

April 14, 1925.

1,533,862

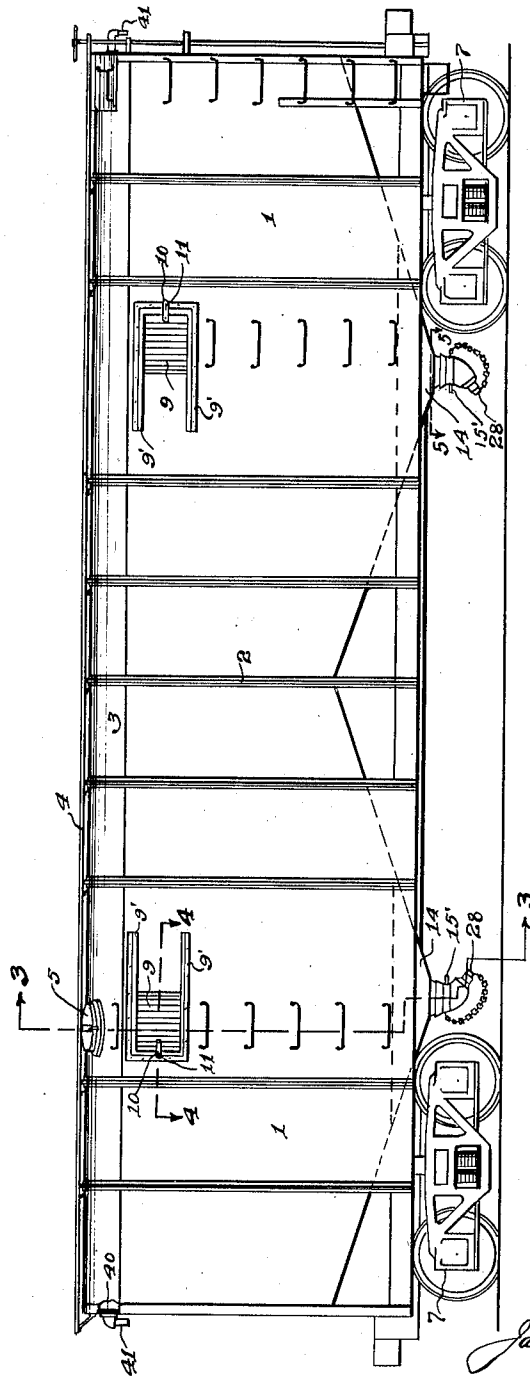
J. A. HYLE

STEEL GRAIN CAR

Filed May 29, 1924

3 Sheets-Sheet 1

Fig. 1.



Inventor.

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By

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Fig. 2.

