

No. 644,890.

Patented Mar. 6, 1900.

A. B. BELLOWS.

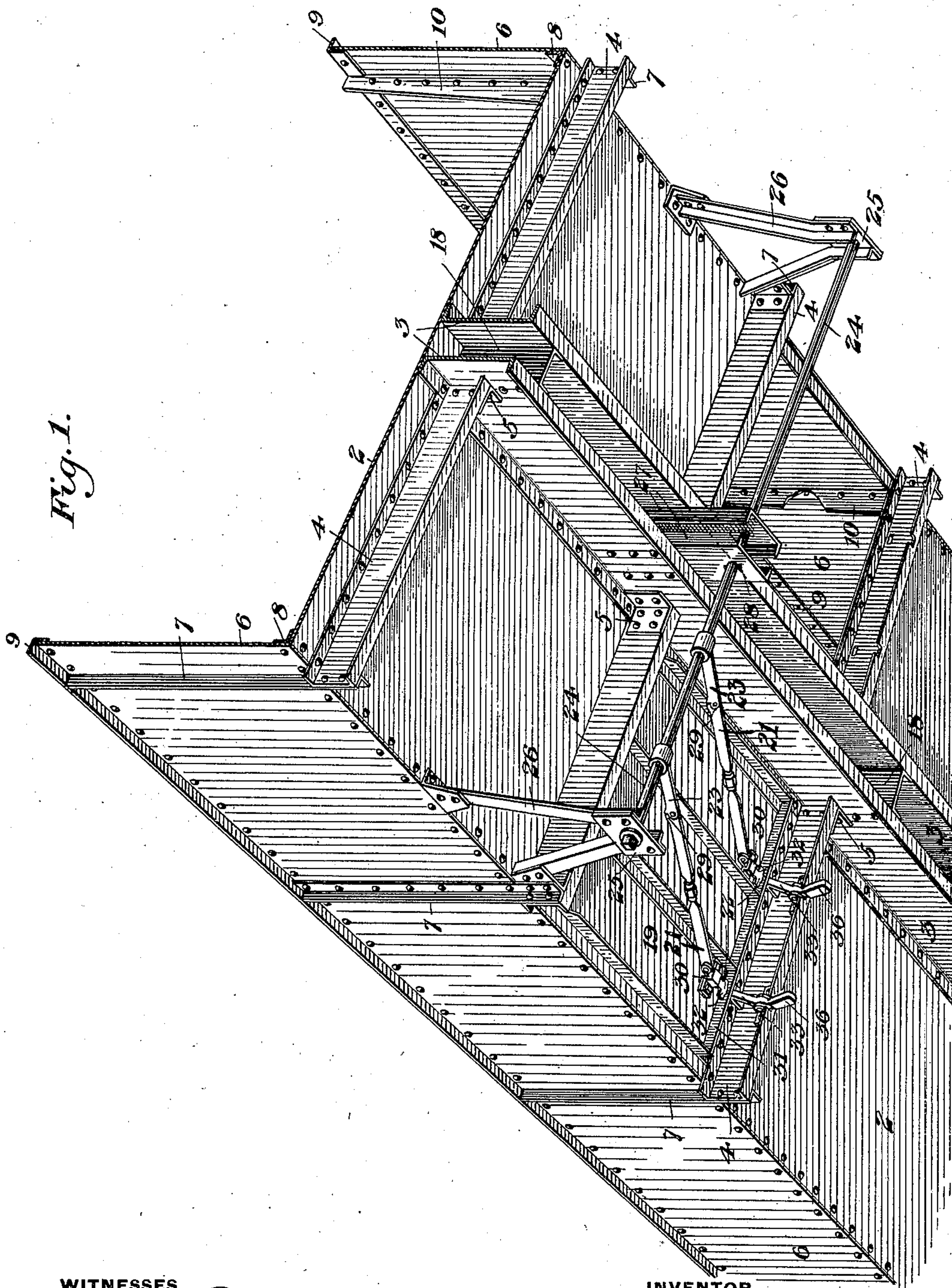
STEEL CAR AND DOOR MECHANISM THEREFOR.

