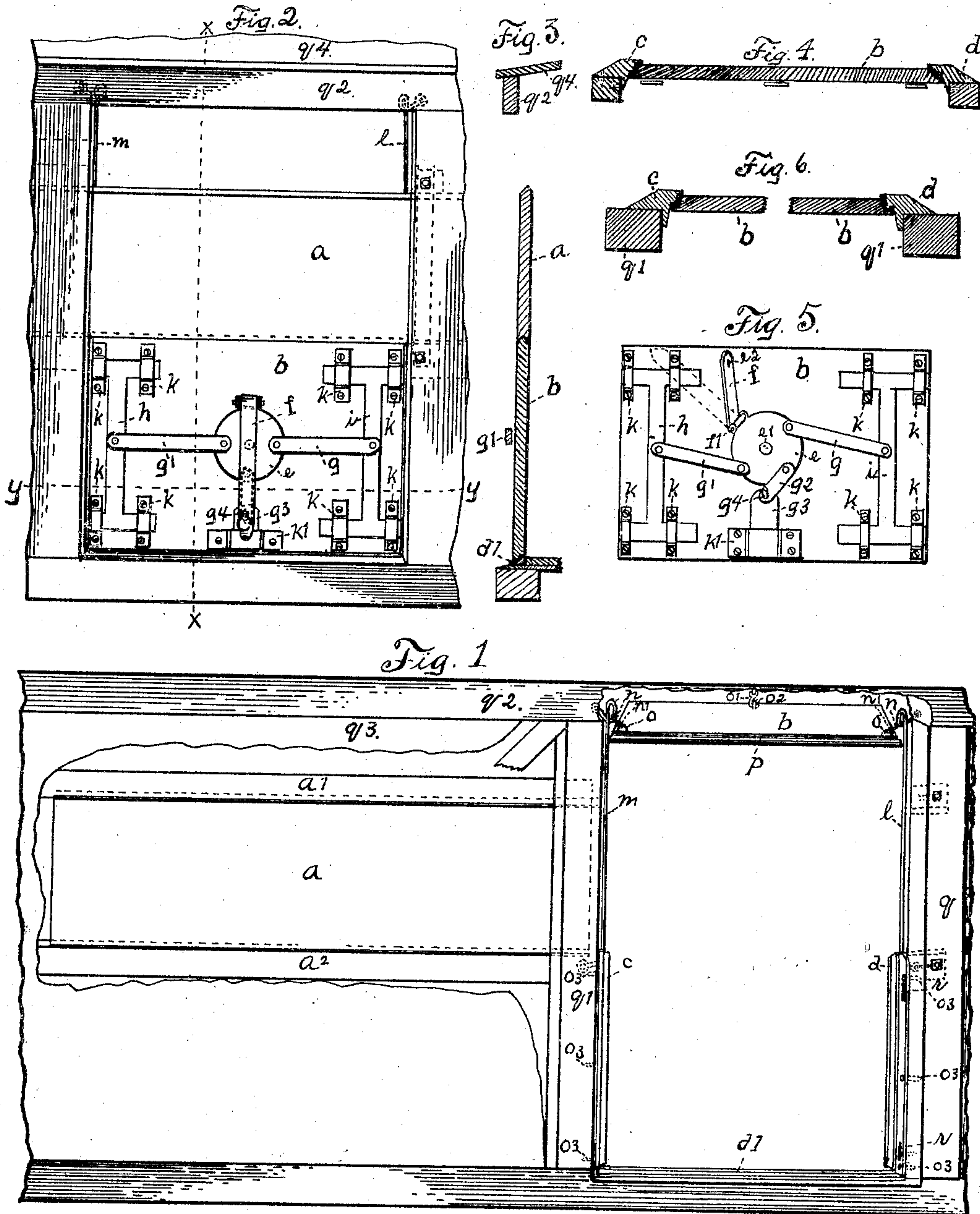


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GRAIN DOOR FOR CARS.  
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928,005.

