Oct. 26, 1971 S. R. DAMY 3,614,932

EMBANKMENT TERRACING DOOR FOR HOPPER CARS

Filed Dec. 27, 1968 2 Sheets-Sheet 1

Fig. 1.

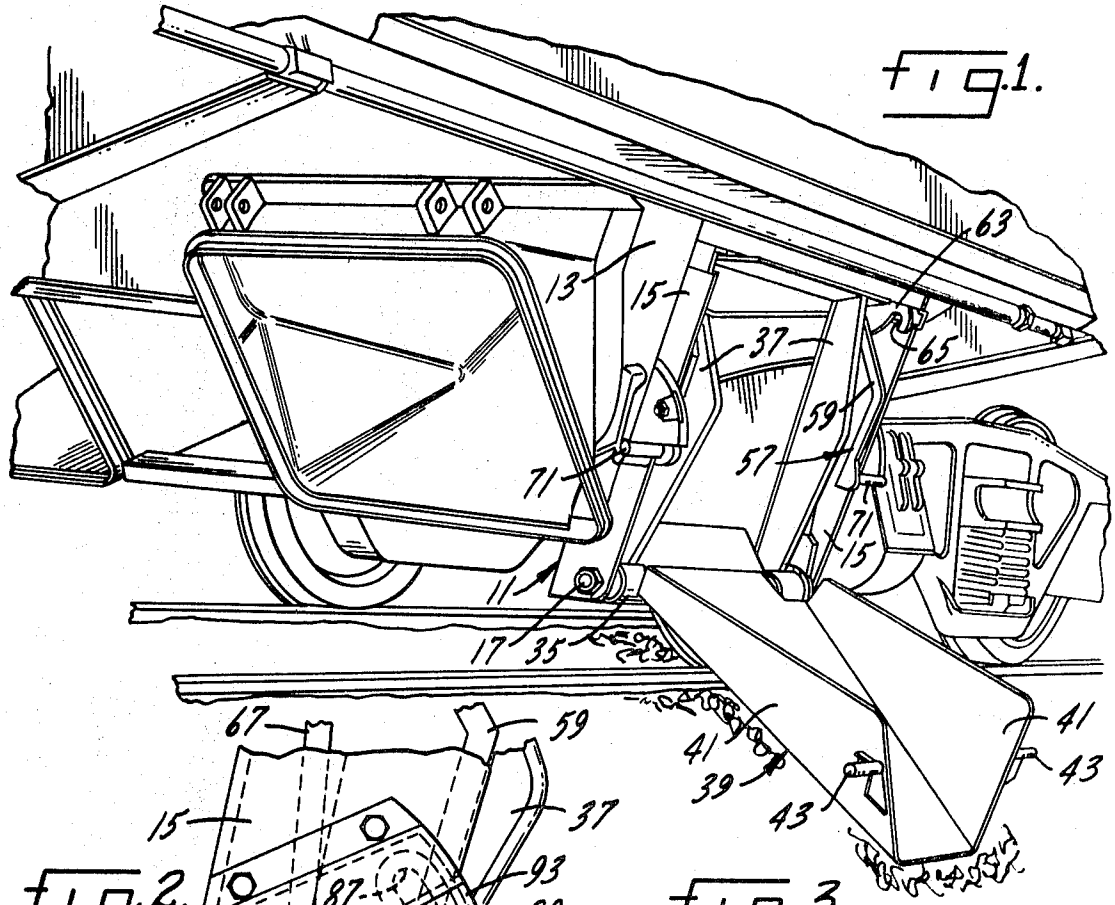


Fig. 2.