(Application filed Feb. 23, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



WITNESSES

L. A. Comer
H. M. Corwin

INVENTOR

A. B. Bellows
By Bulwer & Bulwer
his attys.

No. 644,890.

Patented Mar. 6, 1900.

A. B. BELLOWS.

STEEL CAR AND DOOR MECHANISM THEREFOR.

(Application filed Feb. 23, 1899.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 2.

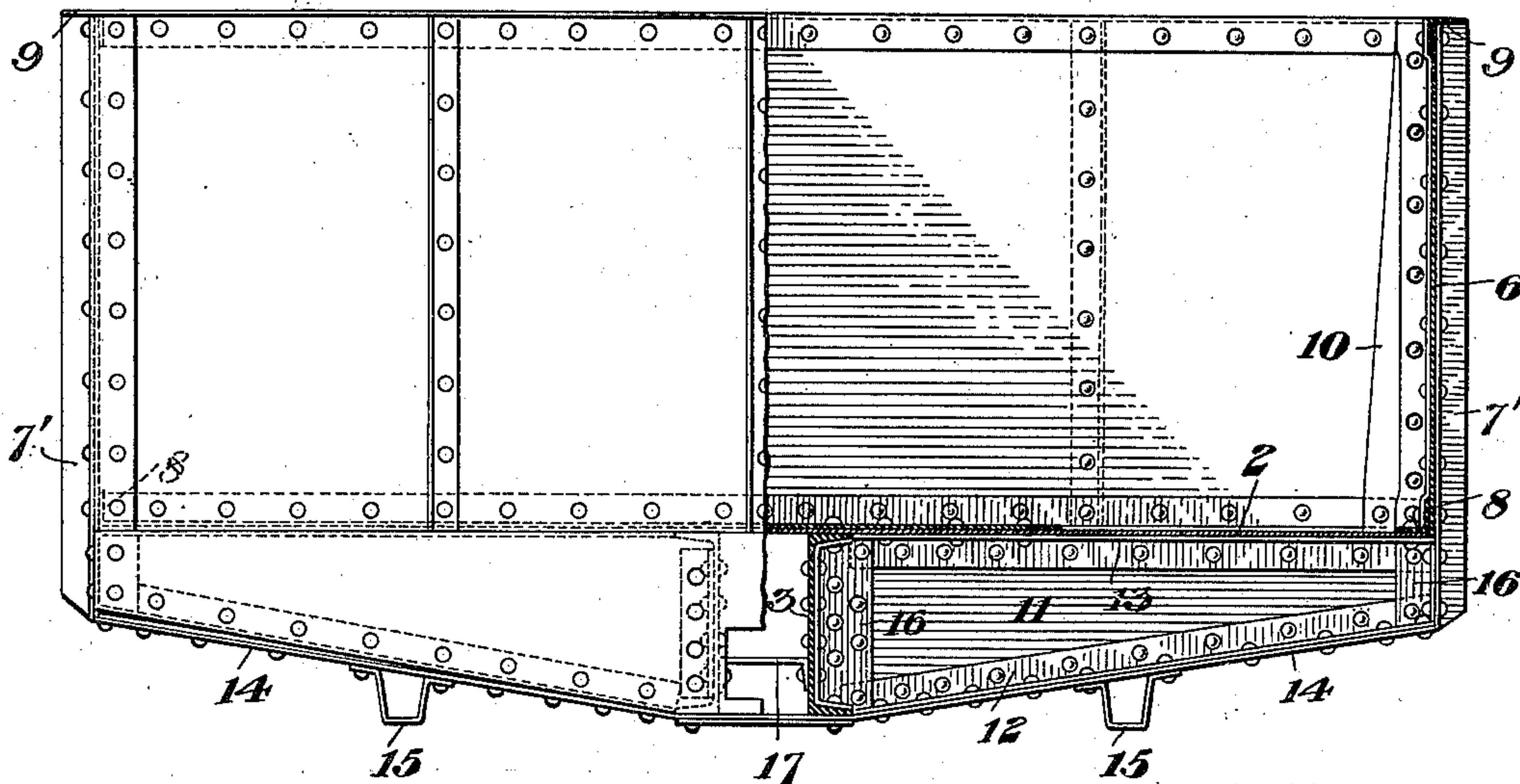
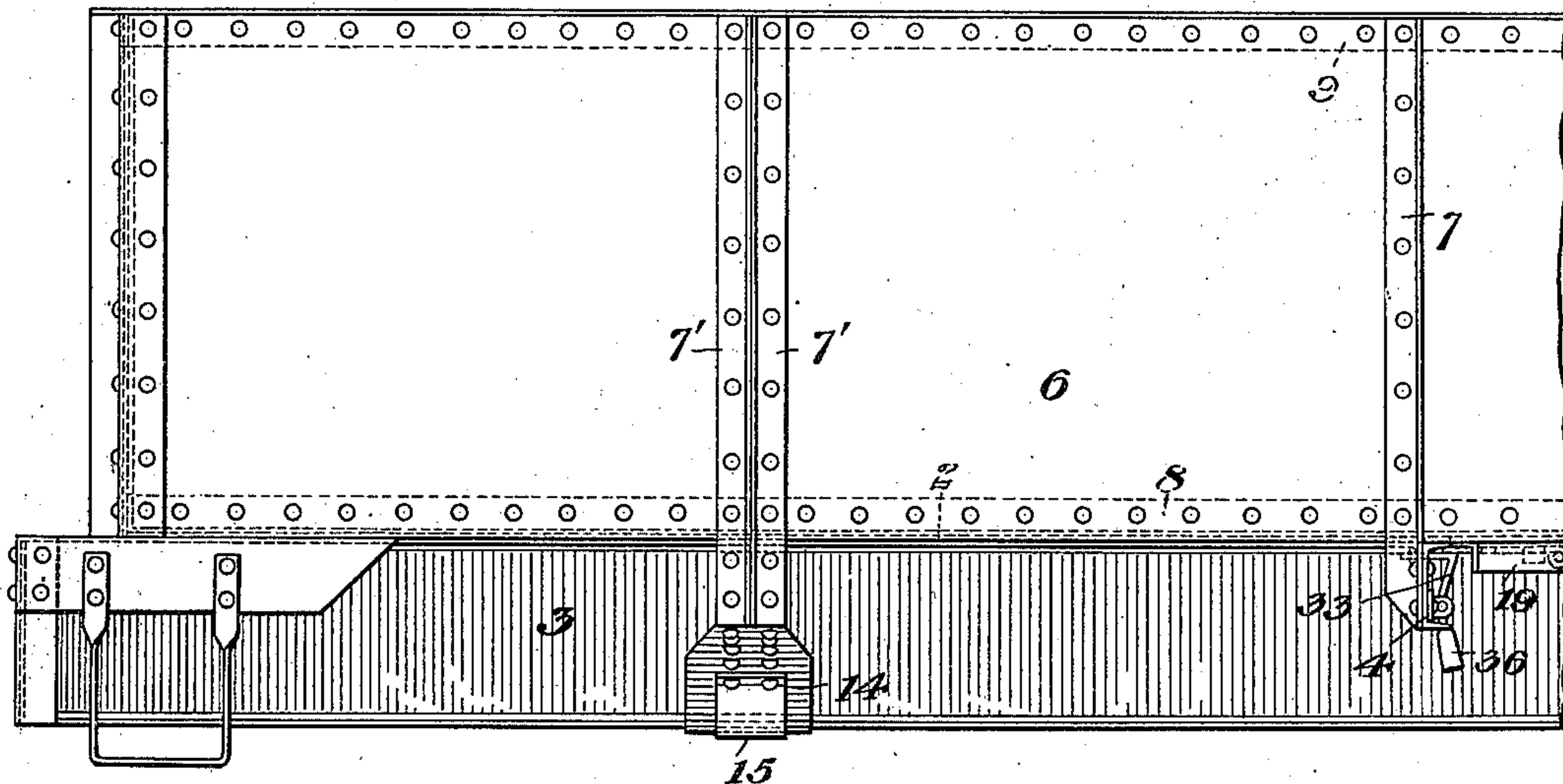


Fig. 3.



