(No Model.) 3 Sheets—Sheet 1.

P. P. DOERING.

EXPRESS CAR.

No. 460,744. Patented Oct. 6, 1891.

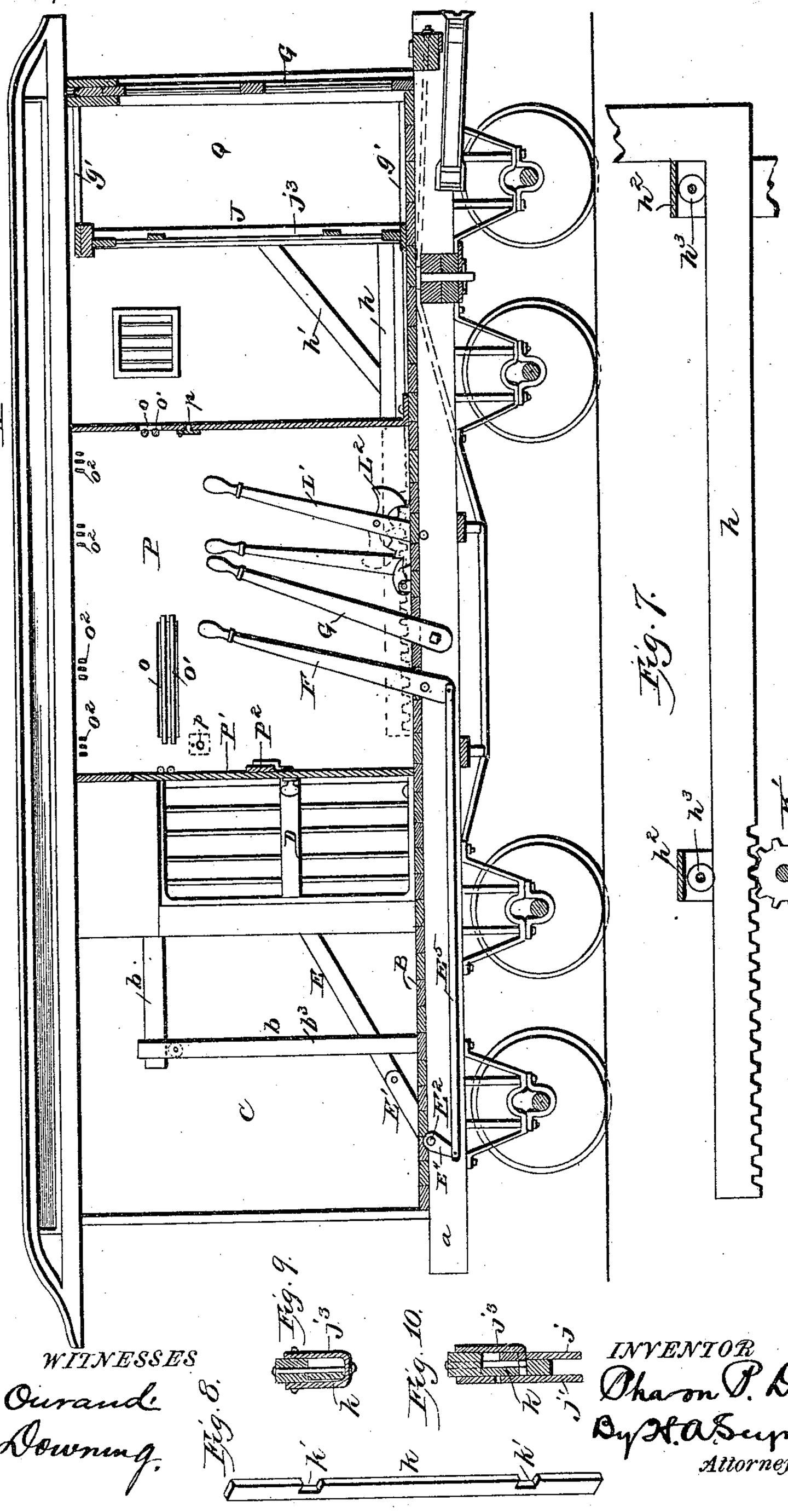