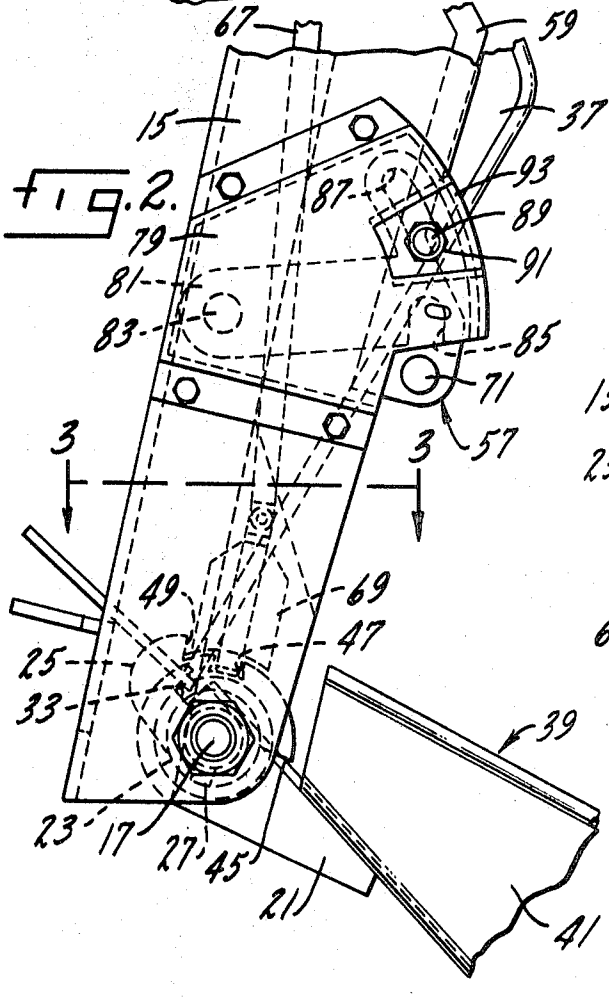
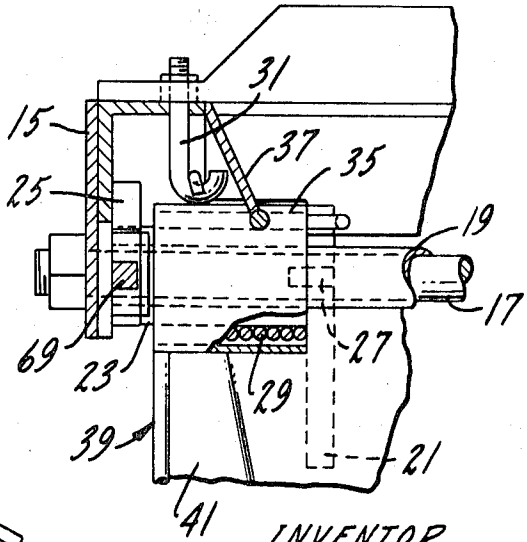


Fig. 3.



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Fig. 4.