WITNESSES

L. A. Conner
J. H. McConin

INVENTOR

A. B. Bellows
by B. A. Bellows & B. A. Bellows
his attys.

No. 644,890.

Patented Mar. 6, 1900.

A. B. BELLOWS.

STEEL CAR AND DOOR MECHANISM THEREFOR.

(Application filed Feb. 23, 1899.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 4.

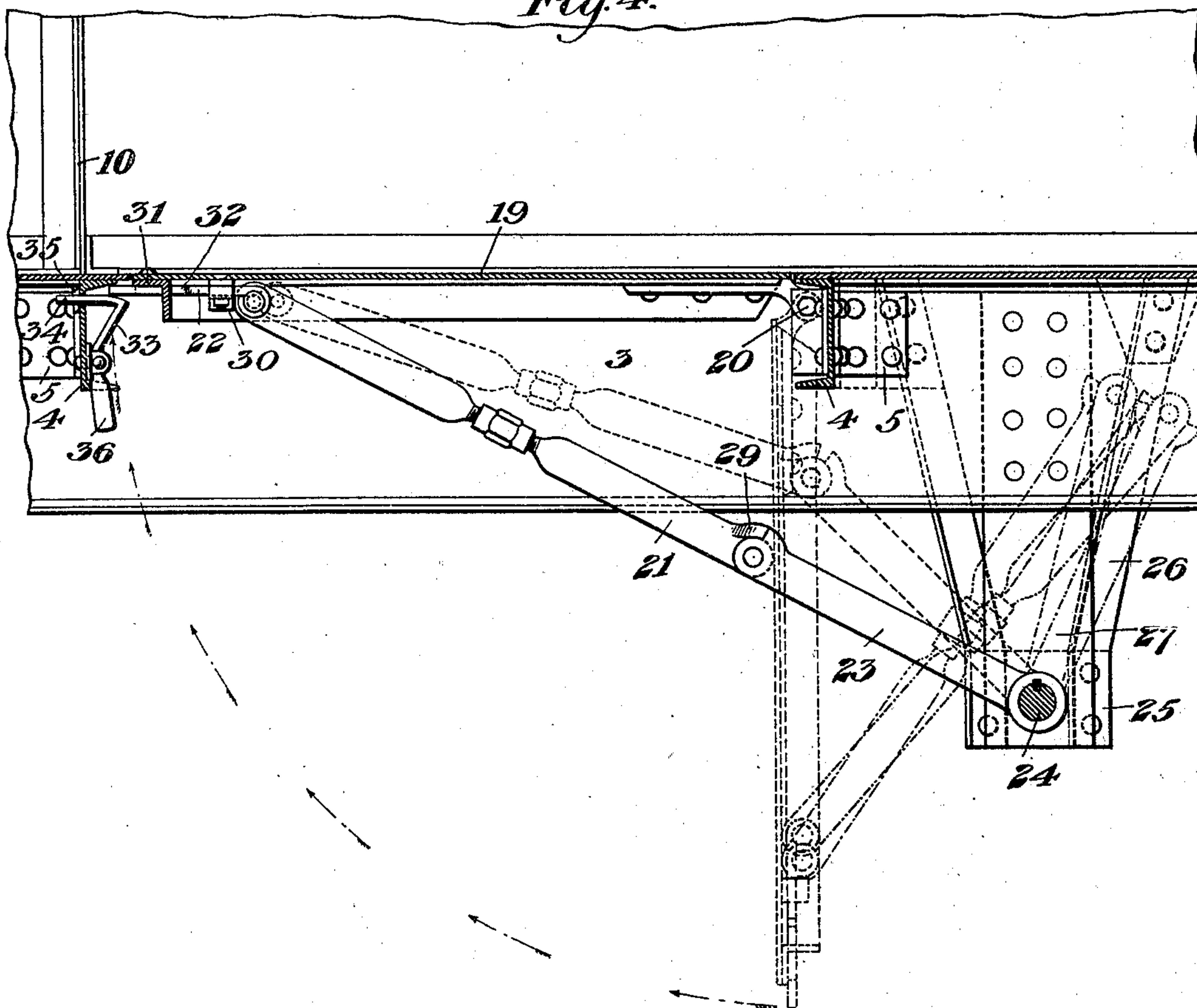


Fig. 5.

