

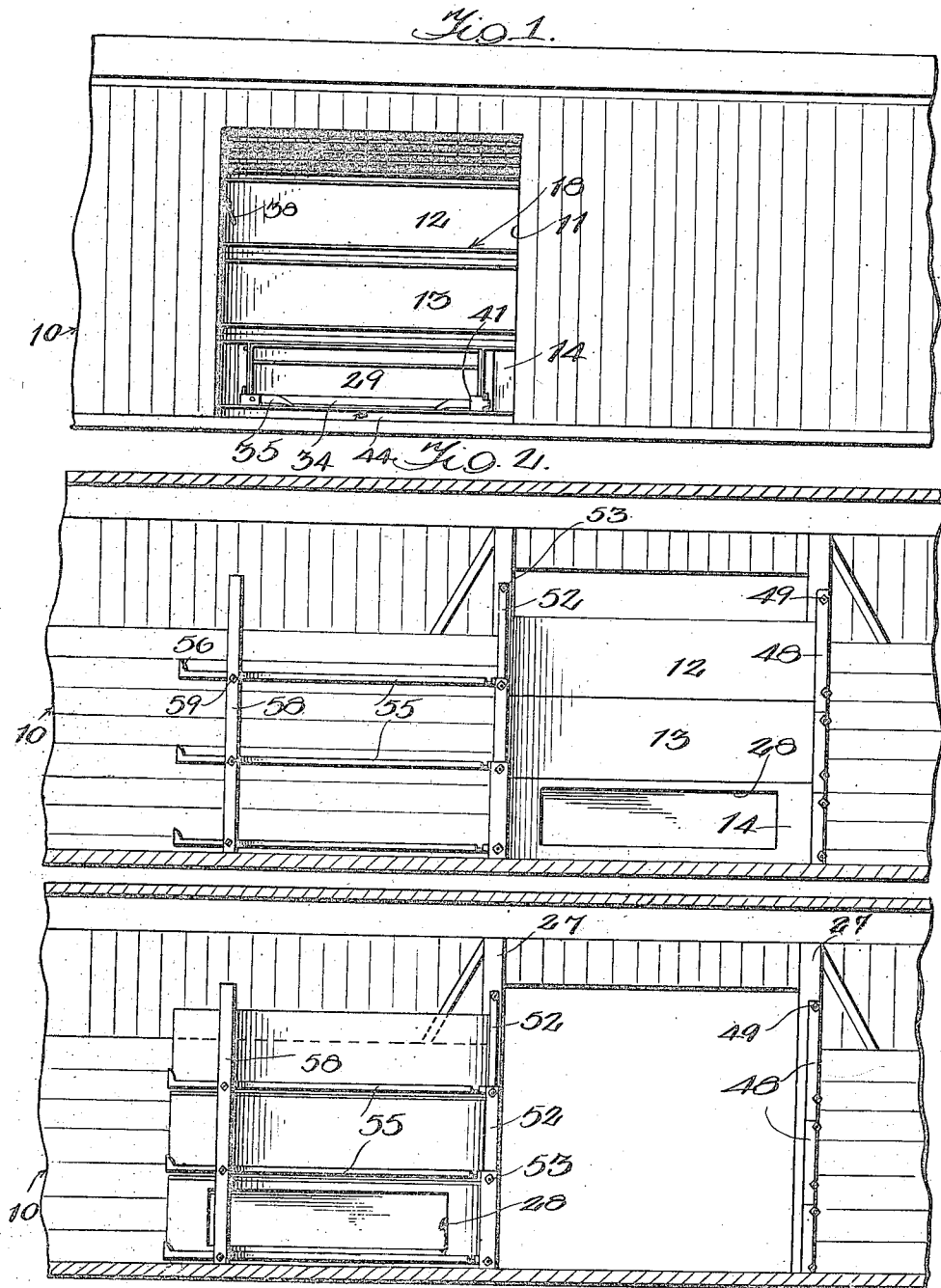
O. FROMAN AND W. A. WILMOTH.
BOX CAR DOOR.

APPLICATION FILED APR. 2, 1921.

1,424,812.

Patented Aug. 8, 1922.

2 SHEETS—SHEET 1.



WITNESSES

George C. Myers

J. L. Guanda

Fig. 3.

