

(No Model.)

N. BARNEY.
MEANS FOR OPERATING CAR DOORS.

No. 583,019.

Patented May 25, 1897.

Fig. 1.

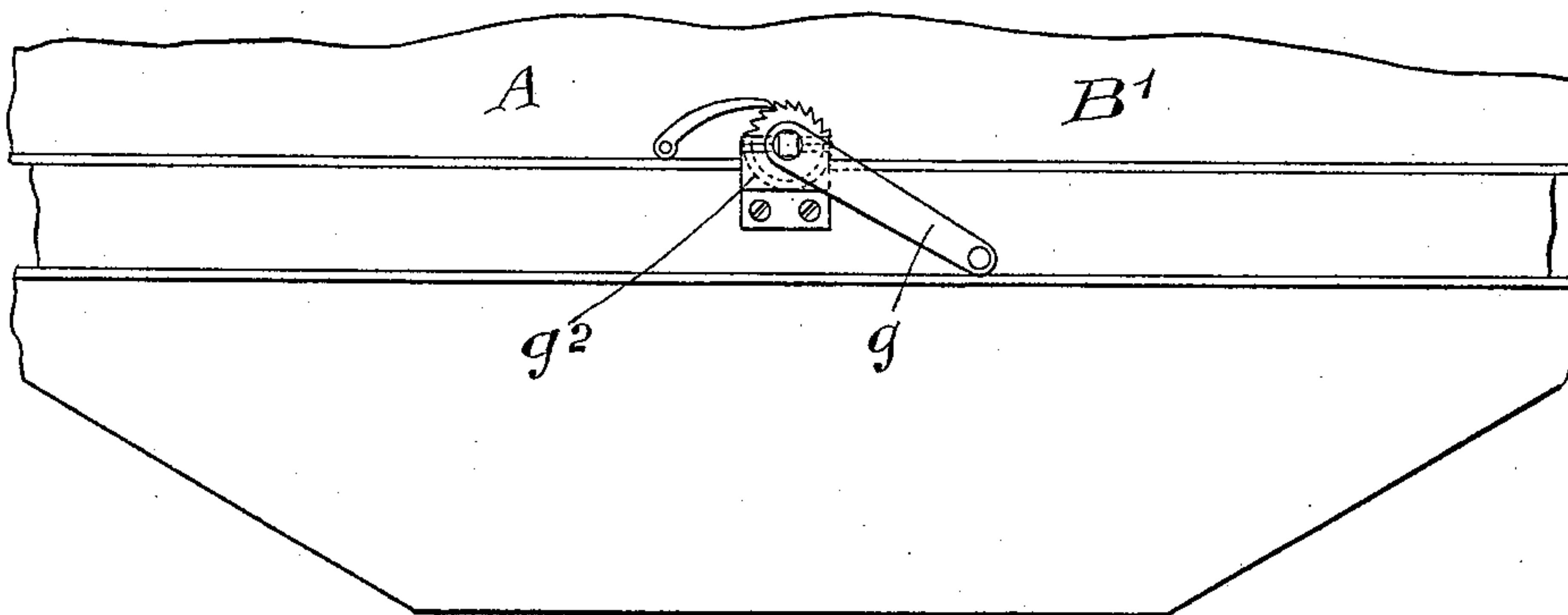


Fig. 2.

