

No. 712,926.

Patented Nov. 4, 1902.

G. R. GRIGG.  
GRAIN CAR DOOR.

(Application filed June 21, 1902.)

(No Model.)

2 Sheets—Sheet 1.

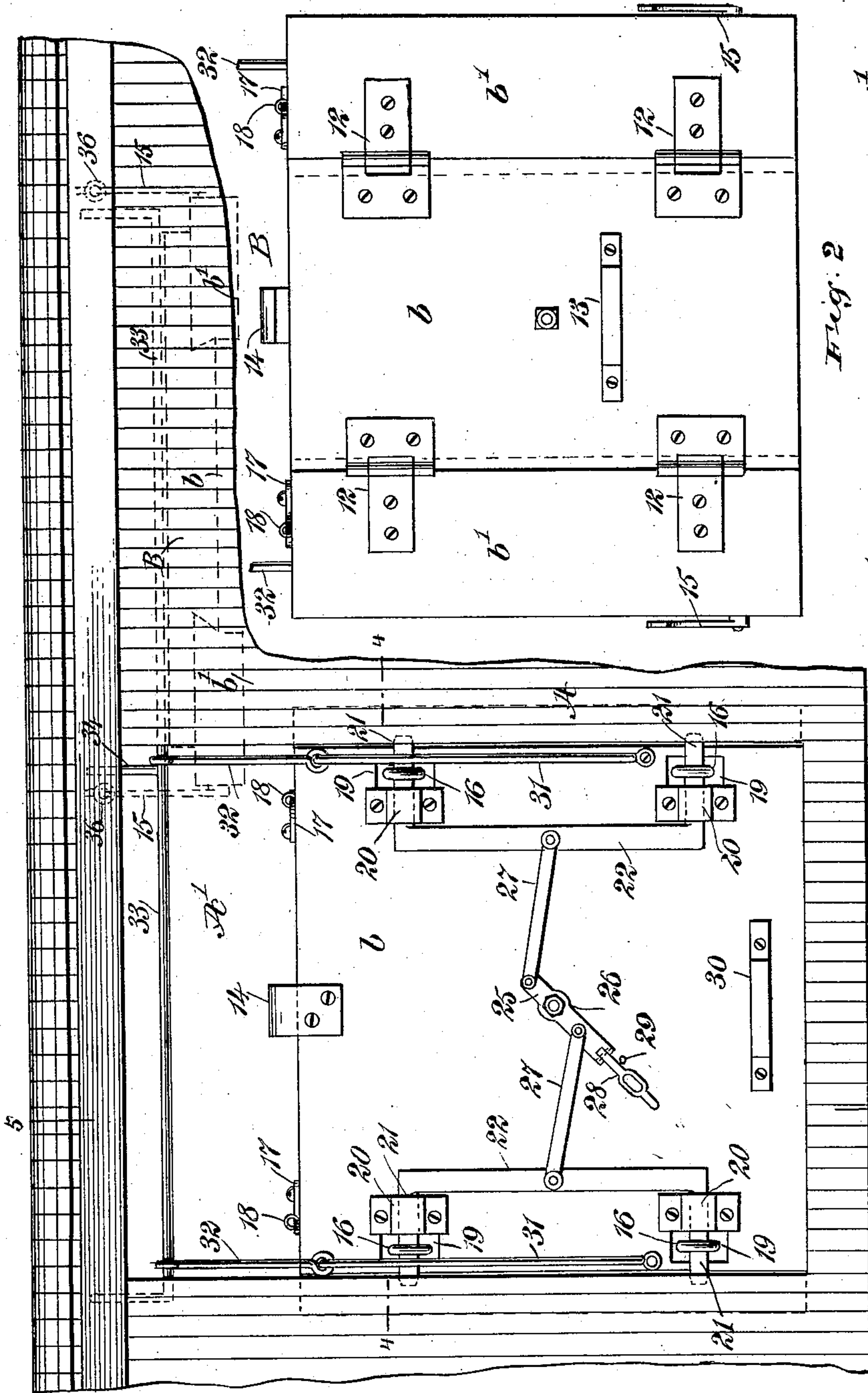


Fig. 2

