

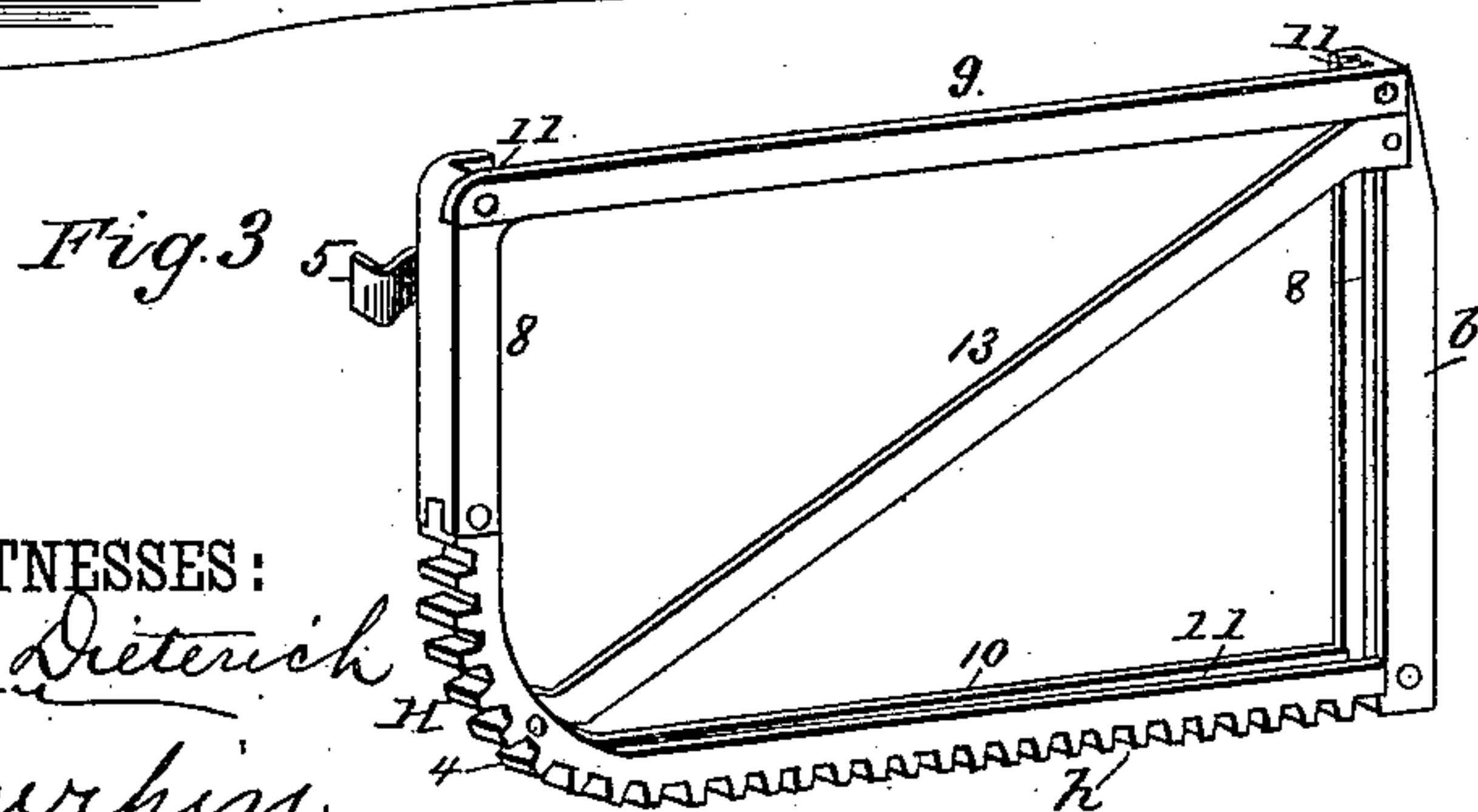