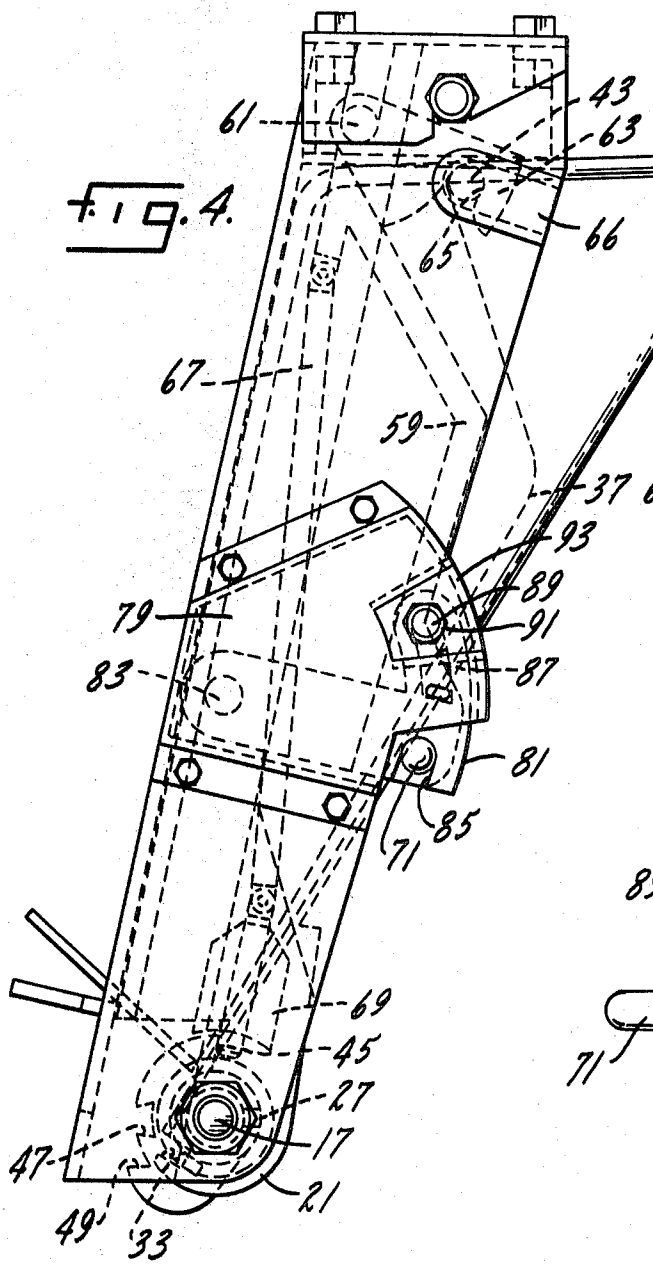
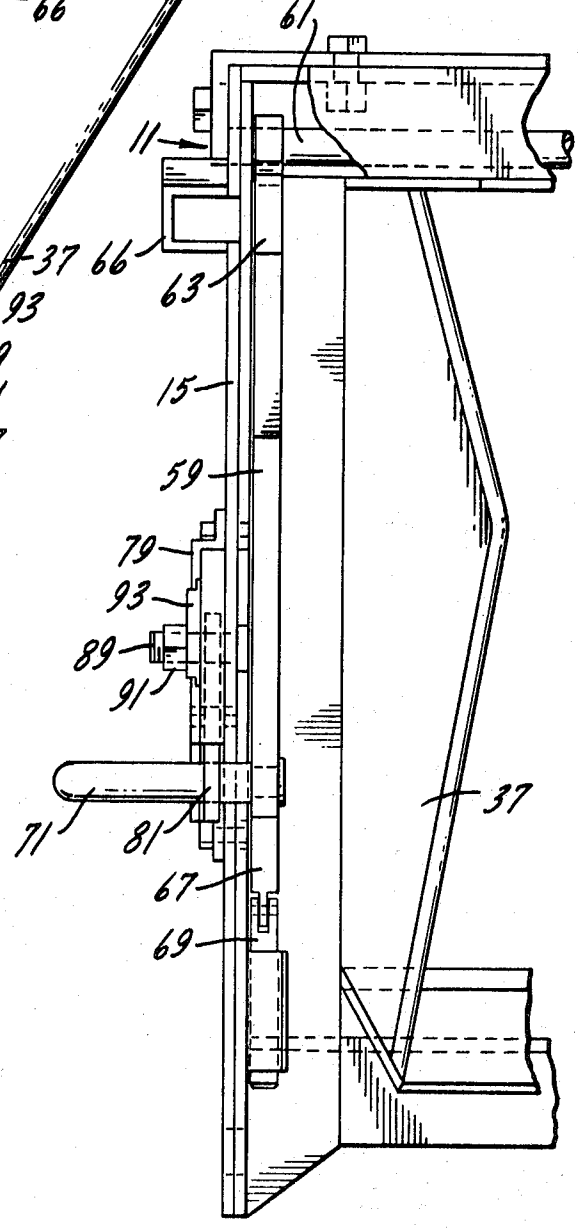


Fig. 5.