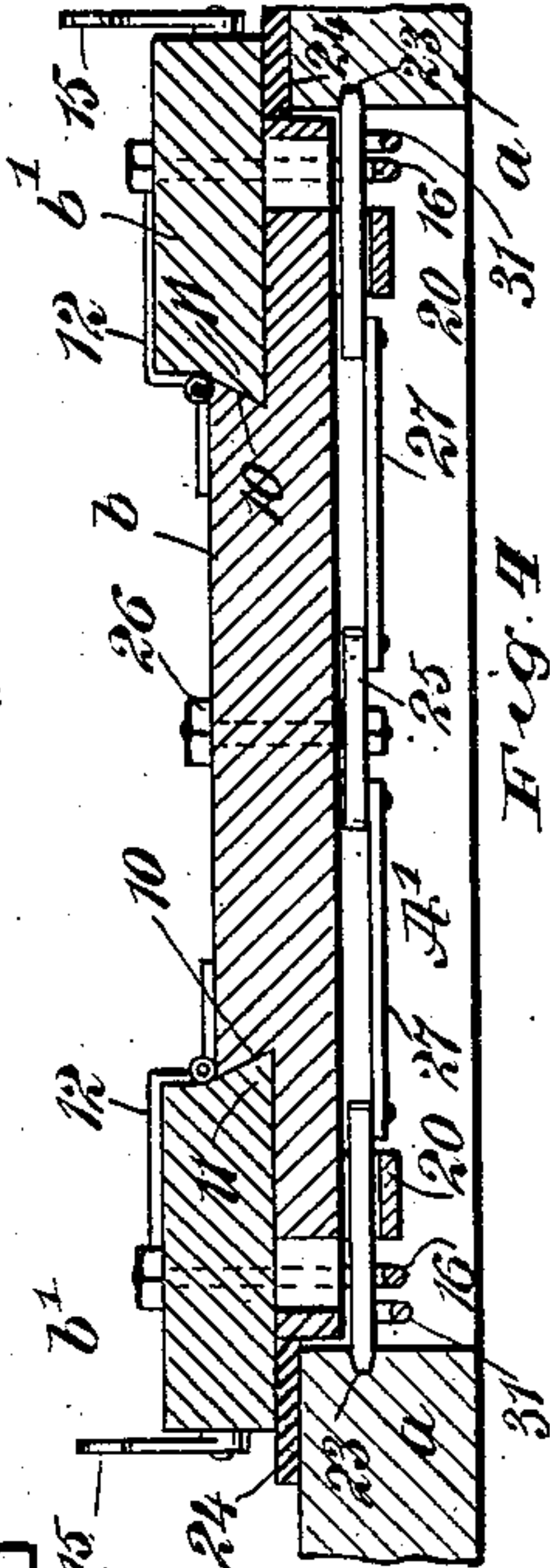


Fig. 3

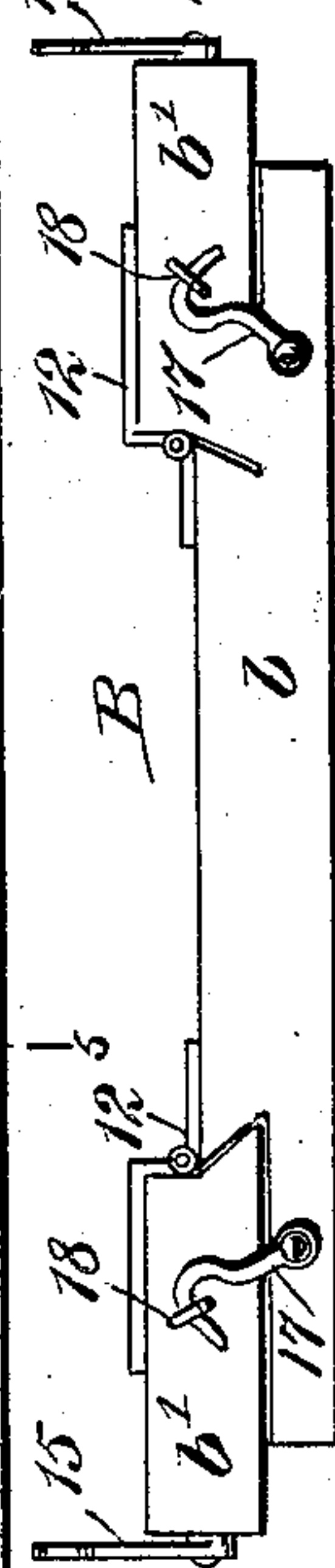


Fig. 4

WITNESSES:

John A. Sengstrom  
Fred A. Sengstrom

Fig. 1

INVENTOR

George R. Grigg

