

S. D. WRIGHT.

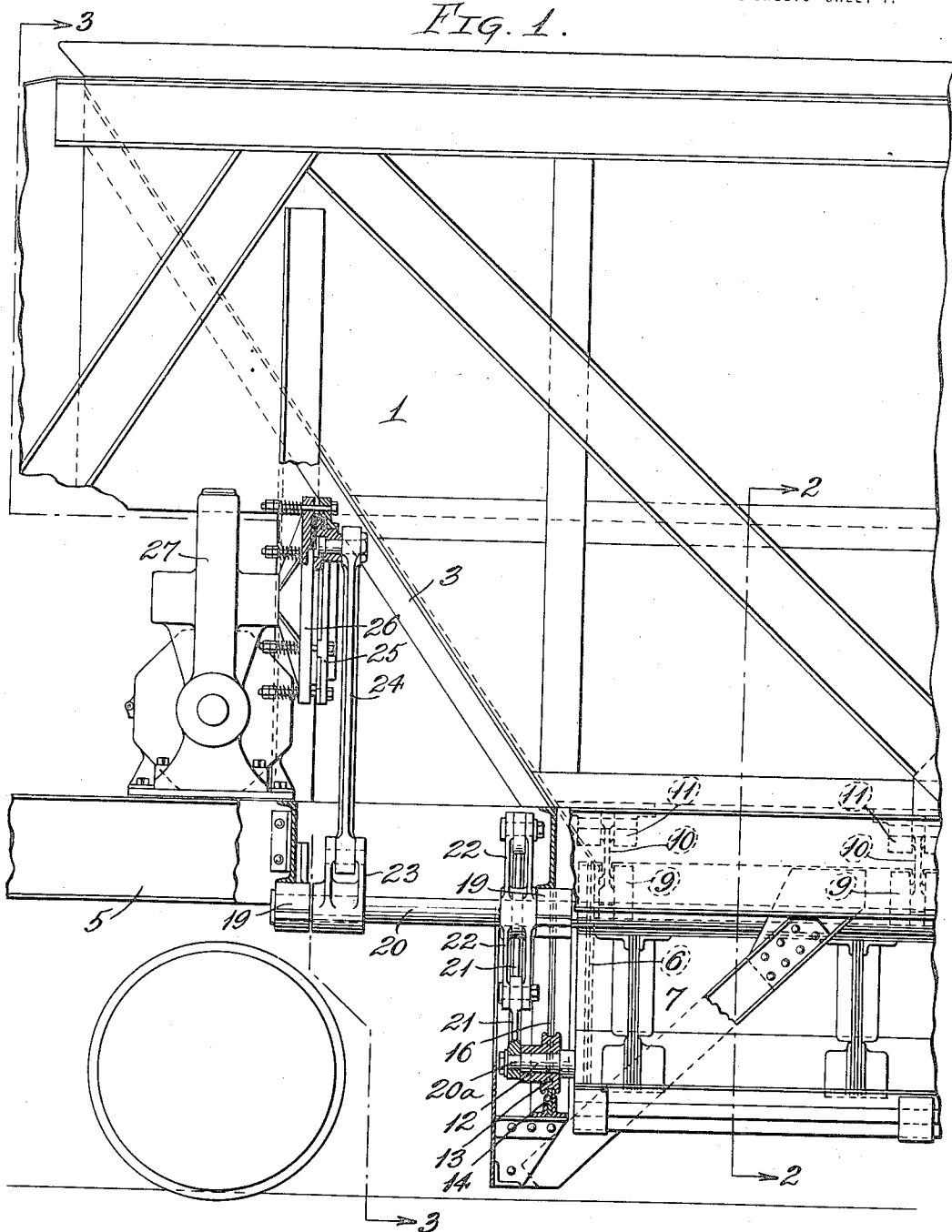
DUMP CAR.

APPLICATION FILED JULY 23, 1917.

1,307,428.

Patented June 21, 1919.

5 SHEETS--SHEET 1.



Inventor.

