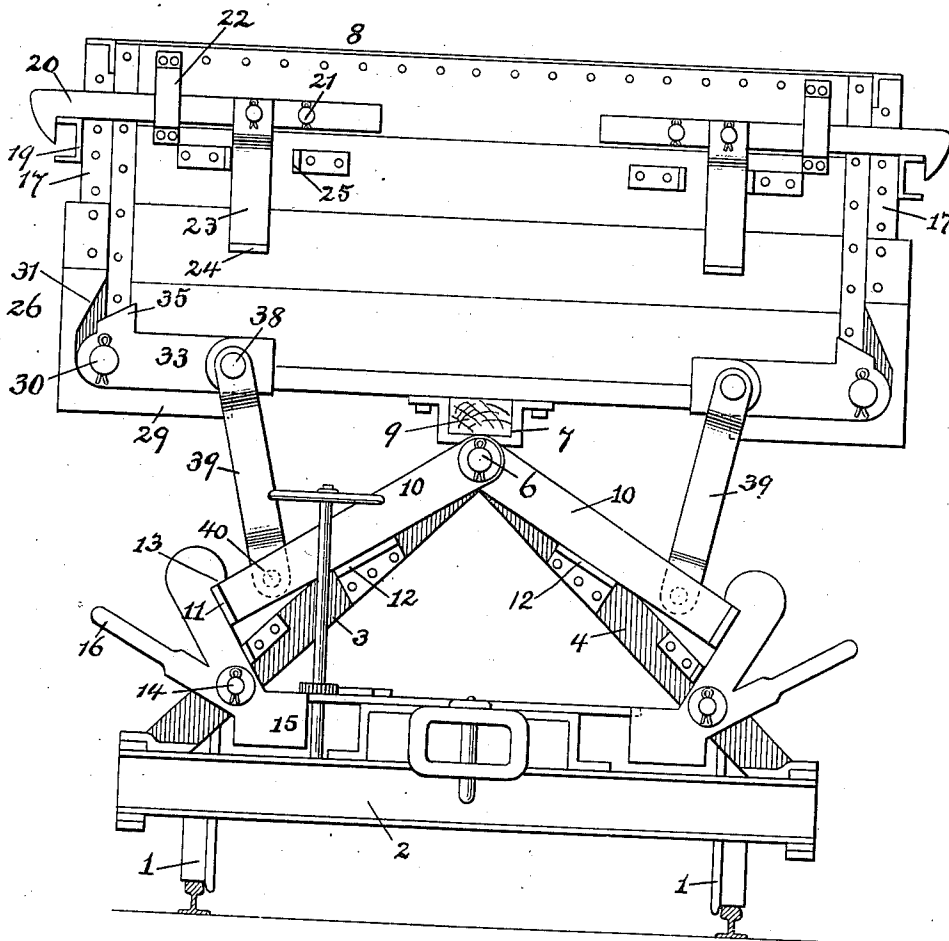


R. P. McCORMICK, JR.
SIDE DUMP CAR.
APPLICATION FILED APR. 14, 1911.

1,014,077.

Patented Jan. 9, 1912.
3 SHEETS—SHEET 1.

Fig. 1.



Inventor

Richard P. McCormick, Jr.

By

Mann & Co.