BY

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ATTORNEYS.

No. 712,926.

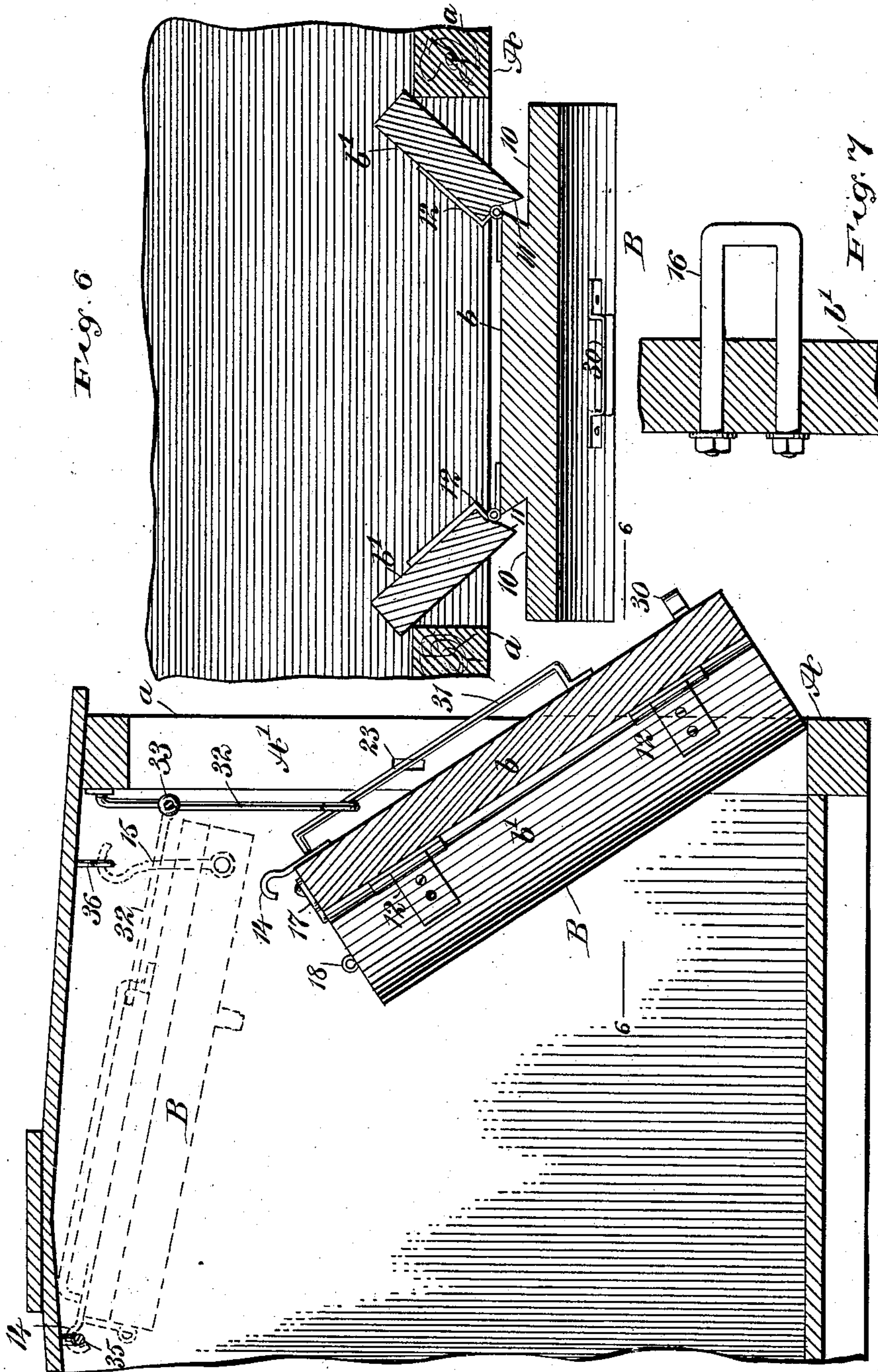
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Fig. 5