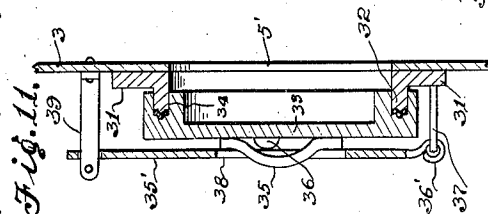
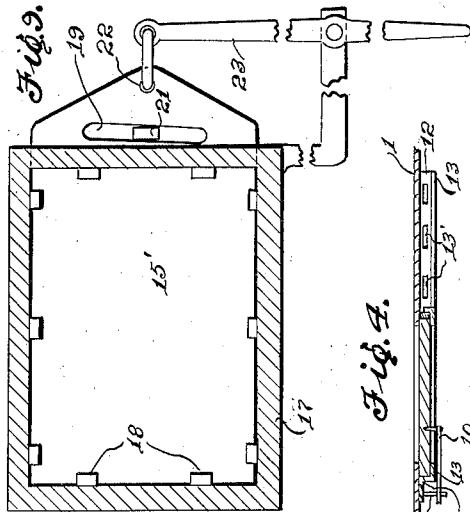
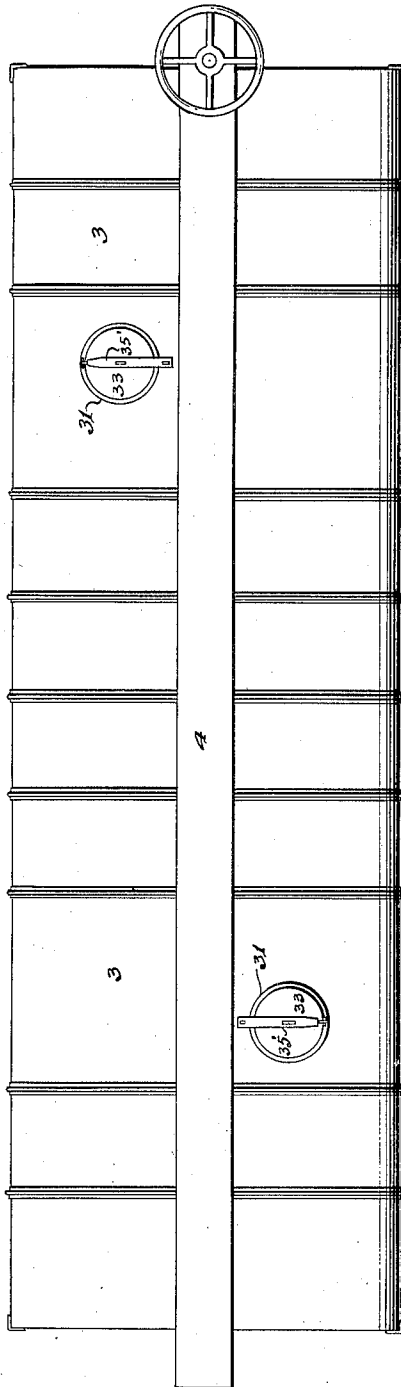
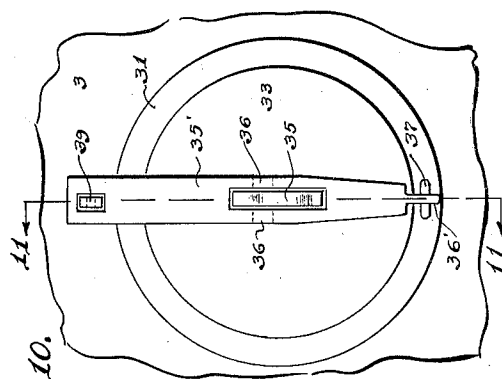


Fig. 10.



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Fig. 4.



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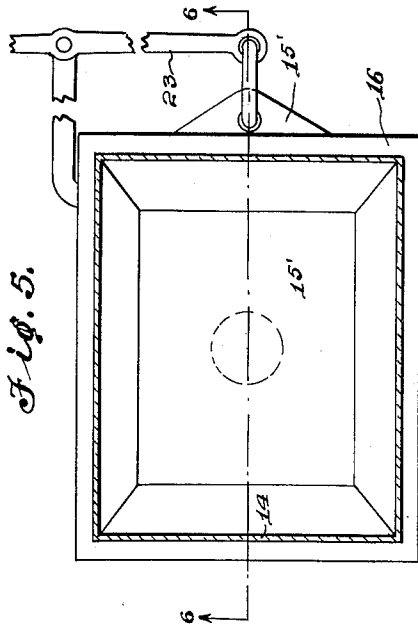


Fig. 6.

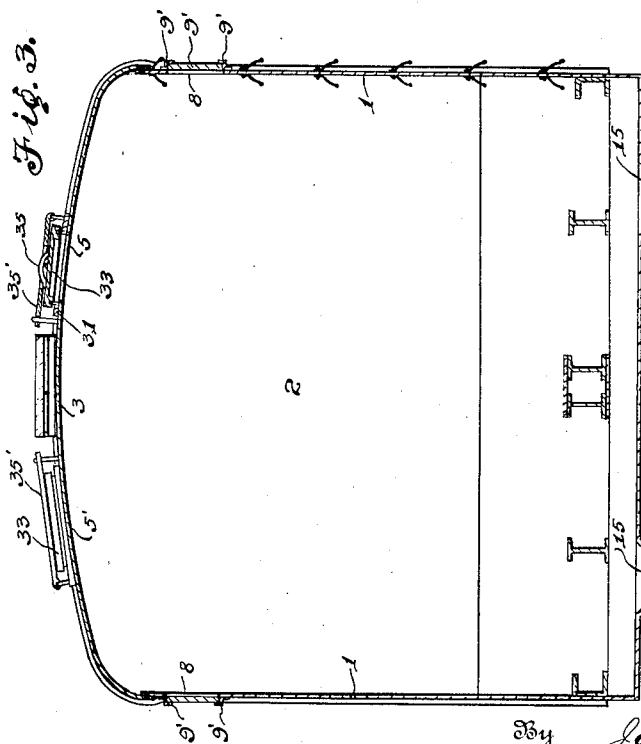
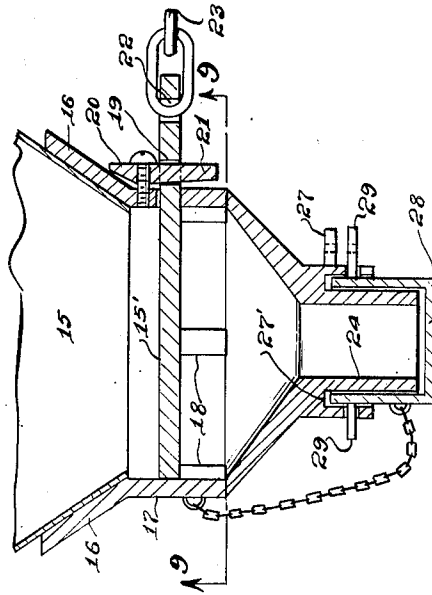


