

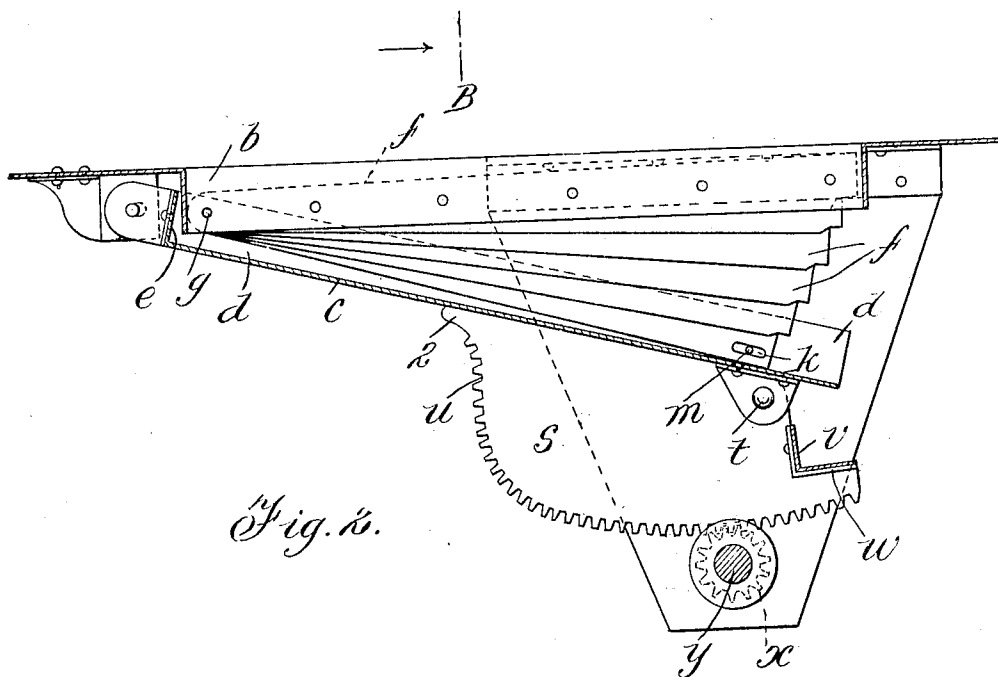
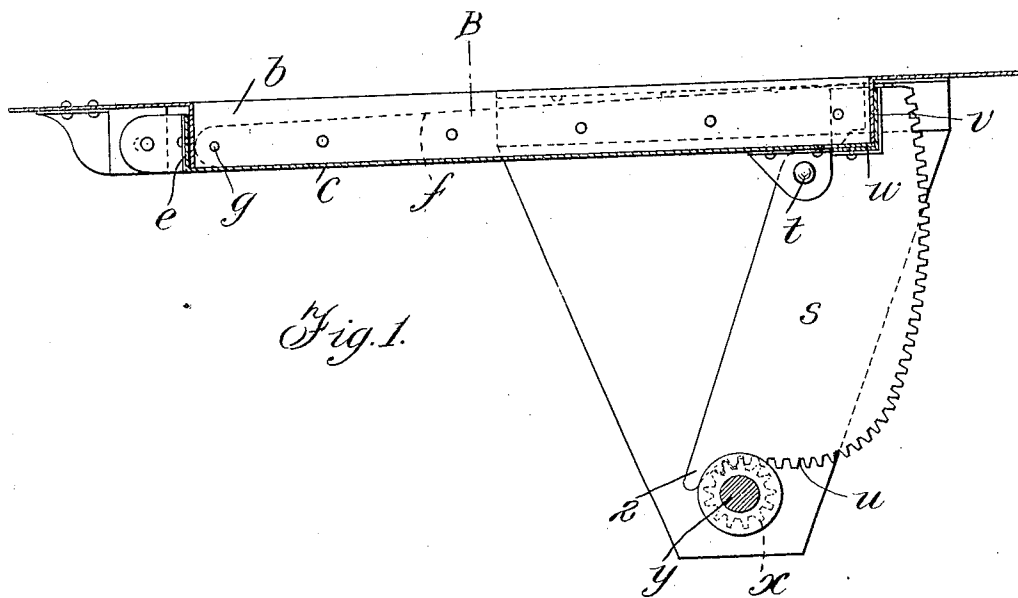
TRAP DOOR OPERATING MECHANISM.

APPLICATION FILED JUNE 9, 1908. RENEWED OCT. 3, 1910.

Patented Aug. 13, 1912.

2 SHEETS-SHEET 1.

1,035,801.