Attorneys

Witnesses

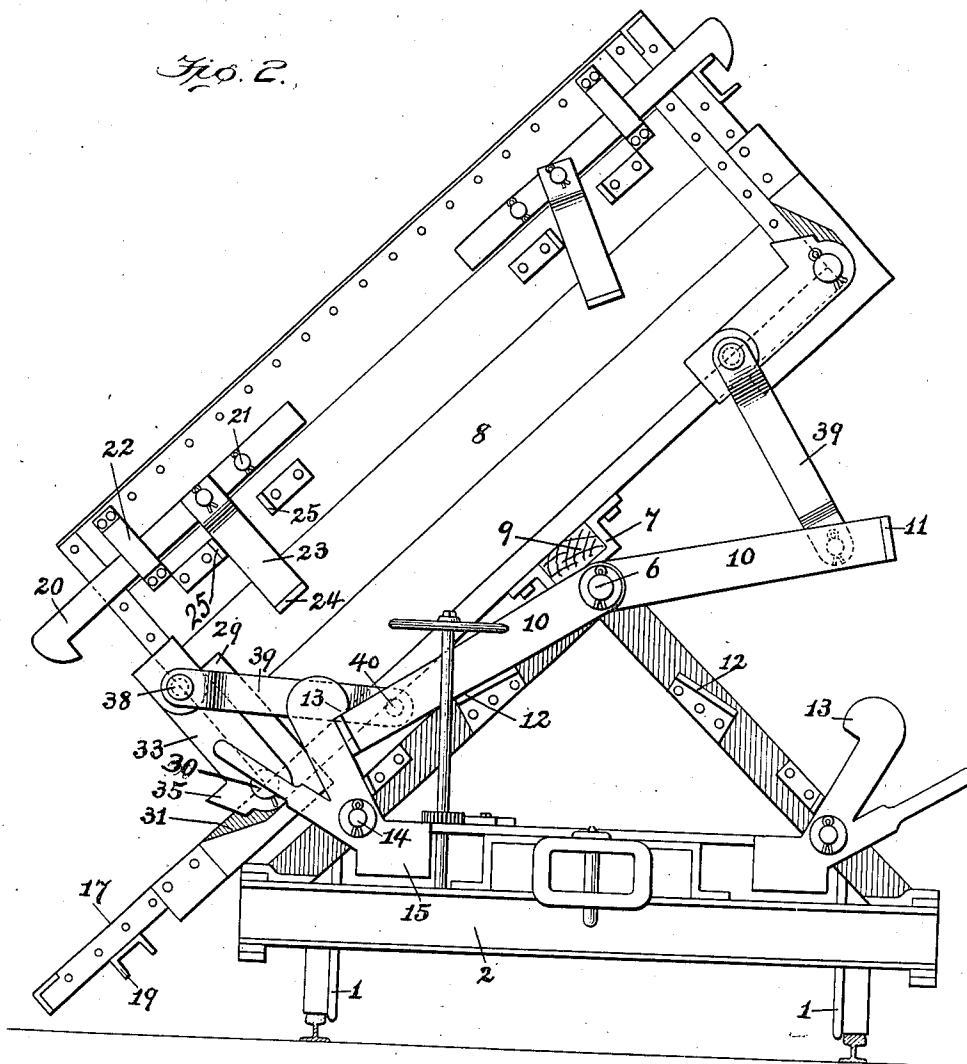
Edwin L. Bradford

G. Herd. Vogt

R. P. McCORMICK, JR.
SIDE DUMP CAR.
APPLICATION FILED APR. 14, 1911.

1,014,077.

Patented Jan. 9, 1912.
3 SHEETS-SHEET 2.



Inventor

Richard P. McCormick, Jr.

By Mann & Co

Attorneys

Witnesses

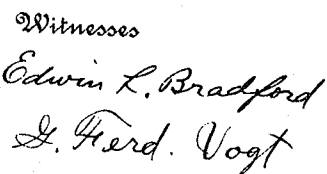
Edwin L. Bradford

G. Ferd. Vogt

APPLICATION FILED APR. 14, 1911.

Patented Jan. 9, 1912.

3 SHEETS—SHEET 3.



Inventor.

Richard P. McCormick Jr.

Mann & Co.

Attorneys

UNITED STATES PATENT OFFICE.

RICHARD P. McCORMICK, JR., OF PORTLAND, OREGON.

SIDE-DUMP CAR.

1,014,077.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed April 14, 1911. Serial No. 620,967.

To all whom it may concern:

Be it known that I, RICHARD P. McCORMICK, Jr., a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Side-Dump Cars, of which the following is a specification.

This invention relates to an improved dumping-car of that type wherein the car-body is mounted to run on track-rails and to tilt so as to dump its load from the side. In this type of dumping-car it is common to provide for tilting the car-body at one or both sides, and to have a door at each side. A construction of the doors of such cars has been such that when the car-body tilts, the door at the down, or lowest side, opens by raising. This mode of dumping the car and opening the door by raising, has objections one of which is that when large rocks are in the load that is to be dumped below the raised door, the rocks are liable, as they slide out, to catch or strike against the lower edge of the raised door. Another objection is that the material constituting the load when dumped falls very close to the track-rails on which the car is standing, and therefore is liable to block the track.

One object of my invention is to provide a tilting car-body with a side door that automatically opens by the door gradually turning down at the time the car-body tilts downward. Also when the door is fully opened at any position of the body the inner surface of the door will be on a plane even with the top surface of the car-body bottom.

Another object is to provide a tilting dumping car-body with a side-door, hinged at its bottom and that opens by its top turning outward and downward, and also to provide mechanism that will operate automatically to fasten and unfasten the door-latch, to open the door without shock in readiness to dump the load, and after dumping to close the door, and finally to lock the car-body in its elevated position ready for another load.