Fig. 8.

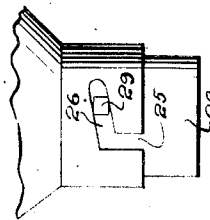
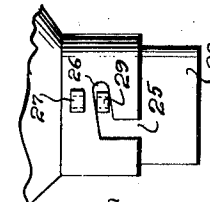


Fig. 7.



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UNITED STATES PATENT OFFICE.

JACOB A. HYLE, OF GIRARD, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO UNITED RAILWAY EQUIPMENT COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF DELAWARE.

STEEL GRAIN CAR.

Application filed May 29, 1924. Serial No. 716,686.

To all whom it may concern:

Be it known that I, JACOB A. HYLE, a citizen of the United States, residing at Girard, in the county of Macoupin and State of Illinois, have invented certain new and useful Improvements in Steel Grain Cars, of which the following is a specification.

This invention relates to steel grain cars especially designed for the safe and undamaged transportation of granular material in bulk, although said cars are so constructed that two different kinds of material or grain may be shipped in the one car, or various kinds of merchandise may be safely packed and transported therein.

It is well known that it is now in common practice to employ what is known as box cars in the transportation of granular materials which require the grain to be shoveled by power or hand shovel to the ends of the car, thus creating expense in both loading and unloading the car. Further, such box cars become loose; the lining and the usual sliding doors become warped or twisted, and other defects happen to the car so that when en route from its loading point to its destination a material loss of the grain occurs during transit owing to defective cars. Again, such cars being usually constructed of wood are more readily subjected to leaky roofs and sides which permit the grain to become damaged by moisture when subjected to stormy and inclement weather for any considerable length of time, and it is also well known that unauthorized persons ride in these box cars, and leave them in an unsanitary condition, and it being difficult to clean these cars in a sanitary condition before being loaded, the grain has a tendency to absorb the dirt and unsanitary elements which are likely to remain in said box cars, hence it is these and other disadvantages that this invention seeks to avoid.

The main object of my invention is to provide a steel grain car which is simple, safe, durable, and thoroughly efficient for the transportation of granular material, and adapted to exclude moisture from the top, bottom, sides, and ends, and to effectually resist removal of grain by unauthorized persons.

Another object of this invention is to so construct my improved grain car that no one will enter it to ride over the railway.

Further objects of the invention are to so construct the car that a partition is provided centrally thereof, thus permitting the car to be loaded with two kinds of grain, or with grain in one-half of the car and anthracite coal in the other half, or with different kinds of merchandise, which may be suitably packed in each half of the car; that the car may be loaded from the top or sides thereof; that means is provided so that a person can enter the top at each half thereof and pass down a ladder secured inside the car for any purpose desired or required; that means is provided at the top portion of each end of the car having a screen plate to prevent the entrance of insects and other foreign matter, and forming a vent to admit air, but at the same time prevent any undue accumulation of gas or grain dust therein; which may be easily loaded, and reliably sealed against storm and inclement weather as well as unauthorized entrance when both loaded and empty, and readily unloaded by gravity flow of the granular material from the cars in a manner to facilitate the conveying of the material to other suitable containers.

The foregoing and such other objects as may appear from the ensuing description are accomplished by the construction, arrangement, location, and combination of the parts hereinafter more fully described, illustrated by the accompanying drawings and particularly pointed out in the claims appended hereto, it being understood that slight changes in the proportions and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming a part of this specification it will be seen that:—

Figure 1 is a side elevation of the improved grain car embodying my invention.

