

No. 661,713.

Patented Nov. 13, 1900.

T. G. COCKINGS.
DISAPPEARING GRAIN CAR DOOR.

(Application filed July 13, 1900.)

(No Model.)

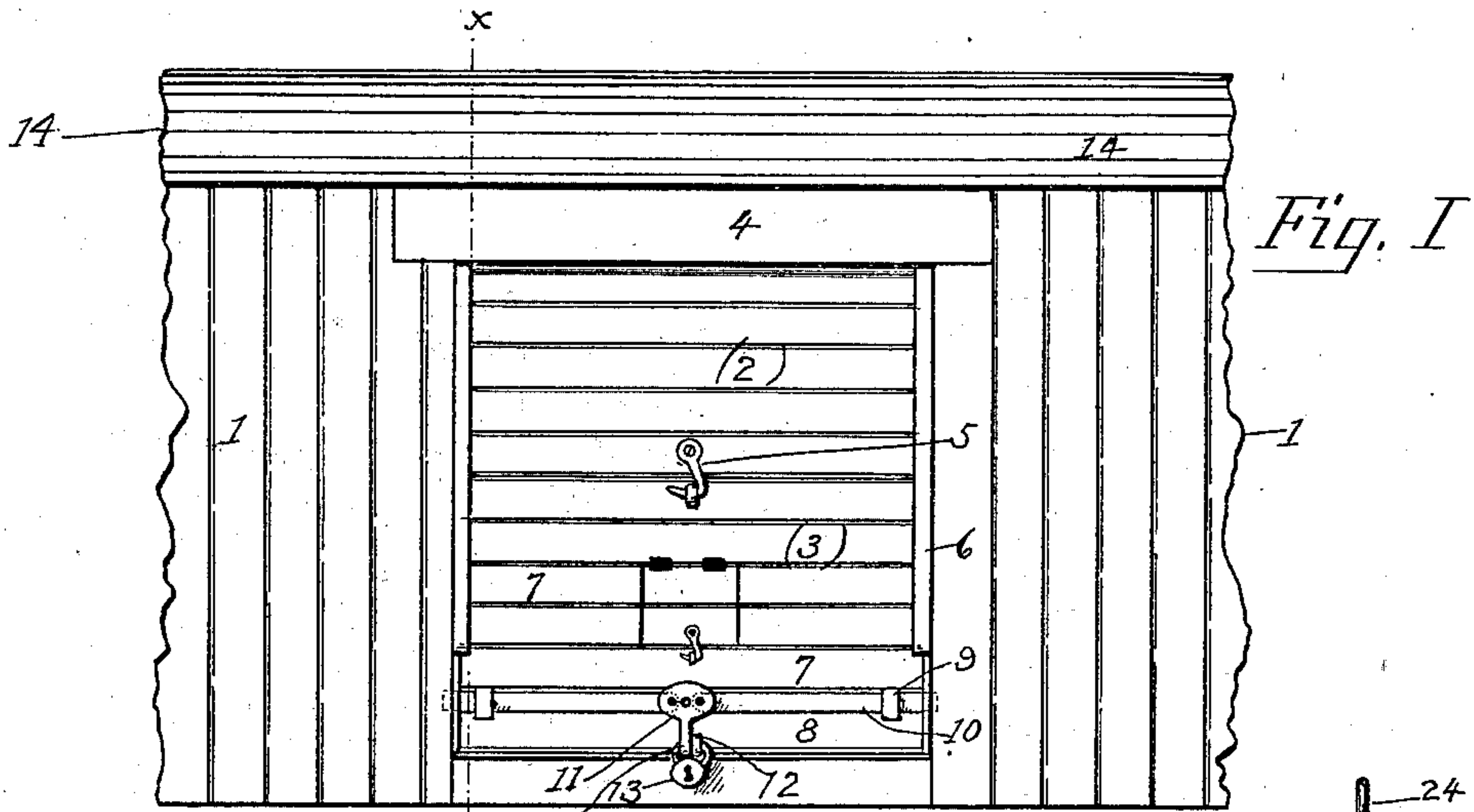


Fig. I

Fig. III

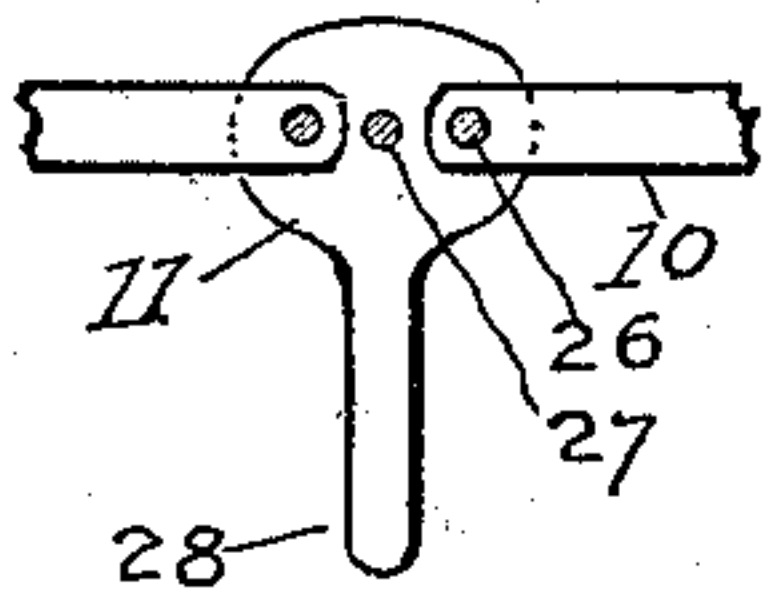