Patented July 13, 1909.



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# UNITED STATES PATENT OFFICE.

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## GRAIN-DOOR FOR CARS.

No. 928,005.

Specification of Letters Patent.

Patented July 13, 1909.

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*To all whom it may concern:*

Be it known that I, LEE P. ROBERTS, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Grain-Doors for Cars, of which the following is a specification sufficiently clear to enable those skilled in the art to which it appertains to make and use the same.

The object of my invention is:—1, to produce an improved grain door for cars which can be made at a reasonable expense and which is grain tight, durable and which may be instantly opened without the use of tools, and without damage incidental to prying open and releasing with bars and which can be instantly placed and secured in position for use and removed out of the way when not in use, effecting a saving of both time and labor and which may be easily attached to and used in any box car without interfering with the outer doors thereof. These purposes I attain in my invention by certain novel combinations of materials, parts and construction which will be hereinafter described and claimed.

My invention is illustrated in the accompanying drawings which form a part of this specification and in which drawings similar characters of reference refer to similar parts in the several views.

Figure 1, represents a portion of the side of a car equipped with my grain doors, parts of the car cut away showing my grain doors removed out of the way when not in use. Fig. 2, represents a side view of a car door equipped with my grain doors, locked in position for use. Fig. 3, represents a cross-sectional view on the plane of the dotted line "X," "X." Fig. 4, represents a cross-sectional view on the plane of the dotted line "y," "y." Fig. 5, represents a perspective view of the door "b," with bolts withdrawn. Fig. 6, represents an enlarged cross-sectional view on plane of dotted line "y," "y."

I make my car doors of wood, preferably, though they may be made of metal. I make the grain door, "b," with its sides and bottom beveled and offset inwardly and metal shod. I make metal casings double rabbeted to match the sides and bottom of said door and make the side casings "c" and "d" with a shoulder in the outer sides of each through which I attach the casings to the sides of the

car door frame by means of wood screws, "O", though bolts may be used if preferred for that purpose, in such position that the grain door, when locked in position is just inside the inner line of the car door frame as shown in Fig. 4. In each of the side casings I provide two recesses, "r", to receive the double bolts, "h" and "i" when the grain door is locked. I make the top of the side casings and the top of the door "b" rounded as shown in Figs. 1, and 3, to fit the bottom of the auxiliary door and to permit grain door "b" to swing open at the bottom for unloading. I make the upper, or auxiliary door, "a" with its bottom grooved to mate the rounded top of door "b" as shown in Fig. 3, also to enable it to slide freely on the rounded track "a<sup>2</sup>" so as to fit snugly and make a tight joint with the top of the casings and door "b". I make the top of the auxiliary door "a" beveled to a point as shown in Fig. 3, and shape the bottom of the track "A<sup>1</sup>" to receive and permit the door "a" to slide snugly therein, into position for use as shown in Fig. 2, and out of the way when not in use as shown in Fig. 1.

On either side of the outer face of the grain door "b" I attach the double bolts "h" and "i" to said door by means of the guide plates "h<sup>2</sup>" and "i<sup>2</sup>" so as to slide freely therein. I movably attach the said double bolts and the single bolt "g<sup>3</sup>" by means of the arms "g", "g<sup>1</sup>" and "g<sup>2</sup>" to the circular disk "e" as shown in Figs. 2 and 5. The circular disk "e" is rotatably attached to the door "b" by the bolt "e<sup>1</sup>". Said disk is supplied with a strong hasp, "f", which is securely hinged to the upper and outer edge of said disk and serves the double purpose of a lever to rotate the disk and also a hasp to lock the grain door "b" in position as shown in Fig. 2, the rivet, "g<sup>4</sup>" by which the arm "g<sup>2</sup>" is attached to the single bolt "g<sup>3</sup>" being provided with an elongated head which passes through the aperture "e<sup>2</sup>" in the hasp, the elongated head is provided with a transverse hole to receive a fastening ring, or pin. The metal casings "c" and "d" are provided with slits "r", "r", to receive the ends of the double bolts "h" and "i" when the door "b" is locked in position.