Fig. 1.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

WITNESSES

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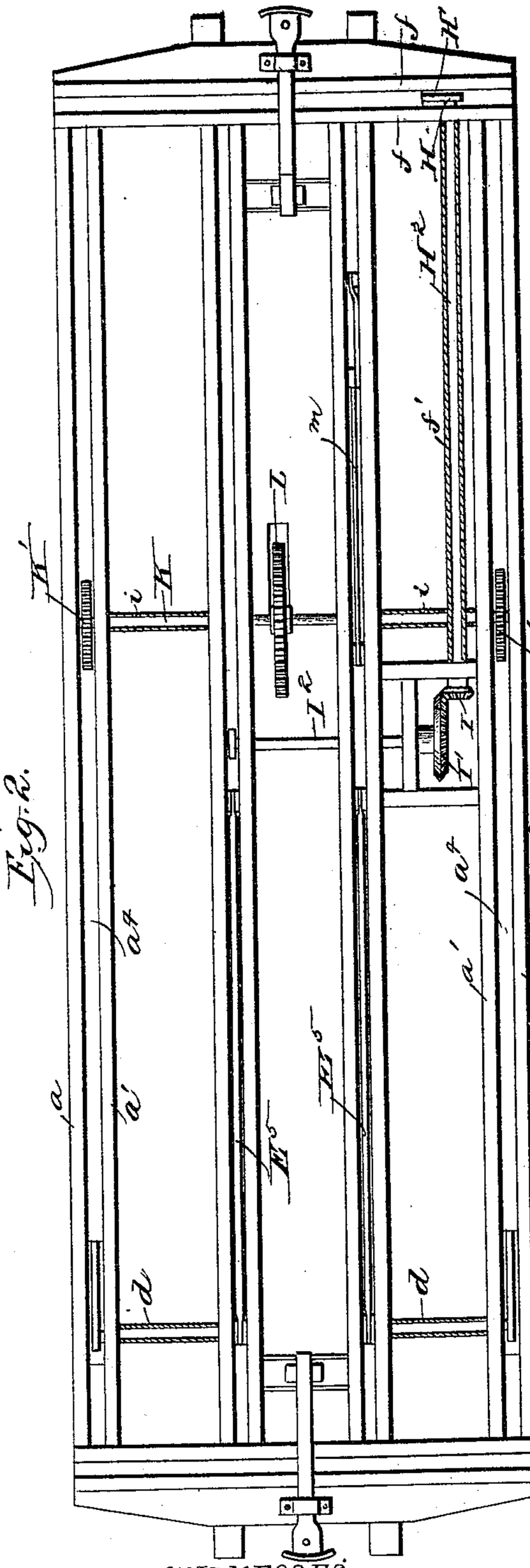

Fig. 2.

