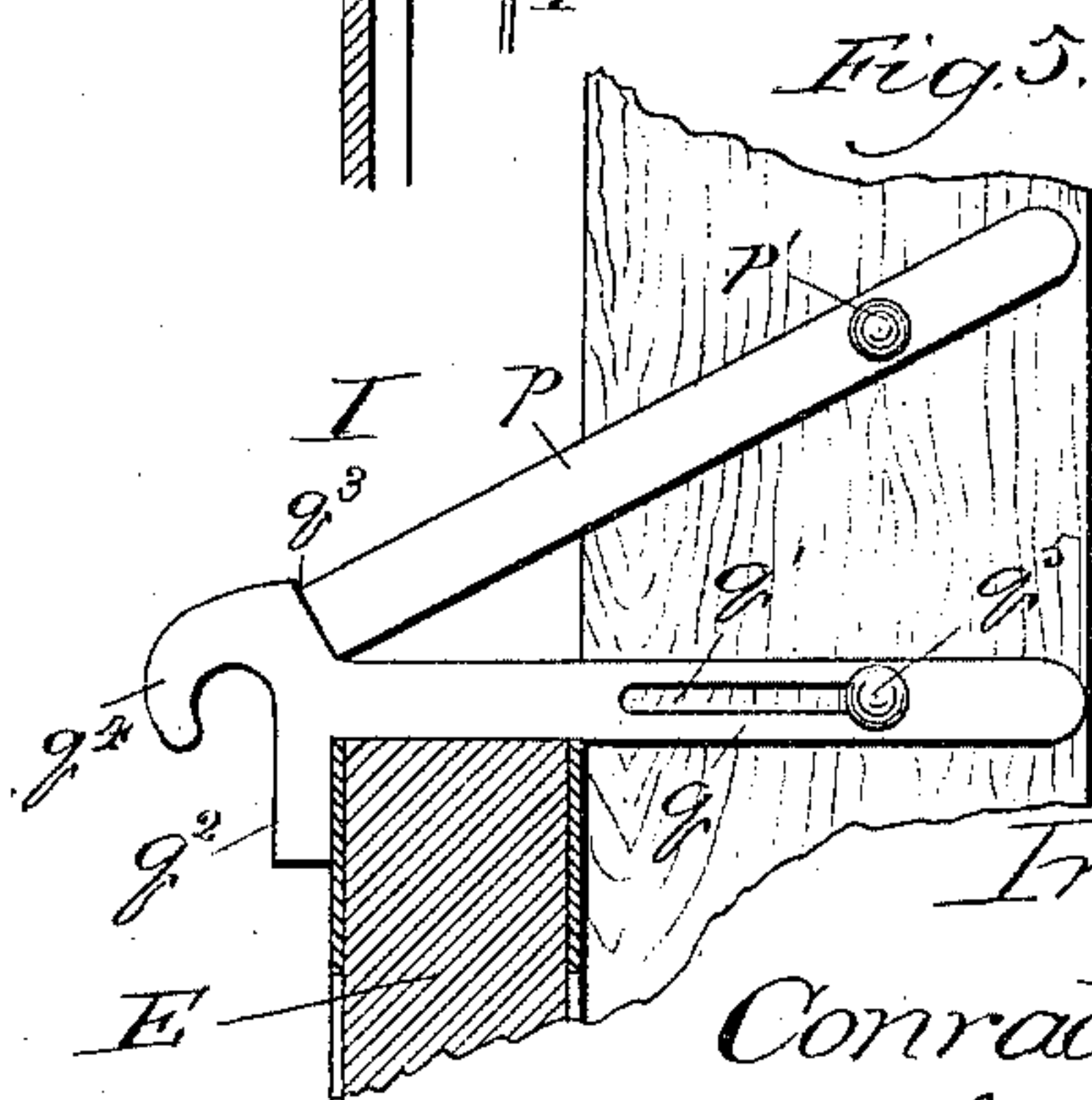
