

1,241,841.

C. FRENCH.
GRAIN DOOR FOR CARS.
APPLICATION FILED MAY 22, 1916.

Patented Oct. 2, 1917.

2 SHEETS—SHEET 1.

Fig. 8.

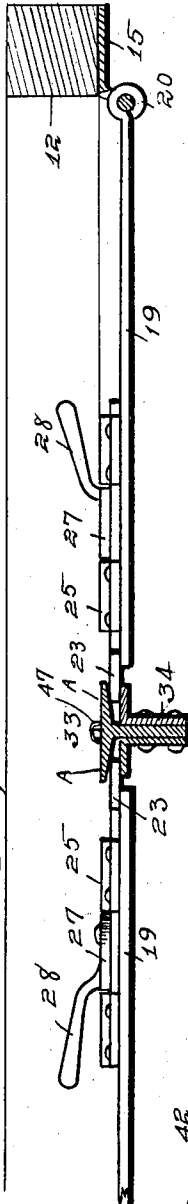


Fig. 1.

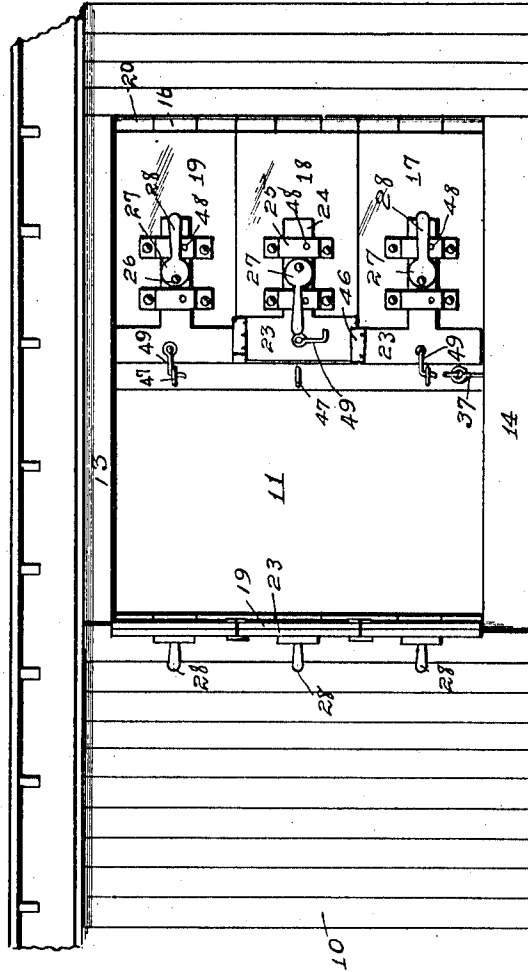
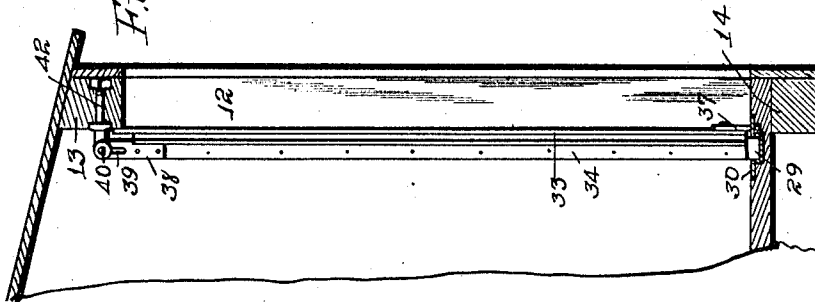


Fig. 7.



