S. S. SPEAR.

DEVICES FOR OPERATING DOORS.

No. 194,058. Patented Aug. 14, 1877.

Fig. 2.

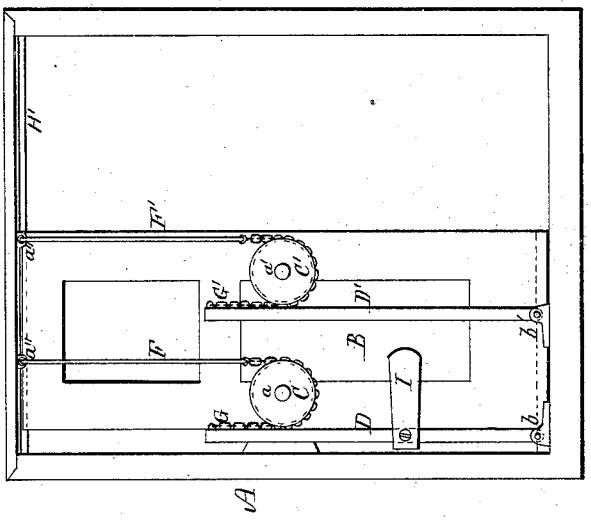
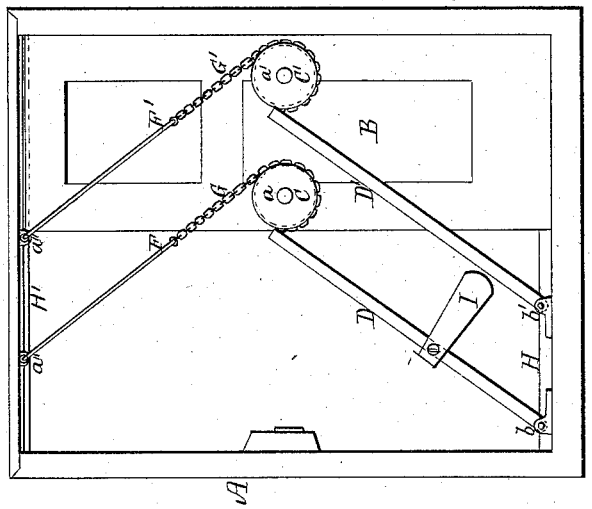


Fig. 1.



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SAMUEL S. SPEAR, OF SOUTH WEYMOUTH, MASSACHUSETTS.

IMPROVEMENT IN DEVICES FOR OPERATING DOORS.

Specification forming part of Letters Patent No. **194,058**, dated August 14, 1877; application filed June 9, 1877.

To all whom it may concern:

Be it known that I, SAMUEL S. SPEAR, of South Weymouth, Norfolk county, State of Massachusetts, have made an invention of Improvements in Shutter or Door Workers, of which the following is a specification:

The drawings accompanying this specification represent, in Figures 1 and 2, elevations of my device as applied to a car-door, with the outer protecting-plate removed.

In these said drawings, A represents what may be considered as the frame-work of the rear end of a street-railway car, while B represents the sliding door thereof.

To one side of the said door B—preferably the inner side—I pivot, by horizontal studs *a* or *a'*, two peripherally-grooved wheels or rollers, C C', these studs and rollers being practically in the same plane, and applied in use to a metallic plate secured to the door.

To one side of each roller I dispose an upright bar, D or D', which is supported and pivoted at bottom by and upon a horizontal pivot, *b* or *b'*, applied to the car-floor, the upper end of each bar terminating at a point in close proximity to the grooved periphery of the next adjacent roller, and about in a horizontal plane with the axis of the latter.

Upon the side of each wheel opposite the bars above named I dispose a rod, F or F', which is suspended from the top of the car-frame by eyebolts *a''*, or other means which permit of swinging or vibratory movements of each rod in consonance with a corresponding movement of the bars D D'.

The lower end of each suspensory, F or F', is connected to the upper end of the next adjacent bar, D or D', by a chain or cord, G or G', which passes partially about the contiguous roller, as shown in the drawings.

The door B may be steadied and guided in its movements in opening and closing by rails H or H', applied to the floor and ceiling of the car; but this is not absolutely essential.

The bars D D', suspensories F F', cords or chains G G', and rollers C C constitute the support of the door B, and, owing to the tilting or vibratory movement of the said bars and rotary movements of the rollers, I reduce the friction upon the door to a very small sum, and this friction may be neutralized or overbalanced by an overhanging weight, I, applied to the lower part of one of the bars D, so that the door will close automatically, if desired, and the force or momentum with which the door closes may be increased or diminished by changing the altitude of the said weight.

When the door is full open, as shown in Fig. 2 of the accompanying drawings, it is essential or necessary to the perfect operation of the mechanism that the bars D D' and rods F F' shall be practically parallel, and shall stand vertically, or, at least, shall not incline in a direction opposite to that they assume when the door is partially or wholly closed.

Under a proper arrangement and adjustment of the mechanism above described, the door, as it reaches its closed position, should come to a bearing on the threshold of the door or the car-floor, and if it is desired to exert a slight stop or drag on the door when in this closed position, to prevent accidental opening, the bars D D' should be shortened somewhat from the length shown in the accompanying drawings, so that the upper end of one or both shall bring up against the periphery of the adjacent roller, and abut against it with slight pressure.

The suspensories or rods F F' and chains or cords G G' may be one and the same—either a rod or chain; but I prefer the arrangement before described.

A door supported and operated as explained moves, in opening and closing, with slight sound and friction. Very little exertion is required to open it, and none, if so desired, to close it.

Though I have described my invention as applied to car-doors, I do not limit its use to such application, as it will be useful in other instances—for example in supporting draws of railway or other bridges, &c.

I claim—

1. The combination, with the door B, of the rollers C C', bars D D', and the rods F F', the whole being substantially as and for purposes stated.

2. The weight I, in combination with the bar D or D', substantially as and for purposes stated.

SAMUEL S. SPEAR.

Witnesses:

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