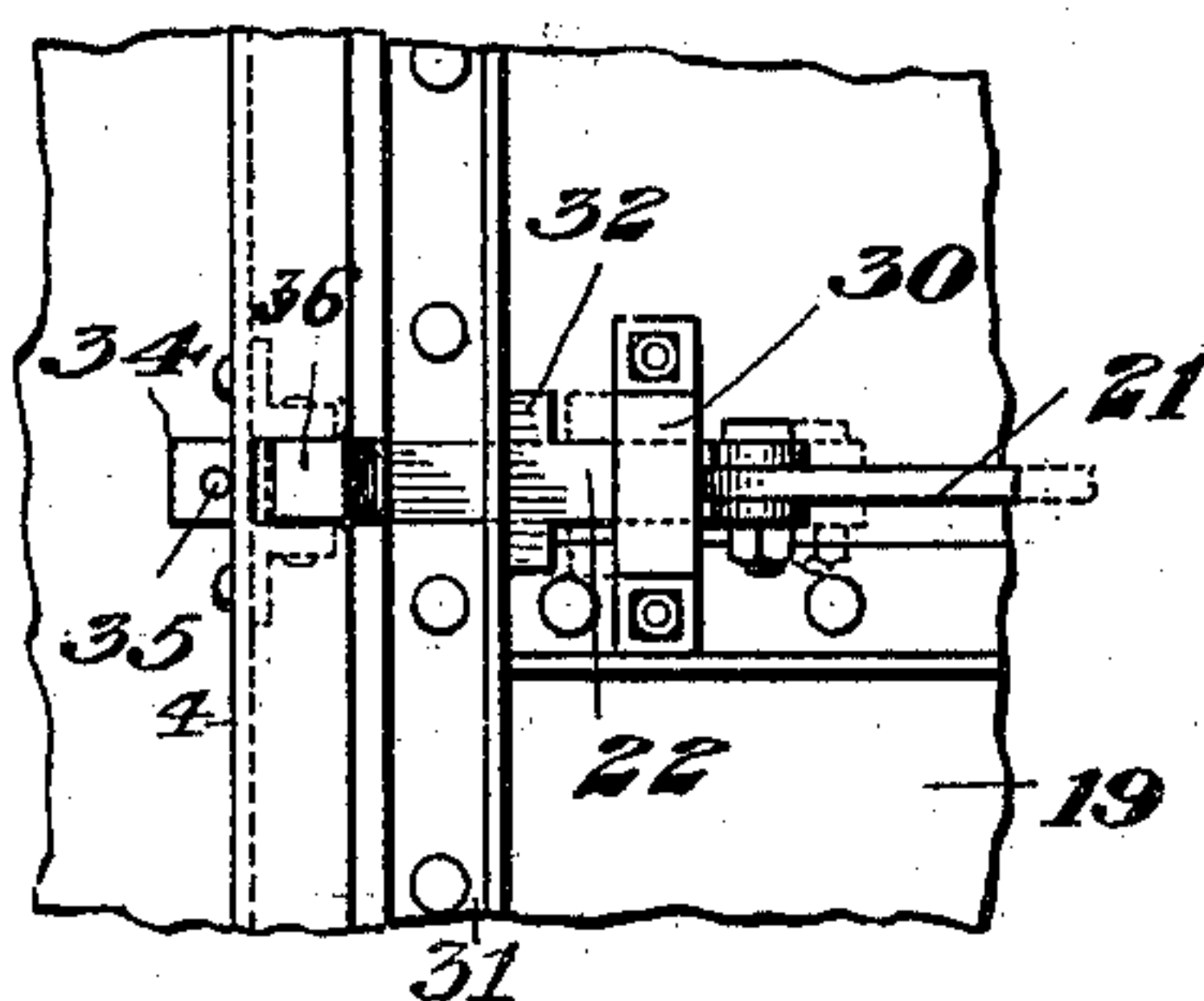