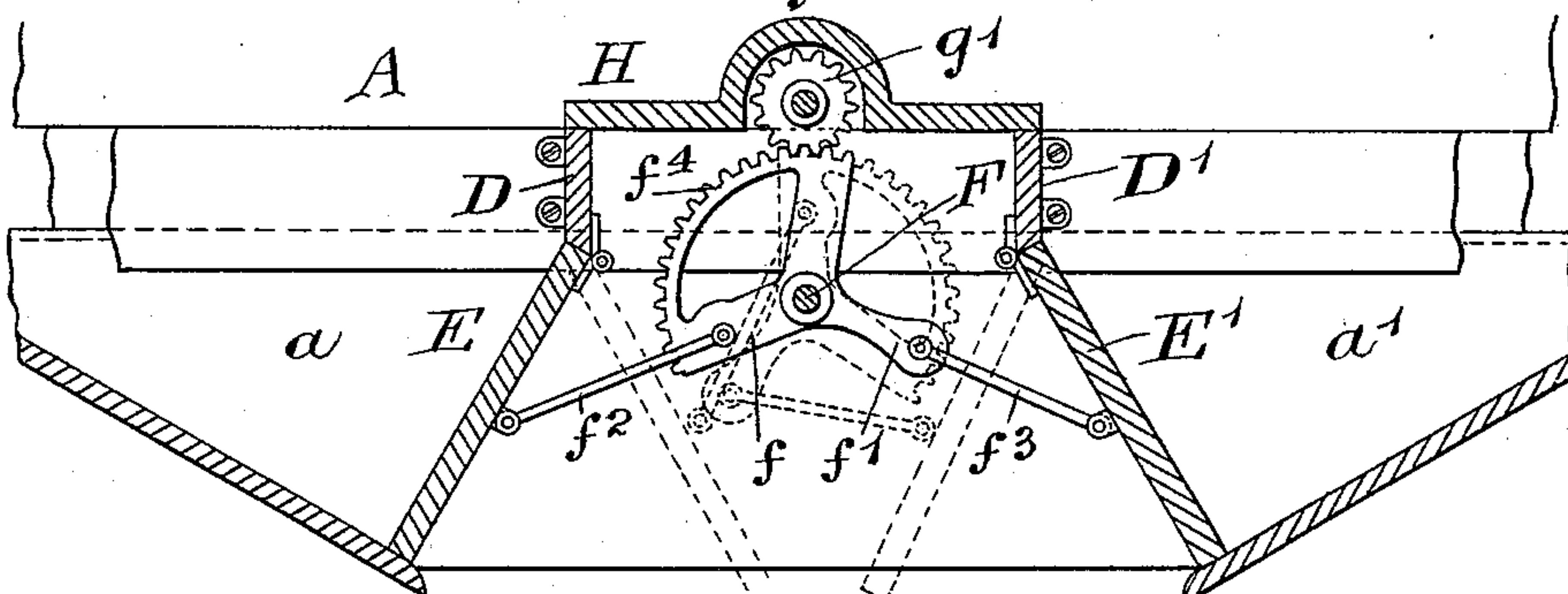
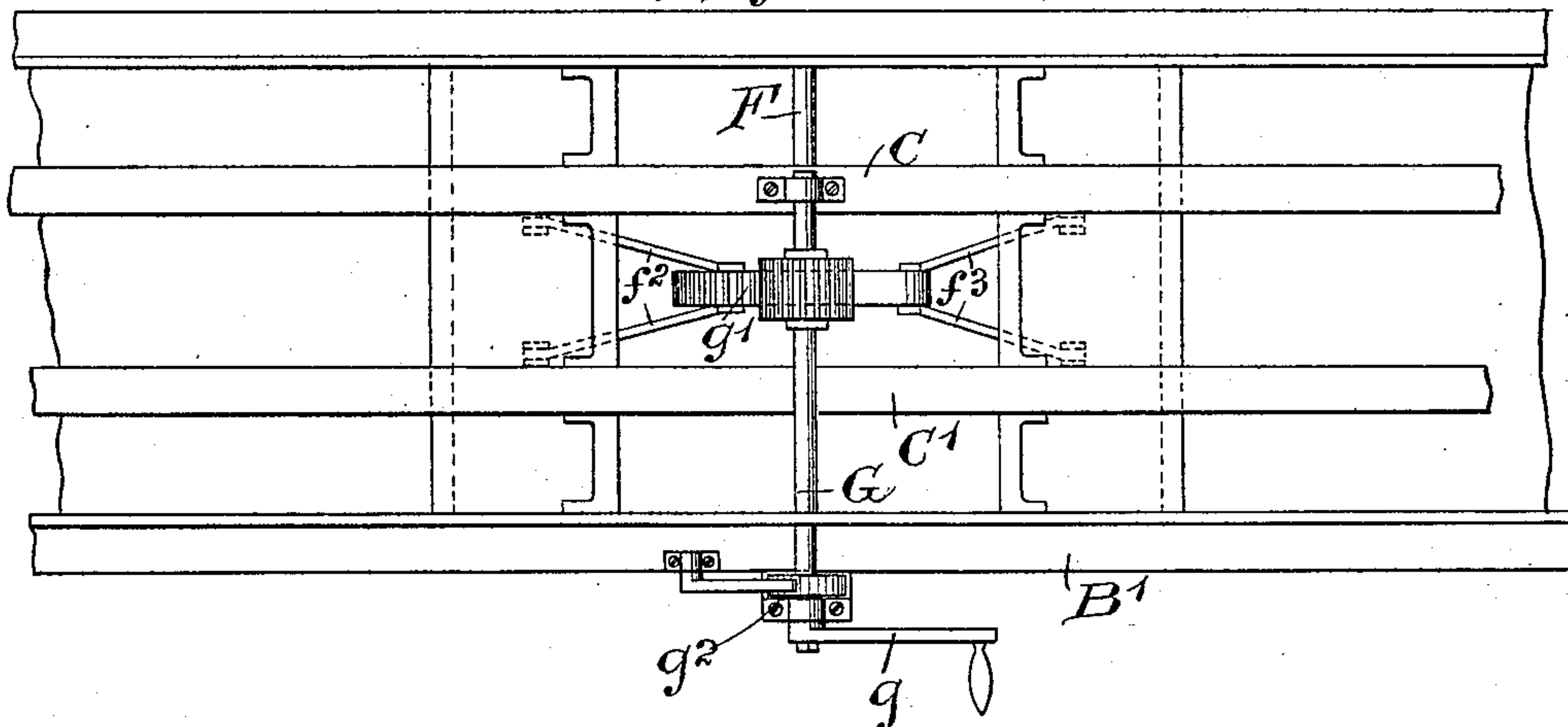


Fig. 3.