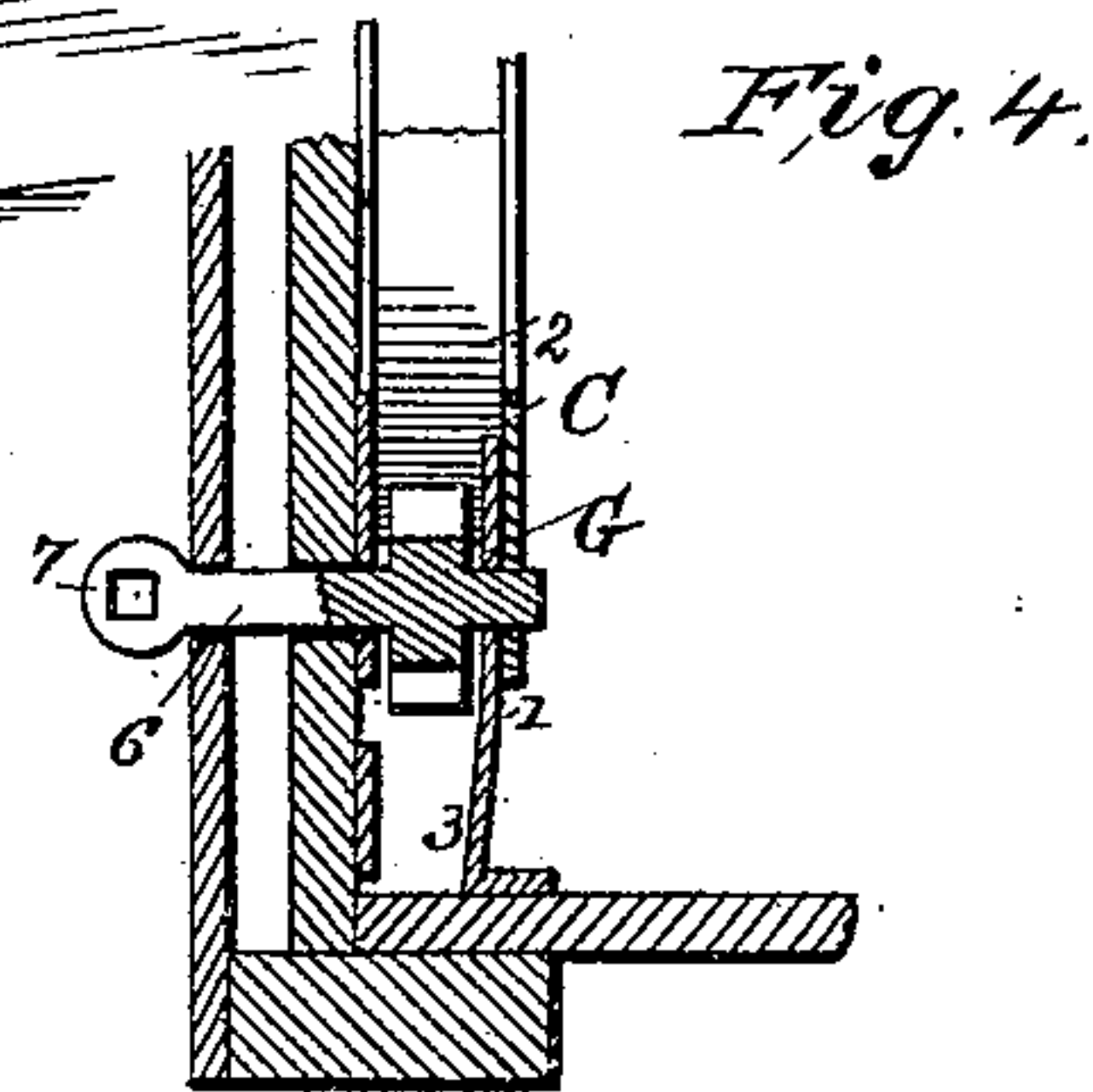
