

(No Model.)

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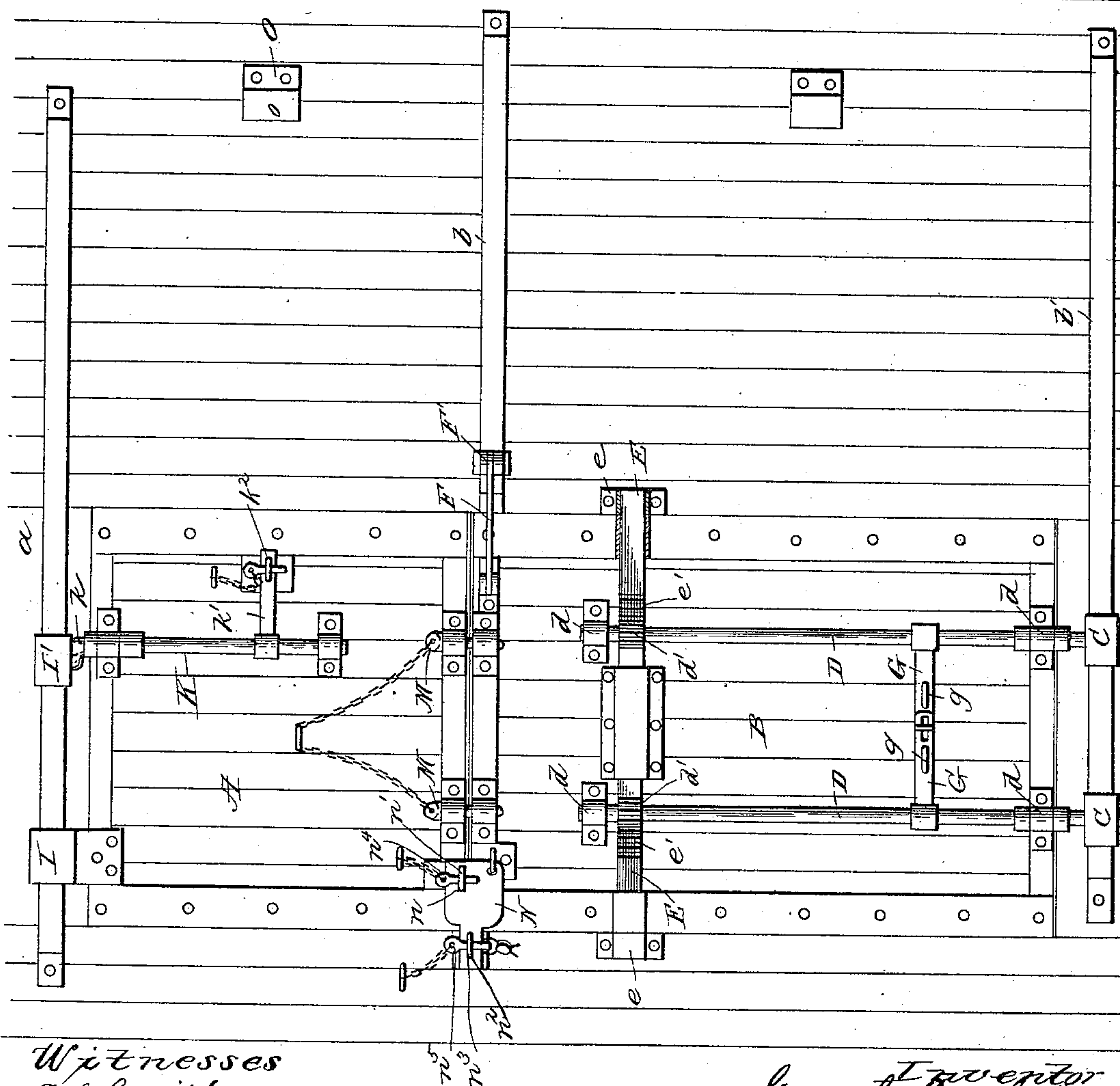
G. C. DOUGHERTY.

FREIGHT OR GRAIN CAR DOOR.

No. 450,559.

Patented Apr. 14, 1891.