Witnesses

Mt. Pleasant

Otto W. Meissner

Inventor

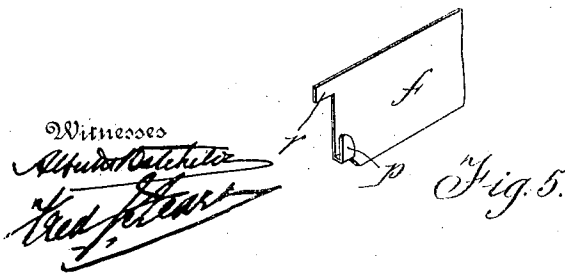
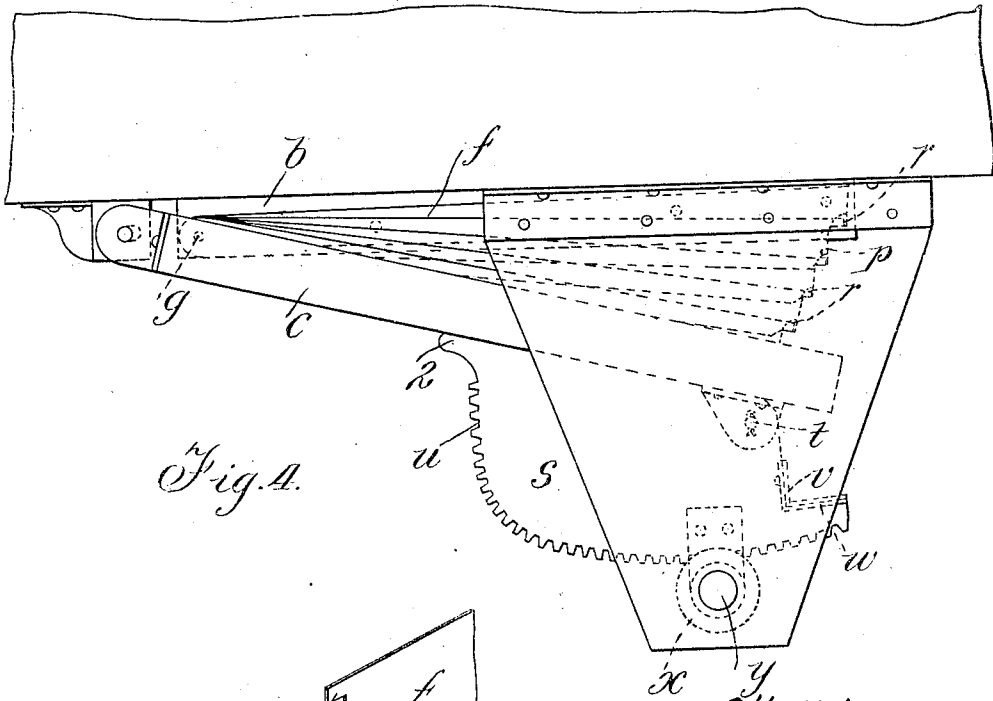
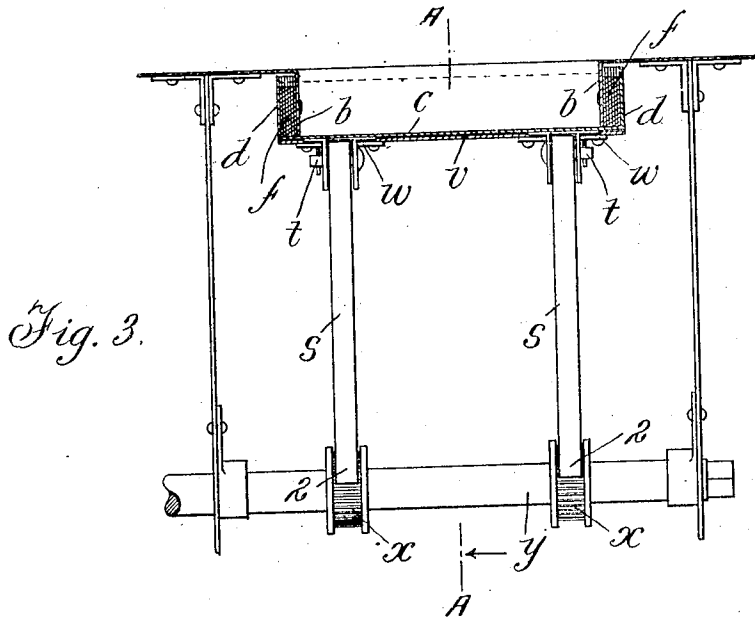
By Attorney

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O. W. MEISSNER.
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 2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

OTTO WILLIAM MEISSNER, OF WESTMOUNT, QUEBEC, CANADA.

TRAP-DOOR-OPERATING MECHANISM.

1,035,801.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed June 9, 1908, Serial No. 437,596. Renewed October 3, 1910. Serial No. 585,162.