The invention is illustrated in the accompanying drawing, in which,

Figure 1 is an end elevation of the improved car whose body is shown in the upright position. Fig. 2 is an end elevation of the car but showing the car-body in the dumping or tilted position, and the door on

the lowermost side of the car opened by being turned down. Fig. 3 is a partial side elevation of the car, the door being closed, and shows the mechanical door-operating parts as seen in a direction transverse to the views in Figs. 1 and 2. Figs. 4 and 5 are section views through the hinged part of the door and car bottom, taken on the lines 4-4 and 5-5 respectively of Fig. 3. The door in Fig. 4 is in the closed position, and in Fig. 5 is in the open position. Fig. 6 is a view of one of the brackets carried at each end of the door,—it being understood this door is hinged at its bottom and opens by turning downward. Fig. 7 is a perspective view of the lever that co-acts with the end-bracket carried on the door. Fig. 8 is an end elevation of a part of the car-body and shows the latter partly tilted preliminary to dumping the load, and the door-latch disengaged from the door preparatory to the latter being opened, but the door still in the closed portion.

Referring to the drawing the numeral, 1, designates the truck-wheels standing on the track-rails, the truck-frame, 2, has at each end an I-channel beam and at the sides has a truss-beam; these parts of the car are or may be of any well-known or preferred construction. The truck-frame has at each of two ends arched braces, 3, 4, at the top apex of which is a suitable metal box or bearing, 5, (see Fig. 3) through which projects a horizontal trunnion or pivot-bolt, 6, that it attached by means of a bracket or clip, 7, to the bottom of the car-body, 8; a central beam or sill, 9, extends along the bottom of the car and has its ends in the said brackets or clips, 7. This construction enables the car-body to tilt to either side.

Two levers, 10, are below the car-body and each has one end pivoted at the center and one of these levers projects toward one side of the car and the other lever projects toward the opposite side. The free end of each lever, 10, has a right-angled terminal, 11. A stop device, 12, is bolted to each of the two arched braces, 3, 4, and serves as a seat or stop-device for the said levers, 10, and prevents them from tilting down too far but leaving them free to tilt upward. A dog, 13, is pivoted at, 14, and the hook at its upper end engages the said right-angled terminal, 11, of one lever; a weight, 15, attached to the dog serves to keep the dog-hook normally in contact with said termi-

nal; a handle, 16, also attached to the dog affords a grasp for the operator's hand when he desires to disengage the dog-hook from the said terminal. As there are two levers, 10, one being for each side so there must be two dogs, 13, one being for each lever. The free end of the lever, 10, is forked or bifurcated at 11¹, as seen at Fig. 3. The mechanical provision of two levers, 10, and two dogs, 13, is necessary only when the car-body, 8, has two side doors—one opposite the other so as to tilt and unload from either side. If a tilting door was at one side only of the car, then a lower lever, 10, and dog, 13, at the opposite side might be dispensed with; it would only be necessary to have at that side any well-known means, such as a chain, to prevent that side of the car from tilting up when the loaded car is moving on the track. The car shown in the drawing has doors at two opposite sides and is provided with means for tilting downward at both sides. As the mechanical means at each side of the car body to automatically open and close one door is the same, it will be sufficient for the purposes of this description to describe the mechanism at one side and that operates only one door.

The vertical door, 17, has its lower edge hinged to the bottom, 18, of the car, and the manner of hinging will be presently described. A channel bar, 19, extends entirely across the door, 17, from end to end and the ends of this bar project beyond the ends of the door; a latch-lever, 20, is pivoted at, 21, to the end of the car-body and at its free end the latch has a down-pointing hook that engages the said projecting end of the channel bar, 19, on the door, and thereby the door is held closed. The latch, 20, plays in a keeper bracket, 22, on the car-body, and a trip-lever, 23, is jointed to the latch and hangs therefrom pendant; the lower end of the trip-lever has a foot, 24. At two opposite sides of the hanging trip-lever are angle-iron guards, 25, secured to the car-body, and these prevent the said trip-lever from swinging too far out of a vertical position, when the car is being dumped, or being righted to its normal upward position. The means for automatically acting on the pendant trip-lever, 23, to cause it to release the latch-hook from the said door-bar, 19, will be presently described. Each end of the door carries a bracket, 26, shown separately in Fig. 6. The upper or vertical wall of this bracket has at its highest part a right-angled flange, 27, provided with holes for bolts, 28, by which it is fastened rigidly to the door. The bracket also has at its lowest part an arm, 29, that is horizontal when the car-body is in its raised position; this arm projects at a right-angle with respect to the vertical wall of the bracket; a pivot-pin, 30, projects horizontally from the vertical wall

