May 1, 1923. 1,453,986

O. J. MILLER

SLIDING DOOR

Filed July 10, 1922 2 Sheets-Sheet 1

Fig. 1

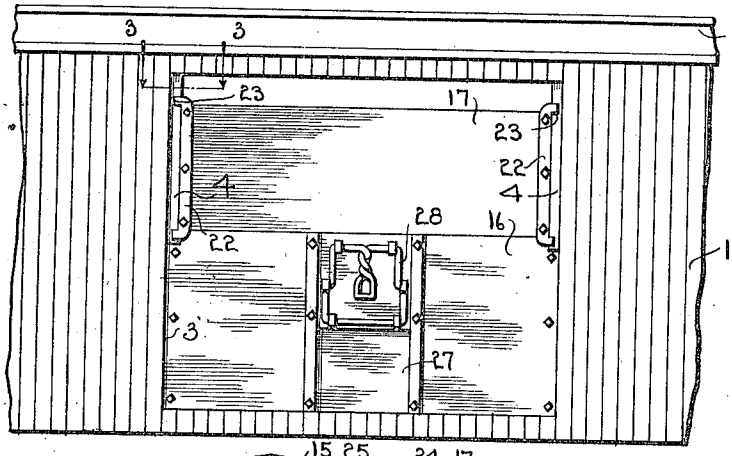


Fig. 2

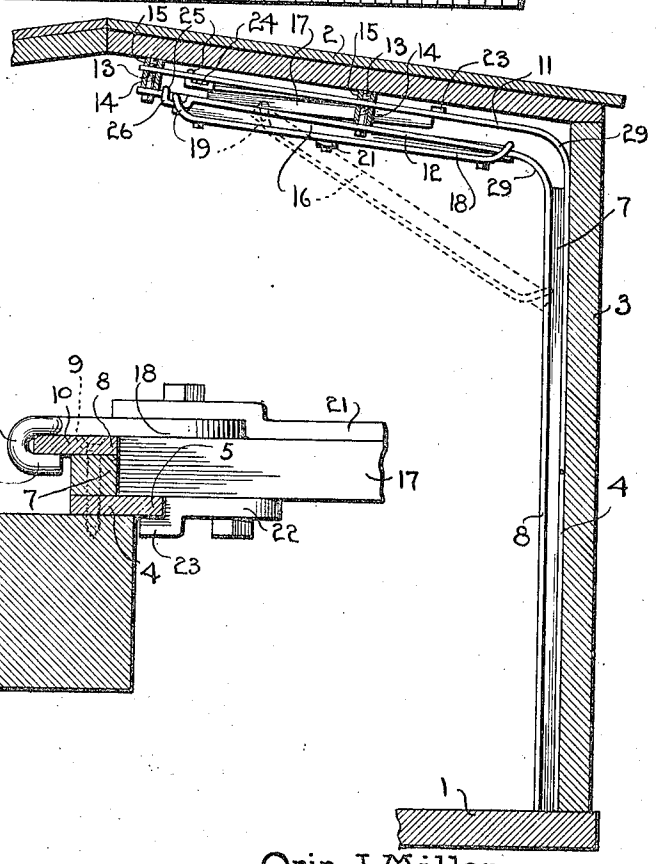


Fig. 3

Orin J. Miller INVENTOR

WITNESSES

Frank B. Cook

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BY E. G. Siggers

