

V. M. SUMMA.
CAR DOOR OPERATING DEVICE.
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1,066,547.

Patented July 8, 1913.

Fig. 1

WITNESSES
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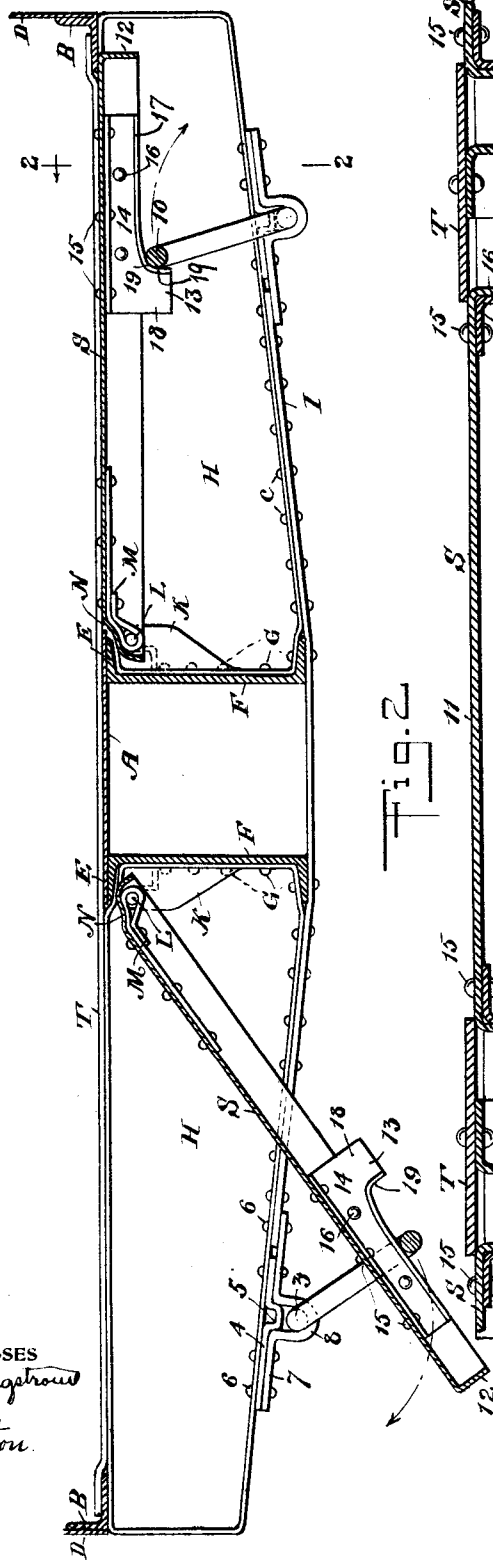
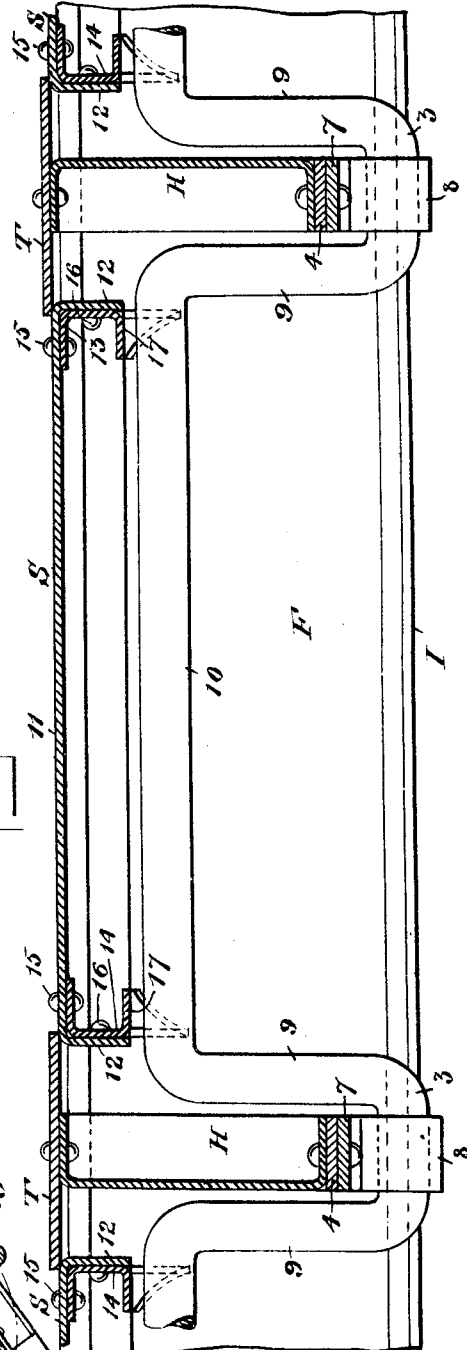


Fig. 2



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CAR-DOOR-OPERATING DEVICE.