Figure 2 is a top-plan view of the car.

Figure 3 is a transverse section taken in the plane of the dotted lines 3—3, Figure 1, looking in the direction of the arrow.

Figure 4 is a detail section through one

side of the car taken in the plane of the dotted lines 4—4, Figure 1, looking in the direction of the arrows.

Figure 5 is an enlarged section taken in the plane of the dotted line 5—5, Fig. 1, looking in the direction of the arrows.

Figure 6 is a section taken in the plane of the dotted line 6—6, Fig. 5, looking in the direction of the arrows.

Figure 7 is a front view of the lower-end portion of the egress opening.

Figure 8 is a rear view of the same.

Figure 9 is a section taken in the plane of the dotted line 9—9, Fig. 6, looking in the direction of the arrows.

Figure 10 is an enlarged plan of one of the closures for an ingress opening in the car roof; and

Figure 11 is a cross-section taken in the plane of the dotted lines 11—11, Fig. 10.

In the embodiment of my invention as illustrated, the numeral 1 designates the metallic body of the car, formed preferably with a vertical centrally arranged partition 2, thus dividing the body into two equally spaced halves or compartments, the top portion 3 being curved or rounded to form a substantially semi-circular contour and having a longitudinally arranged running board or runway 4 fixedly secured to the central portion thereof, said top portion being formed with an ingress opening 5 into one of the compartments at one side of the runway, and another ingress opening 5' into the other compartment at the opposite side of the runway, and in vertical alinement with each of said ingress openings fixedly secured to the inner face of the car is a ladder 6, whereby an employee may readily enter either of said openings and descend to the floor of the car for cleaning out any loose grain that may be retained therein or for any other desirable purpose.

The numeral 7 indicates the ordinary car truck and truck frame with such equipment as is ordinarily used in connection with all standard cars, and which forms no part of the invention, since it is the special construction of the body portion and its equipments that form the essential features of this invention.

It will be perceived that this body portion 1 is formed entirely of metal with a steel frame to which is riveted water tight a series of suitable steel plates thus forming the sides, bottom, top and ends of the car, and at each side of each half or compartment near the top portion of the car is formed an opening 8, of any suitable dimensions for either loading or unloading said half or compartment, each opening being protected by a slidable storm tight door 9, preferably formed of wood, the outer end portion of the inner face of the door having a dovetailed recess formed therein for the

reception of a piece of solid rubber fixedly secured within said recess, thus forming a watertight structure when the door is closed, and at the front central portion of the door is fixedly secured a hasp 10, which is adapted to engage with a staple 11, after which it can be securely sealed and locked to the car body. The said door 9 is fitted within a steel frame 9' riveted water tight to the car body, which frame surrounds the top, bottom and inner end of the door, said frame being formed with a laterally extended portion 12, forming a runway for the door, and a flanged portion 13 which overlaps and embraces the top, bottom and inner end of said door to securely retain it in its proper position, the lowermost laterally extended portion being formed with a slot 13' therethrough to permit the escape of water or granular material which would otherwise have a tendency to accumulate thereon. Each half or compartment of the car is formed with a hopper shaped portion 14, which is provided at each side thereof with an egress opening 15 of any desirable dimensions, having a regulating slide valve 15', adapted to regulate the discharge of granular material therethrough, each egress opening being surrounded by a square member 16, formed of cast steel malleable or pressed steel which is securely riveted to the steel hopper of the car, said member being formed with its inner wall beveled or tapered inwardly and downwardly and terminating with a depending portion 17 provided with a series of lateral extensions 18 for the reception thereon of the slide regulating discharge valve 15', the said valve being formed at its outer end portion with a slotted opening 19 therethrough for the reception of a metallic turnbutton or key 20, which is fixedly and pivotally secured nearest one end thereof to the member 16, said key 20 being formed with an inner face which is beveled gradually outwardly from its pivoted point and with a longer and heavier arm 21 at one side of the pivotal point, said arm being adapted to drop by gravity thereby allowing its beveled face to become wedged into the slotted opening 19 when the valve 15' is closed, and thus securely retain the valve in its closed position. An opening 22 is formed through the outer end of the valve to which a lever 23 may be suitably secured and properly adjusted for manipulating the slide valve, and thus regulate the discharge of the grain through the opening, or to pull out the valve to the full extent of the opening without displacing the valve from its normal position. When it is desired to open the valve it is simply necessary to lift the turnbutton or key 20 by turning it on its pivot until it is clear of the opening 19 and then operate the lever 23. Securely and fixedly riveted to the

