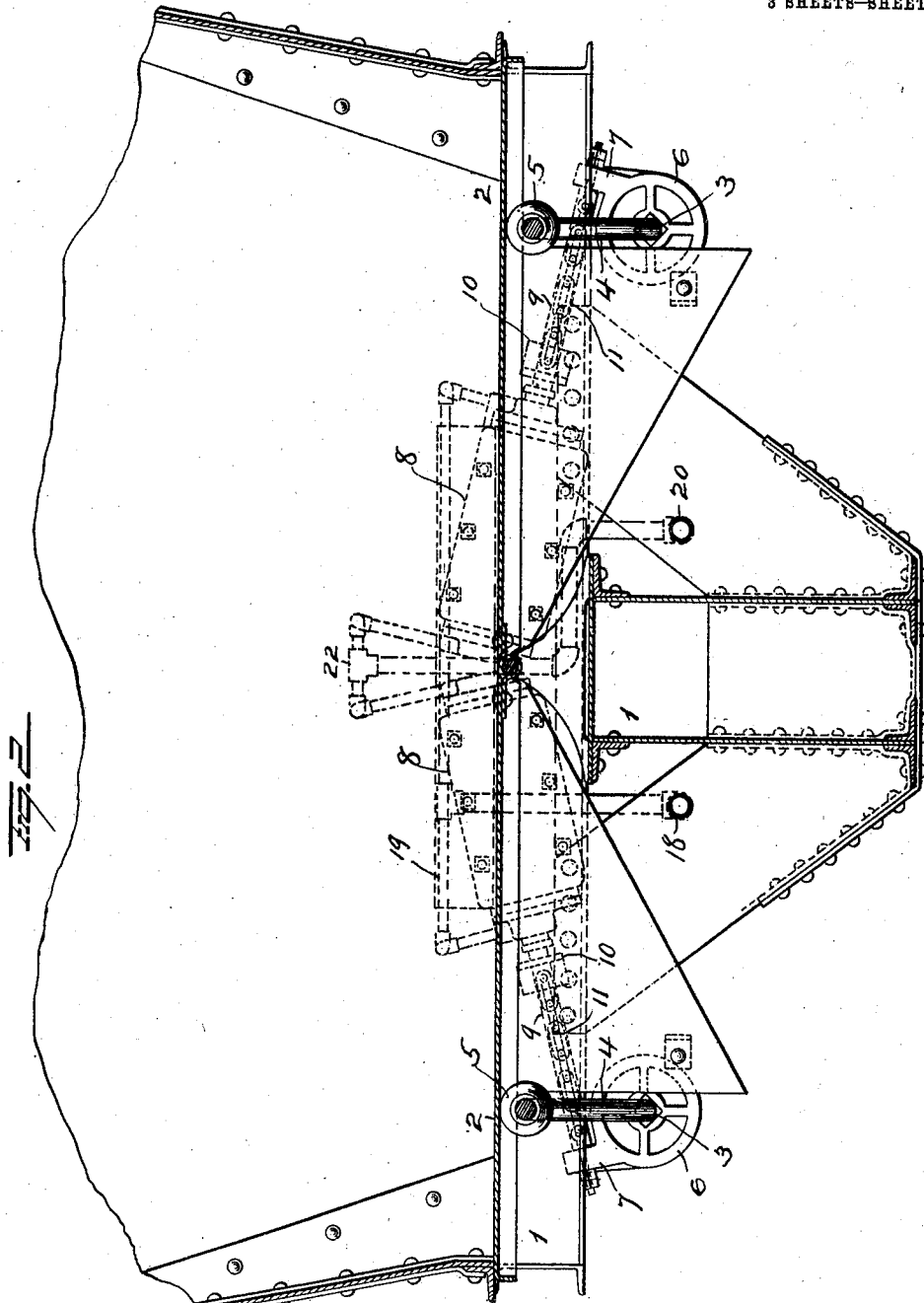
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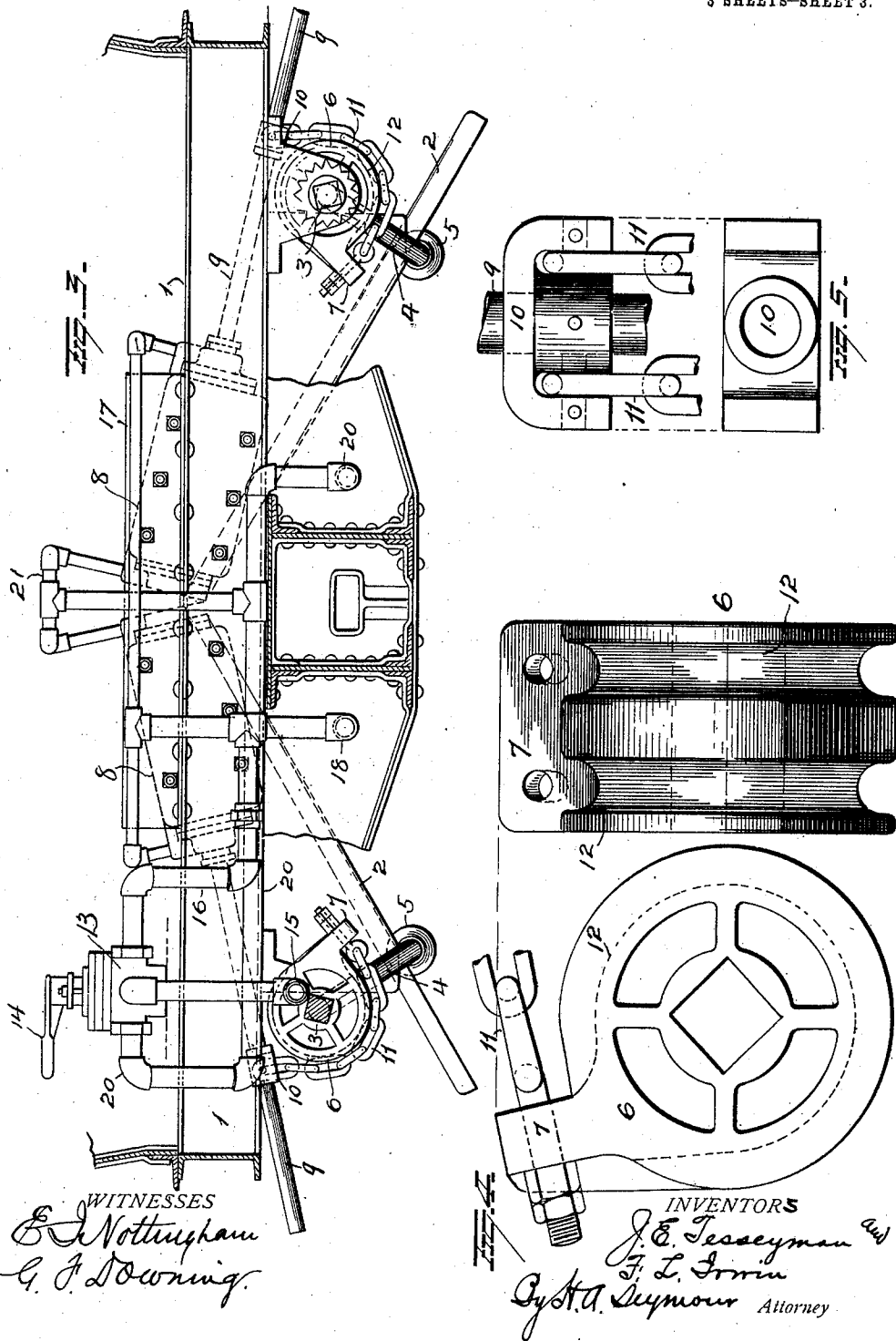
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3 SHEETS-SHEET 3.