I bolt to the car door frame the metal carrying rods, "m" and "l" each of which rods I make with a pig tail twist, as shown in Fig. 1, at its upper end, and I attach the door "b" to said rods by means of metal



rings, "n" which encircle said rods which rings are connected by a swivel, "n<sup>1</sup>", to the staple "o", as shown in Fig. 1. A staple, "o<sup>2</sup>", is attached to the inner side near the center and bottom of the door "b" whereby the said door is hung up out of the way and attached to the car roof by means of the hook, "o<sup>1</sup>" as shown in Fig. 1.

To use my improved grain doors I release the hook "o<sup>1</sup>" at the top of the car from the staple "o<sup>2</sup>" and permit the door "b" to swing vertically in the car door-way, then lift the door "b" slide the metal rings "o", "o", out of the pig tail twist and onto the vertical portions of the rods "m" and "l", then lower the door "b" and slide it into the double rabbeted casings "c" and "d", then by means of the lever hasp "f" I revolve the circular metal disk "e" and slide the double bolts, "h" and "i" and the single bolt "g<sup>3</sup>", into the recesses "r", "r", provided in the metal casings therefor, then fold the hinged lever hasp shut forcing the elongated head of the rivet "g<sup>4</sup>" through the aperture "e<sup>2</sup>" provided therefor in said hasp secure same by means of a fastening ring through the dowel hole in rivet head "g<sup>4</sup>", then slide the auxiliary door "a" into position and the car is ready for loading, with room above the auxiliary door "a" for grain chutes or for inspection. To unload remove the fastening ring from the dowel hole in the elongated rivet head, "g<sup>4</sup>", open the hinged lever hasp, "f" and using same as a lever revolve the circular plate "e", withdrawing the bolts the grain pressure will cause the door "b" to swing open from the bottom and the door will be suspended by the metal rings "n" on the carrying rods "m" and "l"; after the grain pressure has been removed the auxiliary door "a" may be slid back out of the way and the door "b" again hung up in the top of the car.

45 Having thus described my invention what I claim as new and desire secured by Letters Patent is:—

1. In grain doors for box cars, the com-

50 bination with a car door frame, of a grain door, casings for the sides and bottom of the doorway, the said casings being provided with slits to receive the door fastening bolts, means for suspending the grain door, said means consisting of carrying rods each hav- 55 ing an elliptical turn at its upper end, means of attaching the carrying rods to the inner side of the door frame, a metal ring encircling each carrying rod and attached to the inner side of the grain door by a swivel connection, means of locking said grain doors, 60 said means consisting of two double bolts in shape similar to a lazy letter H, a single fastening bolt at the bottom, shouldered metal plates for slidably attaching the fastening bolts to the grain door said plates 65 being provided with bolt holes in their extremities, plate bolts, a circular metal disk rotatably attached to said grain door, metal arms loosely connecting the fastening bolts to the outer periphery of the metal disk, a 70 metal hasp lever hinged to said metal disk and a metal pin, said pin being provided with a dowel hole and dowel for fastening and locking said hasp to a fastening bolt, all substantially as described and set forth. 75

2. The combination with a grain car, a doorway therein, casings at the sides of the doorway provided with slits, a sliding and swinging door, two double bolts in the shape of a lazy letter H, adapted to engage the 80 slits in the casings, shouldered plates forming slideways for said bolts, a bottom fastening bolt, a circular disk rotatably attached to the door, arms loosely attaching the fastening bolts to the disk, a hasp lever hinged 85 to the top of the disk and adapted to engage the pin, which connects the bottom fastening bolt and its attaching arm.

In testimony whereof, I have signed my name to this amended specification in the 90 presence of two subscribing witnesses.

LEE P. ROBERTS.

Witnesses:

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A. S. TIBBETS.