lower face of the member 16 is a metallic pipe 24 formed with a substantially square upper end portion which merges into a lower cylindrical portion, said lower cylindrical portion being provided at each side thereof with a vertical slot 25, which merges into a right angularly arranged slot 26, which inclines slightly upwardly, and above the slot 26 is a lateral extension 27, having an opening formed therethrough for the purpose hereinafter referred to. The lower end of the pipe 24 is provided with an annular recess 27' within which recess is fitted the upper end portion of a cup-shaped cap or closure 28 having a lateral extension 29 formed at each side thereof, said cap being adjusted within the lower end of the pipe 24 by causing the lower end of said cap to pass into the annular recess 27' of the pipe at the same time causing the lateral extensions 29 of the cap to be in alinement with the vertical slots 25 in the pipe, then pushing the cap upwardly until the extensions 29 register with the slots 26 when by turning the cap the extensions 29 are caused to ride upwardly through the inclined slots 26 until one of the extensions 29 formed with a hole therethrough registers in alinement with the extension 27 formed at one side of the pipe 24, when a seal or a seal and lock may be secured through the openings formed in the extension 27 and 29 and the cap fixedly secured to the pipe, thus making it impossible to lose any grain during transit through the egress openings. In order to prevent the loss or accidental displacement of the cap or closure 28 a suitable chain is provided, one end of which is fixedly secured to the member 16 and its other end to the cap, thereby securing the cap always to the car in a convenient location for use.

Each ingress opening 5 formed in the top of the car for the purpose of loading and for the admission of an employee inside the car when desired, is preferably circular in form and about twenty-two inches in diameter, and each of said openings is formed by a round steel frame 31 encircling the opening and riveted securely to the car top having an upwardly extended annular rim 32, and an annular steel cap 33 formed with an annular recess 34, a handle 35 and an upwardly extended rib 36 formed at each side of the handle, which cap 33 is fitted over the frame 31 with the rim 32 extending upwardly within the recess 34 into contact with a rubber or thin flexible pad seated within a groove formed in the cap at the upper end of said recess thus causing the cap when placed in its proper position to become tightly wedged and retain such position and effectually prevents the admission of moisture during stormy and inclement weather. In order to securely retain the

cap 33 in position during transportation of the car I preferably employ a hasp 35' formed of a single piece of spring steel with a closed hook 36' formed at one end adapted to engage with an eye bolt 37 fixedly secured to the car roof, said hasp having a slotted opening 38 formed through its central portion through which is passed the handle 35 of the cap, said central portion of the hasp resting in contact with each of the ribs 36, and the outer end portion of the hasp is provided with a slotted opening through which is adapted to pass a suitable staple 39 fixedly secured to the car roof, when by pressing downwardly on the free end of the hasp a suitable split spring key or cotter pin may be slipped through the staple above the hasp, or the hasp may be sealed and locked to the staple, thereby retaining the hasp in a spring like manner in contact with the ribs of the cap, and securely hold the cap always in its proper position regardless of the strenuous jarring to which rolling stock is usually subjected.

At the top or roof portion, and at each end of the car is formed an opening therethrough, which opening is surrounded by a suitable sheet of fine wire screen or gauze 40, and secured to the car in communication with said opening is a pipe 41, depending a suitable distance below the opening to prevent the entrance of rain or other moisture, and constituting a gas vent or ventilator, and at the same time preventing the accumulation of any undue amount of gas or grain dust within the top of the car, while the screen serves to prevent the entrance of any insects or other foreign matter.

Each half or compartment of the car is preferably provided with a metallic ladder securely fastened to the outside of the car in alinement with the ingress openings and another ladder of a similar type at the outside end portion of the car.

From the foregoing description it will be readily apparent that this construction of car may be utilized for conveying two kinds of grain in the same car; that one half of the car may be used for grain and the other side for anthracite coal; that the car may be loaded at each side of the car and at the top portion simultaneously or independently; that it is practically waterproof against all kinds of stormy weather; that it will successfully resist access to the contents thereof by unauthorized persons; that it effectively prevents all waste or loss of material during transit; that it can be easily loaded with grain without shoveling to level it off by the usual pipes employed in connection with grain elevators; that the load can be quickly discharged by opening all of the four discharge outlets, or the slide valves may be regulated so as to unload the car gradually into sacks or other suitable

containers, and that an authorized person can easily enter within the car and descend to the floor for any desirable purpose.