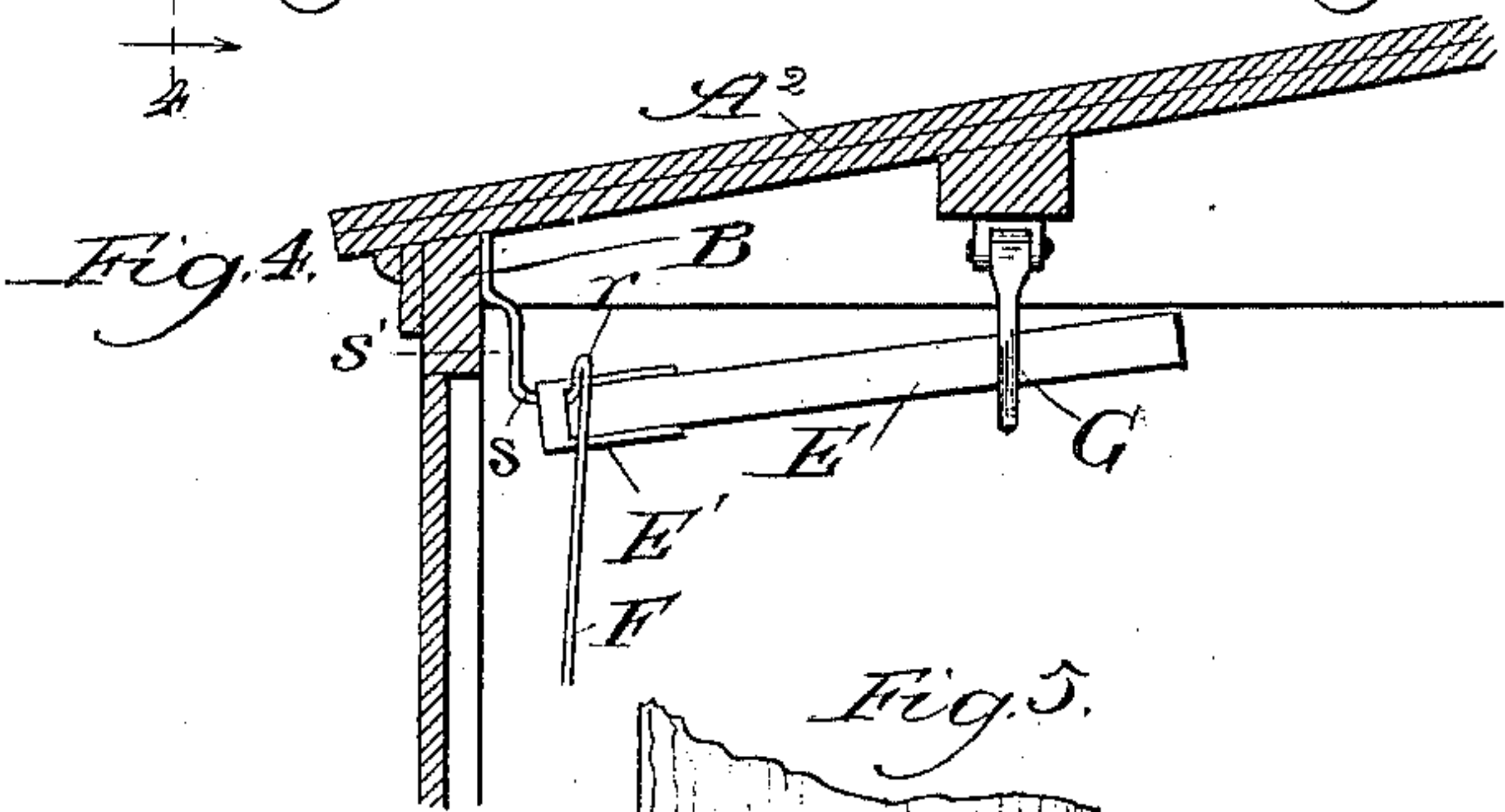
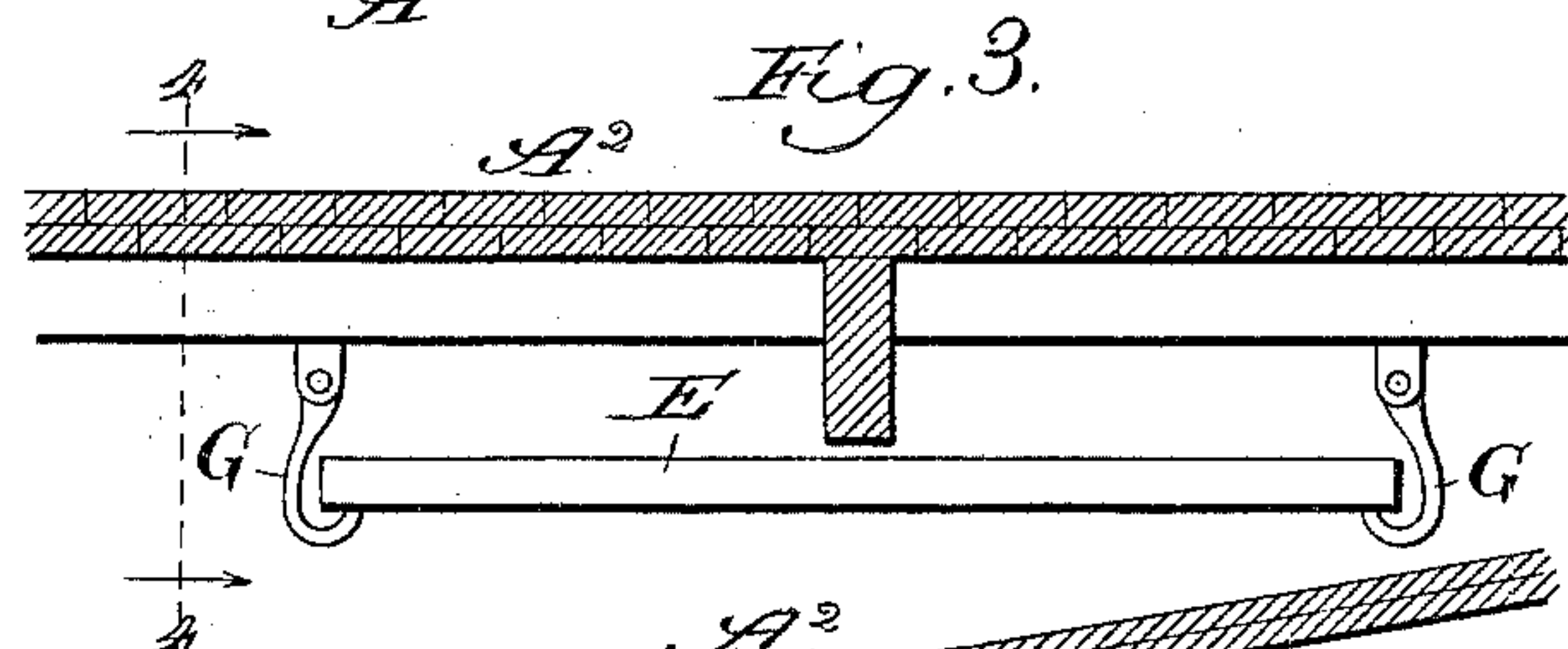
