No. 691,756. Patented Jan. 28, 1902.

J. FLESHER.

DOOR FOR GRAIN CARS.

(Application filed May 13, 1901.)

(No Model.) 3 Sheets—Sheet 1.

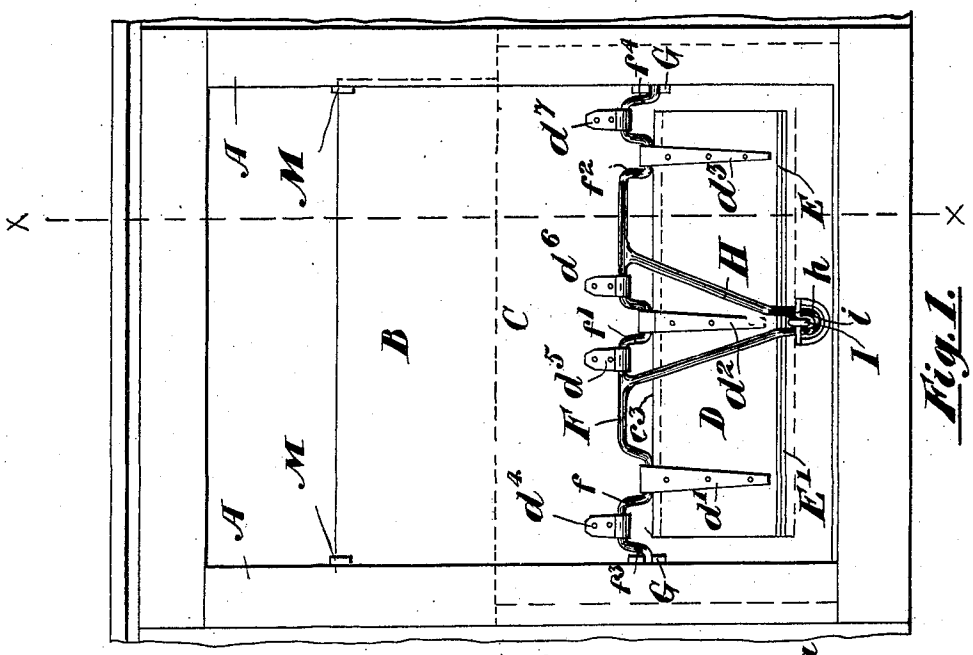


Fig. 1.

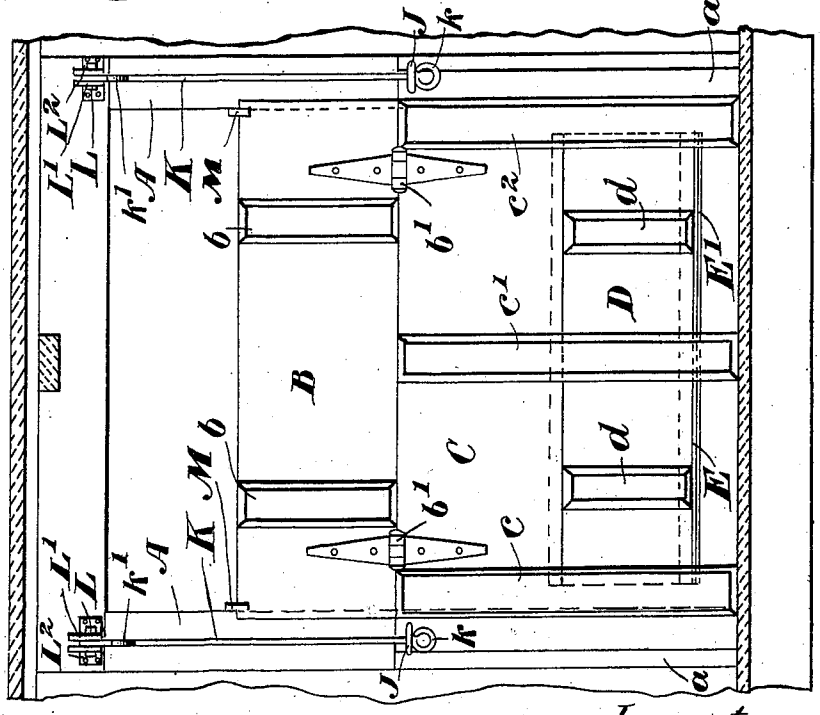


Fig. 2.