Samson D Wright

By Brockett and Hyde

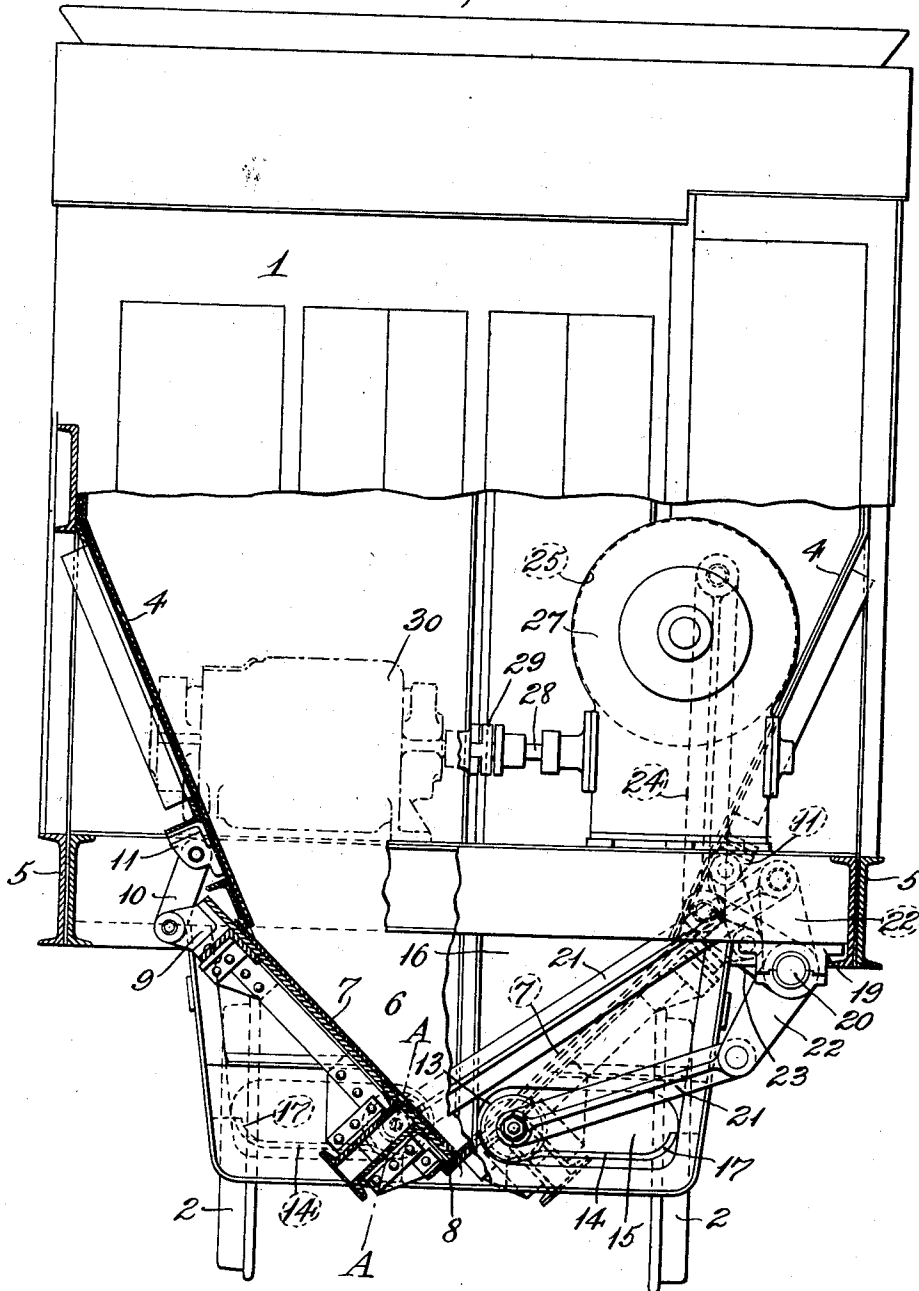
Att'ys.