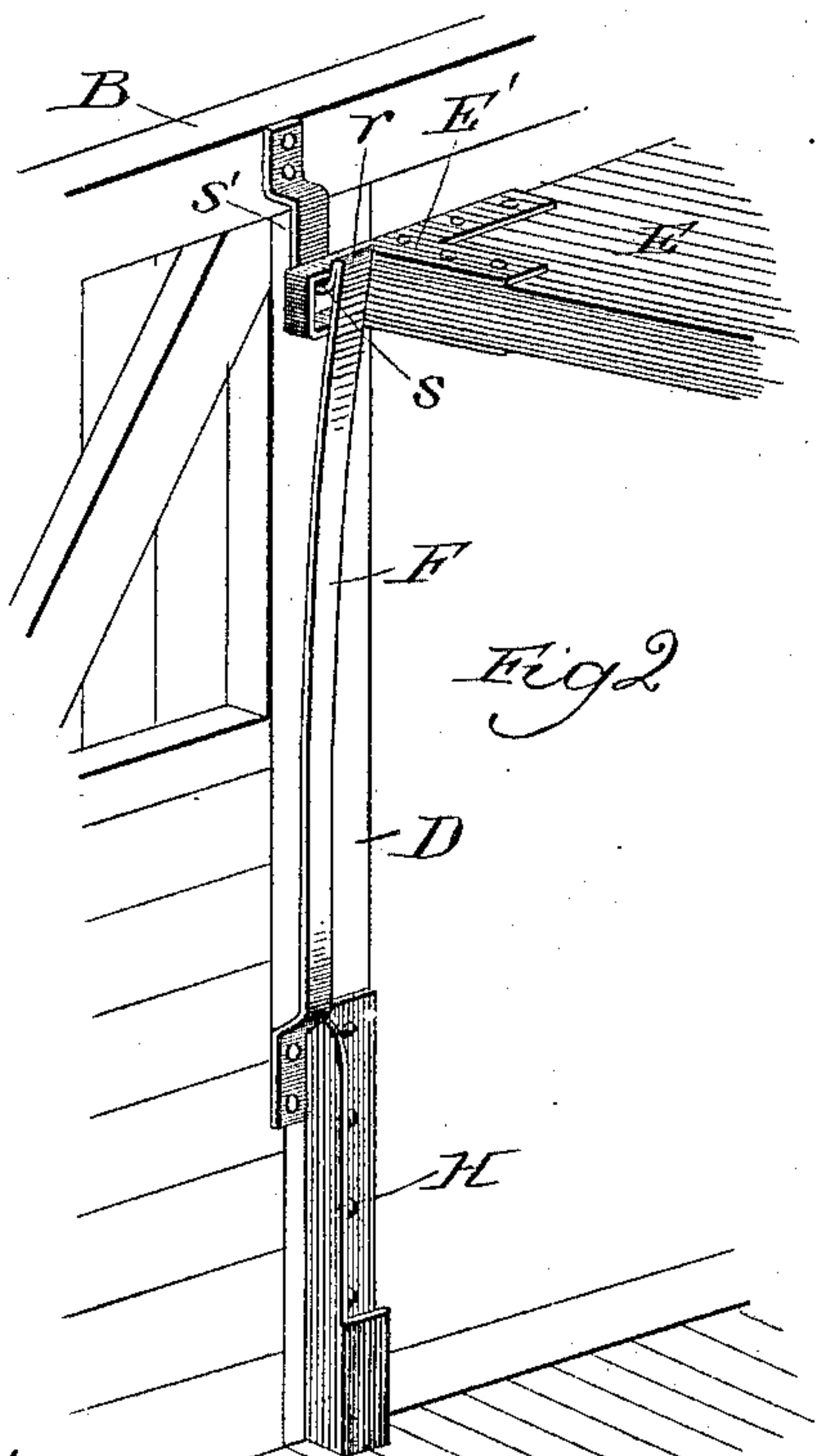