INVENTOR
OSCAR FROMAN,
W. A. WILMOTH,
BY *Mum & Co.*
ATTORNEYS

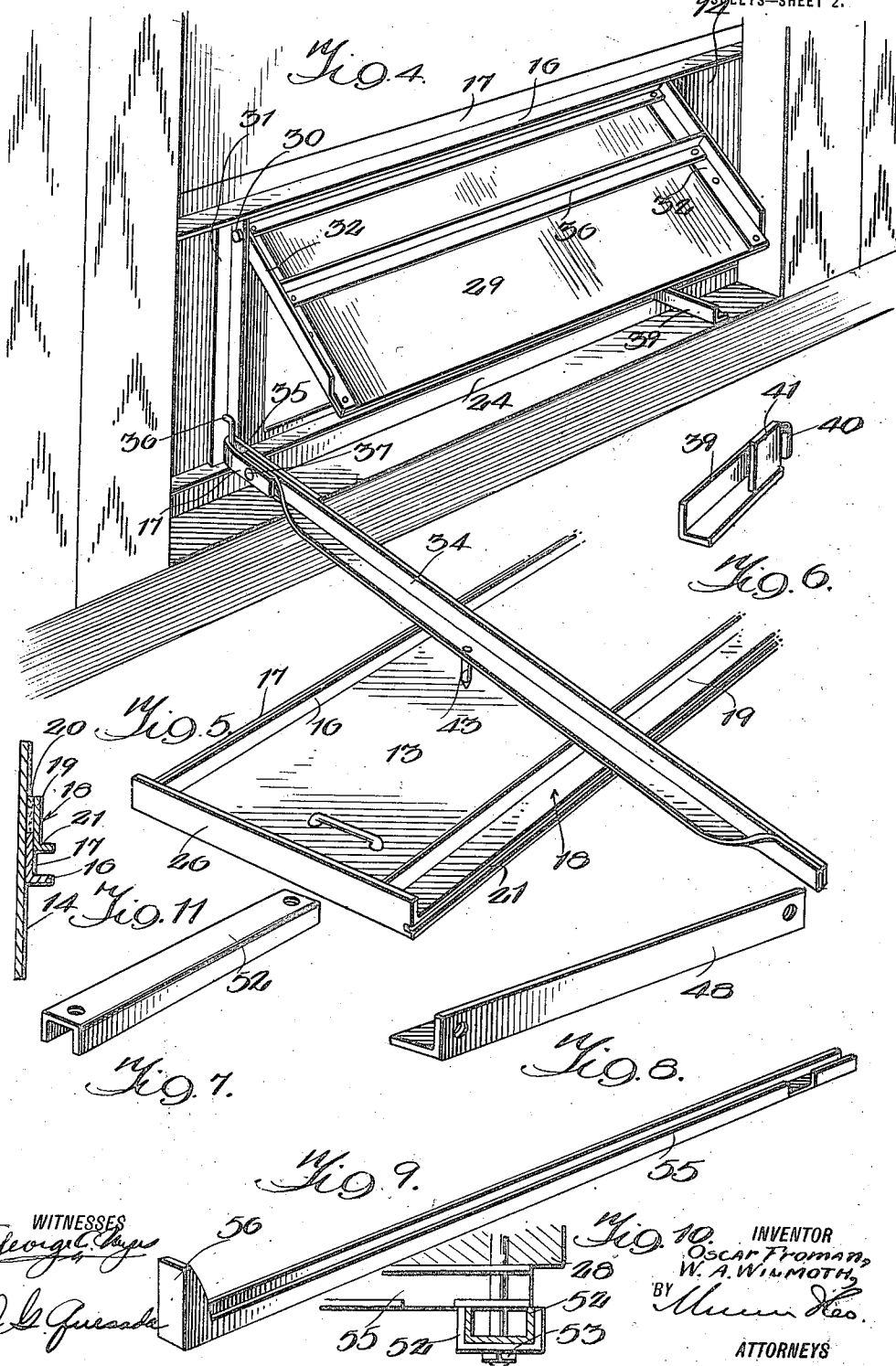
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UNITED STATES PATENT OFFICE.

OSCAR FROMAN AND WARREN ARTHUR WILMOTH, OF EDNA, KANSAS.

BOX-CAR DOOR.

1,424,812.

Specification of Letters Patent.

Patented Aug. 8, 1922.

Application filed April 2, 1921. Serial No. 457,882.

To all whom it may concern:

Be it known that we, OSCAR FROMAN and WARREN ARTHUR WILMOTH, citizens of the United States, and residents of Edna, in the county of Labette and State of Kansas, have invented certain new and useful Improvements in Box-Car Doors, of which the following is a specification.

This invention relates to doors especially adapted for use on grain cars and the like.

An important object of this invention is to provide a grain car door having a plurality of sections which may be placed in position as the car is loaded and which when in position absolutely prevent the escape of grain or the like.

The invention forming the subject matter of this application aims also to provide a grain car door having novel means whereby grain may be discharged when desired.

A further object of the invention is to provide a car door which is efficient, simple to operate and cheap to manufacture.

Other objects of this invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a fragmentary side elevation of the grain car equipped with the improved door.

Figure 2 is a detailed sectional view through the car, the view illustrating the doors in position.