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Fig. 4

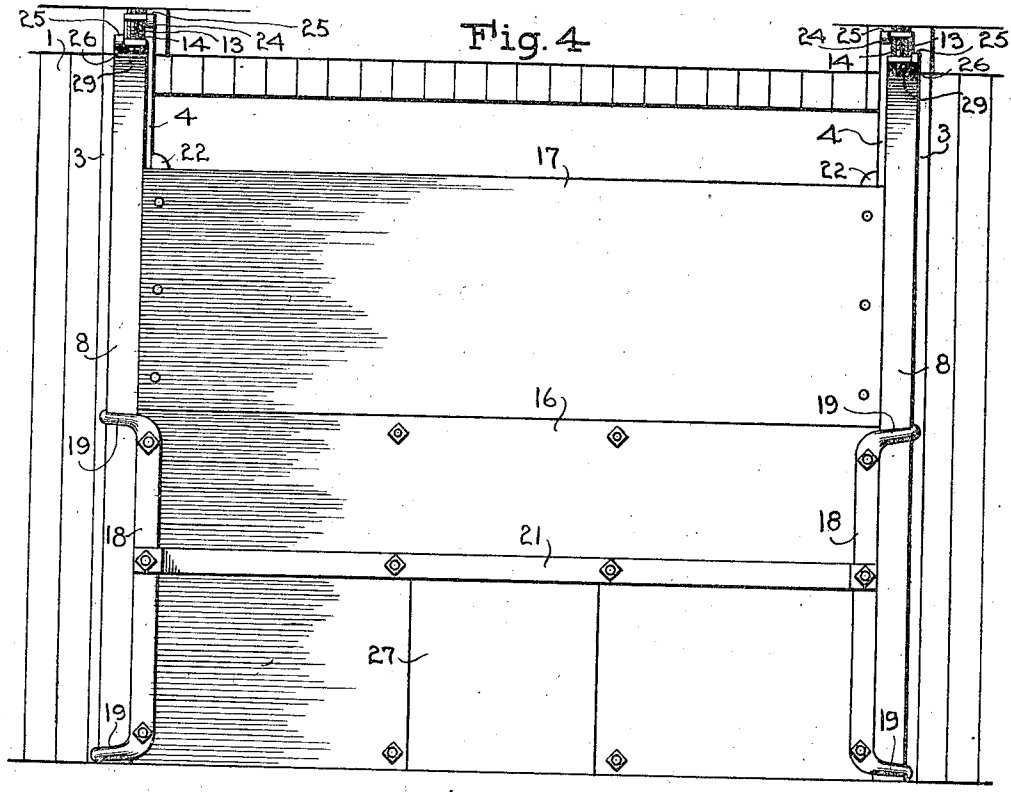


Fig. 5

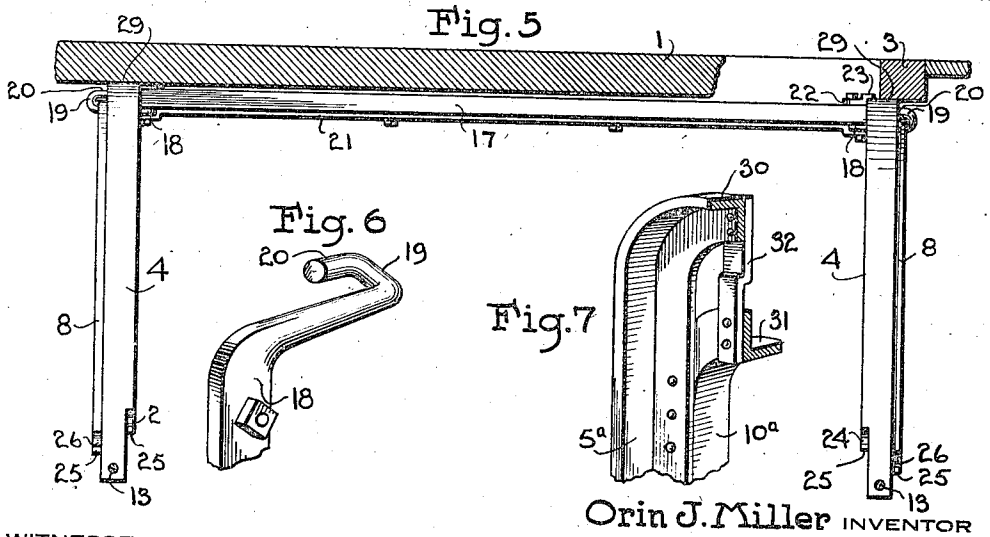


Fig. 6

Fig. 7

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Patented May 1, 1923. 1,453,986

UNITED STATES PATENT OFFICE.