Fig. II

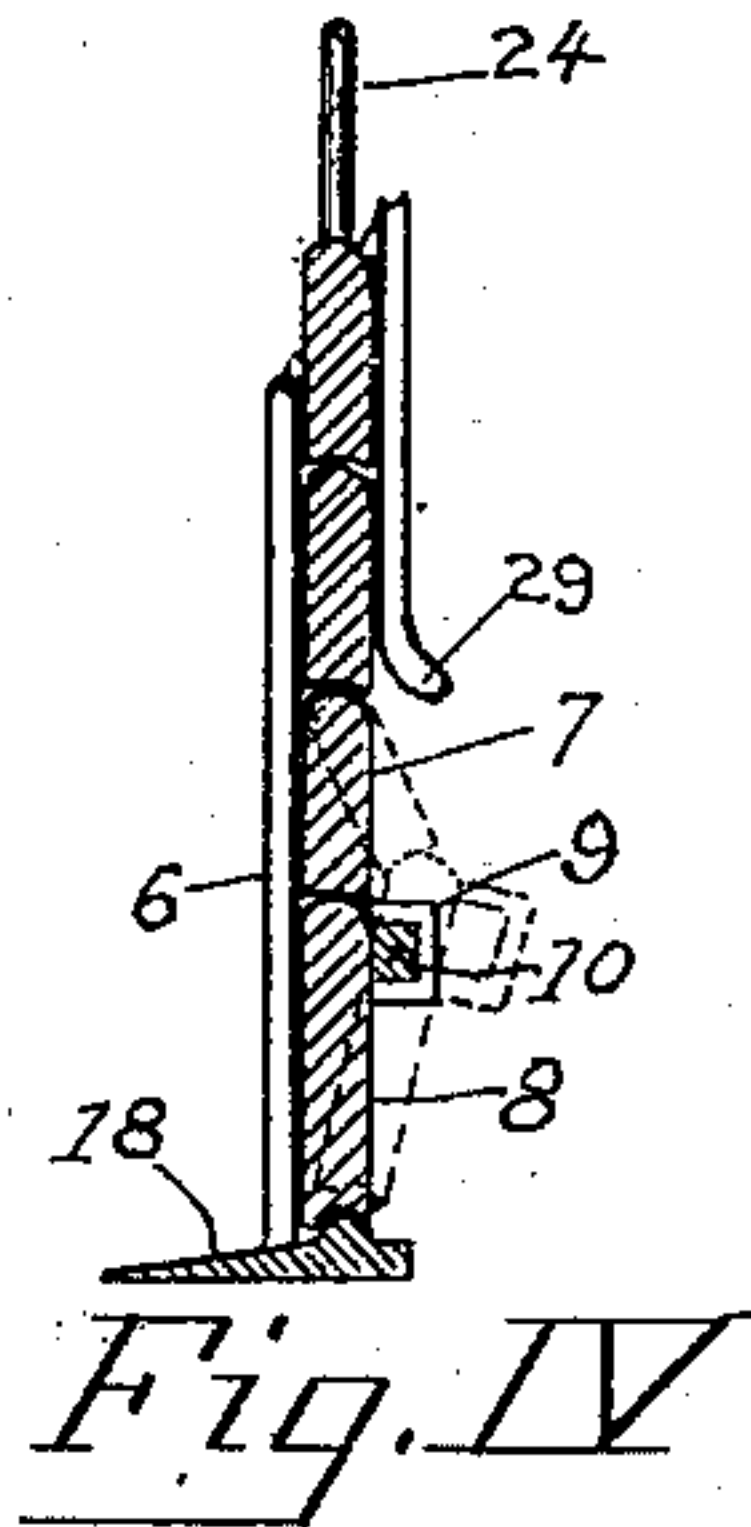
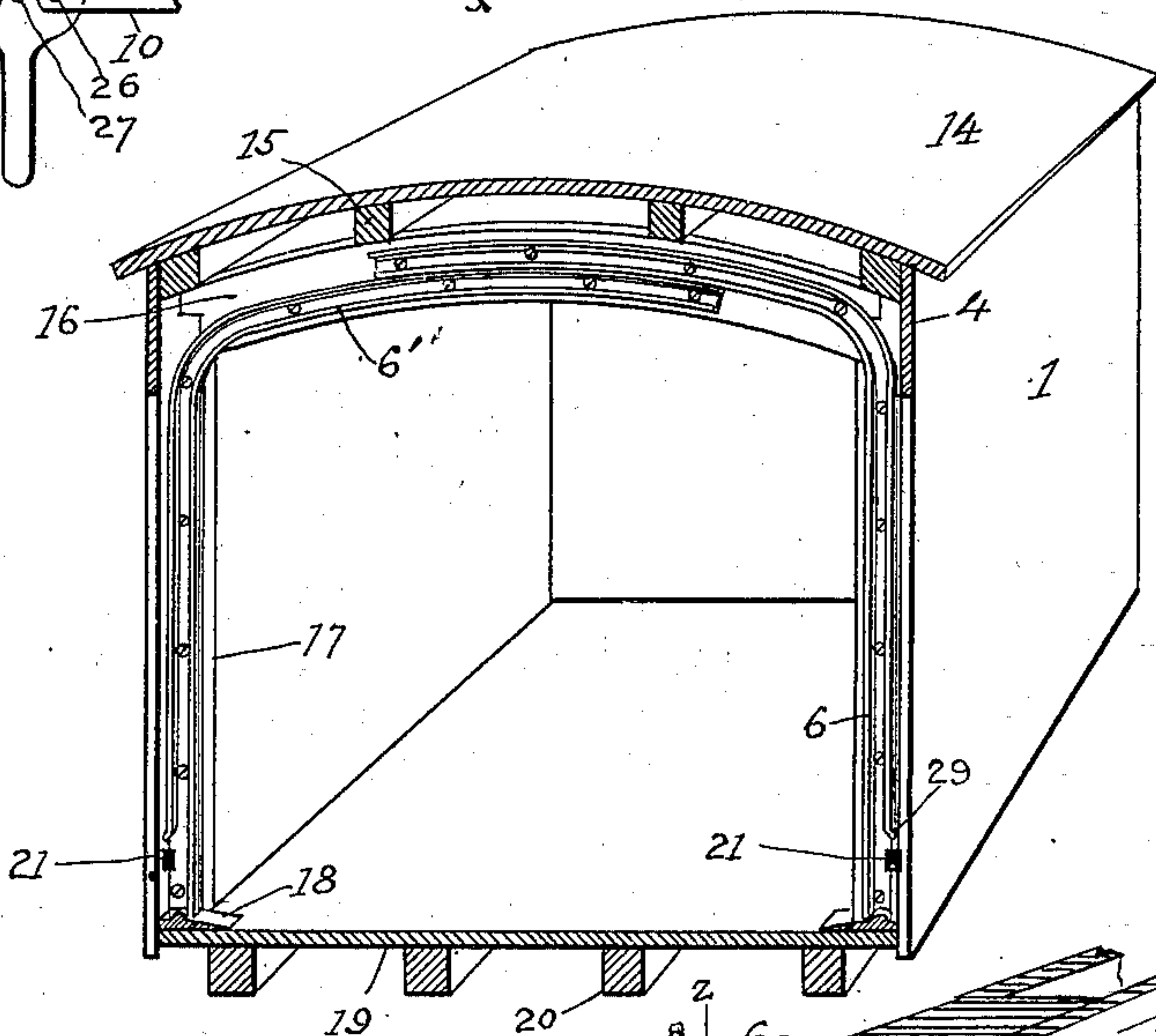