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EMBANKMENT TERRACING DOOR FOR HOPPER CARS

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U.S. Cl. 105—239 3 Claims

ABSTRACT OF THE DISCLOSURE

A terracing door assembly for a hopper car having a locking member that is adapted to lock the door in both its closed and open positions. When the door is closed, the locking mechanism engages the top and bottom portions of the door. In the open position, the locking mechanism engages the bottom portion of the door. A latching mechanism is provided to hold the locking mechanism in its locking positions with the latch arranged so it can selectively be held away from engagement with the locking member.

SUMMARY OF THE INVENTION

This invention is concerned with a terracing door for a railroad hopper car and more particularly with such a door that can be easily opened and closed yet can be positively locked in both its open and closed positions.

An object of this invention is a terracing door that can be locked at its top and bottom when in its closed position.

Another object is a terracing door that can be locked in its open position.

Another object is a locking mechanism for a terracing door in which the upper and lower locks can be released and applied simultaneously.

Another object is a terracing door in which the locking mechanism is held in the locked position by a latch means.

Another object is a latch means for a locking mechanism which latch means may be held in an inoperative position.

Other objects may be found in the following specification, claims and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated more or less diagrammatically in the following drawings wherein:

FIG. 1 is a partial perspective view of a terracing door mounted in the discharge chute of a hopper car with parts omitted for clarity of illustration;

FIG. 2 is an enlarged side elevational view of a portion of the terracing door of FIG. 1;

FIG. 3 is a partial cross-sectional view taken along line 3—3 of FIG. 1 with some parts broken away;

FIG. 4 is an enlarged side elevational view of the terracing door frame and door showing the door in the closed position; and

FIG. 5 is a front elevational view of the structure of FIG. 4 with the door removed for clarity of illustration.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a terracing door installed in the side of a discharge chute of a hopper car. The terracing door assembly includes a generally rectangular framework **11** which may be secured to the side **13** of the chute in any conventional manner such as by welding or riveting. The framework includes side members **15**. A rod **17** is secured to and extends between the side members **15** adjacent the lower ends thereof. A tube **19** is journalled on the rod **17**. A pair of arms **21** fit over the tube **19** and are secured thereto as by welding. The arms are spaced apart and are located adjacent the ends of the tube. Sleeves **23**, each having ratchet portions **25** at one end thereof, fit over the ends of the tube **19** with the ratchet portions located at the outer ends thereof. The sleeves **23** are fastened to the arms **21** by means of keys **27**. Coil springs **29** are positioned over the sleeves **23** with one end of each spring held in position by a J-bolt **31** and the other end of each spring connected to a notch **33** in an arm **21**. A cover **35** is provided for each spring with the covers being welded to vertically extending deflector plates **37** which are fastened to the side members **15** of the framework **11**. A door **39** is secured to the arms **21** as by welding. The door has side plates **41** which, in the closed position of the door, fit between the side members **15** and the deflector plates **37**. Stub rods **43** extend outwardly from the side plates **41** of the door **39** in the manner shown in FIG. 4. The ratchet portion **25** of each sleeve **23** is provided with a first stop wall **45**, a notch **47** and a second stop wall **49**.

A locking member **57** is provided for the door. This locking member includes a pair of arms **59** which are secured to a rod **61** which in turn is journalled to the side members **15** of the framework **11**. Formed as part of each arm and located adjacent the rod **61** is a hook portion **63** having a notch **65**. When the door is in its closed position, the notches **65** are adapted to engage stub rods **43**. A projecting cover **66** is attached to each side member **15** to receive a stub rod **43**. A rod **67** is pivotably attached to each arm **59** and extends downwardly along the side member **15**. The other end of each rod is pivotably connected to a ratchet portion engagement member **69**. A stub handle **71** is attached to and extends outwardly from the free end of each arm **59**. The second stop wall **49** of the ratchet portions may also engage the member **69** to limit opening of the door **39**.