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DUMP CAR.
APPLICATION FILED JULY 23, 1917.

1,307,428.

Patented June 24, 1919.
3 SHEETS—SHEET 2.

FIG. 2.



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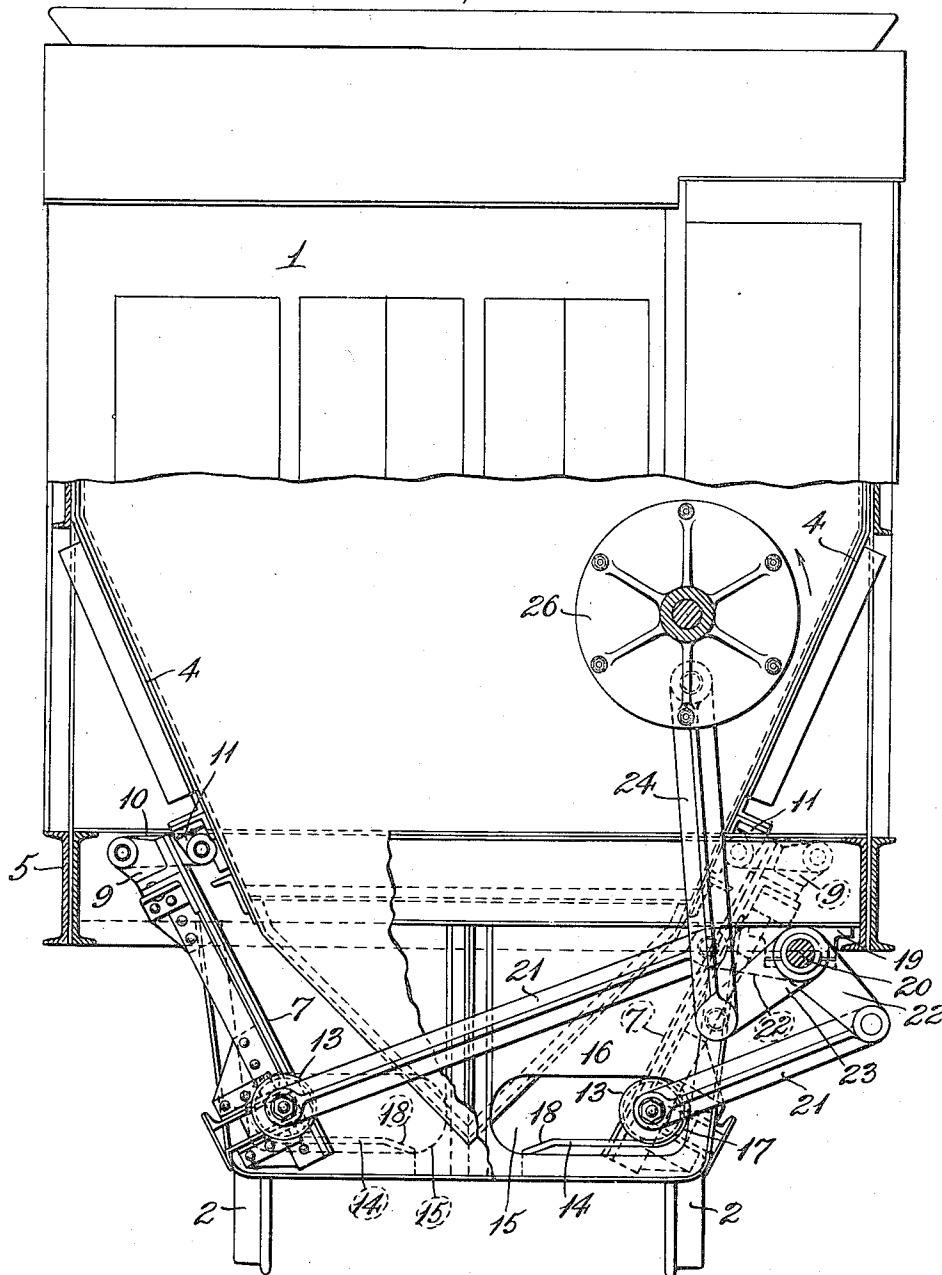
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FIG. 3.