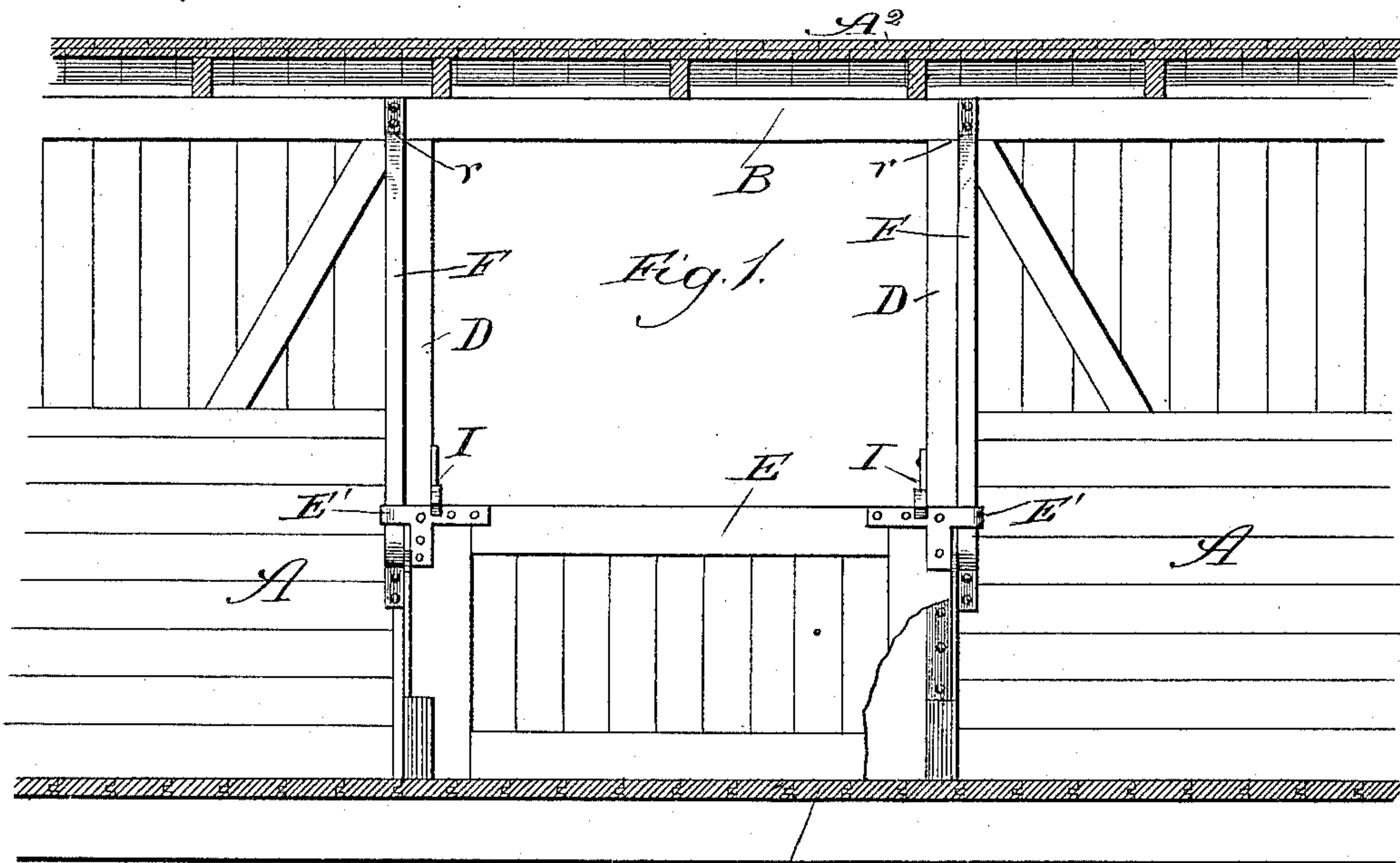