1,066,547.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, VICTOR M. SUMMA, residing at St. Louis, Missouri, and being a citizen of the United States, have invented certain new and useful Improvements in Car-Door-Operating Devices, (Case B,) of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof will occur to persons skilled in the art.

In said drawings: Figure 1 is a transverse sectional view taken through the center sills and drop doors of a dumping car, showing the cross-bearers in elevation, and showing a preferred embodiment of my invention attached thereto. Fig. 2 is a longitudinal sectional view of the car, the section taken on the line 2—2 of Fig. 1 and looking in the direction of the arrow.

The object of the invention is in general to provide a simple door lifting and locking means adapted to be applied to the hinged doors of dumping cars of the class commonly known as general service cars, the principal object being to provide a simple, durable and efficient means for operating the door, and more particularly the object of the invention is to provide a reinforcing bearer or track for the door engaging the door actuating means, so as to minimize wear between these members.

Referring to the parts, there is shown in the physical embodiment illustrated, spaced apart double center sills F united by a top plate A, as is usual with constructions of this character.

H represents generally a cross-bearing member commonly incident to car under-frame constructions, which is connected with the adjacent center sills by means of rivets G passing through its flanges and through the webs of the center sills.

I is a bottom tie plate connected with the diaphragms H and extending below and connecting the center sills and fastened to the center sills by means of rivets R and fastened to the lower flanges of the diaphragms H by means of the rivets C.

B—B indicate angles which are commonly used as bottom or tension angles of plate girder side walls, which side walls are shown fragmentarily at D, and S indicates in general the drop doors of the car. Extending outwardly from the web of each of the center sills F, and positioned below the upper flange E of these sills is an outstanding bracket K, to the upper outer portion of which bracket is pivoted by means of a pin L and strap M, the inner edge of the door S. This inner edge of the door S is outlined by a downwardly and outwardly extending flange N, adapted to fit beneath the upper flange E and top plate A, so that when the door is in a raised or closed position, the door S is in effect a continuation of the top plate, and lies substantially in a horizontal plane with this plate. This door is so pivoted to the bracket relative to the top flange and cover plate that when the door is in its lowered or open position, as shown in the left-hand side of Fig. 1, the extreme inner edge of the door contacts with the under-side of the top flange E, preventing infiltration of the lading between the door and center sills. Connecting the cross-bearers on both sides of the car and extending longitudinally of the same is a crank shaft 3, which crank shaft is supported from the cross-bearers preferably by means of brackets fastened to the lower flange of the diaphragm H, or other cross-bearers, and, as shown in the illustration, the bracket comprises a top bearing plate 4 having a central dependent U portion 5, which plate forms in effect an outer continuation of the bottom tie plate I. Disposed beneath and fastened to the plate 4 by means of rivets 6, which pass through this plate and through the lower flange of the bolster H, is a hanger plate 7 having a central dependent U hanger 8 straddling the U portion 5, and affording a bearer for the shaft 3. By this construction it is seen that the shaft normally rests within the crotch of the U hanger 8, but is prevented from contacting with the diaphragm H by means of the U portion 5. On each side of the bracket so formed the shaft is bent into crank arms 9, and is then bent into a relatively long crank pin 10, disposed beneath and extending parallel with the outer edge of the door S, it being understood that each door is supported upon the crank pin

10 adjacent opposite longitudinal sides thereof. The pin 10 is formed integral with double crank arms 9—9, supported from the cross-bearers on opposite sides of each of the doors.

5 The doors S, as usually constructed, comprise a flat floor forming portion 11 and an outlining depending flange 12 extending thereabout. It has been usual with devices
10 of this character to have the depending flange directly engage the pin 10, but this has been found to either bend the flange 12 or to cut through the pin 10. In order to obviate this objection there is fastened beneath each side adjacent the outer edge of
15 each door a casting 13. This casting, as shown more particularly in Fig. 2, has a channel portion 14 facing inwardly of the door and fastened to the top portion 11 by means of rivets 15, and the depending flange
20 12 by means of rivets 16, the lower rib 17 of this casting affording a materially wide bearing surface to rest on the pin 10, and this lower flange 17 may be made as wide
25 as desired, and, of course, may even extend entirely across the bottom of the door.

