(No Model.)

# J. M. GRISWOLD.

## FASTENING DEVICE FOR GRAIN DOORS OF FREIGHT CARS.

No. 375,447. Patented Dec. 27, 1887.

Fig. 1.

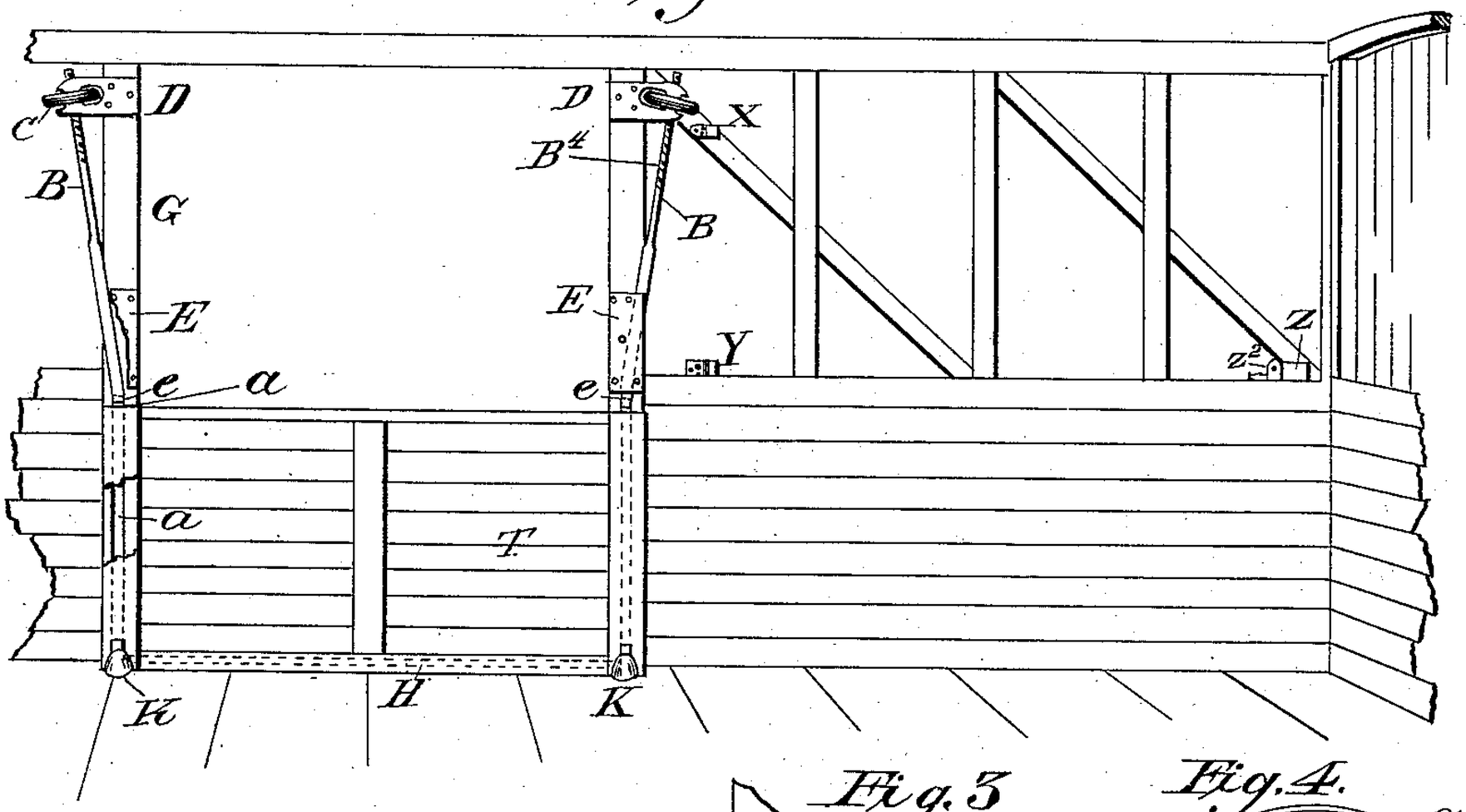



Fig. 2.