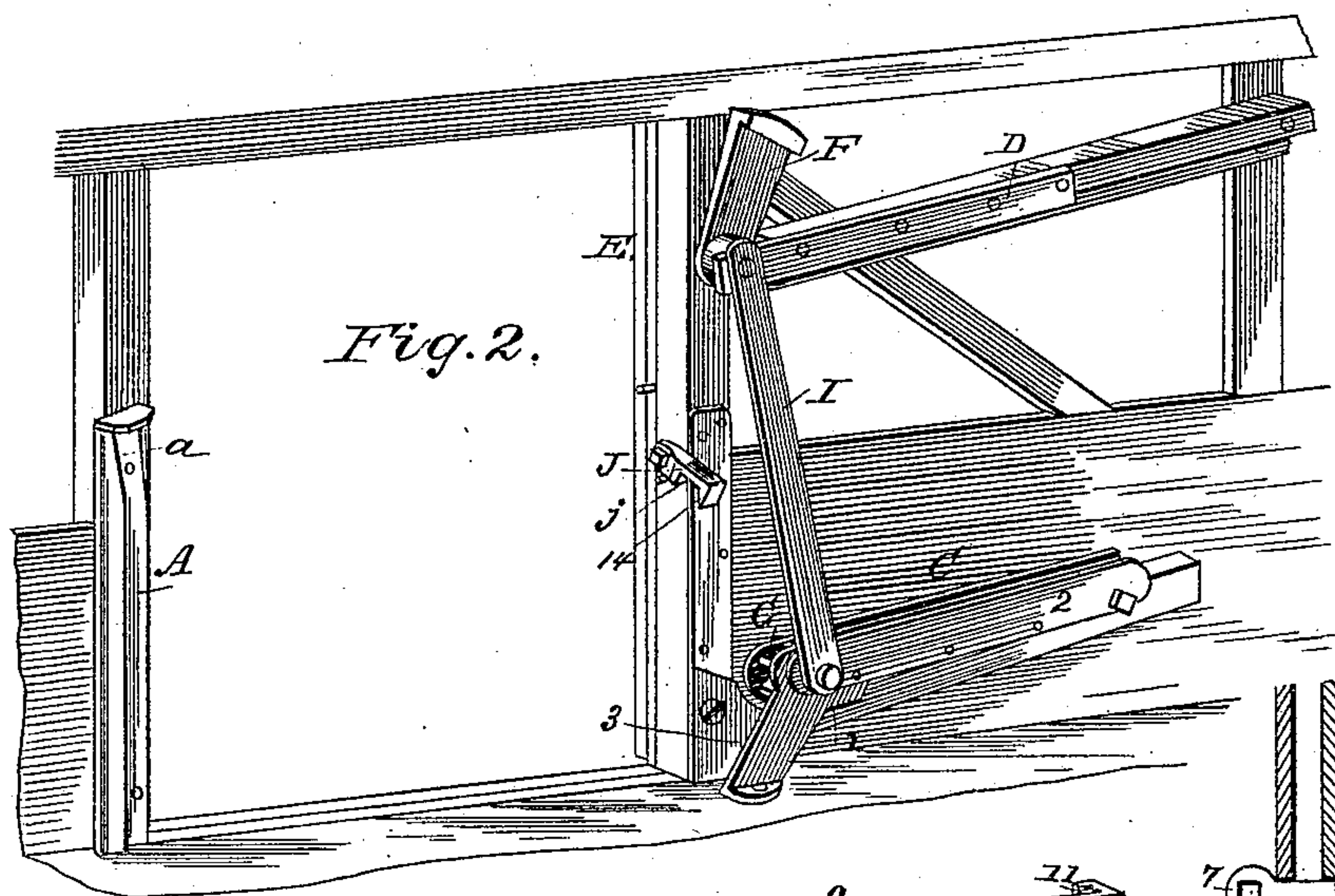