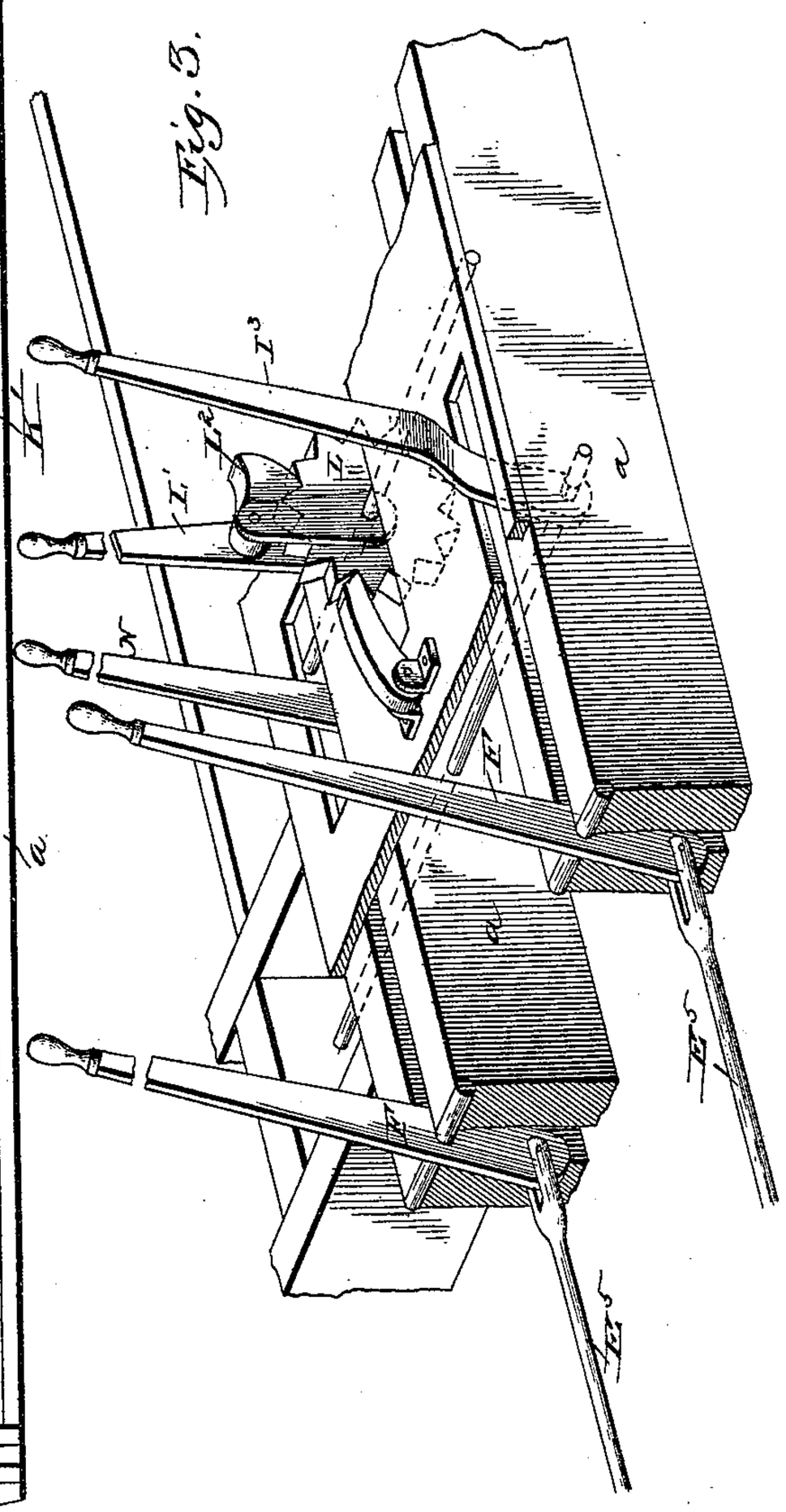

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

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EXPRESS CAR.

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Fig. 5.