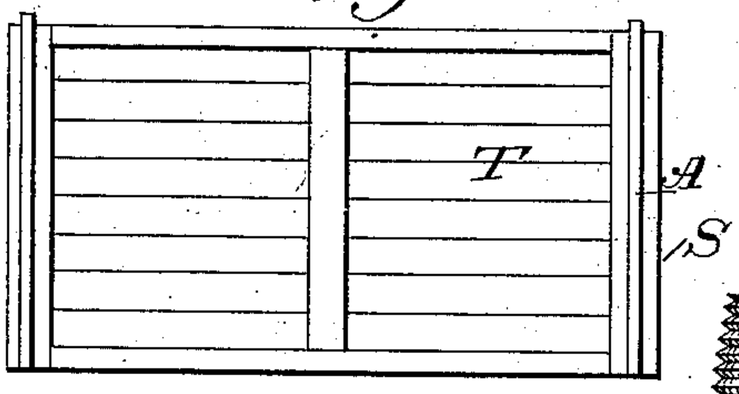



Fig. 3

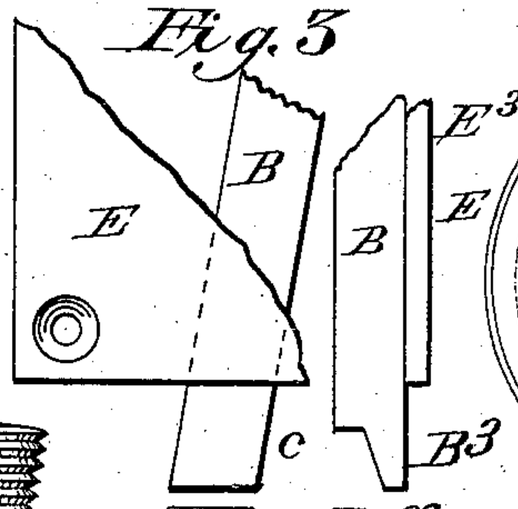



Fig. 4.

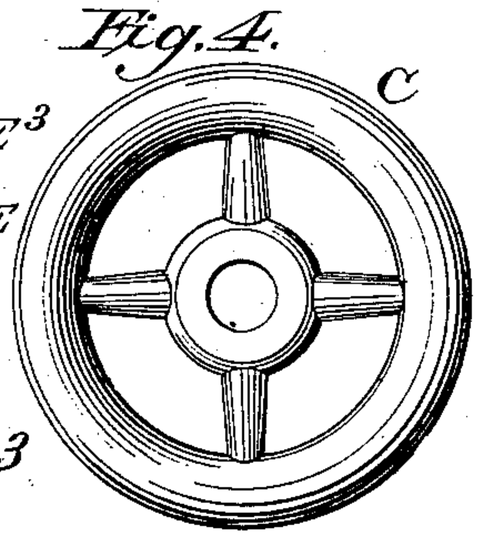



Fig. 7.

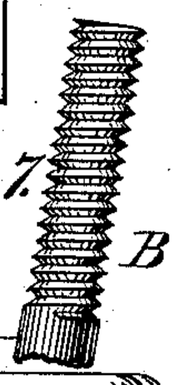



Fig. 6.a

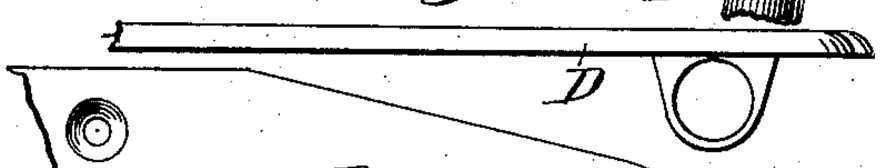
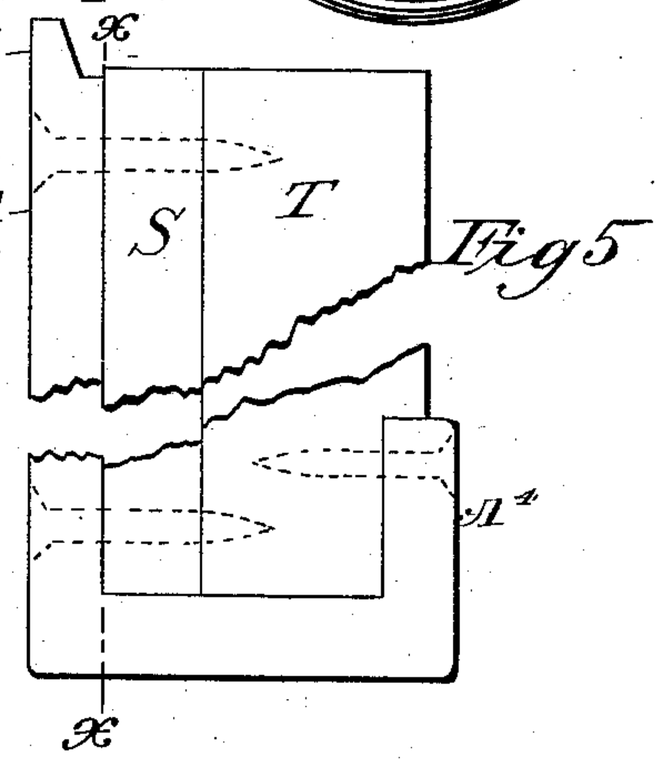



Fig. 6.