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UNITED STATES PATENT OFFICE.

SAMSON D. WRIGHT, OF CLEVELAND, OHIO.

DUMP-CAR.

1,307,428.

Specification of Letters Patent. Patented June 24, 1919.

Application filed July 23, 1917. Serial No. 182,213.

To all whom it may concern:

Be it known that I, SAMSON D. WRIGHT, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Dump-Cars, of which the following is a specification.

This invention relates to dump cars, such as are used for transporting lime, ore, coal and like materials. More particularly the invention relates to dump cars of the hopper bottom form.

The object of the invention is to improve the construction and arrangement of the hopper doors and operating mechanism therefor and to the end of securing a tight closure when the doors are in closed position; to avoid any tendency of the lading to open the doors; to cause the lading to assist in moving the doors to close fitting position when closed; to secure a substantially horizontal movement of the lower ends of the doors in opening whereby they may be opened with minimum effort and are assisted in their opening movement by the lading; and to provide improved mechanism for actuating the doors for opening or closing the same, said mechanism being preferably of a form capable of control from a convenient station on the car and operating the doors by positive movement to insure their actuation regardless of the kind or character of lading, and thereby preventing the doors from sticking.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

The invention comprises the dump car hereinafter described and claimed.

In the drawings, which represent one embodiment of the invention, Figure 1 is a side elevation of one end of the car, parts being broken away and in section to more clearly illustrate the mechanism; Fig. 2 is in part an end elevation thereof and in part a section on the line 2—2, Fig. 1, looking in the direction of the arrows, and illustrating the doors in closed position; and Fig. 3 is partly an end elevation, and partly a sectional elevation on the line 3—3, Fig. 1, looking in the direction of the arrows, and at the left has an end guide plate broken away to expose the door, the doors in this view being shown in open position.

The dump car shown in the drawings as to many of its features is of the usual form.

It comprises a body 1 supported upon trucks having the wheels 2. The body is provided with end walls 3 and side walls whose lower portions 4 slope inwardly toward the center of the car to about the level of the side sills 5. The end walls 3 also slope toward the center of the car to about the level of the sills, from which level depend the substantially triangular aprons 6, which are in a vertical plane and are at the ends of the movable doors to be described.

The car may be of any suitable form or shape and may comprise but a single hopper, in which case it will have two opposite side doors controlled by mechanism preferably located at one end of the car or may have two or a series of hoppers whose doors may be operated in unison or by independent mechanism as desired. The particular arrangement is immaterial, and the drawings show a single hopper at one end of the car with the proper mechanism for operating it.

The movable doors are indicated at 7, said doors in closed position closing the bottom opening of the hopper and meeting at their lower edges 8 in the median longitudinal plane of the car. The inclination of the doors when closed is nearer to the horizontal than the sloping side walls 4 of the car, although this is not essential.

The upper edges of the doors are connected to the body of the car to have swinging movement relative thereto, said movement also having a horizontal component, so that the upper edges of the doors move outwardly in opening. As illustrated, each door is provided with two or more brackets 9 to which are pivotally connected links 10 pivoted in turn to brackets 11 on the car body. The lower edges of the doors are so mounted as to have substantially horizontal outward movement in opening, for which purpose each door is provided at its opposite ends with shaft members 12 on which are journaled rollers 13 traveling on tracks 14 carried by the stationary frame. There are two such tracks at each end of a hopper, one for each of the oppositely disposed doors of a pair. In the particular form shown the tracks 14 form the lower edges of openings 15 in a depending plate or wall 16 of the body, located outwardly beyond the depending apron 6. These openings, at least at one end, are larger in diameter than the rollers 13 to enable the latter to be inserted into place.