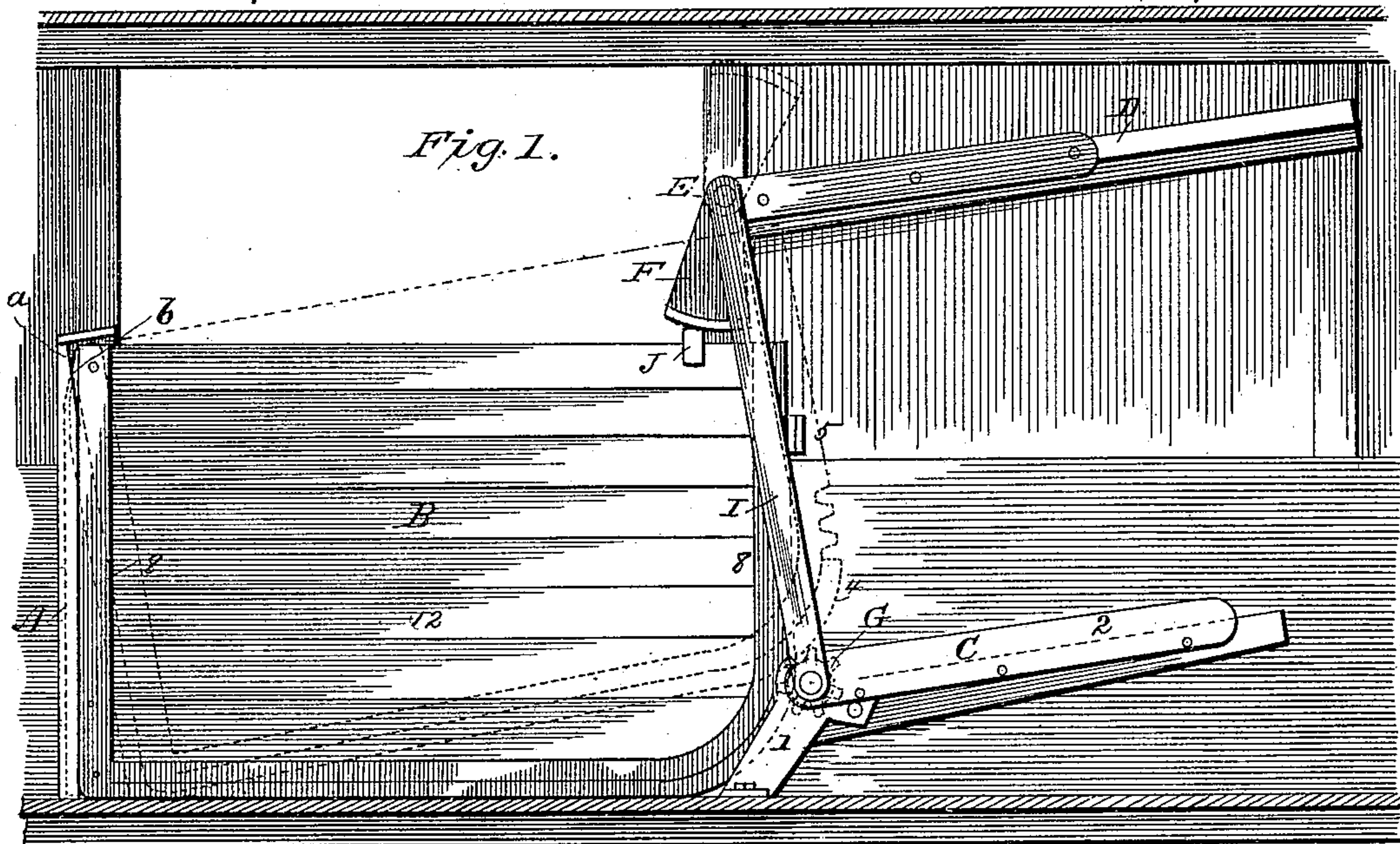
(No Model.)