ORIN J. MILLER, OF HURDSFIELD, NORTH DAKOTA.

SLIDING DOOR.

Application filed July 10, 1922. Serial No. 573,972.

To all whom it may concern:

Be it known that I, ORIN J. MILLER, a citizen of the United States, residing at Hurdsfield, in the county of Wells and State of North Dakota, have invented a new and useful Sliding Door, of which the following is a specification.

This invention relates to doors, and has for its object the provision of a plurality of sections adapted to be alined vertically when in closed position with relation to the door opening, and adapted when not in use to be suspended and locked in an overhead position, with the sections of the door placed in superimposed position. Though the invention was designed particularly for grain doors, it is capable of use in many other relations.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing in the drawing, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Fig. 1 is a front elevation of the sections of my door applied to an opening in a box car.

Fig. 2 is a side elevation of the same with the sections of the door located in an inoperative and overhead position.

Fig. 3 is a horizontal section taken along the line 3—3 of Fig. 1.

Fig. 4 is an inside elevation of the door with the sections located in closed position.

Fig. 5 is a horizontal section taken through the upper portion of Fig. 4 with parts broken away to show the sliding means for the sections of the door.

Fig. 6 is a fragmentary view in perspective of a track-engaging member for supporting one of the sections of the door on its tracks.

Fig. 7 is a sectional perspective view of a modified form of track.

Referring to the drawings, 1 indicates the side of the box car, 2 the top or roof, and 3 the posts or door jambs. Secured directly to the door jambs, in face to face relation, is a pair of spaced tracks 4, with offset portions 5 extending laterally beyond the jambs 3 and inwardly of the opening of the door. Spaced from the tracks 4, by means of spacing strips 7, is a second pair of tracks 8. The tracks 4, spacing strips 7 and tracks 8 are respectively secured to the door jambs 3 by means of screws or bolts 9. The tracks 8 have offset portions 10 extending laterally outwardly and beyond the spacing strips 7.

The tracks 4 are positioned vertically with the portions 11 extending at an angle inwardly from the vertical portions and spaced in parallel relation with the angularly disposed portions 12 of the tracks 5. The angular portions 11 and 12, respectively, of the tracks 4 and 5 are secured to the roof of the box car by means of bolts 13, and spaced from each other by means of sleeves 14 located on the bolts 13, while the portions 11 of the tracks 4 are spaced from the roof of said car by means of washers 15 on the bolts 13.

As shown in Fig. 2, the portions 11 and 12 of the tracks 4 and 5 are inclined at an angle to the horizontal, and this is due to the fact that the roof of the box car is inclined, but where the angular portions 11 and 12 of the tracks are secured to the top of a car, or any other fixed support which is located in a horizontal position, the said portions of the tracks will be likewise located in a horizontal position and at substantially a right angle to the vertical portions of the tracks which are secured to the door jambs 3. Curved portions 29 connect the vertical portions of the tracks with the angular portions of the same.

The offset portions 5 of the tracks 4 are located in staggered relation with the offset portions 10 of the tracks 8, with the offset portions of the tracks 4 extending in an opposite direction to the offset portions of the tracks 8.

The door closure comprises two sections, a lower section 16 and an upper section 17. The lower section is provided with vertical bars 18 shown more particularly in Fig. 4, bolted or otherwise secured to said section of the door adjacent its side edges, and provided with hook-like members 19 extending laterally from the ends of the bar and having end portions 20 adapted to hook over or embrace the offset portions 10 of the tracks 8. The portion 20 of the hook-like member

19 is turned at an oblique angle relative to the bar 18, as shown in Fig. 2. The purpose of this construction will be explained later. An iron brace 21 extends horizontally across the front of the section 16 of the door with its ends offset where it engages the bars 18. Bolts passing directly through the offset ends of the iron brace, the bars 18, and the section 16 of the door secure these members together in rigid relation.