(No Model.)

C. TRIER.
CAR DOOR.

No. 396,903.

Patented Jan. 29, 1889.



Witnesses:
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UNITED STATES PATENT OFFICE.

CONRAD TRIER, OF CHICAGO, ILLINOIS.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 396,903, dated January 29, 1889.

Application filed August 21, 1888. Serial No. 283,356. (No model.)

To all whom it may concern:

Be it known that I, CONRAD TRIER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Grain-Doors for Cars, of which the following is a specification.

My invention relates to improvements in doors for freight-cars, and especially cars of the kind generally in use for the transportation of grain, which close only the lower portions of the openings in the sides of the car, and which when opened or not in use are raised toward the top of the doorway and swung to horizontal planes, where they are held by mechanism provided for the purpose.

The objects of my improvements are, first, to provide guides for the door on opposite sides of the opening of improved construction, which shall, when the door is raised, prevent the possibility of its being shaken from its elevated position by any jarring to which the car may be subjected; second, to afford an improved form of retaining device to secure the door in its adjusted position when swung back to a horizontal or substantially horizontal plane; third, to afford shields on the door-casing adjacent to the lateral edges of the door to prevent grain from being jarred out between the edges of the door and its casing by the motion of the car while in transit, and, fourth, to provide an improved form of lock to hold the door firmly down when closed.

To these ends my invention consists in the general construction of my improvements; and it further consists in details of construction and combinations of parts.

In the drawings, Figure 1 is a broken sectional elevation of a grain-car, showing one side of its interior provided with my improved construction of grain-door; Fig. 2, a broken perspective view taken on the inside of the car and illustrating the grain-door as elevated and swung back; Fig. 3, a broken sectional view of an upper portion of the car, showing my improved means for retaining the door in its horizontal elevated position; Fig. 4, a section taken on the line 4 4 of Fig. 3 and viewed in the direction of the arrow; and Fig. 5, a broken partly-sectional view of

the door and casing, showing my improved locking device for the door.

A is a car, of which A' is the floor and A² the roof. 55

B is a "plate," which forms, also, the upper part of the door-case, and D D are the door-posts.

E is a grain-door of the kind generally in use, closing only the lower part of the door-opening and overlapping the door-posts D at opposite edges. 60

E' E' are metal guide-loops, firmly secured to the grain-door to embrace the latter toward upper opposite corners and project beyond its lateral edges, as shown. 65

F F are strips of stiff metal, firmly secured toward opposite extremities, respectively, to the door-posts D and plate B, and bent in the manner shown to afford guides, preferably inclining away from the door-posts as they extend upward, and to afford, also, toward their extremities shoulders r, depressed seats, s, and recesses s'. 70

The guide-loops E' surround the guides F, and, as the door is raised to open it, slide upon the latter to the height of the shoulders r, when the sides of the loops E' toward the outside of the car enter the recesses s', and the sides of the loops toward the inside of the car are drawn over the shoulders r to the seats s, into which they descend as the door is released and operate as hangers. While in this vertical position the door as it rests on the seats s is, owing to the shoulders r, secure against danger of being jarred from its elevated position by motion of the car, and especially by the bumping to which a car while side-tracked for unloading is apt to be subjected by the switching of cars about it. This feature of my improvement is important for the reason that in stormy weather or when the sun is beating down upon that side of the car it is frequently desirable during unloading to have the door, when elevated in vertical position, to close the upper part of the door-opening. 85 90 95