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# UNITED STATES PATENT OFFICE.

GEORGE RENNIE GRIGG, OF COFFEYVILLE, KANSAS.

## GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 712,926, dated November 4, 1902.

Application filed June 21, 1902. Serial No. 112,626. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE RENNIE GRIGG, a citizen of the United States, and a resident of Coffeyville, in the county of Montgomery and State of Kansas, have invented a new and Improved Grain-Car Door, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a car-door especially designed as a grain-door, but which may be utilized for other purposes, and to so construct the door that it is applicable to any car and will be a fixture and may be made to closely fit in between the jambs, having hinged extensions or wings at its sides to fit back of and against the jambs, enabling the door to be opened outwardly when the wings are folded back practically by the pressure of the grain or material against it.

Another purpose of the invention is to so construct the door that it may be easily opened and closed no matter what pressure is against it and which may be readily hung up in the car when not in use without detaching it from its usual connections.

A further purpose of the invention is to provide a heavy durable door and simple yet effective means for hanging it, which means enables the door to be easily handled.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a portion of a car and a front elevation of the improved door locked in closing position, said figure also illustrating in dotted lines the door in an open position and hung up out of the way. Fig. 2 is a rear elevation of the door. Fig. 3 is a plan view of the door. Fig. 4 is a horizontal section taken practically on the line 4 4 of Fig. 1. Fig. 5 is a vertical transverse section on the line 5 5 of Fig. 1, the said section being taken through a portion of the car and door, the latter being in partially open position, the door also being shown hung up in dotted lines. Fig. 6 is a horizontal section

taken practically on the line 6 6 of Fig. 5; and Fig. 7 is a section through one of the wings of the door, illustrating the manner in which the locking-staples are secured thereto.

A represents the side of a car, A' the door-opening, and B the grain-door, which in no manner interferes with the usual outside door and is made in three sections—a body-section *b*, which is adapted to fit in the door-opening A' between the jambs *a* as tight as a wedge, and hinged side wings *b'*, adapted to fold inward and which when locked to the body bear against the inner faces of the door-jambs *a*, as is shown in Fig. 4.

The body-section *b* of the door is provided in its back at each side with a vertical recess 10, the inner vertical wall of which recess is inwardly and outwardly inclined, as is shown best in Fig. 4, and the wings *b'* at their inner side portions are made to enter the said recesses 10 and at their inner side portions are provided with angular projections 11 to fit in the inclined portions of the recesses 10 when the wings are closed in parallelism with the front and back of the body-section, as is shown in Figs. 3 and 4. The wings *b'* thus extend partly within the body-section *b* and partly without the same when the wings are in operative position. The said wings *b'* at their inner portions are connected with the back of the body-section *b* by hinges 12, adapted to the construction of the said parts.

A handle 13 is usually secured to the inner face of the body-section *b* of the door for convenience in handling the door, as is best shown in Fig. 2, and at the upper central portion of the said body-section *b* of the door a hook 14 is carried up above the upper edge of the said body-section, which hook is preferably attached to the front face of said body-section and faces rearward. Hooks 15 are pivotally attached to the outer side edges of the wings *b'* at a point near the bottom portion of the door for a purpose to be hereinafter described.