UNITED STATES PATENT OFFICE.

JOHN E. TESSEYMAN AND FRANK L. IRWIN, OF COLUMBUS, OHIO, ASSIGNORS TO THE
RALSTON STEEL CAR COMPANY, OF COLUMBUS, OHIO.

DUMP-CAR.

976,411.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed April 27, 1910. Serial No. 557,935.

To all whom it may concern:

Be it known that we, JOHN E. TESSEYMAN and FRANK L. IRWIN, of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Dump-Cars; and we 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.

This invention relates to improvements in dump cars and more particularly to that type employing drop-doors,—the object of the present invention being to provide simple and efficient air-operated means for controlling the opening and closing of the drop doors.

With this object in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view showing portions of a car structure and the application of our improvements thereto. Fig. 2 is a transverse sectional view of a dump car showing the application of our improvements, in elevation. Fig. 3 is a transverse sectional view of a car showing the piping system which controls the application of air for actuating the door operating mechanism, and Figs. 4 and 5 are enlarged detail views.

1 represents a car underframe which may be of any approved construction and provided with a floor consisting of two series of drop-doors 2 arranged at respective sides of the longitudinal center of the car. A shaft 3 is mounted in suitable hangers depending from the underframe,—one of such shafts being located below the plane of each series of drop-doors. Each shaft 3 is provided with a series of crank-arms 4 carrying rollers 5 to engage the drop-doors and hold the same in closed position when said crank-arms are vertically disposed and support said doors in their open position when the crank-arms depend from the shaft as shown by dotted lines in Fig. 2.

Each shaft 3 has secured thereto near respective ends of the car structure, grooved wheels or castings 6, each of which is provided with a tangential arm or extension 7 as clearly shown in Figs. 2 and 4. With these castings or wheels, the air-controlled

operating mechanism coöperates, as will now be explained:

Near respective ends of the car structure, cylinders 8 are located and disposed transversely of the underframe and preferably somewhat inclined. These cylinders are located near the longitudinal central portion of the car structure and each contains a suitable piston provided with a piston rod 9 which is of sufficient length to engage the tangential arm 7 of the adjacent wheel or casting 6. Each piston rod 9 is provided with a cross-head 10, to which are attached the inner ends of chains 11,—the other ends of said chains being secured to the wheel or casting 6 so as to wind in the grooves 12 of the latter when said wheel or casting is rotated in one direction.