Fig. 1



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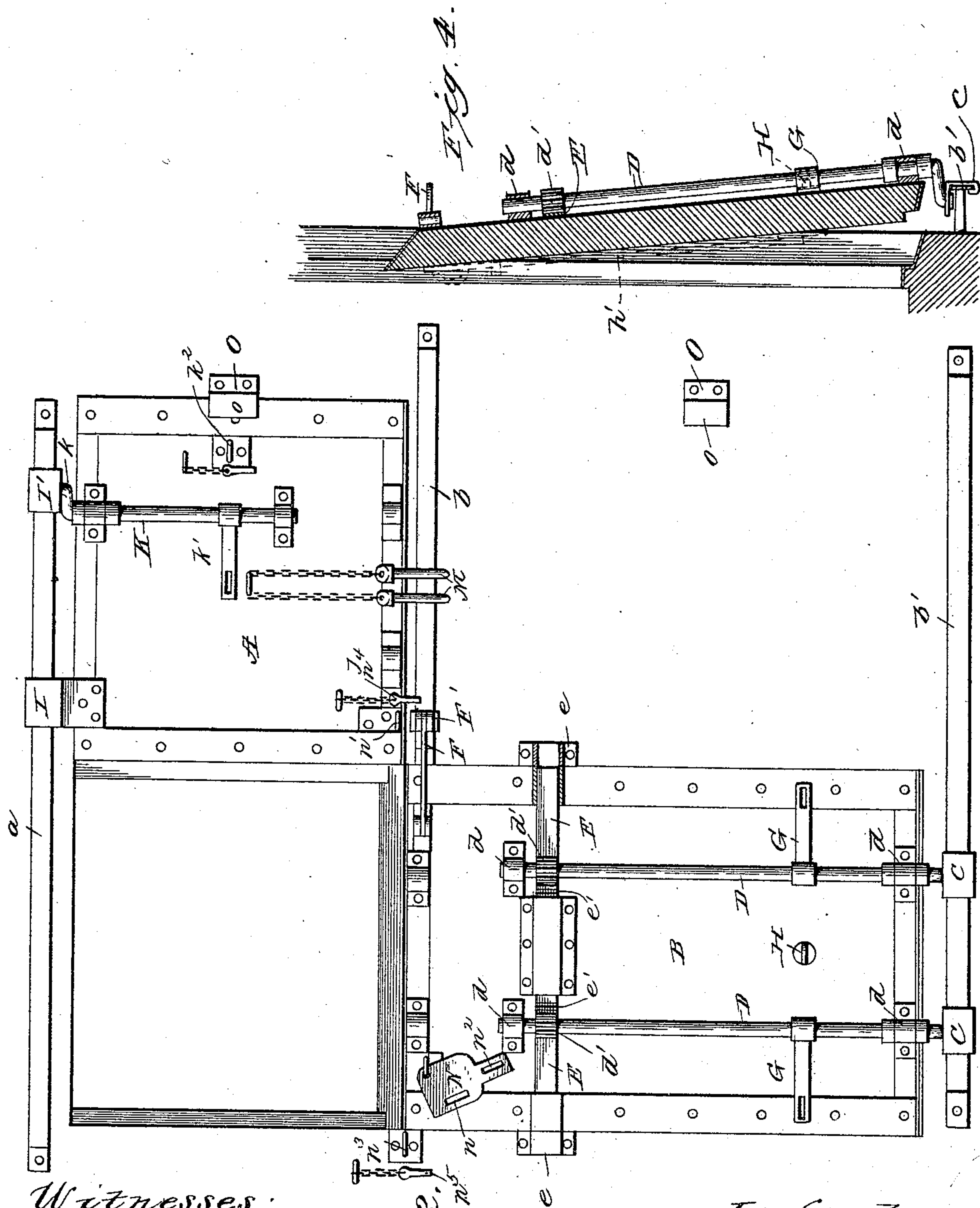
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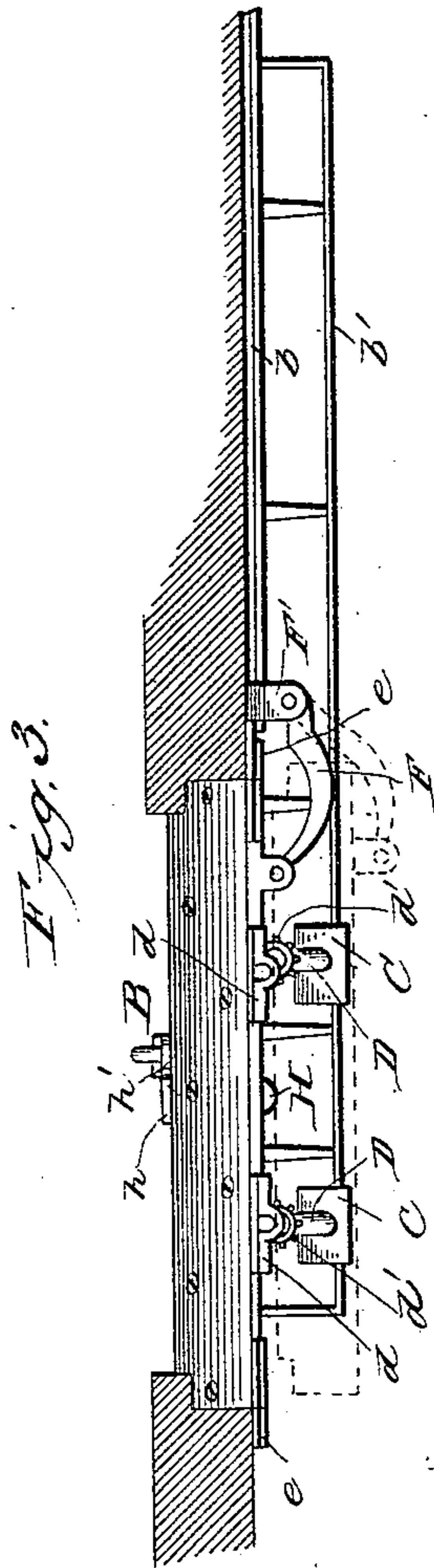