To all whom it may concern:

Be it known that I, OTTO WILLIAM MEISSNER, of Westmount, Province of Quebec, Canada, have invented certain new and useful Improvements in Trap-Door-Operating Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention consists of means for closing the space between the side edges of the door and sides of the door opening when the door is open, for preventing the substance being discharged from falling through such spaces; and the invention also consists of the combination with a troughed door with its free end open of a cam pivoted to the door and having mounted thereon a valvular member for closing the open end of the latter; a shaft; a rack and pinion operatively connecting the shaft to the cam; and means for rotating the shaft. For full comprehension, however of my invention reference must be had to the accompanying drawing, forming a part of this specification, in which similar reference characters indicate the same parts and wherein—

Figure 1 is a longitudinal sectional view of a portion of the hopper bottom of a car illustrating the flanged opening therein and the door closed, the section being taken on line A, A, Fig. 3; Fig. 2 is a similar view with the door open; Fig. 3 is a transverse sectional view taken on line B, B, Fig. 1; and Fig. 4 is a side elevation with the parts in the same position as in Fig. 2. Fig. 5 is a detail view of the free end of one of the members of the improved collapsible means.

The flanged drop door opening *b*, door *c*, with its side and rear-end flanges *d* and *e*, respectively, are as illustrated in other applications for patents filed by me and will therefore not be described in detail.

A pair of guards are located between the side edges of the door and the door opening, each of such guards being made up of a series of slats *f* pivoted together at one end as at *g*, and spreading in a wedge-shaped sheet. The topmost slats are riveted to the exterior of the side flanges of the door opening and the lowermost slats are slotted as at *h* through which they are slidably connected by rivets *m* to the inside of the side flanges *d* of the door. The members of each guard

are provided with means to prevent complete separation at their free ends by forming the same with upwardly extending hooks *p* at the lower corners and projections *r* at their upper corners, the projection of each member being caught in the hook of the member above it in the order in which they spread. The purpose of these guards is to prevent the contents of the car as it is dumped from being precipitated over the side flanges of the door.

My improved door operating mechanism comprises a pair of toothed cams *s* pivoted as at *t* to the door and each presenting a substantially flat portion *u*, an angular valvular member *v* being secured in angular seats *w* formed in these cams and such valvular member is adapted to be thrown across and to close the open end of the door when the cams are swung to position to hold the door closed. A pair of pinions *x* mounted rigidly upon a suitably supported manually rotated shaft *y*, have these toothed cams in mesh therewith, and lugs *z* extending at practically right angles to the flat portion *u*, limit the movement of the cams in one direction over such pinions. The flat portions when projected over the shaft by the pinions present an effective bearing for the cams and the door supported thereby, and at the same time throws the center of gravity to that side of the shaft thus imparting the tendency for the parts to remain in this position.

The trap door described herein is applicable to cars as well as to bins or other structures where such a door may be desirable, and it is not claimed broadly herein as broad claims thereto are embodied in applications filed by me as follows: Serial #401876, November 12, 1907 (Case A); and Serial #401955, November 13, 1907 (Case B).

What I claim is as follows:—

1. The combination with the sides of a discharge opening presenting downwardly projecting flanges, of a drop door having fixed flanges projecting upwardly from the body thereof and inclosing the said downwardly projecting flanges when the door is in closed position, and collapsible devices closing the spaces between the flanged sides of the door and the flanged sides of the door opening when the door is open, such

devices being located between the said upwardly and downwardly projecting flanges when the door is closed.

2. The combination with the sides of a discharge opening presenting downwardly projecting flanges, of a drop door having fixed flanges projecting upwardly from the body thereof and inclosing the said downwardly projecting flanges when the door is in closed position, and collapsible devices closing the spaces between the flanged sides of the door and the flanged sides of the door opening when the door is open, such devices overlapping and being attached at opposite sides respectively to the inner faces of the said door flanges and the outer faces of the flanged sides of the door opening.

3. The combination with the sides of a discharge opening presenting downwardly projecting flanges, of a drop door having fixed flanges projecting upwardly from the body thereof and inclosing the said downwardly projecting flanges when the door is in closed position, and collapsible devices closing the spaces between the flanged sides of the door and the flanged sides of the door opening when the door is open, such devices being connected at one side to the sides of the door and at the other side to the sides of the door opening and overlapping at opposite sides the inner faces of the door flanges and the outer faces of the flanged sides of the door opening.

4. The combination with the sides of a discharge opening presenting downwardly projecting flanges, of a drop door having fixed flanges projecting upwardly from the body thereof and inclosing the said downwardly projecting flanges, and members forming upward continuations of the door flanges, and overlapping and inclosing the outer faces of the said downwardly projecting flanges and closing the space therebetween and the door flanges when the door is open.