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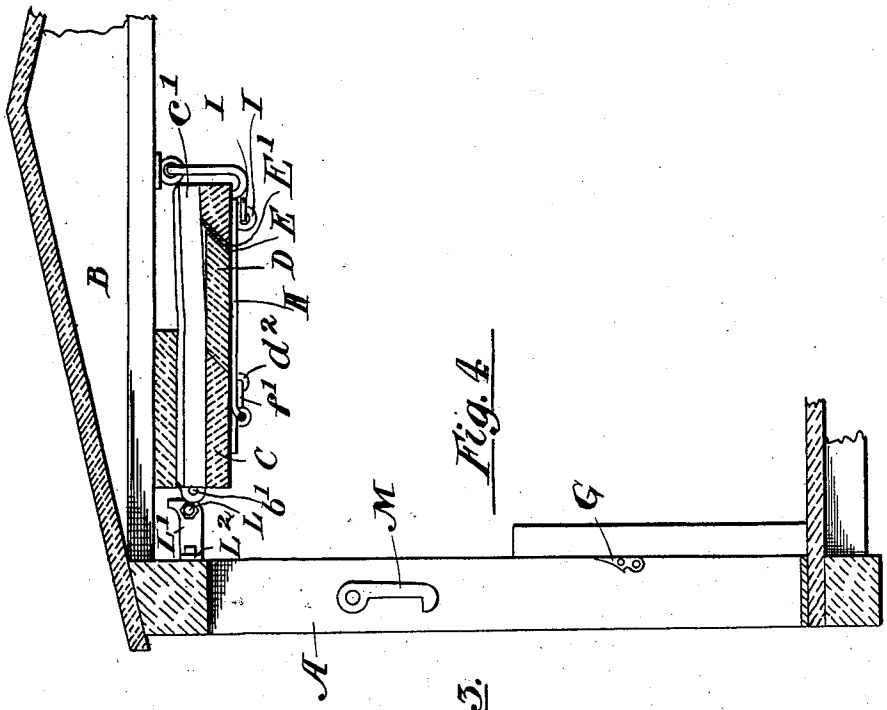


Fig. 4.

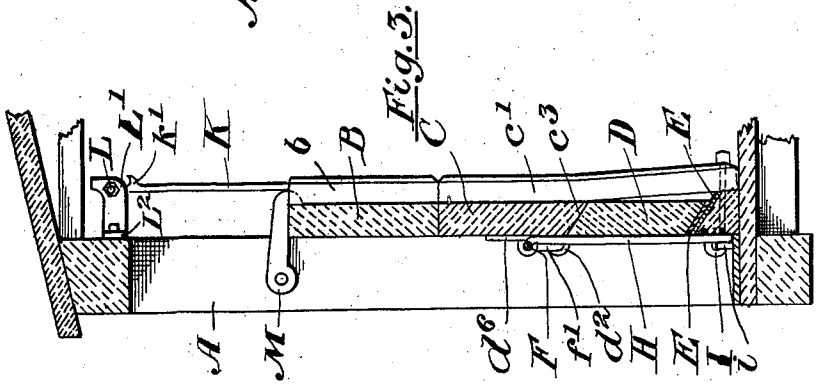


Fig. 3.

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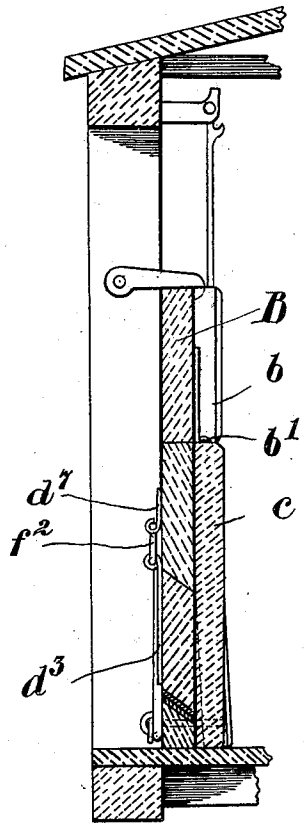


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN FLESHER, OF PARRY SOUND, CANADA.

DOOR FOR GRAIN-CARS.