Figure 3 is a similar view through the car, the view illustrating the means for supporting the door when not in use.

Figure 4 is a fragmentary perspective of one of the sections of the door, the same being provided with means whereby grain or the like may be discharged without removing the section.

Figure 5 is a fragmentary perspective of one of the sections of the door.

Figure 6 is a perspective view of one member of a locking device embodied in the invention.

Figure 7 is a perspective of one of the combined guides and retaining members for the door.

Figure 8 is also a perspective of one of the combined retaining members and stop elements for limiting the movement of the door.

Figure 9 is a perspective of one of the guides or tracks for the door.

Figure 10 is a detailed sectional view illustrating the means for supporting and guiding the door.

Figure 11 is a detail sectional view illustrating the means for connecting the door sections.

In the drawings, the numeral 10 designates one side of a freight car having the usual openings 11 for the entrance or discharge of grain, coal or other loose freight.

The improved door which is adapted for closing the door way 11 comprises sections 12, 13 and 14 preferably formed from sheet metal possessed of sufficient stoutness to withstand the pressure of the grain or other material carried in the car.

The upper longitudinal edge of each section with the exception of the uppermost section is provided with a reinforcing angle bar having a laterally projecting flange 16 and a second flange 17 secured flatly in contact with the section and extending above the same for a short distance to define a key adapted for fitting within a recess or groove within the adjacent section.

As illustrated in Figure 11 the door section immediately above the section having the transversely extending reinforcing member or angle bar is provided with a reinforcing bar generally designated by the numeral 18 and which includes a flat attaching base or flange 19 arranged in spaced relation to the door section to which it is attached by means of a spacing strip 20. The lower longitudinal edge portion of the base 19 extends beyond the lower end of the spacing strip 20 so as to cooperate with the lower end portion of the door section to which it is attached in forming a groove or recess 21 adapted for snugly receiving the key formed by the flange 17. By reason of this construction, an absolutely grain tight connection is provided between the adjacent edges of the door sections when the door is in the position illustrated in Figure 2. It is understood of course that such a connection is provided only between the opposite edges of the sections 13 and the adjacent edges of the sections 12 and 14. It is thus apparent that the longitudinally extending angle bars provide a grain tight connection between the sections of the door as well as strengthening and reinforcing the sections of the door.

The lower longitudinal edge of the door section 14 is provided with a longitudinally extending angle bar 24 having its lower edge flush with the lower edge of the section 13 so that the lower edge of the door 14 will snugly engage the bottom of the car for effectively preventing the escape of grain. The ends of all the door sections are also provided with angle bars 26 having outwardly directed flanges which are securely engaged with the upstanding posts 27 on opposite sides of the door frame by means to be later described.

The lower door section 14 is provided with an elongated opening 28 through which grain or the like may be discharged when it is desired to empty the car.

As illustrated in Figure 4, a sheet metal gate or closure 29 which is of a greater area than the opening 28 contacts with the portions of the door section 14 about the opening. The gate 29 is swingingly supported on the outside of the section 14 by means of hinge pins 30 which extend through the outwardly directed flanges of a pair of angle bars 31 arranged at opposite ends of the gate. The hinge pins 30 are carried by the outwardly directed flanges of reinforcing angle bars 32 extending transversely along the ends of the gate 29 and riveted or otherwise secured to the same. When the gate 29 is swung downwardly to close the opening 28, the outwardly directed flanges of the angle bars 32 are firmly in contact with the outwardly directed flanges of the relatively stationary angle bar 31 so as to securely hold the gate in position and prevent endwise movement of the same. The intermediate portion of the gate 29 is reinforced by a longitudinally extending angle bar 36 having its ends secured to the adjacent flanges of the angle bars 32.

When the swinging gate 29 is arranged in the closed position a lock bar 34 is extended across the lower longitudinal edge portion of the same so as to firmly hold the same in position. One end of the lock bar is pivotally connected to a hinge member 35 swingingly connected to a staple designated by the numeral 36. The hinge member is formed from a piece of angle iron having one of its flanges bent upon itself and securely connected to the other portion of the flange by means of a pin 37. The adjacent end of the lock bar 34 which is formed from angle iron has its flanges bent firmly into contact with each other and received between the sides of the hinge member 35. When the gate 29 is opened, the lock bar 34 may be swung upwardly and engaged with a locking loop 38 secured to one side of the door opening 11.

The opposite or free end of the locking bar 34 is adapted to be engaged with or brought into overlapping relation with a co-

operating lock bar 39 which is swingingly connected to the stationary portion of the door section 14. The cooperating lock bar 39 which is formed from angle iron has one of its flanges bent upon itself to form a hinge 40 and a keeper 41 adapted for engaging the front side of the lock bar. In other words, the free end portion of the lock bar 34 is received between the upstanding flange of the lock bar 39 and the keeper 41 so that opening of the door is prevented. The free end portion of the locking bar 34 also has its flanges arranged firmly in contact with each other so that the same may be readily received between the keeper 41 and the upstanding flange of the lock bar 39.