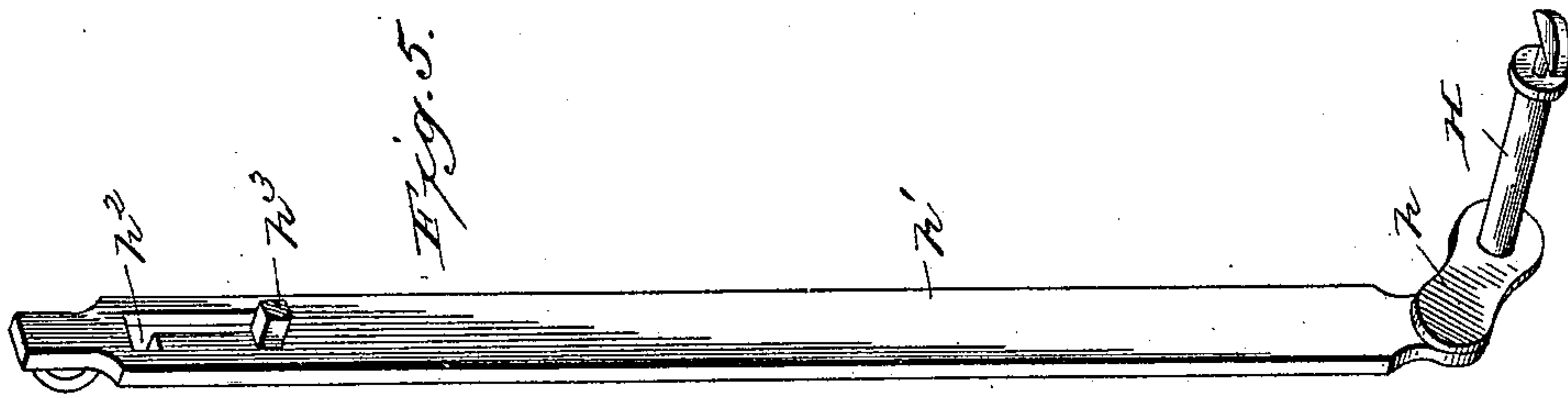
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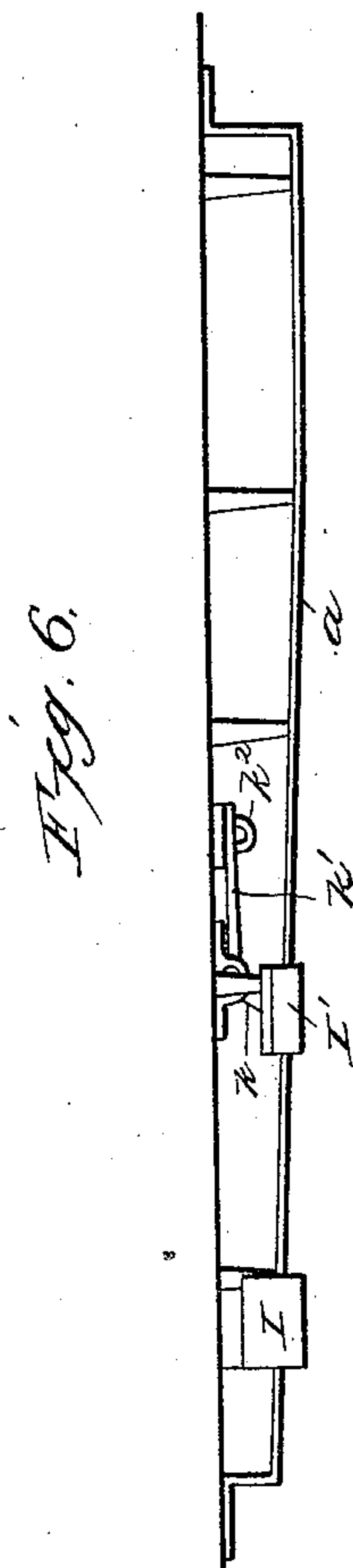
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UNITED STATES PATENT OFFICE.