Each wing *b'* is provided usually with two horizontal staples 16, which staples extend beyond the forward faces of the wings a sufficient distance to pass through openings 19 made in the body-section *b*, as is shown in Fig. 1. These staples 16 are located near the top and the bottom portions of the wings, and



their rear ends are preferably threaded to receive nuts and washers, as is shown in Fig. 7.

The wings  $b'$  are held locked to the body-section  $b$  by means of hooks 17 or their equivalents, which are pivoted to the upper edge of the body-section  $b$  and enter eyes 18, carried by the corresponding portion of the wings  $b'$ . These hooks 17, however, are not the sole reliance to hold the wings  $b'$  in a closed position or in position to engage with the door-jambs  $a$ , since the staples 16 are intended for the same purpose. In connection with these staples bolts 21 are employed, adapted to pass through the said staples and through guide-loops 20, secured to the front face of the body of the door adjacent to the openings 19. The outer ends of the bolts 21, which ends are beveled, are adapted when the bolts are in locking position to enter openings 23, produced in the jambs  $a$ , so that when the bolts enter the said openings 23 they have a wedge-like action, tending to draw the body-section  $b$  of the door closely within the space between the jambs of the door-opening and also bringing the wings  $b'$  in close engagement with the inner surfaces of said jambs.

The bolts at each side of the body-section  $b$  of the door are connected by vertical bars 22, as is best shown in Fig. 1. The door described may be made to fit any size of door-opening by adding extension-sections 24 to the wings  $b'$ , as is shown in Fig. 4, which extension-sections when used will engage with the inner faces of the door-jambs.

The connecting-bars 22 of the bolts 21 are moved to and from each other in parallelism through the medium of a lever 25, fulcrumed by means of a suitable bolt 26 at the central portion of the body-section  $b$  of the door, the said lever being at the outer face of the door, and at an equal distance at each side of the fulcrum 26 of the lever 25 the inner ends of links 27 are pivoted to said lever, the outer ends of said links being pivotally attached to the connecting-bars 22 at a point about centrally between their ends, as is best shown in Fig. 1. The lever 25 is preferably provided with a hinged handle 28, and when the lever has been moved to throw the bolts 21 to locking position the handle 28 is carried over a pin 29 or its equivalent secured to the body-section  $b$  of the door and by these means the lever is held in position to retain the bolts in locking engagement with the door-jamb and with the staples 16 of the wings of the door.

A handle 30 is attached to the outer face of the door, preferably near its lower end, to facilitate the operation of said door.

Yokes 31 are vertically attached to the outer face of the body-section  $b$  of the door, near each side edge of said section, and links 32 are mounted to travel on the said yokes at their lower ends. The upper ends of these links 32 move freely upon a track 33, suspended from the roof of the car back of the door-opening  $A'$ . The track 33 extends some distance beyond one side of the door-opening

$A'$ , which extension of the track is divided from that portion which faces the door-opening by a post 34, and one link 32 travels on that section of the track 33 which faces the door-opening, while the other link 32 travels upon that portion of the track which extends beyond the door-opening, so that the door may be readily slid within the car from the door-opening or be carried immediately in front of the door-opening to partially close the same, as the height of the door is less than the height of the door-opening.

A second track 35 is located within the car, suspended from the roof opposite the section of the main track 33, extending inward from the door-opening, and opposite this second track 35 eyes or staples 36 are secured to the roof of the car. The purpose of this second track 35 and the eyes or staples 36 is to provide means for holding the door in an upper practically horizontal position close to the roof when the door is not needed. When the door is to be thus carried upward, the wings  $b'$  of the door are locked to the body-section  $b$  by the hooks and eyes 17 and 18, and the bolts 21 are moved outward a sufficient distance to just enter the staples 16 of the wings. The door is now lifted from the bottom and the hanger-links 32 will travel on the tracks 31 until the door can be brought to a substantially horizontal upper position, whereupon the hook 14 at the top of the door is made to engage with the supplementary track 35, and the hooks 15 at the lower portion of the door are then carried upward and made to enter the eyes or staples 36, as is also shown in Fig. 5.