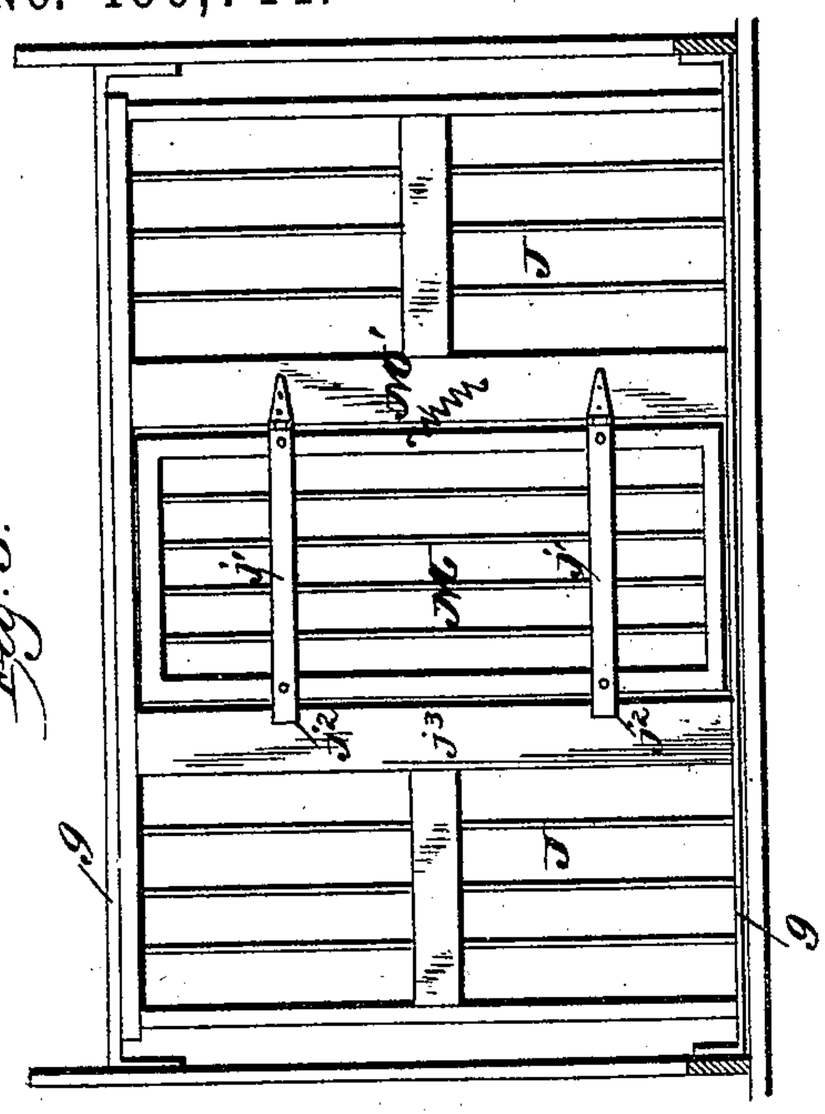

Fig. 6.

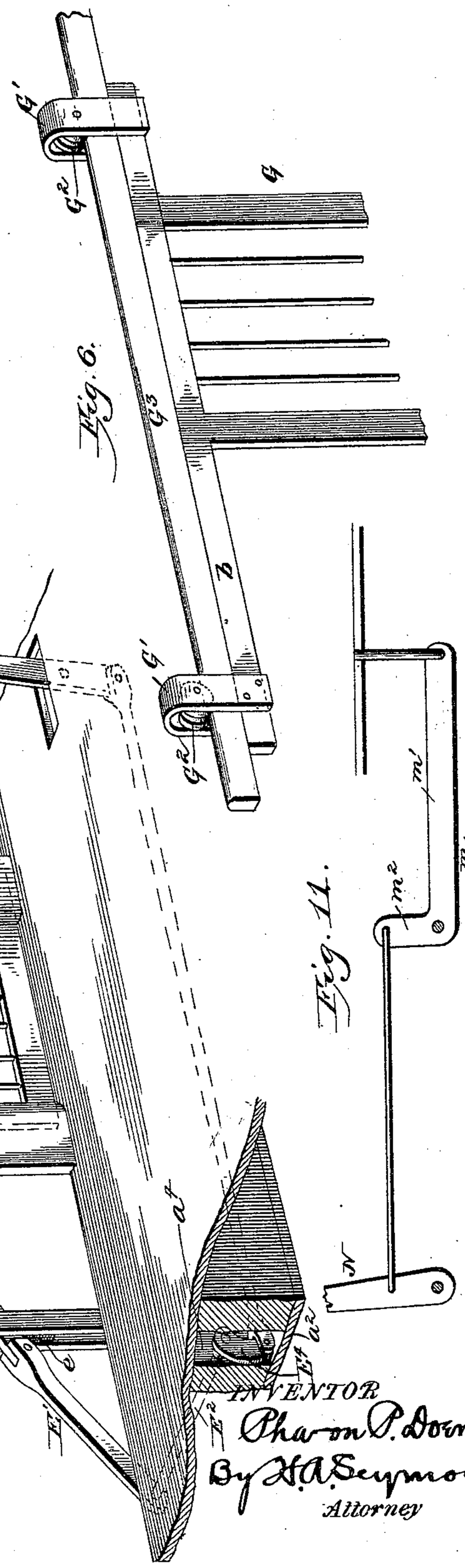

Fig. 4.

Fig. 11.

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UNITED STATES PATENT OFFICE.

PHAON P. DOERING, OF ANTWERP, OHIO.

EXPRESS-CAR.