SPECIFICATION forming part of Letters Patent No. 691,756, dated January 28, 1902.

Application filed May 13, 1901. Serial No. 60,105. (No model.)

To all whom it may concern:

Be it known that I, JOHN FLESHER, a subject of the King of Great Britain, residing at Parry Sound, in the district of Parry Sound and Province of Ontario, Canada, have invented a new and useful Door for Grain-Cars, of which the following is a specification.

My invention relates to improvements in doors for grain-cars or other receptacles for grain and like products; and the object of my invention is to design a door which may be easily opened or closed, which may be hung up to the ceiling of the car when not in use, and which will not be difficult to open owing to the pressure of the grain in the car; and it consists, essentially, of a door comprising three principal parts—an upper hinged section, a body, and an auxiliary door set in and connected by hinges to the body, said hinges being formed of a bent rod passing alternately through bearings attached to the body portion and bearings attached to the lower door, means being also provided for hanging the whole door to the roof of the car or other receptacle, and the various parts being otherwise constructed and arranged in detail, as hereinafter more particularly described.

Figure 1 is an elevation of the front or outside of my door. Fig. 2 is an elevation of the back or inside of my door. Fig. 3 is a sectional elevation of the door on the line $x\ x$, Fig. 1. Fig. 4 is a sectional elevation of the door on the line $x\ x$, Fig. 1, and showing the door hanging to the roof of the car. Fig. 5 is a section through the door on the line $y\ y$, Fig. 2.

In the drawings like letters of reference indicate corresponding parts in each figure.

A A are the jambs on each side of the door.

B is the upper section of the door, which is provided with strengthening-battens $b\ b$.

C is the body or main section of the door, which extends about half the distance from the floor to the top of the opening and is connected to the upper section B by means of hinges $b'\ b'$, which are preferably made long to act as strengtheners for the upper section B.

$c\ c'\ c^2$ are strengthening-battens extending from top to bottom of the body. This body or main section and the upper section are prevented from side displacement when in position by the guide-strips $a\ a$, secured to the inside of the jambs A A.

In the lower portion of the body of the door is a rectangular opening c^3, which extends almost across the said body or main section of the door. The upper and lower edges of this opening are formed with a bevel of approximately forty-five degrees and sloping in an upward and outward direction. In this opening is a secondary or auxiliary door D, which is hinged to the body by means hereinafter described. The upper and lower edges of this door are beveled similarly to the upper and lower edges of the opening c^3, the lower beveled edges of the door and opening being supplied with wear-plates E and E', respectively, to prevent the wearing of said edges due to their rubbing together when the auxiliary door D is opened and closed. The auxiliary door D is also provided with strengthening-battens $d\ d$ on its inside.

The auxiliary door D is connected to the body C by a suitable hinge, and preferably a crank-hinge, made as follows: Bearings $d'\ d^2\ d^3$ are provided and secured to the auxiliary door D, one being preferably near each of its sides and one at the center thereof. A rod F is provided and bent to form a series of U-shaped cranks $f\ f'\ f^2$, the lower portions of these cranks being journaled in the bearings $d'\ d^2\ d^3$, respectively. The straight portions of the rod are journaled in bearings $d^4\ d^5\ d^6\ d^7$, secured to the body portion of the door, these bearings being a little above the upper edge of the door D. Cranks $f^3\ f^4$ are formed at the ends of the rod F, and when the door D is closed these cranks engage with stops G G, secured to the jambs. H is a substantially V-shaped lever which is welded or otherwise joined at its upper ends to the rod F, the lower end being bent to form a loop h. The loop h may be secured to the bottom part of the body by any suitable means to secure the door D in the closed position. The means which I employ to accomplish this end is to provide an eyebolt I, which passes through the lower part of the body, the eye projecting out in front of the door and through the loop h when the door D is closed. A locking-rod i of suitable form is then passed

through this eye, thus securely fastening the door in the closed position.

J J are loops or eyes secured to the inside of the body portion of the door. Rods K K are provided, their lower ends passing through the eyes J J and terminating in eyes *k k*, which are sufficiently large to prevent the ends of said rods from slipping through the eyes J. The upper ends of the rods K are pivotally held by pins L, passing through the lugs L′, formed on the plates L^2, which are firmly secured to the upper part of the jambs A A.

k′ k′ are two hooked portions formed near the top of the rods K K.