G. J. FERGUSON.

CAR DOOR.

No. 356,308.

Patented Jan. 18, 1887.



WITNESSES:

Fred G. Dieterich
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INVENTOR:

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UNITED STATES PATENT OFFICE.

GEORGE J. FERGUSON, OF GREENVILLE, TEXAS, ASSIGNOR OF ONE-EIGHTH
TO EDWIN F. STAHL AND SAMUEL BRANTHOFFER, OF SAME PLACE, AND
ALMER L. DOWNER, OF PITTSBURG, TEXAS.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 356,308, dated January 18, 1887.

Application filed June 1, 1886. Serial No. 803,838. (No model.)

To all whom it may concern:

Be it known that I, GEORGE JONES FERGUSON, of Greenville, in the county of Hunt and State of Texas, have invented a new and
5 useful Improvement in Car-Doors, of which the following is a specification.

This invention is an improved car-door, and has for an object to provide a simple and convenient construction by which the door, which
10 is mainly intended for grain-cars, may be pressed firmly against the bottom of the car and fastened, so it will not shake loose in making a trip, may be easily started in opening, and will be efficient and durable.

15 The invention also has for objects other improvements; and it consists in certain features of construction and novel combinations of parts, as will be described.

In the drawings, Figure 1 is a side view of
20 a portion of the inner side of a car provided with my improvements, with dotted lines showing the door partially opened. Fig. 2 is a perspective view of the construction shown in Fig. 1, the door being removed. Fig. 3 is
25 a detail perspective view of the iron frame of the door. Fig. 4 is a detached cross-section drawn alongside of the toothed pulley.

On one side of the doorway of the car I fix a keeper, A, fitted to receive a plate, *b*, on the
30 front edge of the door B. This keeper has its outer plate cut away or tapered rearwardly at *a*, at its upper end, and the plate *b* of the door is also cut away or tapered at its upper end. The purpose of this construction is to enable
35 the door to turn to the position indicated in dotted lines, Fig. 1, when the rear edge of such door is elevated. In this position, it will be seen, the door or parts thereof are braced against the car at both ends of the door, while
40 the grain passes out below the door, and when the pressure of the grain has ceased the door may be entirely opened. Thus any outward movement of the forward edge of the door and the consequent binding of the door in the
45 guides therefor at the side of the doorway is avoided.

At the side of the doorway opposite to the keeper A is arranged a guide, C, having its portion 1 next the doorway inclined abruptly

downward, while its remaining or rear portion, 50
2, extends at a gradual incline, as shown. This guide C is for the lower edge of the door, and above it I arrange a second guide, D, for the upper edge of the door. The extremity of the inner plate of portion 1 of the lower guide 55
is beveled at 3 on its inner face, to force the door when closed firmly against the inner side of the car, to prevent any leakage of grain at such point.

At the side of the doorway, and close to the 60
end of the guideway D, I journal an anti-friction roller, E, and on the shaft of said roller I pivot the cam-like latch F, for securing the door closed.

To the car and within the guideway C, at 65
the juncture of its portions 1 2, I journal a pinion, G, which is connected with the door to raise and lower the rear edge of the same and for adjusting the door, as will be described. In the construction shown the pinion G has cog- 70
teeth, which mesh a rack, H, on the rear edge of the door. This rack is preferably curved at 4 around the lower rear corner of the door, and extended at *h* along the base or bottom edge
75 of the door, in order that after the door is started it may be entirely opened by the pinion G. This pinion and rack for binding the door firmly against the bottom of the car is especially desirable, for the reason it permits
80 the door to be pressed so forcibly down that when the latch is applied to the top of the door it will be prevented from jarring loose by the motion of the car, because of the force
85 of expansion of the door. Thus the pinion acts as a presser for forcing the door down tightly to receive the latch. The roller E bears upon the upper edge of the door while the latter is being opened and closed.

Between the latch for securing the door and the presser for forcing its rear edge downward 90
I extend a connecting-bar, I, by which the pressure of the latch and pinion is counter-balanced, the strain between them being distributed, so that the supports of the latch will not be strained or forced out of position in ap- 95
plying or using the same. This bar I also serves to hold the rack of the door in mesh with the cogged pinion, and as a retaining

means for the door in the motions thereof, and prevents the door from moving too far forward by means of a stop-lug, 5, on the rear edge of the door engaging against the rear edge of the bar I. By arranging the pinion G in the guideway the said pinion will clear itself of grain in opening the door by pushing the grain behind it down in the guideway and under the raised edge of the door as the door is started.

It will be understood that the door is closed before the grain is loaded into the car, so that the guideway below the said pinion will be clear of the grain, and in revolving the pinion to elevate the rear edge of the door it will throw the grain out from the rack edge of the door, and all clogging of the rack will be avoided. The cogged pinion may be used for closing the door, or the door may be closed by hand.

To the pinion G, I connect a stem, 6, which extends outward beyond the side of the car, and is provided at its outer end with an eye, 7, to receive a lever or bar, by which it and the pinion may be turned. By this construction a workman may open a car from the outside, and may exert his whole strength, even should he have a very limited space in which to work, as is generally the case at elevators and warehouses.