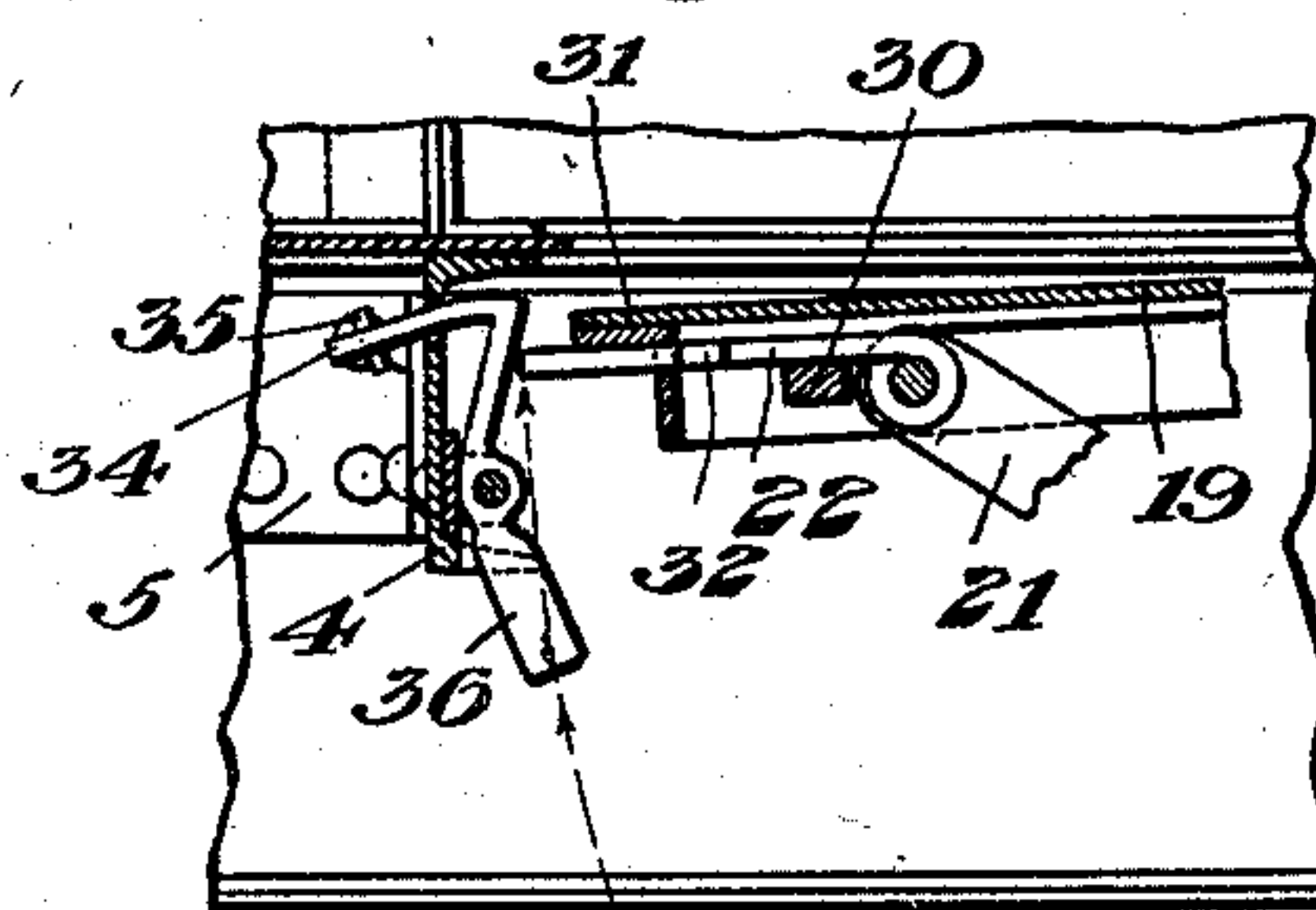