SPECIFICATION forming part of Letters Patent No. 460,744, dated October 6, 1891.

Application filed January 3, 1891. Serial No. 376,609. (No model.)

To all whom it may concern:

Be it known that I, PHAON P. DOERING, a citizen of Antwerp, in the the county of Paulding and State of Ohio, have invented certain new and useful Improvements in Express-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to railroad-cars, and more particularly to an improvement in express-cars, its object being to construct an express-car in such manner that intruders may be effectually excluded.

A further object is to so construct an express-car that the express-messenger shall be protected from intruders, and so that he can prevent the entrance of such intruders into the car, and thus protect the goods intrusted to his care.

A further object is to provide an express-car with devices by means of which the messenger will be enabled to force an intruder from the car or compel him to surrender.

A further object is to provide the doors of an express-car with devices whereby said doors can be opened and closed from within the car and locked, so that they cannot be opened or closed from the exterior of the car.

A further object is to provide the doors of an express-car with concealed locking devices adapted to be operated from within the car.

A further object is to provide an express-car with devices for the purpose stated which shall be of simple substantial construction, easy of operation, and effectual in the performance of its functions.

With these objects in view the invention consists in the combination, with a car and its doors, of a cage or fort located within said car, and devices located within said cage or fort and connected with said doors for simultaneously operating and locking them.

It also consists in the combination, with a car, of a cage or fort located therein, a partition adapted to produce a compartment at one end of the car, and devices connected with said partition for moving the same.

The invention further consists in the combination, with an express-car open at one end, of a sliding partition adapted to produce a compartment at said open end of the car, a cage or fort located within the car, and devices in said cage or fort connected with said sliding partition for sliding the same; and the invention further consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a car embodying my improvements. Fig. 2 is a bottom plan view of a car, showing my improvements applied thereto. Fig. 3 is a perspective view of the lever mechanism. Fig. 4 is a perspective view showing one of the doors and devices attached thereto for operating and locking the same. Fig. 5 is a face view of the grated partition. Figs. 6, 7, 8, 9, 10, and 11 are views of certain details.

A represents an express-car, the floor B and side C of which are supported on longitudinal timbers a a', each of said timbers being composed of two longitudinal sections running parallel with each other, spaced apart somewhat and connected by boards, thus producing housings a^4 for a purpose presently explained.

Located in the sides C of the car, between the interior and exterior walls thereof, are doors D, adapted to slide in suitable guides and provided at their upper ends with rods or bars b, which extend forwardly and rearwardly therefrom, and adapted to slide or run on rollers b', journaled in the upper ends of uprights or supports b^2 b^4, said rods or bars b being guided by passing between the plates or bars b^3, composing the uprights b^2, as shown in Figs. 1 and 4.

Pivotally connected to the rear edge of each side door D is a rod or lever E, which extends rearwardly and downwardly therefrom and passes between the plates or bars b^3 of the uprights b^2, and pivotally connected at their rear ends to the bifurcated forward end of levers E′, thus producing in effect toggle-joints. The lower rear ends of the levers E′ are secured to crank-shafts E^2, mounted in the longitudinal timbers of the car-bottom, said crank-shafts terminating in the housings produced by the longitudinal timbers a, and are inclosed by sections of pipe d to prevent interference therewith from beneath the car. Secured to the inner ends of the crank-shafts E^2, within the housings a^4 of the longitudinal timbers, are crank-arms E^4, which preferably extend downwardly and have piv-

otally connnected to their lower ends the bifurcated rear ends of draw bars or rods E^5, which rods or bars extend forwardly within the housings a^4 and at their forward ends are bifurcated and pivotally connected to the lower ends of levers F, pivoted in the car-bottom or the longitudinal timbers thereof, said levers F being located in proximity to the center of the car. From this construction it will be seen that by manipulating the levers F the doors D will be opened or closed, and that when closed the joints of the toggle-levers E E′ will be below a straight line extending from the crank-shaft E^2 to the pivotal connection of the lever E to the door D, said levers E′ being adapted to normally rest upon stops *e* when the doors D are closed. Thus it will be seen that the doors D when closed will be securely locked by the toggle-lever produced by the levers E E′, and that it will be impossible to slide said doors without first raising the joint of the toggle-levers, and that this can only be done by manipulating the levers F within the car.