Adjacent the lateral edges of the section 17 of the door are secured, by means of bolts, bars 22, provided at their opposite ends with laterally projecting track-engaging members 23 which are offset from the plane of the bars 22 in order to neatly receive the offset portion 5 of the tracks 4 between the track-engaging members and the section 17 of the door, whereby said section is maintained in position on its respective tracks.

The angular portions 11 of the tracks 4 are provided adjacent their ends and along the inner edges with sockets 24 formed by making two cuts at right angles to each other through the tracks and adjacent the lateral edges of the tracks to provide tongues which are bent downwardly at right angles to the tracks and horizontally, and then upwardly with the free ends 25 of the tongues projecting above the horizontal plane of the upper faces of the portions 11 of said tracks. The bent tongues form sockets or seats for the reception of the upper track-engaging members 23 when the section 17 of the door is located in an overhead position, and thereby prevents the section of the door from being dislodged from its inoperative position. Upon the outer lateral edges of the portions 12 of the tracks 8 are formed similar sockets 26 having stops 25 extending above the horizontal plane of the tracks. These sockets are adapted to receive the track-engaging members 19 and retain the section 16 of the door in position against sliding movement when said section is located in an overhead position and suspended below the section 17 of said door. The projecting portions 25 of the sockets 24 and 26 act as stops to prevent the respective track-engaging members 19 and 23 from riding beyond the sockets.

An opening is formed in the section 16 of the door provided with a closure 27, which is operated by the member 28 for opening the same to permit grain to flow from the opening in said section. The closure 27 and the operating mechanism 28 for said closure form no part of the present invention.

As shown in Fig. 1, the sections 16 and 17, are located in closed position and in vertical alinement, with the bottom edge of the section 17 resting on the upper edge of the section 16. The section 17 is normally maintained in place by means of the track-engaging members 23 engaging one of the faces of the tracks 4, with the opposite faces of the tracks in engagement with the section 16. The posts or door jambs 3 are extended sufficiently beyond the lateral edges of the sections 16 and 17 whereby any pressure from within against the sections 16 and 17 of the door will be carried directly by the door jambs 3, instead of by the tracks 4.

The section 16 of the door is maintained in operative relation with the tracks 10 by reason of the track-engaging members having the hook portions 20 in embracing engagement with the extended portions 10 of the tracks 8. The abutment of portions of the door section 17, which are adjacent the lateral edges of said section with the tracks 4, prevents outward movement of said section, while the hooks 20 on the track-engaging members 19 prevent rearward motion.

When it is desired to remove the sections of the door to an inoperative position, the upper section 17 is shoved upwardly with the tracks 4 engaged between the track-engaging members 23 and the outer face of the section 17 until the said section is located in a substantially horizontal position, as shown in Fig. 2, with the track-engaging members 23 supporting said section suspended in an overhead position from the tracks, the upper track engaging members being located in the sockets 24. In this position, the section 17 is substantially locked in an inoperative position. The lower section 16 is then moved upwardly with the track-engaging members 19 riding on the tracks 8 until the section 16 is located in an overhead position and suspended from the portions 12 of the tracks 8 below the section 17. The section 16 is moved sufficiently inward from the side of the car to cause the upper track-engaging members 19 to fall within the sockets 26, whereby the section 16 will be substantially locked in an inoperative position.

If it be desired to release the sections of the doors, it will be only necessary to elevate the upper end of the section 16 by means of a shovel, stick or other implement that may be convenient, to release the track-engaging members from their respective sockets, pushing outwardly on the section, when said section will be caused to descend in the manner shown in dotted lines in Fig. 2. The angular position of the hook 20 relative to the bar 18, permits the door to ride readily around the curved portions 29 which connect the portions 12 of the tracks with the tracks proper.