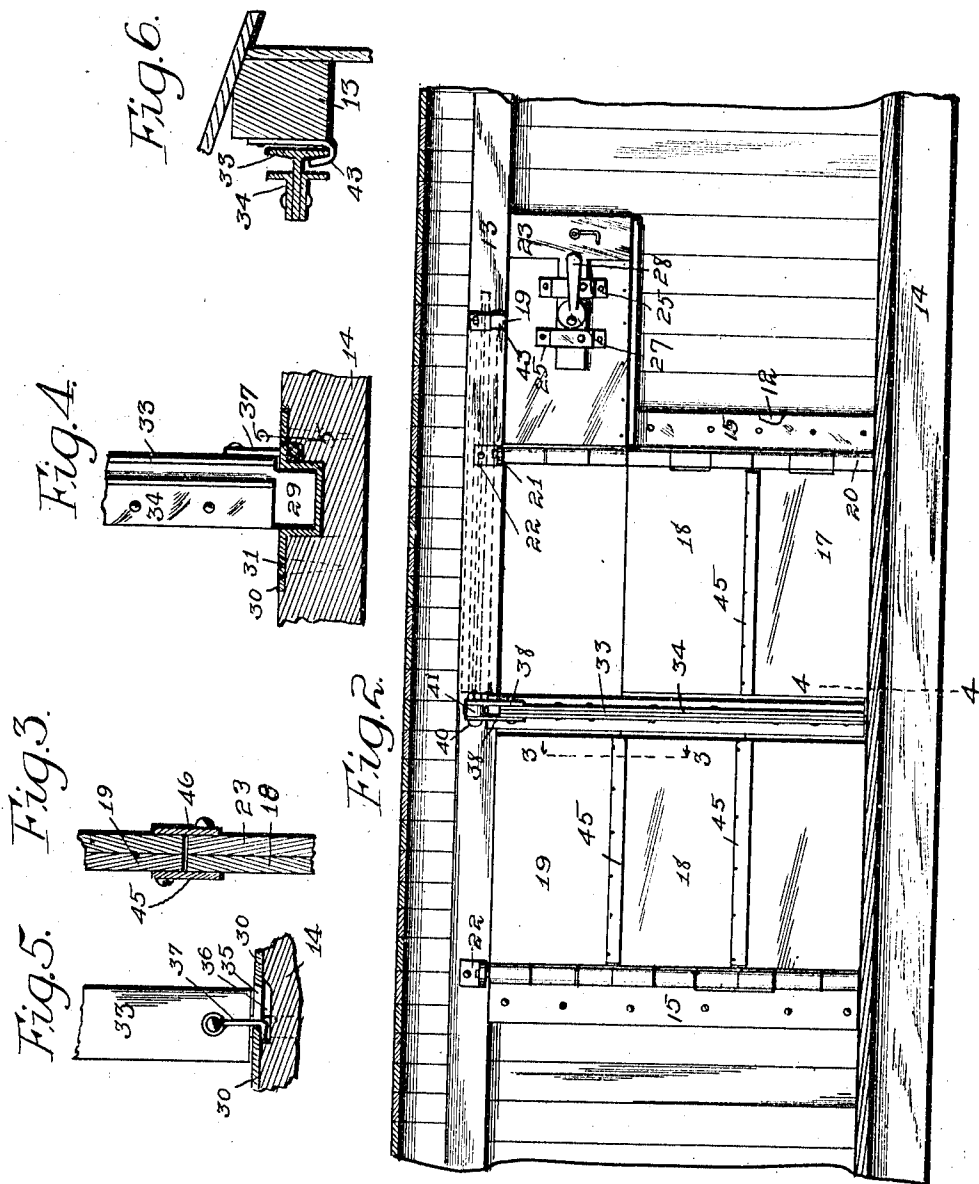
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by Oring & Bair, Attys

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UNITED STATES PATENT OFFICE.

CLARENCE FRENCH, OF FERNALD, IOWA, ASSIGNOR OF ONE-HALF TO HARRY S. FLEAGLE, OF FERNALD, IOWA.

GRAIN-DOOR FOR CARS.

1,241,841.

Specification of Letters Patent.

Patented Oct. 2, 1917.

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To all whom it may concern:

Be it known that I, CLARENCE FRENCH, a citizen of the United States, and resident of Fernald, in the county of Story and State of Iowa, have invented a certain new and useful Grain-Door for Cars, of which the following is a specification.