Fig. IV

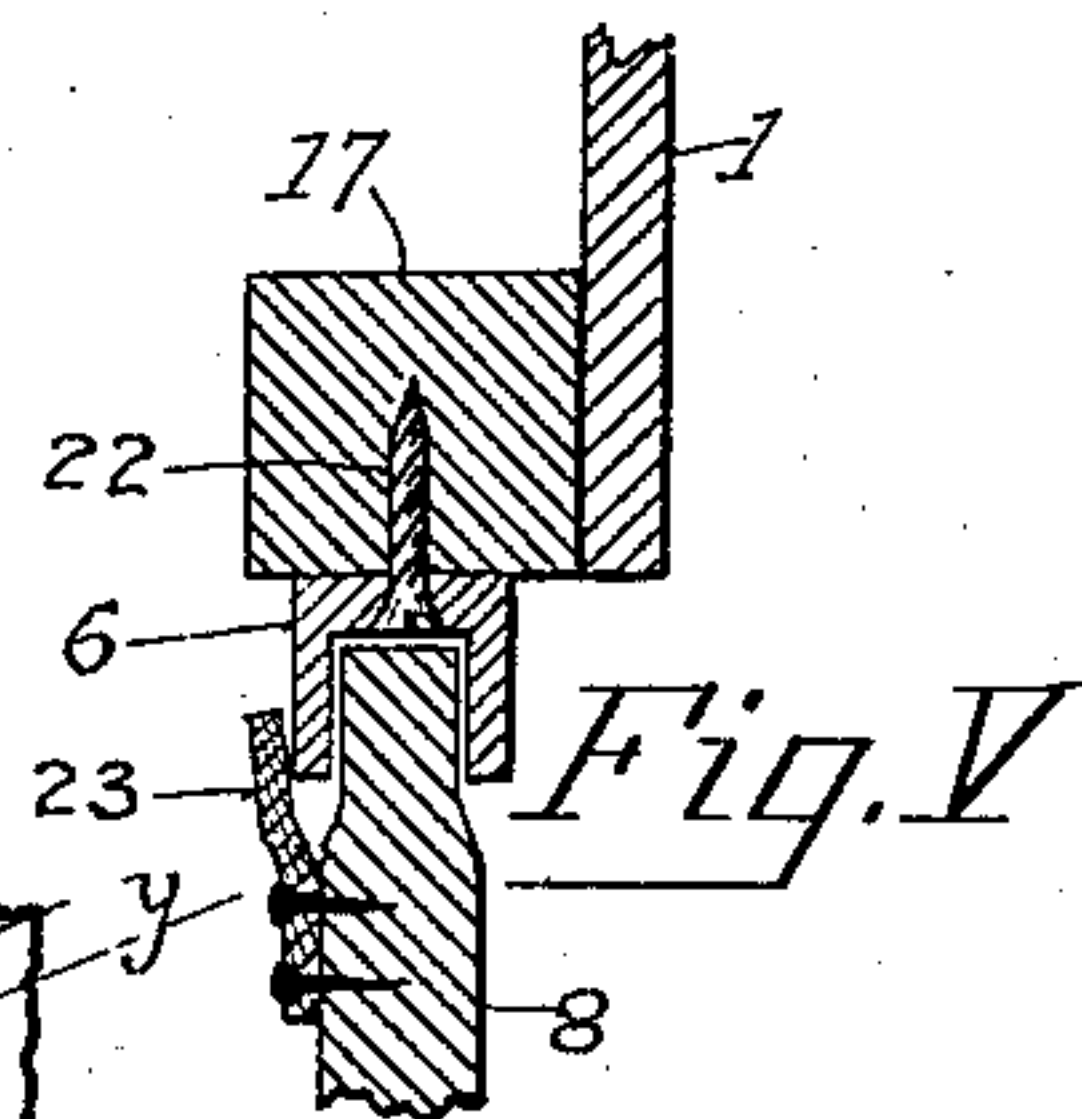
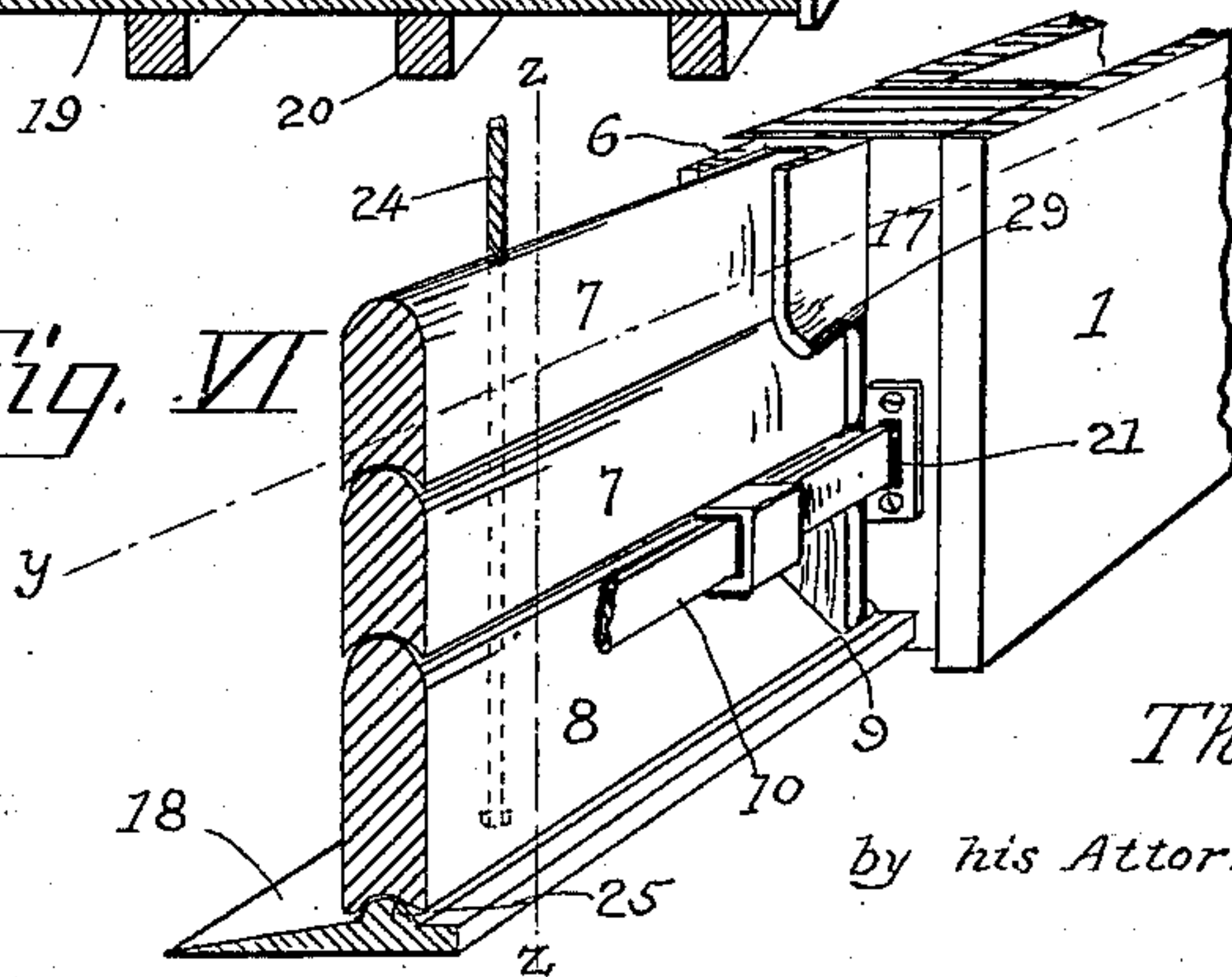


Fig. V

Fig. VI



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UNITED STATES PATENT OFFICE.