and above the said arm, 20, and an inclined cam-face, 31, is formed on the bracket. The position of the pivot-pin, 30, is such that a horizontal line drawn lengthwise through the center of the said pin would pass along the lower edge, 32, of the door, 17, as may be seen in Fig. 3; this lower edge of the door adjoins the car floor. A door-operating lever, 33, has a hole, 34, which takes over the pivot-pin, 30, and turns thereon and thereby said lever may swing vertically at the end and lower corner of the car-body. The end of this lever is rounded and is concentric with the hole, 34, and at its uppermost edge, over the said hole, the lever has a lateral prong, 35, with an inclined face. This lever is shown in perspective in Fig. 7; the swinging end of the lever forms a hook, that is, the end is bent U-shape or doubled-back at, 36, and points toward the pivoted end, and this end has a hole, 37, through which a pin, 38, passes to make joint with the upper end of a link, 39, whose lower end by means of a pin, 40, connects with the bifurcated end, 11¹, of the lever end, 10, below the car body. It is to be understood that if a tilting door was at one side only of the car, then in such case, the lower end of the link, 39, need not be pivoted to a lower lever, 10, below the car-body, but may be pivoted to any suitable object or part below the car-body.

The operation of the latch and the opening of the door when the car is being dumped, are as follows:—In the drawing the car is illustrated as being dumped or tilted down at the left-hand side. To permit this the dog, 13, at the right-hand side must be released from the terminal, 11, of the lever, 10; the right-hand side of the car-body may then be pushed upward by the men in attendance, and thereupon the car-body will tilt on the pivot-bolt, 6, and the left-hand side of the car-body will go downward. The lever, 10, at the left-hand side can not move down because it rests upon the stop, 12; as the car-body tilts down the free end of the bracket-lever, 33, will be forced upward by the link, 39, as shown in Fig. 8; the first effect of this movement will be to cause the foot, 24, of the trip-lever, 23, to come down on the upturned end, 36, of said bracket-lever as in Fig. 8, and thereby raise the trip-lever and release the latch-hook from the bar, 19, on the door, 17, and thus the door is free to tilt on its bottom hinges. At this stage of the movement the lateral prong, 35, of the bracket-lever will have its inclined face in contact with the cam-face, 31, of the bracket, 26, on the end of the door; a still further down-tilting movement of the car-body causes the said lateral prong, 35, to press against the cam-face, 31, and force the door to partly open; the door will then turn down on the door hinges and the

bracket, 26, will also turn until the upward swinging movement of the arm, 29, of the said bracket contacts with the bracket-lever, 33; the door will then gradually turn down as the car-body continues to tilt and at last when the door is open to its limit it will be inclined in the same inclined plane as the top surface of the bottom, 18, of the tilted car-body, see Fig. 2, and of course the load will at once be dumped. It will be seen that the open door, 17, when turned down serves as a slide or chute over which the material composing the load will pass; this material is thus kept away from the car-track. It is a feature of this operation that the door opens gradually as the car-body tilts, and it is impossible for the door to open by a sudden fall, this is important as a fall of the door would produce such a shock as to break the hinges or produce other injury. When the car-body is pulled back from its tilted position to the elevated position shown in Fig. 1, the hook-end of the latch, 20, will be in the down position due to the action of gravity, and the lower edge of the bracket-lever, 33, will be in contact with the arm, 29, (see Fig. 2), and as the lower lever, 10, on the left-hand side is held down by the dog, 13, the said bracket lever, 33, will simply turn on the pivot, 30, and as the left-hand side of the car-body gradually rises, the said bracket-lever by bearing down on the bracket arm, 29, will cause the door, 17, to swing upward until it closes. As the bracket lever, 33, swings down from the position in Fig. 2, to the position in Fig. 1 it strikes the trip-lever, 23, and knocks it toward the right-hand side, and when the door, 17, has been nearly closed, its bar, 19, will take under the rounded end of the latch-hook and raise it, and the latch-hook will then drop and engage the bar. The door is thus raised, closed and latched, and while these operations are being done the lower lever, 10, at the right-hand side, and which was elevated with the car-body, has been lowered, and as this lower lever comes down it strikes the rounded upper end of the dog, 13, which will swing back on its pivot, 14, and allow the end, 11, of said lower lever to pass, and then the dog will swing forward and engage over the said lever-end, 11, which locks the car-body in its elevated position, as in Fig. 1.