When the door is to be opened, the hooks 17 are disengaged from the eyes 18, and the bolts 21 are withdrawn from engagement with the jambs  $a$  and out from the staples 16 of the wings  $b'$ , permitting the latter to fold inward, as is shown in Fig. 6. This action is brought about mainly by the pressure of the material against the inner face of the door, but may be assisted by power applied to the door at the handle 30.

After the door has been hung up in the upper horizontal position (shown in dotted lines in Figs. 1 and 5) and the door is to be closed it is disengaged from its supplementary hangers and is carried in its upper position to the door-opening  $A'$  and is permitted to drop down to its normal position in the said opening, and this position may be obtained even should the car be partially loaded.

I desire it to be understood that while the improved door is especially adapted for use as a grain-door it may be used in connection with any freight-car as the inside door to protect the outer door or may be used in connection with any structure to which it may be conveniently applied and that preferably the wings  $b'$  are covered with sheet-iron, especially where they engage with the door-jambs, to prevent the said wings being nailed to the jambs. Any suitable guide for the lever 25 may be attached to the body  $b$ .



Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A door consisting of a body-section, wings hinged to the sides of the body, bolts mounted to slide upon the body-section in locking engagement with the wings, a lever carried by the body-section, and connections between the lever and bolts for simultaneously operating all of said bolts, substantially as described.

2. A door consisting of a body-section and side wings hinged to fold to and from the body-section, keepers carried by the wings, adapted to extend loosely through the body-section, bolts mounted to slide upon the body-section and to enter the said keepers, an operating-lever for connection with all of the said bolts to simultaneously move the same, and means substantially as described, for suspending the door from a suitable support, as set forth.

3. A grain-door consisting of a body-section and side wings hinged to fold laterally to and from the body-section, the wings being offset from the body-section for a portion of their width, keepers secured to the wings and adapted to loosely pass through the body-section, bolts mounted to slide upon the body-section, enter the said keepers and extend beyond the sides of the body-section, and a lever upon the body-section in operative connection with all of the bolts, substantially as described.

4. The combination with a car, a main track extending across the door-opening of the car and beyond a side of said opening, and an auxiliary track located within the said car, both tracks being at a point near the roof of the car, of a door consisting of a body-section adapted to fit between the jambs of the door-opening of the car, wings hinged to the body, adapted to fold from the back of the body and to extend beyond its sides at a point to the rear of the plane of the front of the body, keepers carried by the said wings and adapt-

ed to loosely pass through the said body, bolts mounted to slide on the body, pass through the said keepers and extend beyond the sides of the body into the jambs of the doorway of the car, a lever mounted on the body, a connection between said lever and said bolts, whereby to simultaneously operate the bolts, vertical yokes secured to the front face of the body, link-hangers mounted to slide on the said yoke and on the track adjacent to the door-opening of the car, and means substantially as described, for holding the said door in an upper horizontal position and in supporting engagement with the auxiliary track in the car, as and for the purpose described.

5. A grain-door, consisting of a body-section, wings hinged to the back of the body-section, extending normally beyond the sides of the body-section rearward of the plane of the front face of said body-section, locking devices located at the upper portion of the door and adapted to hold the wings in the same horizontal plane with the body, vertical yokes secured to the front face of the body, link-hangers mounted to slide on the said yokes, keepers attached to the wings and arranged to extend forwardly through the body of the door, bolts mounted to slide on the forward face of the body and to pass through the said keepers, a lever mounted on the body, means for locking the lever in one position, a connection between the lever and the bolts whereby to operate the latter, hooks pivotally connected with the outer side portions of the wings near the bottom of the door, and a central hook carried by the body and extending beyond its upper edge, for the purpose set forth.

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

GEORGE RENNIE GRIGG.

Witnesses:

W. W. WALTERS,  
A. ROBISON.