THOMAS G. COCKINGS, OF NEWPORT, KENTUCKY.

DISAPPEARING GRAIN-CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 661,713, dated November 13, 1900.

Application filed July 13, 1900. Serial No. 23,474. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. COCKINGS, a citizen of the United States, residing at Newport, in the State of Kentucky, have invented a certain new and useful Improved Car-Door, of which the following is a specification.

My invention relates to doors for filling and emptying freight-cars; and it consists, primarily, in the location, form, and construction of the same and in certain arrangements for operating the same and certain details of construction, as hereinafter set forth.

In the accompanying drawings, Figure I is a side elevation of a portion of a car, showing the door closed. Fig. II is a perspective and a section of the car on line *xx* of Fig. I, showing the arrangement of the channel-iron guides for the sliding door. Fig. III is a view of the lever for withdrawing the bolts 10 seen from the opposite side to that in Fig. I. Fig. IV is a cross-section of the lower part of the door on line *zz* of Fig. VI, showing the toggle-joint action of the lower slats in opening. Fig. V is a horizontal section on line *yy* of Fig. VI. Fig. VI is a perspective and section of a lower corner of the door, showing the fittings and the bolt 10, &c.

I have found certain imperfections in the present systems of car-closures, such as the binding of the door in the act of opening, the clogging up of the runways in the horizontal sliding door, the exposure to danger of breaking in the present vertical sliding doors and interference with free access to the car when open, and the fact that owing to their position and form it was difficult or impossible to use steam-power in the operation of opening. The ordinary method of using double doors in order to make complete the closure against rain and sparks, with the inner seal composed of boards nailed on anew at each filling of the car, was expensive, troublesome, and injurious to the car itself, besides requiring tools and much labor to open the door.

The great difficulty has been to construct a door which allows of easy filling of the car and yet when filled provides for opening with ease and without the use of tools. All of the present doors are prevented from opening because of the pressure and friction on the door itself by the grain.

I have sought to make a car-door that is

single and easily handled, that is tight to keep out rain and sparks as well as to prevent leakage of the grain, that is easy to open and when opened is concealed and out of the way of harm, and is no hindrance to the handling of the freight. To this end I have invented the device illustrated in the drawings accompanying this specification.

1 represents the body of the car, and 14 is the roof. On the sides of the doorway therein are provided channel-iron runways 6 6', which are screwed or bolted to the timber and at the top are bent in a curve running up and back under the roof, being attached to a rafter or other beam, as 16, Fig. II. The runway on one side of the car overlaps the runway on the other, so that the sliding doors may both be open and out of the way at once. The shape of the runway and its mode of attachment may be made as shown in Fig. V.

The door itself may be made in two sections, as 2 3, and is built up of slats or bars 7 8, fitted together by a knuckle-joint, as shown in Fig. VI, and held together by flexible cords or wire cables 24. The ends of the slats or bars 7 are fitted to run easily in the ways 6, and the bend in these runways at the hip of the car-roof lie within the cross-planking 4 above the top of the door-opening, so that there is no chance of rain or sparks blowing in.

The door may be made in two sections, as shown, detachable by releasing the hook 5, so that for filling the car the upper section 2 can be pushed up, while the lower half 3, rising to a point above the grain-line, remains in place, or an auxiliary door may be made near the top, while the main door is all in one section. Near the bottom of the slatted door I may provide a number of small relief-doors, hinged and locked in any convenient manner, which are for the purpose of withdrawing a small quantity of grain or for relieving the pressure of grain on the main door when it is to be raised and entirely opened; but I prefer to accomplish the first operation in opening the door—*i. e.*, the relieving of the pressure of the grain—by the following device: The lower slat 8 may be wider than the others. It fits either in a channel-iron like the side runways 6 or else straddles over a bead 25 on a bead-iron 18, as seen in Fig. VI. At a point a little below