G G are swinging catches depending from the ceiling of the car, preferably at a distance corresponding with about two-thirds of the height of the door E from the door-posts D. When it is desired to clear the entire open- 100

ing, the lower end of the door is swung upward, the guide-loop hangers E' turning in the seats s . The swinging catches G hang normally in the paths of the lateral edges of the grain-door, and as the latter is swung past them they are forced aside and afterward swing back of their own accord to engage with and retain it. The arrangement of catches above described, beside the security they afford over the retaining-hooks commonly in use, which engage the door at its lower edge, prevents warping of the door. When a grain-door has been exposed to the rain and is suspended, while wet, at opposite extremities, it has a tendency to sag at the middle, which in a great measure destroys its utility. With my disposition of the catches this difficulty is obviated, as they engage the door at opposite edges between its middle and free end and uphold the part which would otherwise have a tendency to warp.

H H are shields secured to the door-posts D on the inside of the car and arranged to receive the lateral edges of the grain-door E . Each shield H is formed, preferably, from a single metal sheet or plate, bent to afford three sides and form a channel for the reception of the lateral edges of the door. Each shield is fastened in place on one side, and its opposite side is cut away toward the top to facilitate the guidance of the door into the channel. The shield H performs the double office of preventing the escape of grain between the lateral edges of the door and the casing and of holding the door firmly in place against the door-posts toward its lower side.

My improved construction of guide, by affording a depressed seat for the door-hanger E on its upper side, makes it impossible to lower the door unless the latter is first brought to a vertical position. A jarring motion of the car, therefore, cannot disengage the guide-loop hangers from their seats and cause the upper end of the door to drop without the disengagement first of the lateral edges of the door from the swinging catches G , which a jarring motion of the car cannot affect. When the grain-door is down or closed and the car loaded with grain, it becomes necessary to secure the door firmly in its closed condition to prevent its being raised by the jarring of the car while in transit, which would permit the grain to leak out. I therefore provide locking mechanism I I upon the door-posts to engage the door at its upper edge and hold it down. The locks I comprise each a latch, q , and locking-bar p . Each latch q comprises a metal bar provided with a lon-

gitudinal slot, q' , a flange, q^2 , a shoulder, q^3 , and a lifting-hook, q^4 . The latches are pivoted to the sides of the door-posts, adjacent to the door-opening, by headed pins q^5 . The slots q' allow the latches to be slid back and forth upon the pins q^5 , and in the most advanced position of the latches the flanges q^2 engage the inner side of the grain-door E , as shown. When withdrawn to bring the forward ends of the slots q' to the pivots q^5 , the latches may be readily turned out of the path of the door. The locking-bars p are pivoted at p' to the door-posts, above the latches q , and when the latter are advanced and engage the door, as above described, the ends of the locking-bars fit against the shoulders q^3 , as shown, and prevent raising of the latches, which thus lock the door. It is obvious that only one lock I might be employed, instead of two, and that the slot q' , flange q^2 , and lifting-hook q^4 on the latch could be dispensed with, as they are merely desirable adjuncts, which are not necessary to the operativeness of the device.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a freight-car, the combination, with the grain-door E , of guide-loop hangers E' upon the door and guides F upon the door-casing, provided toward their upper extremities with shoulders r and depressed seats s on the outer sides of the guides, substantially as described.

2. In a freight-car, the combination, with the grain-door E , of guide-loop hangers E' upon the door, guides F upon the door-casing, provided toward their upper extremities with shoulders r and depressed seats s on the outer sides of the guides, and catches G , depending from the ceiling of the car in the path of the lateral edges of the door E , substantially as described.

3. In a freight-car, the combination, with the door E , of guide-loop hangers E' upon the door, guides F , provided toward their upper extremities with shoulders r , depressed seats s on their outer sides to receive the loops E' , which slide upon the guides, and recesses s' on the inner sides of the latter, catches G , depending from the ceiling of the car in the path of the lateral edges of the door E , and vertical shields H along the lower portions of the sides of the door-casing, provided with retaining-flanges for the door in its lowered position, substantially as described.

CONRAD TRIER.

In presence of—

M. J. BOWERS,

J. W. DYRENFORTH.