Tracks 14, for the major portion of their length, are substantially horizontal, but at their outer ends are curved upwardly on an arc, as at 17 to form stops to limit outward rolling motion of the rollers 13. At their inner ends, near the middle of the car, the tracks 14 have a sudden dip, as at 18, so that the rollers 13, as the doors move to closed position, drop into the recess formed by said dips, whereby the weight of the doors assists in moving them to tight sealing engagement with each other. The pressure of the lading in the car when full is directed along the dotted line A, Fig. 2, and consequently substantially perpendicular to the dipped or inclined track portions 18. Consequently when the car is full, the load exerts its pressure through the rollers 13 in a direction perpendicular to the tracks, and produces no tendency whatever to open the doors.

At one side of the car several bearings 19 support a longitudinal operating shaft 20 to which are connected lever arms for operating the movable door members. Each door may be connected at both ends to said shaft, or only at one end, as desired. As illustrated each roller shaft 12 has a reduced extension 20^a to which is pivotally connected a link 21 pivotally connected at its opposite end to a lever arm 22 on the shaft 19. The lever arms 22 for the doors on the same side of the cars as the shaft 20 depend from said shaft, while the lever arms 22 for the doors on the opposite side of the car are above the shaft 20, the links 21 for the two sides of opposed doors being of different lengths. Therefore, rotation of shaft 20 in one direction produces simultaneous opening or closing movement of both of the opposed doors of the pair.

The shaft 20 also is provided with an operating arm 23 pivotally connected by a link 24 to the disk member 25 of a friction coupling, whose driving member 26 is on a shaft rotated by suitable gearing inclosed in the casing 27 and driven by a shaft 28 connected by a universal coupling 29 to an operating motor, such as the electric motor 30, capable of being rotated in either direction.

Fig. 3 shows the open position of the doors, the rollers 13 lying at the outer ends of the tracks 14 and against the curved stops 17. The pin or crank connecting the link 24 to the disk 25 is at substantially its lower point. To close the doors the motor is rotated in the proper direction to turn the driving member 26 in a counterclockwise direction, Fig. 3, which turns the shaft 20 and moves both doors inwardly to closed position. All of the arms 22 are of the same length and are so located on the shaft 20

that both doors have substantially the same movement. As the doors reach their final position the rollers 13 drop down the dips 18 to the recesses formed thereby and settle firmly into close sealing position, in which the load can not produce any tendency to open them. The construction described is simple and can be controlled or operated readily and with minimum effort. The doors meet so closely that loss of lading is avoided and nevertheless can be opened readily and by a positive movement.

What I claim is:—

1. A dump car, comprising a hopper body, doors closing the bottom of said hopper, links pivotally connecting the upper edges of said doors to the car body, and horizontally extending guides controlling the motion of the lower edges of said doors.

2. A dump car, comprising a hopper body, doors closing the bottom opening of said hopper, rollers connected to the lower edges of said doors, horizontally extending tracks for said rollers, and links pivotally connecting the upper edges of said doors to the car body.

3. A dump car, comprising a hopper body, doors closing the bottom opening of said hopper, rollers connected to the lower edges of said doors, horizontally extending tracks for said rollers, and means pivotally connecting the upper edges of said doors to the car body, said tracks at their inner ends being provided with inclined portions forming seats to receive said rollers, whereby the weight of the doors assists in their final closing movement.

4. A dump car, comprising a hopper body, doors closing the bottom opening thereof, rollers on the lower edges of said doors, horizontally extending tracks for said rollers, links connecting the upper edges of said doors to the car body, a longitudinal shaft, arms on said shaft, and links connecting said arms to the lower edges of said doors.

5. A dump car, comprising a hopper body, doors closing the bottom opening of said hopper, rollers connected to the lower edges of said doors, horizontally extending tracks for said rollers, means pivotally connecting the upper edges of said doors to the car body, said tracks at their inner ends being provided with inclined portions forming seats to receive said rollers in closed position of the doors, a longitudinal shaft at one side of the car, and means connecting said shaft to the lower edges of said doors and arranged when said shaft is rotated in one direction to produce opposite movement of said doors.

In testimony whereof I affix my signature.
SAMSON D. WRIGHT.