The object of my invention is to provide a grain door for cars and the like of simple, durable and inexpensive construction.

A further object is to provide a grain door preferably made in sections adapted to be hinged in two series on opposite sides of the frame around the opening in the side of the car; the door sections having slidable members, and the frame around the opening being provided with movable parts of novel construction adapted to receive the edges of said sliding members.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of a car equipped with a sectional grain door embodying my invention.

Fig. 2 shows an interior view of the car wall, illustrating said doors.

Fig. 3 shows a vertical, sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 shows a vertical, sectional, view taken on the line 4—4 of Fig. 2.

Fig. 5 shows a vertical, sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 shows a vertical, sectional view of the upper part of the car frame, showing the movable post in its raised position.

Fig. 7 shows a vertical, transverse, sectional view, the post being illustrated in side elevation, and

Fig. 8 shows a horizontal, sectional view of the post and one of the door frame members illustrating the method of mounting and locking the grain doors.

In the accompanying drawings, I have used the reference numeral 10 to indicate generally that portion of a box car or freight car shown.

The car 10 has the door opening 11, surrounded by the upright frame members 12,

the top frame member 13 and the lower frame member 14.

Suitably mounted on the inner surfaces of the frame members 12 are hinge plates 15 having bearings 16 formed thereon, and extending into the interior of the car, as shown in Figs. 1, 2 and 8.

I provide on each side of the door opening a series of sectional grain doors. I have shown in the drawings in each series, the lower door member 17, the middle door member 18, the upper door member 19. Each of said doors is provided at one end with a pair of spaced bearings 20 adapted to be on opposite sides of one of the bearings 16 and in alinement therewith, as clearly shown in Fig. 1.

Extended through the bearings 20 and 16, on each side of the door frame is a pintle 21, the upper end of which may be mounted, if desired, in the bracket bearings 22, as shown in Fig. 2. The parts described are so arranged that the door sections may swing inwardly to position adjacent to the wall of a car, as illustrated by the upper right-hand door section in Fig. 2.

Slidably mounted on the exterior of each door section near the free edge thereof is a vertical sliding member 23 having a central extension 24 considerably narrower than the door section, extending horizontally along the upper surface of the door section and slidably mounted in guide straps or loops 25.

Secured to each extension 24 between the guide loops 25 in which said extension is mounted, is a pin 26 on which is eccentrically rotatably mounted a disk or cam member 27 having a handle 28 on its edge opposite its pivotal point. The disk 25 is located between the raised portions of the guide straps 25 while the handle 28 stands in a plane and is spaced apart from the vertical plane in which the outer portion of the guide portions are located, as clearly illustrated in Fig. 8.

It will be seen that by rotating the cam 27 in one direction, it will engage one of the guide members 25 and force the member 23 away from the hinged end of the door section to the position illustrated by the showing of the upper right-hand door section in Fig. 1. By swinging the cam 27, by means of the handle 28, a half turn,

the cam will engage the other guide strap 25 for moving the slidable member 23 toward the hinged end of the door, as illustrated by the showing of the middle right-hand door section in Fig. 1.

Received in the lower door frame member 14, at the central portion thereof, is a socket 29, having at its upper edge laterally extended flanges 30, countersunk in the upper surface of the member 14 and secured thereto by means of screws or the like 31, shown by dotted lines in Fig. 4.

I provide a central movable door post comprising an upright T-iron 33, having its central flange extended inwardly toward the center of the car from the central portion of the door opening, as shown in Figs. 2 and 8.

Secured to the central flange of the T-iron 33 on opposite sides thereof are upright angle irons 34, having vertical flanges parallel and secured to the central flange of the T-iron, and having their other flanges extending in opposite directions from the central flange of the T-iron substantially parallel with the base flanges A of the T-irons.

It is well known that the surfaces of the flanges A adjacent to the central flange of the T-irons are, in the ordinary construction of T-irons, slightly beveled, as shown in Fig. 8.

The central flange of the T-iron extends downwardly between the other parts of said post and is received in the socket 19, as shown in Fig. 4.