5. The combination with the sides of a discharge opening presenting downwardly projecting flanges, of a hinged drop door having upwardly projecting flanges on the hinge side and the two adjacent sides inclosing the said downwardly projecting flanges when the door is in closed position, and a pair of collapsible devices for closing the spaces between the said adjacent sides of the door and the corresponding sides of the opening when the door is open, such devices each including a series of slats hinged to the sides of the door opening within the space inclosed by the said upwardly projecting flanges on the hinged and adjacent sides of the door.

6. The combination with the sides of a discharge opening presenting downwardly projecting flanges, of a hinged drop door having upwardly projecting flanges on the

hinge side and the two adjacent sides inclosing the said downwardly projecting flanges when the door is in closed position, and a pair of collapsible devices for closing the spaces between the said adjacent sides of the door and the corresponding sides of the opening when the door is open, such devices each including a series of slats hinged to the sides of the door opening within the space inclosed by the said upwardly projecting flanges on the hinged and adjacent sides of the door and eccentric to the hinge point thereof, and means securing the said devices to the door in a manner to have sliding movement relatively thereto substantially in the plane thereof, during opening or closing movement of the door.

7. The combination with the flanged sides of a discharge opening, and a hinged flanged drop door controlling such opening, such door having its free end open, of collapsible means closing the space between the sides of the door and the sides of the door opening when the door is open, such means consisting of a series of slats hinged together and spreading in wedge-like form, the top slat being secured to the side of the door opening, the top of each of the others having a projection extending in the plane thereof and the bottom of each member a lateral hook adapted to receive and support the projections of the members beneath it, the lowermost member of the collapsible means resting permanently in contact and moving with the door.

8. The combination with a hopper door, of an operating shaft, a cam pivoted at one end to the door and presenting at its opposite end a substantially flat peripheral portion extending substantially at right angles to a line drawn therefrom to the cam axis, and means operatively connecting the shaft to the cam whereby the periphery of the cam is caused to move to and fro past the shaft, for the purpose set forth.

9. The combination with a door, of an operating shaft, a toothed cam pivotally mounted upon the door, and a pinion upon the shaft and engaging the teeth of the cam, the said pinion and cam being so disposed as to have the point of engagement therebetween located approximately in a straight line intersecting the axes thereof.

10. The combination with a door, of an operating shaft, a toothed cam connected at one end to the door and presenting a substantially flat portion at its opposite end, and a pinion upon the shaft and intermeshing with the teeth of the cam, the said pinion and cam being so disposed as to have the point of engagement therebetween located approximately in a straight line intersecting the axes thereof.

11. The combination with a flanged door having its free end open, of a valvular mem-

ber for closing the open end of the door, a toothed cam in operative relation with the valvular member, a pinion intermeshing with the teeth of the cam, and means for rotating the pinion.

12. The combination with a flanged door having its free end open, of an operating shaft, a cam connected at one end to the door and presenting a substantially flat portion at its opposite end and means operatively connecting the shaft to the cam whereby the periphery of the cam is caused to move to and fro past the shaft, and a valvular member carried by the said cam and adapted to close the open end of the door, for the purpose set forth.

13. The combination with a flanged door having its free end open, of an operating shaft, a toothed cam connected at one end to the door and presenting a substantially flat portion at its opposite end, and a pinion upon the shaft and intermeshing with the teeth of the cam, and a valvular member carried by the said cam and adapted to close the open end of the door, for the purpose set forth.

14. The combination with a hinged door and a valvular member carried by the door and adapted to seal the joint between the free end of the door and the door frame, and positively acting means for causing the valvular member to swing away from the free end of the door when the latter opens.

15. The combination with a flanged door frame, of a troughed door constructed and

arranged to engage the flanges of the frame, and a valvular member coacting with the open end of such troughed door, of a toothed device carrying such valvular member and adapted to operate the latter, a pinion in operative engagement with such device, and means for rotating the pinion.

16. In a dump car, the combination of a trap door, a valvular member for sealing one end of the door, and means for swinging the valvular member away from the said end of and underneath the door when the latter is opened.

17. In a dump car, the combination of a trap door, a valvular member movably secured to the door and adapted to seal one end thereof, and means for swinging the valvular member away from the said end and underneath and adjacent the body of the door when the latter is opened.

18. In a dump car, the combination of a trap door, a valvular member for sealing one end of the door, and automatically acting means for swinging the valvular member away from the said open end and underneath and adjacent the body of the door when the latter is opened.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

OTTO WILLIAM MEISSNER.

Witnesses:

WILLIAM G. McFERT,
FRED J. SEARS.