While the car-body must be tilted to dump by manual action, and after dumping its load must be pulled back also by manual power, yet all the mechanical operations of the latch to unfasten and to fasten the door, and to open the door and then to close it again, and finally to lock the car-body in its elevated position, are effected automatically.

The hinges for the door, 17, are shown in Figs. 3, 4 and 5. Referring to Fig. 4, the

lower inside corner edge of the door, and the upper edge of the car-body floor are on the axial line with the pintle, 41, of the hinges which are of the knuckle-joint type. Each hinge consists of a leaf, 42, having an inward projecting rounded knuckle, 43, said leaf being secured to the outer surface of the door by screws, 44, and a second leaf, 45, having two rounded knuckles, 46, and secured to the lower surface of the floor; a notch is cut in the lower edge of the door and another notch in the edge of the floor to receive the said knuckles, and the pintle pin, 41, unites the said three knuckles. When the door of the car is open and fully turned down at an incline, as in Figs. 2 and 5, the knuckles serve as stops, and the two leaves, 42, and 45, are in the form of a straight inclined plate. This construction produces a close fit between the floor and the door, regardless of the position the door may have. Any number of hinges may be used on the door, I prefer to use four.

To facilitate the work of the men who are loading the car with shovels, the side door at either side of the car-body may be opened to a horizontal position so as to be level with the car-bottom, by releasing the dogs, 13, on the side at which it is desired to have a door open; with the door thus turned down the shovellers loading need not throw the dirt so high.

It is obvious the bracket, the bracket-lever, and any other part of the mechanism may be made of metal either cast, rolled or forged; it is also to be understood that the claims hereinafter set forth permit various changes to be made in the shape and arrangement of parts shown.

Having thus described my invention what I claim and desire to secure by Letters Patent is,—

1. A dumping car having in combination a car-body pivoted at its center to tilt side-wise; a side door hinged at its lower edge and opening by the top of the door tilting outward and downward; a suitable latch to hold the door closed; a bracket attached to the end of the door and its bottom having an arm projecting substantially at a right-angle; a door-operating lever whose pivot has its axis in alinement with the axis of the pintles of the door-hinges and said lever provided with a lateral prong which forces the door to open when the lever moves in one direction, and said lever when moving in the opposite direction contacting with said right-angled arm to close the door, and a link whose upper end connects with said door-operating lever and whose lower end is pivoted at a point below the car-body.

2. A dumping car having in combination a car-body pivoted at its center to tilt side-wise; a side door hinged at its lower edge and opening by the top of the door tilting

outward and downward; a latch lever pivoted to tilt in a vertical plane and having a hook that engages the door by the action of gravity; a trip-lever jointed to the latch and hanging therefrom; a door-operating lever and a link whose upper end connects with said door-operating lever and whose lower end is pivoted at a point below the car-body, whereby when the door-side of the car-body tilts downward the said link will force relatively upward the free end of the door-operating lever and cause it to lift the trip-lever and release the latch-hook from the door.

3. A dumping car having in combination a car-body pivoted at its center to tilt side-wise; a side door hinged at its lower edge and opening by the top of the door tilting outward and downward; an upright bracket attached to the end of the said door and its bottom having an arm projecting at an angle with respect to the said upright part; a door-operating lever pivoted above the said arm of the bracket and forcing the door to open when the lever moves in one direction and closing the door when the lever moves in the opposite direction, and means to impart movement to said door-operating lever when the car-body either tilts downward or is raised upward.

4. A dumping car having in combination a car-body pivoted at its center to tilt toward

either side; two levers below the car-body the adjoining ends of both levers pivoted and one projecting from its pivot toward one side and the other toward the opposite side; a stop device for each of said levers to prevent the lever from tilting down too far; means to engage each lever and hold it down while the other lever may be disengaged and free to tilt up; a door at each side of the car-body and hinged at its lower edge and opening by the top of the door tilting outward and downward; a suitable latch to hold each door closed; a bracket attached to the end of each door and at its bottom having an arm projecting substantially at a right-angle; a door-operating lever pivoted above said bracket arm and said lever provided with a lateral prong which forces the door open when moving in one direction and said lever when moving in the opposite direction contacting with said right-angled arm to close the door; and a link connecting each door-operating lever with one of said two levers below the car-body.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD P. McCORMICK, JR.

Witnesses:

R. P. McCORMICK,
W. C. CAMERON.