In order to form a stop to limit the rotation of the shaft 3 when in position closing the door, as shown in the right-hand side of
30 Fig. 1, a shouldered casting is secured under the door and said casting 13 has a depending rear leg 18, the outer edge of which may be formed into a broad flange 19, forming with the flange 17 an L or J-shaped bearing
35 and stop for the pin 10.

Assuming the door to be open, as shown in the left-hand side of Fig. 1, the shaft 3 is rocked in a clock-wise direction, as indicated in the dotted lines, which rocking of
40 the shaft will cause the pin 10 to bear against the casting 13, forcing the door into the closed position shown in the right-hand side of Fig. 1, and in Fig. 2, at which time the pin 10 will be seated in the angle of the
45 bearing plate 19, in which position it will be noted that the weight of the lading on the door S will be transmitted through the casting 13, pin 10 and arms 9 to the brackets fastened to the cross-bearers, whereby the
50 weight of the lading is transmitted to the substantial cross-bearers through members which are capable of withstanding this pressure, and at the same time utilizing the thin sheet doors now in general use. The doors
55 are stopped in their closing position against the angle B and the bolster top plates T.

It will be observed that the crank arms 9 occupy an oblique position when the door is closed, the angle of inclination of the crank
60 arm shown at the right-hand side of Fig. 1 being $16^{\circ} 30'$, so that the shoulder of the casting 13 at the inner end thereof performs a useful function in preventing continued rotation of the shaft under the closed
65 door due to the weight of the door and the

lading. Without the said shoulder, forming a stop for the long crank pin, said pin might be shifted inwardly far enough to permit the superposed load to cause said crank arm to drop inwardly, that is toward
70 the center sills. However, when the said crank pin contacts with the shoulder of the casting 13, it is stopped and can only travel in a direction toward the outer end of the door. It will be observed that the bottom
75 flange 17 of casting 13 is deflected upwardly from the vertical portion 19 thereof at a slight inclination so as to reduce as much as possible the friction incident to the outward movement of the long crank pin 10. Due to
80 the nature of the lading commonly transported in cars of this class, disintegration thereof does not commonly occur until the drop doors are somewhat opened, hence in rocking the operating shaft to release such
85 doors the upward inclination of the bottom flange of the casting performs an important office, as it permits outward movement of the long crank pin, opposed only by friction due to the weight of the door, until said
90 crank arms 9 have passed a vertical or relatively vertical position, after which continued outward movement thereof will be comparatively easy.

What I claim is:—

95 1. In a dumping car, a door, a door actuating mechanism, a cross bearer member and a bracket supporting said door actuating mechanism from said cross-bearer member, said bracket comprising a pair of super-
100 imposed plates, each plate having a U-shape portion formed therein, one of said portions straddling the other.

2. In combination, a dumping door having a hinged side portion and an opposite
105 free edge portion, a reinforcing member secured to and depending below said door, said member having a depending shoulder at its inner end, and a shaft having crank arms and connecting crank pin, said crank
110 arms adapted to extend obliquely inwardly toward the hinged side of the door, and the shoulder on said member being adapted to serve as a stop at predetermined times for said crank pin.
115

3. In a lifting and locking device for
120 dumping doors, a rockable shaft having crank arms and crank pin, a door, a member on the door having a shoulder in the path of movement of the crank pin and adapted
125 to serve as a stop therefor when the crank arms occupy an oblique inwardly extending position, said member having a bottom contour relatively vertical at one portion, and a portion inclined upwardly and outwardly from said vertical portion.

4. In combination, a dumping drop door
130 hinged near one edge, a reinforcing stop casting secured to the door and extending outwardly from said hinged edge and hav-

ing a shoulder near its inner end, and a rock-
able shaft having crank arms and having a
crank pin adapted to bear against said cast-
ing to lift the door and to be stopped by said
5 shoulder to lock the door in closed position
when said crank arms extend obliquely
inwardly.

5. In a dumping car, a door operating de-
vice comprising a door, a shouldered wear
10 resisting member on the underside of the
door, in combination with an operating

shaft having a cranked portion adapted to
contact with said member to close the door
and occupy an oblique position in contact
with the shoulder on the member to prevent 15
accidental opening of the door.

In witness whereof I have hereunto set
my hand in the presence of two witnesses.

VICTOR M. SUMMA.

Witnesses:

OSCAR HOCHBERG,

JAMES J. COOPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."