When the lock bar 34 is swung across the bottom of the gate as illustrated in Figure 1, a locking pin 43 carried by the intermediate portion of the same is received within a hole formed in the intermediate portion of the reinforcing flange 24. A cotter key or other retaining element 44 may now be passed through an opening in the terminal portion of the locking pin 43 so as to prevent the accidental upward movement of the lock bar 34. It will be observed that the terminal portion of the locking pin 43 is pointed so that the same is guided through the opening formed in the laterally projecting flange of the angle bar 24.

With reference to Figures 2 and 3 it will be observed that the sections 12, 13 and 14 are securely held in position across the opening 11 by means of combined stop and guide elements 48 which are formed from angle iron and are secured by means of bolts 49 having suitable nuts threaded thereon. The bolts 49 are preferably mutilated so that the loss of the nut on the same is prevented. When the door sections are moved into position the terminal portions of the same are confined between the flanges of the combined stop elements and keepers and one of the posts 27.

A plurality of guide bars 52 are secured to the other post 27 by means of bolts 53 which extend through the overlapped terminal portions of the bars. When the sections 12, 13 and 14 are extended across the door opening, the nuts on the bolts 49 and 53 are tightened so as to draw the members 48 and 52 firmly into engagement with the terminal portions of the door sections so as to hold the door sections firmly in position.

When it is desired to remove the door sections, the nuts on the bolts 49 and 53 may be loosened so as to permit the door sections to move onto tracks 55 which are as illustrated in Figure 9 of shallow formation. The outer portions of the tracks 55 are formed with upwardly extending stops 56 to limit the sliding movements of the door sections.

The outer portions of the tracks 55 are

supported by means of a vertically arranged standard or post 58 secured to one side bar by means of bolts 59. The outer portions of the tracks 55 rest upon the shanks of the bolts.

With reference to the foregoing description taken in connection with the accompanying drawings it will be apparent that the door constructed in accordance with this invention may be used a number of times and may be readily placed in position. When it is desired to unload the car, the swinging gate 29 may be readily released so as to permit grain or the like carried in the car to be discharged.

When the car is in motion, the grain is effectively prevented from escape by reason of the fact that the several sections of the door are securely joined and by reason of the peculiar fastening devices for the swinging gate 29.

As illustrated in Figures 2 and 3, the guide members 55 are formed with openings through which the grain may be discharged as the door is pushed back.

Having thus described our invention what we claim is:—

1. The combination with a body, of a gate horizontally hinged thereto, a hinge connected to the body for swinging movement about a vertical axis, a gate locking bar of angle iron horizontally pivoted to said hinge, and a keeper vertically pivoted to said body and having means overlapping and engaging the terminal portion of said lock bar, and also engaging said gate.

2. The combination with a body, of a gate horizontally hinged thereto, a hinge connected to the body for swinging movement about a vertical axis, a gate locking bar of angle iron horizontally pivoted to said hinge, a keeper vertically pivoted to said body and having means overlapping and engaging the terminal portion of said lock bar, and also engaging said gate, and a pin carried by the intermediate portion of said lock bar and

adapted to engage said body, whereby to hold the gate in closed position.

3. The combination with a body, of a gate horizontally hinged thereto, a hinge connected to the body for swinging movement about a vertical axis, a gate locking bar of angle iron horizontally pivoted to said hinge, a keeper vertically pivoted to said body and having means overlapping and engaging the terminal portion of said lock bar, and also engaging said gate, a pin carried by the intermediate portion of said lock bar and adapted to engage said body, whereby to hold the gate in closed position, said keeper being formed from a single piece of metal bent intermediate its ends to form a hinge member and a pair of spaced sides between which one terminal portion of the lock bar is adapted to be arranged.

4. The combination with a lock bar, of means supporting the same for swinging movement, and a keeper formed from a single length of metal bent intermediate its ends to form a hinge member and a pair of spaced parallel sides between which one terminal portion of the lock bar is adapted to be arranged, the lower end of one of said sides of the keeper is extended laterally and engaged with the other side of the keeper whereby to limit the downward movement of the lock bar.

5. The combination with a lock bar, of means supporting the same for swinging movement, and a keeper formed from a single length of metal bent intermediate its ends to form a hinge member and a pair of spaced parallel sides between which one terminal portion of the lock bar is adapted to be arranged, the lower end of one of said sides of the keeper is extended laterally and engaged with the other side of the keeper whereby to limit the downward movement of the lock bar, and means pivotally supporting said keeper.

OSCAR FROMAN.

WARREN ARTHUR WILMOTH.