In one end of the car a door G is located, said door being similar in all respects to the doors D. The arms or bars *b* of the door G are provided with loops or hangers G′, in which rollers G^2 are mounted and adapted to run upon a rail G^3, passing through said loops and secured between the interior and exterior walls of the end of the car. A toggle-lever H is connected to the door G, as above explained with reference to the doors D, and the arm H′ of said toggle-lever is connected at its lower end to a shaft H^2, mounted in suitable cross bars or timbers *f* in the car-bottom, said shaft H^2 being inclosed in a pipe *f*′ to prevent interference with it. The shaft H^2 extends to a point in proximity to the center of the car, where it is provided with a bevel-pinion I, adapted to mesh with a larger pinion I′, carried by a shaft I^2, arranged at right angles to the shaft H^2. At the other end of the shaft I^2 a lever I^3 is secured and adapted to extend up into the car at a point near its center. By operating the lever the door G may be opened or closed and locked in an obvious manner.

Located at a point near the open end of the car is a grated partition J, provided at its top and bottom with cross-bars *g*, which project somewhat beyond the ends of the partition and adapted to enter grooves *g*′ in the side walls of the car. Located in the sides of the car, between the interior and exterior walls thereof, are rack-bars *h*, connected at one end to the ends of the partition J and braced by rods or bars *h*′, as shown in Fig. 1. The rack-bars *h* will preferably be passed through loops or guides h^2, having rollers h^3 mounted therein. A shaft K is mounted in the longitudinal timbers of the car-bottom, near the center of the car, and inclosed by sections of pipe *i*, said shaft being provided at its ends and between the interior and exterior walls of the sides of the car with pinions K′ K′, adapted to mesh with the rack-bars *h*. Mounted on the shaft K, preferably at its center and adapted to extend through the floor of the car, is a ratchet-wheel L. Pivoted in proximity to said ratchet-wheel and extending up into the car is a hand-lever L′, carrying a pivoted dog L^2, adapted to engage the ratchet-wheel, said dog being made reversible, as shown in Fig. 1. From this construction it will be seen that by operating the lever L′ the partition J may be slid forward or backward for a purpose explained farther on. The partition J is provided at its center with a hinged door M, to which a spring M′ is attached to cause said door to close when released. The door M is provided with cross-bars *j j*′, the bars *j* being adapted to enter notches j^2 in the door-post j^3, and the bars *j*′ being adapted to cover said notches when the door is closed. The door-post j^3 is made hollow and has located therein a vertical sliding bolt *k*, having notches *k*′, adapted to align with the notches in the door-post when it is desired that the door M shall open. Located in the housing formed by one of the longitudinal timbers *a* is a lever *m*, having a long horizontal arm *m*′ and a short vertical arm m^2. To the end of the long arm *m*′ a pin m^5 is pivotally connected, and to the end of the short arm a rod or bar m^4 is connected, the other end of said rod or bar m^4 being pivoted to a hand-lever N, located within the car, near its center. Thus it will be seen that the notches of bolt *k* will be normally out of line with the notches of the door-post and that when the lever N is operated the bolt *k* will be raised to bring the notches of the bolt and the notches of the door-post in alignment with each other, and thus release the cross-bar *j* and permit the door M to open. When the door M is closed, the cross-bars *j* of the said door will normally lie behind the bolt *k*.

Inclosing the levers F, F, N, L′, and I^3, by the manipulation of which the device above described may be operated, is a burglar-proof cage or fort P, having a door or doors P′ at one end for the admission of the express-messenger, said door or doors being provided with a suitable bolt or other locking mechanism P^2.

In the sides, end, and door of the cage or fort P elongated slots *o* are made, and extending across said slots are rods or bars *o*′. The rods or bars *o*′ are so spaced apart as to produce sight-holes without permitting the passage between them of bullets. The cage or fort will also preferably be provided at or near its top with narrow slots o^2 for the admission of air. Perforations *p* are made in the walls of the cage P, through which the muzzle of a pistol may be inserted from within the cage by the messenger, said perforations or port-holes being provided inside the cage or fort with a shutter to prevent a bullet fired by a person outside the cage from passing through said port-holes.