the knuckle-joint, between the second and third slats from the bottom, the outside flange of the channel-iron 6 is cut away and shaped as at 29 in Fig. VI. To hold these bottom
5 slats from being pushed out by the grain, I may use the bolts 10, which slide through eyes 9 and enter openings 21 in the side post of the door. For withdrawing these bolts I use a lever 11, which is pivoted to the door
10 and has a depending handle 28. The inner ends of the bolts 10 are pivoted by pins to the flaring head of the lever 11, as shown at Fig. III. The lever is held in place by the locking of the arm 28 to the eye 12, as by a
15 padlock 13. It will be seen that when the arm 28 is pulled sidewise after unlocking the bolts 10 will be withdrawn from their sockets. Thereupon the pressure of the grain inside will push out the slats 7 and 8, as indicated
20 in dotted lines in Fig. IV, when the lower slat may rise from its seat and swing out, allowing the escape of the grain, and consequently relieving all pressure on the door. The lower slats will now easily swing back,
25 and as they slide under the lip 29 back into the channel 6 the door is easily opened. The opening of the door is thus accomplished by a simple sidewise pull on the lever-arm 28 and no tools are required.

30 The door may be provided with flexible weather-strips 23 on the inside which the pressure of the grain will hold down to close the interstices around the edges.

It will be observed that once the door is
35 raised there are no cracks either in the door or in the fittings in which grain may lodge, and no part of the apparatus projects to be broken off or injured and nowhere is there any need for nails or other fastening than
40 the ordinary locks.

In case of an accidental blow on the door it would result, ordinarily, in the breaking of but one slat, and any number of slats may be replaced, as will be readily seen. The
45 door being single and capable of rolling up is cheap and easy to handle. It will also be noticed that an entire door can be at once removed or put in place by simply running it out over the upper (inner) ends of the guide-
50 ways 6 6' into the car.

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

1. The combination with a closed car of two flexible slatted doors sliding upward to
55 open from below and overlapping under the roof of the car, said doors being provided with means for opening a port at the bottom by displacing one of the said slats by the inside pressure on the door.

60 2. A car-door completely closing the door-space and composed of slats strung together, sliding in runways to open vertically and overlap under the roof, the bottom slats thereof being held in position partially by bolts so
65 that on releasing said bolts the said slats

may be pushed outward by the inside pressure on the door and open a port for the relief of the said pressure before sliding the door upward.

3. The combination with a closed car of 70 two single flexible slatted doors, one on each side, sliding in runways upward and then in under the roof of the car, and each having a hinged relief-port at the bottom, opening outward by the inside pressure on the door; with 75 means for holding the said swinging section normally in place.

4. The combination with a closed car of two flexible slatted doors whose edges slide in runways upward and under the roof, hav- 80 ing means for a subsidiary opening in the upper part thereof for loading the car, and each provided with a relief-port near the bottom which swings out by the inside pressure on the door when released from the fastening 85 to its normal position, as described.

5. A flexible slatted car-door sliding upward in runways, and having one or more of its lowest slats jointed to act in the manner of toggle-levers, held in place by the com- 90 bined action of a bottom seating-catch, the pressure from the superposed slats, and a bolt engaging a fixed socket outside the door opposite the lowest slat, so that on withdrawing the said bolt from its socket the lower 95 slat may rise from its seating-catch and be swung out by the inside pressure, automatically opening a relief-port.

6. A flexible slatted car-door completely filling the door-space and opening by sliding 100 upwardly into the car, and provided at its bottom with two toggle-jointed sections seated on a groove-and-tenon joint, held inward by a bolt, so that on releasing the said bolt the sections break at the said joint and the bot- 105 tom slat swings out without raising the superposed slats of the door.

7. The combination with a car-door of a relief-port composed of slats forming a toggle-joint, held in normal position by a bolt 110 and a seating-catch at the bottom, so that on releasing the said bolt the inside pressure on the door opens the relief-port, substantially as described.

8. In a sliding car-door, the combination of 115 a toggle-jointed pair of slats 7, 8, a sliding bolt 10 to hold them in place, and an eccentric lever 11 for withdrawing the bolt.

9. In a sliding car-door, the combination of a toggle-jointed pair of slats 7, 8, a bottom 120 seating-catch 25, a sliding bolt 10 with means for withdrawing the same, and the runways 6, substantially as described.

In testimony whereof I have hereunder signed my name in the presence of two wit- 125 nesses.

THOMAS G. COCKINGS.

Attest:

CHAS. H. URBAN,
GREEN CLAY.