Witnesses:-
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UNITED STATES PATENT OFFICE.

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MEANS FOR OPERATING CAR-DOORS.

SPECIFICATION forming part of Letters Patent No. 583,019, dated May 25, 1897.

Application filed September 24, 1896. Serial No. 606,836. (No model.)

To all whom it may concern:

Be it known that I, NATHAN BARNEY, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Means for Operating Car-Doors, of which the following is a specification.

The object of my invention is to provide a new and effective means for opening and closing the trap-doors in the bottom of cars of the double-hopper gondola type.

A further object is to provide means for opening and closing the said doors, which will be very strong and in which the doors are locked when in their closed position, whereby strain is taken off the means for opening and closing the said doors.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a partial side view of a car of the double-hopper gondola type. Fig. 2 is a longitudinal vertical section through the same; and Fig. 3 is a top plan view of the same, the cover for the operating parts being removed.

The body of the car is denoted by A, and it is provided with a pair of hoppers $a a'$. The side rails of the car are denoted by B B' and the centrally-located longitudinal girders by C C'. Cross-girders D D' extend between the side rails and longitudinal girders near the center of the car, and to the lower edges of the said cross-girders are hinged the upper edges of a pair of swinging doors E E', which are adapted to open and close the mouths of the hoppers $a a'$, respectively. These doors are so located that they are swung toward and away from each other to close the said mouths. A rock-shaft F extends transversely through the car about midway between the upper portions of the swinging doors E E', and above the said shaft is mounted a suitable operating-shaft G, which extends beyond the side of the car and is provided with a suitable operating crank-handle g .

The rock-shaft F is provided with a pair of crank-arms $f f'$, extending laterally therefrom, and the ends of the said crank-arms are connected with the swinging doors E and E' at a point intermediate their hinged connec-

tion and their outer ends by suitable connecting-rods $f^2 f^3$. In the form shown in the accompanying drawings there are a pair of each of the connecting-rods $f^2 f^3$, the pair of rods f^2 being secured at their inner ends to the opposite sides of the crank-arm f , and from thence flaring outwardly and connected at their outer ends to the swinging door E. Similarly the pair of connecting-rods f^3 are secured at their inner ends to the opposite sides of the crank-arm f' , and from thence they flare outwardly and are secured to the swinging door E'.

The operating-shaft G has a geared connection with the rock-shaft F for swinging the doors outwardly and inwardly to close or open the hoppers $a a'$ in the following manner: A pinion g' is mounted on the shaft G, and it intermeshes with a sector-gear f^4 , secured to the rock-shaft F. Instead of a sector-rack f^4 I may provide the rock-shaft F with a complete gear-wheel, meshing with the pinion g' , if so desired. In the accompanying drawings I have shown the sector-rack f^4 and the crank-arms $f f'$ as all formed integral and as located at about the middle of the car. A pawl and ratchet g^2 may be provided for preventing the unintentional movement of the operating-shaft G in the wrong direction. The connecting-arms $f^2 f^3$ are so located that when the doors E E' are closed the hinged connections of each pair of the said bars with the doors, their hinged connection with the crank-arms and the rock-shaft F are in a single line, thereby bringing the said connecting-bars to a dead-center. This arrangement will prevent any undue straining of the geared connection between the rock-shaft F and its operating-shaft G, as the strain upon the doors E E' is directed against the rock-shaft F.

For effectually operating the swinging doors, the inner ends of the connecting-bars $f^2 f^3$ are secured to the crank-arms $f f'$ at different distances from the rock-shaft F, the connecting-bars f^3 being secured at a greater distance from the rock-shaft F than the bars f^2 .

The operating parts of the device may be effectually covered to protect them from dust and dirt and the contents of the car by means of a suitable cover H, which cover rests at its

front and rear upon the cross girders or braces D D'.

In operation, supposing the doors to be closed and it be desired to open them, the operating-shaft G is rotated, and it, by means of its geared connections with the rack F, will rock the arms $f f'$, and they in turn, by means of the connecting-bars $f^2 f^3$, will rock the doors toward each other. When it is desired to close the doors, the operating-shaft G is rotated in the reverse direction, thereby returning the parts to their original position.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. Means for operating the doors of double-

hopper cars, comprising an operating-shaft, a rock-shaft geared thereto, a pair of crank-arms on the said rock-shaft, and connecting-bars secured at their outer ends to the doors and at their inner ends to their respective crank-arms at different distances from the rock-shaft, substantially as set forth.

2. Means for operating the doors of double-hopper cars, comprising an operating-shaft, a rock-shaft geared thereto, a pair of crank-arms on said rock-shaft, and connecting-rods between the doors and their respective crank-arms, the connections between the said rods and arms being such that when the doors are closed the arms are on dead-centers, substantially as set forth.

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Witnesses:

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