Fig. 5.a

Fig. 5

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# UNITED STATES PATENT OFFICE.

JOSEPH M. GRISWOLD, OF BROOKLYN, MICHIGAN.

## FASTENING DEVICE FOR GRAIN-DOORS OF FREIGHT-CARS.

SPECIFICATION forming part of Letters Patent No. 375,447, dated December 27, 1887.

Application filed August 2, 1886. Serial No. 209,820. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH M. GRISWOLD, a citizen of the United States, residing at Brooklyn, in the county of Jackson and State of Michigan, have invented a new and useful Fastening Device for Grain-Doors of Freight-Cars, of which the following is a specification.

My invention relates to improvements in grain-doors and their fastenings for freight-cars; and the objects of my improvements are, first, to secure a grain-door easily and quickly operated, both in preparing to load and unload cars with grain or other productions carried in bulk in railroad freight-cars; second, greater security in preventing loss from leakage and escape of grain while in transportation; third, a door less liable to be injured in its manipulations while being handled and arranged for loading or unloading, and, fourth, a door whose attachments for fastening and holding the same in place do not interfere with the convenience or capacity of the car when used for other kinds of freight.

Figure 1 is a perspective of the interior of a grain-car, with the door with its attachments in position in elevation; Fig. 2, an elevation of the grain-door with its attached ribs or bars A A; Fig. 3, face and side detail broken-away views of the bar B, with its stud *c* and guide-plate E; Fig. 4, a view of the hand-wheel C; Fig. 5, a face view of the bar A, with its studs *b*, as attached to the wood of the grain-door, and Fig. 5ª a section on line *x x* of Fig. 5; Fig. 6, a face view of the supporting-bracket D, and Fig. 6ª a side view of the same; Fig. 7, a view of the upper end of bar B.

In the center of the inside face of each of the doorway-posts of the car-frame, as shown at T, saw-grooves are cut, as seen at *a*, from the floor of the car upward as far as the height of the door may require, and continued at a slight angle to the sides of the posts. These grooves are to be cut from three-fourths of an inch to an inch in width, and from a quarter to a third of an inch in depth, the upright part of said grooves being for the purpose of receiving the bars or ribs A A on the grain-door. Said bars are designed to engage said grooves for the purpose of preventing any lateral or endwise movement of said door, and for the further purpose of preventing any escape of grain between the ends of said door and the doorway-posts when in position.

To the outside and near the ends of the grain-door are attached, by screws or rivets, iron bars or ribs, as represented at A, Fig. 2, in width to work freely in the grooves of the doorway-posts, and in thickness to set tight to the inside face or bottom of the grooves in the doorway-posts, and allowing the ends of said door opposite said posts to also be brought tight against the said posts. Said bars are to be turned under and matched into the bottom of the wood of the door, and, if desired, to be turned up on the inner side of said door, as seen at A⁴, Fig. 5. The lower and inside ends of bars A A, after being turned under into the wood of the door, are designed to face and engage the studs K K to assist in forcing the bars A A tightly into the grooves. The upper ends of said bars A A are to be halved into studs or projections, which said studs are beveled on their inner sides, as seen at *b*, Fig. 5, the heads of said bars or heels of said studs being approximately flush with and the studs projecting above the top of the door. S and T represent the wood or boards of the door. The bars A A being engaged in the grooves *a a*, the studs *b b* are designed to engage the studs *c c* of the bars B B.

At the ends of the ordinary iron threshold, (represented at H, Fig. 1,) against the flanges of which the bottom and outside of the grain-door usually rest, are placed studs, as seen at K, Fig. 1, fastened to the floor by screws and facing the doorway-posts, the said studs being about the elevation of the flanges on the iron threshold, and with the face of the studs slightly beveled, for the purpose of assisting in forcing the grain-door into position and holding the bottom of said door firmly when in position. The bars A A, engaging the grooves *a a*, the studs *b b*, engaging the studs *c c*, the studs K K, engaging and operating upon the lower ends of bars A A, said door is held from any inward or upward movement, the ends of the door are brought tightly against the doorway-posts, and the bottom against the flange of the threshold H.