GEORGE C. DOUGHERTY, OF QUINCY, ILLINOIS, ASSIGNOR TO JOHN T. SMITH, SAMUEL H. WHITSITT, LOUIS H. BERGER, AND LOUIS G. OST, ALL OF SAME PLACE.

FREIGHT OR GRAIN CAR DOOR.

SPECIFICATION forming part of Letters Patent No. 450,559, dated April 14, 1891.

Application filed October 3, 1890. Serial No. 366,918. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. DOUGHERTY, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Freight or Grain Car Doors; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in doors, particularly such as are employed on freight or grain cars, to facilitate the loading, unloading, and handling of the grain, the objects being to provide a door which will shut flush with the side of the car, so as to completely close the door-opening and permit the top or bottom section to be independently pushed along the side or the lower half to open at the bottom for the discharge of the grain, and, further, to provide fastening devices for the doors of great strength and simplicity of design, requiring but little manipulation to open or secure the same.

The invention consists in certain novel details of construction and combinations and arrangements of parts to be hereinafter described, and pointed out particularly in the claims at the end of this specification.

Figure 1 is a side elevation of a door constructed in accordance with my invention. Fig. 2 is a similar view with the upper section of the door open and the lower section swung out. Fig. 3 is a sectional view above the lower section of the door, looking down. Fig. 4 is a vertical section with the lower section of the door in the position shown in Fig. 2. Fig. 5 is a skeleton view of the lock for the lower section. Fig. 6 is a top plan view showing the top rail and hangers of the upper section in detail.

Similar letters of reference in the several figures indicate the same parts.

The door in the present instance is made in two sections A and B, one above the other, to facilitate the handling of grain, such sections being mounted to slide on tracks or ways *a b b'*, respectively, the track *a* being

located at or near the top of the car and is inclined inward slightly, as shown in Fig. 6, for a purpose to presently appear, the track *b* at the center to form the top support for the lower section B, and the track *b'* at the bottom to form the bottom support therefor. The hangers C C for the bottom of the lower section embrace the lower rail and are connected to the said section by the shafts D D, mounted in bearings *d d* on the door-section and having their lower ends cranked and held in bearing in the top of the hangers.

At the upper ends of the shafts D, which, it will be seen, are located at each side of the center of the door, are locking-bolts E, adapted to be projected in opposite directions to engage the strike-plate *e e* on the sides of the car as the shafts are turned to force the door into the position shown in Fig. 1. The bolts E E are preferably mounted in bearings and have on their outer surfaces suitable gear-teeth *e'*, with which the pinions *d'* on the shafts D co-operate. When unlocked, the upper part of the lower section B is prevented from swinging out farther than is necessary to move horizontally by means of the link F, which is pivoted thereto at the upper right-hand corner, its opposite end being pivotally connected to the hanger F', embracing the central rail *b*. With this construction it will be seen that by rotating the shafts D D by means of the arms G and handles *g* the locking-bolts are retracted and the lower portion of the door is positively swung outward by the cranks on the ends of the shafts, it being only necessary now to pull out the top of the lower section and slide the same along the ways to give a full door-opening.

For the purpose of discharging grain from a car down into a conveyer below the same the door may be only moved out at the bottom, as shown in Fig. 4, in which position the grain runs out all around the door, and after it has ceased to discharge in this way the door may be quickly moved to one side and the discharge of grain continued in the ordinary manner.