Fig. 6.



WITNESSES

WITNESSES

L.A. Comerford
J.W. Comerford

INVENTOR

A. B. Bellows
by Bakerwell & Bellows
his attys.

UNITED STATES PATENT OFFICE.

ARTHUR B. BELLOWS, OF PITTSBURG, PENNSYLVANIA.

STEEL CAR AND DOOR MECHANISM THEREFOR.

SPECIFICATION forming part of Letters Patent No. 644,890, dated March 6, 1900.

Application filed February 23, 1899. Serial No. 706,447. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR B. BELLOWS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Steel Cars and Door Mechanism Therefor, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a portion of my improved car looking upwardly. Fig. 2 is an end elevation of the same, partly broken away. Fig. 3 is a side elevation showing the end portion of the car. Fig. 4 is an enlarged side elevation, partly in section, showing one of the doors with its operating mechanism. Fig. 5 is a detail bottom plan view of the door slide and catch, and Fig. 6 is a detail showing the manner of closing the door.

My invention relates to the construction of steel cars for railroads wherein doors are not used which extend down to the floor-line and to the door-operating mechanism therefor; and its object is to decrease the weight of these cars by doing away with the heavy side sills which have heretofore been used in this class of cars and, further, to provide a simple and effective door-operating mechanism.

In the drawings, 2 is the car-bottom, having the lower central longitudinal sill 3, which is composed of two channels placed back to back and riveted to the bottom, with a space between their webs. The bottom is further provided at suitable intervals with cross-sills 4, composed of sections of channels having their upper flanges riveted to the car-bottom and their inner ends secured to the center sill by suitable angles 5. The outer ends of these cross-sills protrude beyond the sides 6 of the car-body and are riveted to vertical strengthening-angles 7, which are themselves riveted to the sides of the car. The sides are secured to the bottom by the interior angles 8, and along the upper edge of each side is riveted an angle 9, with its flange turned outwardly. Along the inner faces of the sides and at suitable intervals are preferably secured vertical strengthening-gussets 10. The external strengthening-pieces 7' for the sides at the points above the body-bolsters are preferably formed of two angles, as shown in

Fig. 3, these angles extending down and being riveted to the end portion of the bolster.

The body-bolster proper consists of a web-plate 11, extending vertically from each side of the center sill to the side and having angles 12 and 13 riveted on each side thereof along its top and bottom. The bottom of the bolster is formed by a continuous plate 14, extending from side to side of the car and having the side bearings 15 secured thereto. At the ends of each web-plate 11 are riveted the angle-plates 16, the inner of which is riveted to the channel of the center sill, while the outer is riveted to the strengthening member 7'. Short horizontal sections of channels 17 are secured within the center sill between the bolster portions, and short vertical sections 18 may be riveted between the channels of the center sill at any suitable points throughout its length.

It will be seen that in the car as thus constructed the sides of the car constitute plate-girders, which carry their proportion of the material or load in the car, replacing the ordinary side sills used for this purpose. This plate-girder construction of the sides does away with these heavy side sills below the floor-level of the car, and thus not only reduces the weight of the car, but allows easy access to the parts supported below its bottom. This is an important feature of my invention, and I intend to cover the same broadly irrespective of the particular construction of the car.

On either side of the center of the car are provided dumping-openings on each side of the center sill, each opening being closed by a swinging door 19, pivoted at 20 to the cross-sills. Each door consists of a web-plate strengthened by suitable angles, as shown, and is operated by links 21, pivoted to slides 22 upon the door and pivotally connected at their other ends with levers 23, secured to a common shaft 24, extending across the car and carried at its ends in bearings 25. The bearings 25 are supported upon hangers 26, and the central portion of the shaft is carried in a hanger composed of two channels 27, riveted within the center sill. Endwise movement of the shaft is prevented by small pins 28, driven through the shaft on each side of the channels 27. The links 21 are made in