In a similar manner, some implement may be employed for slightly raising the upper end of the section 17 to release said section from its locked position, and then by pushing on the upper end of the section, said section will be caused to slide forwardly towards the opening in the side of the car with the track-engaging members 23 riding on the

track. The section 17, after leaving the portions 11 of the tracks, will fall directly into place and in alinement with the section 16 of the door.

It will be noted that the portions 11 and 12 of the respective tracks 4 and 8 are spaced at a greater distance apart than the vertical portions of the tracks to permit the door section 17 to be placed in superimposed relation with the door section 16 when said door sections are located in an overhead position.

As shown in Fig. 7, instead of the forms of tracks disclosed in Figs. 1 to 6, inclusive, the tracks may be formed of two angle irons 30 and 31 with two of their side members in face to face engagement and secured together by means of rivets or bolts, the other side members or flanges of the angle irons forming the respective tracks 5^a and 10^a. Where these angle irons are located in an overhead position, they are spaced apart by a strap iron 32 which is riveted at its opposite ends to the opposite faces of a side flange of each of the angle irons. These tracks are likewise located in staggered relation and offset from each other.

What is claimed is:—

1. A sliding door comprising a plurality of sections, pairs of spaced track bars secured to fixed supports upon opposite sides of the door, the tracks bars of each pair being located in spaced and offset relation throughout their lengths, track-engaging members on one door section engaging on the inner sides of one set of track bars, and track engaging members on the other door section engaging on the outer sides of the other set of track bars, said sections being movable into vertical alinement to close the doorway and relatively slidable into opposed parallel relation when opening the same.

2. A sliding door comprising a plurality of sections, pairs of spaced tracks secured to fixed supports upon the opposite sides of the door, the tracks of each pair being located in spaced and offset relation throughout their lengths, a portion of the tracks being disposed vertically with the remaining portions of the tracks inclined at an angle to the vertical portion and secured to a fixed overhead support, track-engaging members secured adjacent the lateral edges of the sections of the door, the track-engaging members on one door section engaging the inner side of one set of tracks with the track-engaging members on the other door section engaging the outer side of the other set of tracks, said track-engaging members being adapted to support the sections of the door in suspended overhead relation from the angular portions of the tracks, said sections being slidable into vertically alined position to close the opening.

3. A sliding door comprising a plurality of sections slidable with respect to each other and adapted when located in closed position relative to an opening to be vertically alined, pairs of spaced tracks secured to fixed supports upon opposite sides of the door, the tracks of each pair being respectively spaced, a portion of the tracks being disposed vertically with the remaining portions of the tracks inclined at an angle to the vertical portion and secured to a fixed overhead support, track-engaging members secured adjacent the lateral edges of the door, the track-engaging members on one section engaging one pair of tracks with the track-engaging members on the other section engaging the other pair of tracks, said track-engaging members adapted to support the sections of the door in suspended overhead relation from the angular portions of the tracks, and means on the upper ends of the tracks adapted to be engaged by the track-engaging members for locking the sections of the door in the overhead position.

4. A sliding door comprising a plurality of sections slidable with respect to each other and adapted when located in closed position relative to an opening to be vertically alined, pairs of spaced tracks secured to fixed supports upon the opposite sides of the door, the tracks of each pair being located in spaced relation throughout their length, a portion of the tracks being disposed vertically with an angularly disposed portion connected to the vertical portion by a curved portion, the inner adjacent edges of one pair of tracks and the opposite side edges of the other pair of tracks being provided with cut-out portions forming a longitudinally extending tongue bent to form sockets, with the free end of the tongue projecting above the longitudinal face of the tracks to provide stops, laterally-projecting track-engaging members secured adjacent the side edges of the sections of the door, the track-engaging members on one section engaging one set of tracks with the track-engaging members on the other section engaging the other set of tracks, said track-engaging members adapted to support the sections of the door in suspended overhead relation from the angular portions of the tracks, with pairs of the track-engaging members of each section seated within the sockets formed in the tracks, the stops limiting the sliding movement of the section.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ORIN J. MILLER.