When the doors are in their closed position and the piston rods 9 are caused to move outwardly, the coöperation of said piston rods with the tangential arms on the wheels or castings 6 will cause the latter and the shafts 3 to which they are secured to turn until the crank-arms of said shafts have moved beyond their normal vertical positions, when the drop-doors will be caused to open by reason of their weight and the weight of the material thereon. Inward movement of the piston rods will, through the medium of the chains 11 cause the wheels or castings 6 and the crank shafts 3 to rotate and effect the closing of the doors.

A four-way valve 13 provided with a suitable operating lever 14, is located near one end of the car structure and with this valve an air inlet pipe 15 from any suitable source of supply communicates. A pipe 16 also communicates with the casing of the valve 13 and with a pipe 17 which supplies air to the outer end of the cylinders 8 at one end of the car structure. A line pipe 18 communicates at one end with the pipe 16 and at the other end with a pipe 19,—the latter serving to supply air to the outer ends of the cylinders 8 at the opposite end of the car structure. A pipe 20 communicates with another port of the casing of valve 13 and extends approximately from end to end of the car structure. At one end of the car structure, pipes 21 communicate with the pipe 20 and with the inner ends of the adjacent cylinders 8, and at the other end of the car structure, a similar pipe 22 com-

municates with said pipe 20 and with the inner ends of the cylinders 8 at this end of the car. The casing of valve 13 is also provided with an exhaust port 23.

5 Assuming now that the doors are closed and it is desired to open them,—the operator will manipulate the valve 13 so as to cause air pressure passing through the pipes 20, 21 and 22, to enter the inner ends of the cylinders 8 at respective ends of the car structure 10 and to force the pistons within said cylinders outwardly. The piston rods, engaging the tangential arms 7 of the wheels or castings 6, will cause the crank-shafts 3 to be turned 15 and the doors to be opened as above explained. It is apparent that when the wheels or castings shall have been thus turned, the piston rods will project beyond the same and the chains 11 caused to wind 20 on said wheels or castings. In order to close the doors, the operator will manipulate the valve 13 so as to permit air to exhaust from behind the pistons in the cylinders and air pressure to be supplied to the outer ends of 25 said cylinders by way of the pipes 16, 17, 18 and 19. The pistons and piston rods will now move rearwardly and, by reason of the connection of said piston rods with the wheels or castings through the medium of 30 the chains 11, said wheels or castings and the crank shafts 3 to which they are secured will be turned and the closing of the doors effected.

Various changes might be made in the 35 means employed for the direct operation of the drop-doors without departing from the spirit of our invention or limiting its scope and hence we do not wish to restrict ourselves to the precise construction of these or 40 of other features of the mechanism herein shown and described.

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

45 1. The combination with a car provided with drop doors and operating means for said drop doors, of an arm connected with said operating means, an air cylinder provided with a piston and a piston rod, the latter disposed to engage the arm of the door 50 operating means for moving the latter to permit the doors to open, and means for controlling air pressure at respective sides of the piston in said cylinder.

55 2. The combination with a car provided with drop doors and door operating means, of a member secured to the door operating means and provided with an arm, an air cylinder provided with a piston and piston rod, 60 the latter disposed to coöperate with the arm on the member secured to the door operating means to permit the doors to open, flexible

devices connected with the piston rod and said member for effecting the closing of the doors, and means for controlling fluid pressure at respective sides of the piston in said cylinder. 65

3. The combination with a car provided at respective sides of its longitudinal center with drop doors, operating means for the 70 doors at each side of the center, a member provided with an arm secured to each of said operating means, two cylinders provided with pistons and piston rods, the latter disposed to coöperate with the arms and the 75 members secured to the respective door operating means, flexible devices connecting the piston rods with said members, and means for controlling fluid pressure at respective sides of the pistons in the two cylinders 80 for controlling the operation of the door operating means.

4. The combination with a car provided at each side of its longitudinal center with a series of drop doors, and operating means 85 for each series of drop doors, of wheels secured to the door operating means near respective ends of the car structure and provided with arms, two cylinders near each end of the car structure and provided with 90 pistons having piston rods, the latter disposed to coöperate with the arms on the wheels of the respective door operating means, flexible connections between said wheels and piston rods, pipes for conveying 95 fluid to respective ends of said cylinders, and a valve for controlling the passage of said fluid to cause the simultaneous movement of all of said pistons and piston rods in one direction or the other. 100

5. The combination with a car provided with drop doors at respective sides of its longitudinal center, of crank shafts supported 105 by the car structure and coöperating with the drop doors, wheels secured to said crank shafts and provided with arms, cylinders mounted on the car structure near respective ends of the latter and provided with pistons and piston rods, the latter disposed to coöperate with the said arms on said wheels, 110 flexible devices connected with the piston rods and with said wheels, a system of pipes connected with respective ends of said cylinders, and valve mechanism for controlling the passage of fluid simultaneously to one 115 end or the other of all of the cylinders.

In testimony whereof, we have signed this specification in the presence of two subscribing witnesses.

JOHN E. TESSEYMAN.
FRANK L. IRWIN.

Witnesses:

E. S. CUEVER,
F. R. HOOVER.