It will be understood that in the event it is desired to load the car with certain merchandise, such goods may be passed through the side openings and suitably packed within the car by an employee therein, and it may be unloaded by an attendant passing the merchandise through said openings to the outside of the car.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. A steel grain car of the character described, comprising a central fixed partition forming two compartments, each compartment being formed with an ingress opening at each side, an ingress opening at its top, and two egress openings at the bottom thereof.

2. A steel grain car of the character described, comprising a central fixed partition forming two compartments, each compartment being formed with an ingress opening near the top at each side thereof, an ingress opening in its roof portion, and two egress openings at the bottom thereof.

3. A steel grain car of the character described, comprising a vertical centrally arranged fixed partition forming two compartments, each compartment being formed with an ingress opening near its top at each side thereof, an ingress opening in the roof portion of each compartment, two egress openings at the bottom of each compartment, and a ladder fixedly secured to the inner face of the car.

4. A steel grain car of the character described, comprising a vertical centrally disposed fixed partition forming two compartments, each compartment being formed with a slidable door near its top portion at each side thereof, a circular ingress opening on the roof portion of each compartment disposed at opposite sides of the car roof, a ladder fixedly secured to the inner face of the car in vertical alinement with each door and ingress opening, and two egress openings in the bottom of each compartment.

5. A steel grain car of the character described, comprising a centrally disposed fixed partition forming two compartments, each compartment being formed with a waterproof slidable door near its top portion at each side thereof, an ingress opening in the roof portion of each compartment, a sealed waterproof cover for said ingress opening, a hopper formed in each compartment, and two valve regulated egress openings formed through the bottom of each compartment.

6. A steel grain car of the character described, comprising a centrally disposed fixed partition forming two compartments, each

compartment being formed with an ingress opening near its top at each side thereof, an ingress opening in the roof portion, each roof opening being disposed at opposite sides of the longitudinal central portion of the car roof, two egress openings formed in the bottom portion, and a screened vent pipe secured at the outer end at the top portion of each compartment.

7. A steel grain car of the character described, comprising a centrally disposed fixed partition forming two compartments, each compartment being formed with an ingress opening at each side, an ingress opening in its top portion, two egress openings in its bottom portion, a fixed ladder secured to the outer and to the inner face of the car in alinement with said openings, and a screened vent pipe secured at the outer end at the top portion of each compartment.

8. A steel grain car of the character described, comprising two compartments, each compartment being formed with an ingress and egress opening near its top at each side thereof, an ingress and egress opening in its roof portion, two egress openings formed in its bottom, and a screened vent pipe secured at its outer end at the top portion of each compartment.

9. A steel grain car of the character described, comprising two compartments, each compartment being formed with an opening near its top at each side thereof, the outer side of each opening being surrounded at its top, bottom and one-end with a slotted steel frame, a slidable waterproof door fitted within said frame adapted to close said opening, an ingress opening formed through the roof portion, means for sealing said ingress opening against moisture, and two egress openings formed in the bottom of each compartment.

10. A steel grain car of the character described, comprising two compartments, each compartment being formed with an ingress and egress opening in its roof portion, a steel frame formed around said opening having an upwardly extended rim, a cover plate provided with an annular recess and groove adapted to be seated over said rim and frame, a handle and projecting ribs integrally formed on said cover plate, a spring steel hasp seated on said plate with its lower surface resting in contact with the ribs, means for retaining the hasp to the roof portion, means for locking the hasp over the cover plate, ingress and egress openings formed near the top of each compartment at each side thereof, and two egress openings formed in the bottom of each compartment.

11. A steel grain car of the character described, comprising two compartments, each compartment being formed with two egress

openings in its bottom, each opening being
surrounded by a steel frame, a slide regu-
lating valve mounted in said frame having
a slot formed through its outer end portion,
5 a metallic gravity button pivotally secured
to said frame adapted to lock the valve in
closed position, a pipe fixedly secured to the
bottom of the frame, a cup-shaped mem-
ber adapted to seal and close the outer end
of said pipe, and a lever secured to the outer 10
end of the valve for properly operating the
said slide valve.

JACOB A. HYLE.