The stem may be formed integral with the pinion, or the latter may be socketed to receive an angular stem of the shank, or instead of such shank a crank may be provided having an angular shaft fitted to enter the socket of the pinion; but I prefer the construction as shown.

The door B is preferably formed of a metal frame consisting of end bars, 8, connected at their upper ends by top bar, 9, and at their lower ends by base-bar 10, the said bars 8 and 10 being socketed on their inner faces at 11 to receive the planking 12, forming the body of the door. A strut-brace, 13, may be employed to brace the frame.

Now it will be seen that by the construction shown the iron frame can be readily filled with rough timber by any workman, it not requiring the services of a skilled mechanic, and the door can consequently be made or repaired more easily and at less cost than if the services of a skilled workman were necessary. The frame will also in great part prevent warping of the timbers out of place.

It will be noticed that my door is not fastened directly to the car; so I avoid the use of rods, which are likely to get bent up and impede the desired movements of the door, and when the door is open it will be out of the way, as well as out of danger of being broken by heavy articles, which otherwise might fall against and damage it.

The latch F is pivoted at its upper end, and has its lower edge formed cam-shaped. This lower edge may bear directly against the top of the door; but it is preferred to cause it to bear on hook J, which in its turn bears on the

top of the door, as shown, and it is also preferred to serrate the meeting surfaces of the latch and hook to aid in preventing any slipping of such parts. The portion *j* of the hook, which catches over the door, is beveled at 14, to press the door firmly against the side of the car to avoid leakage of grain. This hook J may also be used to hold the door open by turning it in front of the door when the latter has been moved to its full open position.

Having thus described my invention, what I claim as new is—

1. A door for cars having a metallic main frame provided with sockets or flanges, in combination with the filling timber or sheet metal.

2. The combination, with a car, of a grain-door, an operating-pinion suitably journaled, whereby it may be revolved, and a connection between said pinion and the rear edge of the door, whereby said rear edge of said door may be forcibly elevated in starting to open the door, substantially as set forth.

3. A car-door having its rear edge provided with a rack, combined with a pinion journaled to the car and meshing said rack, substantially as set forth.

4. The combination of the car, the door having its base and rear edges provided with a rack, and the pinion journaled to the car and meshing the rack, substantially as set forth.

5. The combination, in a car, with the door having a cog-rack and a beveled projection on top of keeper A, and metal bar I, of a pinion journaled to the side of the car and operating in cog-rack on the door for straining the lower edge of the door against the floor of the car, and a latch for fastening the door, whereby the rear edge of the door may be pressed firmly against the bed or floor of the car before the latch is applied to prevent the said latch from jarring loose, the other or front edge of door being held down by beveled or inclined shaped projection on top of keeper A.

6. The combination, with the door, the pinion for straining the door down by engaging in cog-rack on door, and the latch for fastening the same, of a connection by a metal bar, I, connecting pinion G and latch F, whereby they are held from being strained apart in use between said parts.

7. The combination of the door and the guideway having its inner plate provided at its edge next the doorway with an inclined portion forming a wedge whereby to bind the lower edge of the door outward, substantially as set forth.

8. A car having at one edge of its doorway a keeper, the upper portion of the outer plate of which is cut away or tapered, combined with the door having at one edge a plate fitted to enter the keeper and cut away or tapered at its upper edge and means for raising the opposite end of the door, substantially as set forth.

9. The combination of the car, the door having a cog-rack, the guideway fitting over the

lower rear corner of the door, and the pinion journaled within said guideway and meshed with the rack, substantially as set forth.

10. The combination of the car, the door, 5 the hook pivoted to the car and arranged to engage upon the door, and having a beveled surface at 14 to draw door tight to side of car, and the cam-latch arranged to engage upon the hook, in combination with metal bar I, 10 connecting pinion G and latch F, to prevent them from being strained apart by use.

11. The combination of the car, the door having a cog-rack, a toothed pinion engaging

said rack, and a stem or shaft journaled to side of car and connected at inner end with 15 said pinion, whereby to turn the same, and having its other or outer end extended beyond the outside of the car and provided with an eye fitted to receive a lever-rod, whereby to turn said stem or shaft to open or close the 20 door from outside of car.

GEORGE J. FERGUSON.

Witnesses:

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