Hooks or catches M M are pivotally secured to the jambs in order to hold the hinged upper section C in place.

By reference to Fig. 3 it will be seen that the lower part *b* of the body of the door is thicker than the upper part and the center batten is sprung slightly, leaving a space between said batten and the door D. This is to prevent the grain getting in between the door and the batten and keeping the door from closing tight.

Having thus described the construction of my door, I will proceed to explain its use and its advantages.

When the door is in use and in the closed position, as shown in Figs. 1, 2, and 3, the body portion rests against the jambs A A and between the guides or strips *a a* the upper hinged section B is turned up and held in place by the hooks or catches M M, and the auxiliary door D is closed and locked, as above described, the cranks f^3 f^4 and the hooks M M, together with the pressure of the grain, holding the entire door tightly in position. In order to unload the car, the lever H is unlocked and raised, turning the rod F in its bearings. This motion draws the door D upward and outward in the direction of the bevel until it is entirely free from the body portion, and the grain rushes out of the opening 3, thus relieving the pressure on the inside of the door. It will be noticed that owing to its beveled edges the auxiliary door is not retarded but rather assisted in its opening by the pressure of the grain. This is an important point of my invention and has not been accomplished previously. The pressure having been released, the catches M M are unhooked and the upper section C is turned down against the body B. The whole door is now slipped up the rods K K on the hooks *k k* and is then swung up to the roof of the car and held in such raised position by means of the hook N, as shown in Fig. 4. The rest of the grain may now be unloaded.

The reason for having the door formed with the hinged upper section B is to enable the door to hold the full load of grain and still not extend more than half-way across the car when it is in the raised position.

It may here be observed that the battens on the upper section and the battens on the body of the door are so arranged that they will not interfere when the said upper section is turned over onto the body to be hung up.

I am aware that grain-doors have been constructed with lower auxiliary doors; but they have been difficult to open or have been detachable from the body of the door, and consequently frequently lost. It will be seen that my invention overcomes these difficulties.

What I claim as my invention is—

1. In a door of the class described, the combination with the body thereof, of an auxiliary door set in an opening in said door-body, the upper and lower edges of said opening and said auxiliary door being beveled with an upward and outward slant, and means for locking and unlocking said auxiliary door, as and for the purpose specified.

2. In a door of the class described, the combination with the body thereof, of an auxiliary door set in an opening in said door-body, the upper and lower edges of said opening and said auxiliary door being beveled with an upward and outward slant, and a crank-hinge connection between said auxiliary door and said door-body and means for locking and unlocking said auxiliary door, substantially as and for the purpose specified.

3. In a door of the class described, the combination with the body thereof, of an auxiliary door set in an opening in said door-body, the upper and lower edges of said opening and said auxiliary door being beveled with an upward and outward slant, and a crank-hinge formed of a rod bent to form cranks and straight portions, said straight portions being journaled in bearings attached to the door-body, and the cranks being journaled in bearings attached to the auxiliary door, and means for locking said door as and for the purpose specified.

4. In a door of the class described the combination with the door-jambs, the body, the auxiliary door and the bent rod for the crank-hinge, of cranks formed at the extremities of said bent rods, and stops secured to the jambs of the door, said cranks being adapted to engage with said stops as and for the purpose specified.

5. In a door of the class described, the combination with the body thereof, of an auxiliary door set in an opening in said door-body, and a rod bent to form cranks and straight portions alternately, and bearings attached to the door-body in which said straight portions are journaled, and bearings attached to the auxiliary door in which said cranks are journaled, and a substantially V-shaped lever rigidly connected at its upper ends to said rod, and means for locking the lower end of said lever to said body portion as and for the purpose specified.

6. The combination with the body of the

door and the auxiliary door set in and hinged to said body of an enlarged lower portion of the body, vertical strengthening-battens attached to the inside of said body, one in proximity to each side thereof, and one in the center thereof, the lower ends of the side battens being sunk in the enlarged lower portion of the body, and a center batten being sprung out and attached at its lower end to said enlarged portions of the body as and for the purpose specified.

Signed at Ottawa this 25th day of April, 1901.

JOHN FLESHER.

Witnesses:

E. P. FETHERSTONHAUGH,

F. C. ASKWITH.