A cover plate **79** is affixed to the outer surface of each of the side members **15** of the framework **11**. Located inside this cover plate is a latch member **81** which is pivotably connected to a side member at **83**. Each latch member is provided with a notch **85** adapted to engage a stub handle **71** of a locking member arm. A slot **87** is also formed in each latching member. A bolt **89** extends through each slot and a nut **91** located on the outer end of each bolt holds a replaceable friction plate **93** in position to bear against the latch.

The use, operation and function of this invention are as follows:

The terracing door is shown in its closed position in FIG. 4. When it is desired to open the door, a nut **91** holding a latch **81** in engagement with the arm **59** is loosened and the latch **81** is raised until the end of the slot **87** contacts the bolt **89**. The nut **91** is then tightened to press the plate **93** against the latch **81** to hold it in the raised position. The latch **81** on the opposite side of the door is then raised and secured in a similar manner.

With the latches **81** in their raised positions, the stub handles **71** of the locking member **57** are free to move. The locking member may then be swung upwardly about its rod **61** to unhook the stub rods **43** of the door **39**. Upward rotational movement of the locking member **57** also lifts the rods **67** and the ratchet engaging members **69** out of contact with the first stop walls **45** of the ratchet portions **25**. With the locking member in its fully raised position, the weight of the material in the hopper car will overcome the biasing force of the springs **29** to swing the terracing door **39** to its open position which is shown in FIGS. 1 and 2.

To lock the terracing door **39** in the open position so that it will remain open in the position shown in FIG. 1 even after the hopper has been emptied and there is no material to counteract the closing bias of the springs **29**, the locking member **57** is returned to its lowered position. Lowering the locking member moves the rods **67** and the ratchet engaging members into the positions shown in FIG. 2 where the ratchet engaging members engage the notches **47** in the ratchet members **25**, thereby locking the door in its lowered position.

After the hopper is emptied, the door **39** may be closed by again lifting the locking member **57** which lifts the locking rods **67** and ratchet engaging members **69** out of the notches **47**. The biasing forces of the springs **29** acting against the arms **21** will return the door to the closed position. When the door is in the closed position, the locking member **57** may be lowered to engage its hook portions **63** with the stub rods **43** of the door and to move the ratchet engaging members **69** into contact with the first stop walls **45** of the ratchets. The nuts **91** may then be loosened to allow the latches **81** to move into locking engagement with the stub handles **71**.

Whereas a preferred form of the invention has been shown and described, it should be understood that modifications, changes and alterations may be made to this preferred embodiment by those skilled in the art without departing from the spirit of the invention. Therefore, the scope of the invention should not be limited to the preferred embodiment shown and described herein.

What is claimed is:

1. A terracing door assembly for a railroad hopper car including:

a frame connected to a side of a discharge chute of a hopper car,

a door hinged to the lower portion of said frame with the door adapted to swing about said hinge from a closed, generally upright position to an open, generally lowered position,

means to simultaneously lock the upper and lower portions of the door to the frame when the door is in its closed position,

said means including a locking member having an arm positioned on each side of said frame with said arms pivoted to the frame adjacent the top thereof,

hooks associated with said arms and adapted to engage the free end of said door,

rod means pivotally connected to said arms and adapted to be moved into and out of locking engagement with said door upon rotation of said arms,

and latches to hold said arms in their door locking position,

said latches being pivoted to said frame.

2. The terracing door assembly of claim **1** further characterized in that ratchets are formed as part of said door adjacent said hinge and said rod means engage said ratchets in both the open and closed positions of said door.

3. The terracing door assembly of claim **1** further characterized in that means are provided to lock said latches in their door locking and open positions.

References Cited

UNITED STATES PATENTS

364,618	6/1887	Woodhead	105—308 X
646,195	3/1900	Summers	105—251
903,295	11/1908	Larsson	105—251
1,127,929	2/1915	Skidmore	105—252
1,743,579	1/1930	Straw	105—239
1,848,901	3/1932	Neikirk	105—251
2,042,528	6/1936	Hosceit	105—255

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