Now it will be seen that should a person

apply at the door G at the end of the car for admission the express-messenger may, if he sees fit, open said door by manipulating the lever I^3 and admit him into the compartment Q between said door and the sliding partition, after which the door G will be closed and locked, as above explained. After the stranger has been admitted to the compartment Q, should the messenger see fit to admit him to the body of the car he may do so by manipulating the lever N to open the door M, after which said door will be closed and locked. Should, however, the messenger conclude that the person whom he has admitted to the compartment Q is an intruder or a person having no right to admission to the car, the messenger may demand his withdrawal, or, if a burglar, he may demand surrender. If the intruder refuses to withdraw or surrender, the messenger may then operate the lever L′ to slide the partition J toward the end of the car, and thus force the intruder toward the door G, and if he still refuses to so closely confine him between the partition J and the door G that he will be compelled to surrender. The partition J may be moved back to its normal position by the same lever by simply reversing the dog L^2. From the cage or fort P the messenger may have a complete view of the car and have also a complete range of the car for use of fire-arms without the slightest danger of injury to himself.

It is evident that slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope. Hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. The combination, with a car, of a cage or fort located therein, a transverse partition adapted to produce a compartment at one end of the car, and devices connected with said partition for moving the same longitudinally of the car, substantially as set forth.

2. The combination, with an express-car open at one end, of a sliding transverse partition adapted to produce a compartment at said open end of the car, a cage or fort located within the car, and devices in said cage or fort connected with said sliding partition for sliding the same lengthwise of the car, substantially as set forth.

3. The combination, in a car, with a cage or fort located therein, doors at the side and end, and means in the cage for operating said doors, of a sliding partition extending transversely of car and means for moving this partition lengthwise of the car, substantially as set forth.

4. The combination, with a car, of a sliding door, a toggle-lever connected to said door, and devices for operating the toggle-lever to open or close and lock the door, substantially as set forth.

5. The combination, with a car, of a sliding door, a toggle-lever connected with said door, a cage, a lever located in said cage, and devices connecting said toggle-lever with the lever in the cage, whereby the door may be opened or closed and locked by said operating-lever, substantially as set forth.

6. The combination, with a car, of sliding doors, a toggle-lever for each door, a cage in the car, levers in said cage, and mechanism connecting said toggle-levers and levers in the cage, said mechanism being inclosed and protected from interference, substantially as set forth.

7. The combination, with a car, of a sliding partition therein, a door in said sliding partition, and concealed devices for operating said partition and door, substantially as set forth.

8. The combination, with a car, of a longitudinally-sliding partition, rack-bars connected to said sliding partition, a shaft having pinions to mesh with said rack-bars, and devices for operating said shaft to slide said partition, substantially as set forth.

9. The combination, with a car, of a sliding door in the end thereof, a toggle-lever connected to said door, a shaft connected to said toggle-lever, a pinion carried by said shaft, a shaft carrying a pinion to mesh with the first-mentioned pinion, and a lever for operating the latter-mentioned shaft, substantially as set forth.

10. The combination, with a partition, of a door therein, a sliding bolt in the door-post, said door-post and bolt having notches, cross-bars on the door to enter said notches, and mechanism for operating said bolt, substantially as set forth.

11. The combination, with a partition, of a door therein, a sliding bolt in the door-post, said door-post and bolt having notches therein, cross-bars on the door, arranged in pairs, one cross-bar of each pair being adapted to pass through the notches in the door-post and bolt and the other cross-bar of each pair being adapted to cover said notches in the door-post, and devices for operating said bolt, substantially as set forth.

12. The combination, with a partition, of a door therein, a bolt in the door-post, said door-post and bolt being provided with notches, cross-bars on the door to enter said notches, a lever mounted in the bottom of the car, a rod or pin attached to one end of said lever to engage the bolt, and devices connected to said lever to operate the bolt, substantially as set forth.

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

PHAON P. DOERING.

Witnesses:
L. S. GORDON,
H. H. GORDON.