The flange 30 has in it a slot 35 above a notch or recess 36 in the member 14, so that a hook 37 pivoted to the T-irons may be inserted through said slot 35 with its hook member engaging the under surface of the flange 30, as shown in Fig. 5.

Secured to the angle-irons 34, at the upper ends thereof, are spaced upwardly extending bars 38, having at their upper ends aligned, vertical, elongated slots 39 in which is mounted a bolt 40 pivotally extended through the eye 41 of an eye-bolt 42, which is rotatably mounted in the top frame member 30.

It will thus be seen that the slot 39 will permit the raising of the post thus described, after which the post can be swung upwardly and laterally to position adjacent to the under surface of the top of the car and can be supported in such raised position by means of a hook or the like 43, secured to the frame of the car.

It is noted that the post is pivotally and slidably mounted on the eye-bolt 42. Each of the central and upper door sections are provided at their lower edges with strips 45 which extend downwardly and overlap the upper edge of the next lower door section when the doors are closed.

Each lower and middle slidable member

23 has at its upper edge a strap 46 arranged to extend upwardly and overlap the next slidable member 23 when the door sections are closed.

The slidable members 23 may be provided with hooks 49 adapted to coact with screw-eyes 47 secured to the central post, as shown in Fig. 1.

Assuming that the door sections are all in closed position, I will now describe the practical operation of my improved grain door.

If it is desired to open the grain doors, the handle 28 of the upper cam 27, on one series of door sections, is moved from the position shown on the upper right-hand door section in Fig. 1 to position shown by the illustration of the middle right-hand door section in said figure.

It will be noted that the stops 48 limit the downward movement of the handle 28.

The upper door section, which is now under consideration, may then be swung inwardly into the car. The next lower section may then be manipulated in the same way, and so on.

It will be noted that after operating the cams on all the door sections in one series, the door sections in that series may be swung inwardly or outwardly as a unit.

The lower door section cannot be swung inwardly, however, until after the upper door sections have been swung inwardly or at the same time therewith, and the upper door sections cannot swing outwardly, except until after or at the same time when the lower door sections are swung outwardly.

It will be noted that one or more of the door sections can be opened at a time without interfering or unlocking or releasing the other door sections.

It will be noted that the members 45 make a grain tight joint, and that the slidable members in connection with the movable post also make a grain tight joint.

When the doors are not in use, or are not needed, they may be swung back against the inside of the car wall, and the movable post may be swung laterally and upwardly, as shown by the dotted lines, and held in position by the member 43, as shown in Fig. 6.

The doors and parts thereof are preferably made of metal, so that they are comparatively thin, and are very strong and durable.

The locking device for the doors is very simple and there is no danger of the slidable members becoming released while the car is loaded, on account of the fact that the pressure of the load causes the slidable members to frictionally engage the upright post.

Attention is called to the simplicity of the construction of the upright post, which is made of an ordinary T-bar having two angled irons secured thereto.

When not in use the parts take up very little room, and do not substantially decrease the capacity of the car.

Some changes may be made in the arrangement and construction of the various parts of my improved grain door without departing from the essential features and purposes thereof, and it is my intention to cover by this application any such changes which may be included within the scope of my claims.

I claim as my invention:

1. In a grain door, a frame, a vertical central post fixed therein, a plurality of doors disposed in vertical succession hinged to the inner side edge of the frame and adapted to swing through an angle of 270 degrees, said doors being of such length that

their free ends may be swung past the post in either direction, and means for forming a grain tight joint between said free ends and the post and for locking same together.

2. In a grain door, a frame, a vertical central post fixed therein, said post being adapted to be swung to a position above and adjacent to said frame, a plurality of doors disposed in vertical succession hinged to the inner side edge of the frame and adapted to swing through an angle of 270 degrees, said doors being of such length that their free ends may be swung past the post in either direction, and means for forming a grain tight joint between said free ends and the post and for locking same together.

Des Moines, Iowa, April 26, 1916.

CLARENCE FRENCH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."