Difficulty has heretofore been experienced with this class of doors, owing to the fact that

the lower section could be opened without disturbing the upper section, and should this be done accidentally, or, as is more frequently the case, maliciously done, a large proportion of the grain will run out and be lost beyond hope of recovery, particularly if the car be moving. This difficulty I propose to overcome by providing a lock for the lower section, which can only be released from the inside of the door, making it necessary to open the upper section before the lower section can be opened. This lock consists of a turn-bolt II, mounted in bearings in the lower central portion of the door and adapted to pass through slots in both the arms G, which turn-bolt is operated by a crank-arm h and upwardly-extending rod h' on the inside of the door. The upper end of the rod h' is provided with a handle at a point near the top of the door and immediately below the same with locking-notches h^2 , adapted to engage a locking-pin h^3 and to be released therefrom by a lateral movement, as will be readily understood. The upper section A of the door is also provided with two hangers I I', the one I' corresponding to the hangers C for the lower section, and is connected to the upper right-hand portion of the door by the shaft K, having the crank k thereof held in a bearing in the hanger. This shaft K is also rotated to throw the door out or into its seat by an arm k' , having a slot therein for engagement with the hasp and pin k^2 to hold the same with the door in closed position. The hanger I is preferably in the form of a simple loop, which embraces the rail a and is adapted to travel along the rail, which is inclined in toward the side of the car at the left, and thereby causes the door to strike the opposite jamb when pushed home, the loop being large enough to permit the door to be firmly seated when the crank-shaft is turned. The two sections of the door are locked together by pins M M, passing through registering clips on the upper and lower edges of the sections, respectively, and they are both locked in closed position by the plate N, which is permanently stapled to one section and has two slots n n^2 , which pass over staples n' n^3 on the upper section and side of the car, respectively, suitable pins n^4 n^5 being provided to prevent the release of the locking-plate, the latter pin having a hole through its point for the passage of a sealing-wire.

The door-jamb is provided with an internal shoulder, against which the door-sections seat to form a tight seal, and the top edge of the lower section is inclined outward for the double purpose of shedding any water that might work in between the same and to form a tight seal when the upper section is forced home.

It will be noted that the outward movement of the left-hand side of the upper section is prevented when the crank is turned to closed position and locked, as such outward movement would necessarily be accom-

panied by a corresponding inward movement of the right-hand side with the shaft K as a center, and such movement would be resisted by the shoulder in the jamb, making it necessary to employ other fastening devices only at the bottom of the section.

The swinging of the door-sections when open is prevented by the stop-plates O, the ends of which pass over the edge of the door when fully opened.

With a door such as herein described it will be seen that the lower section as well as the upper section may be moved horizontally along the side of the car without danger of becoming detached at either end, and that there is practically no dependence of the sections upon each other, as has been the case with doors of this class heretofore constructed.

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

1. In a sliding door having top and bottom sections, the combination, with the upper section and hanger-rail and hanger therefor, of the lower section, the hanger-rails at top and bottom of the same, and a loose connection between the top of said section and its hanger-rail, whereby said section may be moved into the door-opening, substantially as described.

2. In a sliding door having top and bottom sections, the combination, with the upper section, hanger-rail, and hanger therefor, of the lower section, the hanger-rail at top and bottom of the same, the hangers uniting the bottom of said section and the bottom hanger-rail, the hanger on the upper rail, and the link uniting said hanger and the top of the lower section, substantially as described.

3. In a sliding door, the combination, with the upper section, hanger-rail therefor, and the independent lower section, its hanger-rails, and a loose connection between the top of said section and its upper rail, of the independent crank-shafts on said upper and lower sections, having the crank ends connected, respectively, with the top and bottom hanger-rails, substantially as described.

4. The combination, with a car-door having vertical crank-shafts thereon, the hanger-rail, and hangers with which the cranks on the shafts co-operate, of the locking-bolts engaging strike-plates at the sides of the door and having gear-teeth thereon and the pinion on the shafts engaging the locking-bolts to throw the same out as the shafts are turned to locked position, substantially as described.

5. In a freight-car door, the combination, with the upper door-section and the locking device therefor, of the independent lower section and the locking device therefor, having its controlling-handle on the inside of the door, whereby said lower section can be unlocked only after the upper section is opened, substantially as described.

6. The combination, with a door having a crank-shaft thereon, hanger-rail and hangers with which the crank-shafts co-operate, and the operating-arms on said crank-shafts, of

the turn-bolt for holding said arms in locked position, and the rod controlling said turn-bolt, mounted on the inside of the door, substantially as described.

5 7. The combination, with a door-jamb having the shoulder therein and the divided door fitting in against said shoulder, of the hanger-rails at top and bottom of the door, the hangers on said rail, the two crank-shafts on
10 the bottom section of the door, co-operating

with the hangers on the bottom rail, a single crank-shaft on the top section of the door, co-operating with one of the hangers on the top rail, and a direct connection between the other hanger and top of the door, substantially as described. 15

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