The bars B B (represented at B, Fig. 1) are made of iron, the lower part of the same size as the bars A A and the upper part round,

the lower ends having studs, as appears at $B^3$, Fig. 3, with beveled faces on the inside, corresponding and designed to engage or match into the studs on bars A A. The edges of the studs of bars B B are to be slightly beveled crosswise, so that said studs shall match squarely on the top of the studs of bars A A, as appears at *e*. On the upper ends of the bars B B are cut either a bench-screw or tap-cut thread, as appears at $B^4$, about six inches in length. The said bars B B are designed to fit into and work in the angular grooves in the doorway-posts.

The hand-wheels C C are made of iron, the hubs of which are threaded to work upon the threaded ends of the bars B B, said hand-wheels to be as large in diameter as their location will permit.

To the sides of the doorway-posts are attached at a proper angle iron brackets, as represented at D. Said brackets are constructed with jaws parallel with each other, the opening or recess between them being of equal width of about two inches, and into which opening the hand-wheels C C are to be placed. Holes on a line with the angular grooves in the doorway-posts are to be made through both of said jaws, of a size to pass the upper ends of the bars B B, the hand-wheels C C working within said recess and upon the threads of said bars, moving said upper ends of the bars B B through said holes and raising and lowering said bars.

On the face of the inside of the doorway-posts, as shown at E, Fig. 1, are screwed iron plates covering the face of said doorway-posts for the space of ten inches, for the purpose of holding in place and protecting the bars B B in the grooves in which they are worked.

Resting the bottom of the door on and against the threshold H, the lower and inside ends of the bars A A placed against the studs K K, and bringing the door upright, the bars A A entering the grooves *a a*, the door is brought to its proper position, and by lowering the bars B B by means of the hand-wheels C C, so that the studs of the bars B B shall overlap and engage the studs of the bars A A, the guide-plates E E holding said bars B B to their proper places, and continuing the pressure by the hand-wheels C C, the beveled sides of the studs B B acting upon the beveled sides of the bars A A, and the beveled sides of the studs K K acting on the lower ends of the bars A A, the said bars A A are brought tight against the inner face of the grooves *a a*, the sides of both ends of the grain-door are brought tight against the doorway-posts, and the bottom of the door tight to and against the threshold H and its flange, and so held securely in position for use.

To relieve the grain-door so as to unload a car, raise the bars B B by the hand-wheels C C till said bars do not obstruct the moving of the grain-door, and by pushing the top of the door inward, the grain will be allowed to escape at the sides and bottom as said door is gradually pushed out of position and hung up at the side of the car. When so hung, the floor and sides of the car are unobstructed by projections ordinarily used to fasten grain-doors in position.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A door-frame for railroad freight-cars, with longitudinal grooves *a a* cut in the inner face of the doorway-posts, in combination with the bars A A on a grain-door, and the forcing-bars B B, mounted in the frame-work, for the purposes as herein specified.

2. A door-frame for railroad freight-cars provided with grooves *a a*, in combination with a door having bars or ribs A A, arranged on the outside of the door to engage the grooves, and provided with studs *b b*, the bars B B, provided with studs *c c*, arranged to engage with the studs *b b*, and the studs K K, arranged to engage the lower ends of the bars A A, substantially as herein described.

3. The combination, with the grooved doorway-posts, of a grain-door having bars A A, attached thereto, said bars provided with studs *b b*, bars B B, engaging the grooves in the doorway-posts, and provided with screw-threaded ends and with studs *c c*, arranged to engage the studs *b b* of bars A A, the brackets D D, hand-wheels C C, mounted therein for operating the bars B B, and the guide-plates E E, attached to the doorway-posts, substantially as and for the purpose specified.

4. The combination of the doorway-posts of a railroad-car having grooves *a a*, the door having bars A A, provided with studs *b b* engaging in said grooves, the bars B B, having studs engaging with the studs on the bars A A, and having screw-threaded ends, the hand-wheels C C, engaging the screw-threaded ends of bars B B, the brackets D D, supporting said hand-wheels, the guide-plates E E for the bars B B, and the studs K K, all substantially and for the purposes as herein specified and described.

JOSEPH M. GRISWOLD.

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