two parts connected by a turnbuckle, so that they may be adjusted in length, and their pivotal joints with the actuating-levers are provided with lips 29, which prevent the downward movement of these joints beyond the point where the links extend in line with the cranks, as shown in Fig. 4. The slides 22 extend through straps 30, secured to the bottom of the door, and their forward ends project through slots in the angles 31, secured to the door, the endwise movement of the slide being limited by side lugs 32 thereon. Swinging latches 33 are pivoted to the cross-sill in front of the door and are provided with forward arms 34, having cotter-pins 35, which limit the backward swing of the latches. Each latch is provided at its lower end with a counterweight 36, which normally swings it into position to engage and support its slide, as shown in Fig. 4.

The operation of the doors is as follows: The doors being closed, a wrench is applied to the squared end of the shaft 24, and this shaft is turned so as to swing its lever-arms upwardly. This movement through the connecting-links draws back the slides sufficiently to disengage them from their latches, and the doors then drop into a vertical position, the levers and links assuming the positions shown in dotted lines in Fig. 4. In closing the doors, the shaft being rocked in the opposite direction, the slides are first pushed forward to their limit of movement, and the doors are then swung up. As they move into closed position the slides pass the counterweight of the latches and then, contacting with the inclined faces of the latches, push them back, as shown in Fig. 6, and on reaching the closed position the counterweights automatically swing the latches under the slides to support them.

The advantages of my invention will be apparent to those skilled in the art. The use of the plate-girder sides does away with the heavy side sills heretofore used below the floor-line and gives a strong and light construction. The door is automatically unlatched and opened by merely rocking the actuating-shaft and is automatically locked when swung up into closed position. The center sill may be made from I-beams. The door-actuating shaft may extend longitudinally of the car, and many other changes may be made in the form and arrangement of the car, the doors, and the actuating mechanism therefor without departing from my invention, since

I claim—

1. A steel car having a central longitudinal sill and plate-girder sides provided with vertical strengthening members, said sides terminating at the floor-level and secured directly to the bottom, and arranged to take the

entire strain usually carried by the side sills, whereby said side sills are dispensed with; substantially as described.

2. A steel car, having a longitudinal center sill and cross-sills, and plate-girder sides having strengthening members secured to the cross-sills; substantially as described.

3. A steel car having a longitudinal center sill composed of two channels with their upper flanges secured to the car-bottom, cross-sills composed of channel-sections secured to the car-bottom and to the center sill, and plate-girder sides secured directly to the bottom and arranged to assist in supporting the weight; substantially as described.

4. A steel car having plate-girder sides provided with inner and outer vertical strengthening members, the outer strengthening members being secured at their lower ends to cross-sills; substantially as described.

5. A car having a vertically-swinging door in its bottom, a horizontal rock-shaft, an automatic latch on the door arranged to engage the car-bottom and hold the door in closed position, and a lever on the rock-shaft having link connection with the latch and arranged to operate it and open and close the door; substantially as described.

6. A car having a swinging bottom door, a horizontal rock-shaft having lever connections arranged to open and close the door, and an automatic latch upon the door connected with the lever mechanism and arranged to be positively opened and closed thereby; substantially as described.

7. A car having a swinging bottom door, lever connections arranged to open and close the same, a movable latch supported beneath the car-body and an automatic latch upon the door connected with and actuated by the door-swinging mechanism, said automatic latch co-operating with the movable latch on the car-body; substantially as described.

8. A car having a swinging bottom door provided with a locking-slide, a rock-shaft having a lever with a pivotal link connection to the slide, and an automatic latch arranged to engage the slide when the door is thrown into closed position; substantially as described.

9. A car having a swinging bottom door provided with a slide, a rock-shaft having a lever-arm provided with a link connected to the slide, the joint between the lever and the link having limiting-lugs, and an automatic swinging latch arranged to engage the slide; substantially as described.

In testimony whereof I have hereunto set my hand.

ARTHUR B. BELLOWS.

Witnesses:

H. M. CORWIN,
M. S. MURPHY.