G. S. KNAPP.

Mounting Car-Doors.

No. 162,930. Patented May 4, 1875.

Fig. 1.

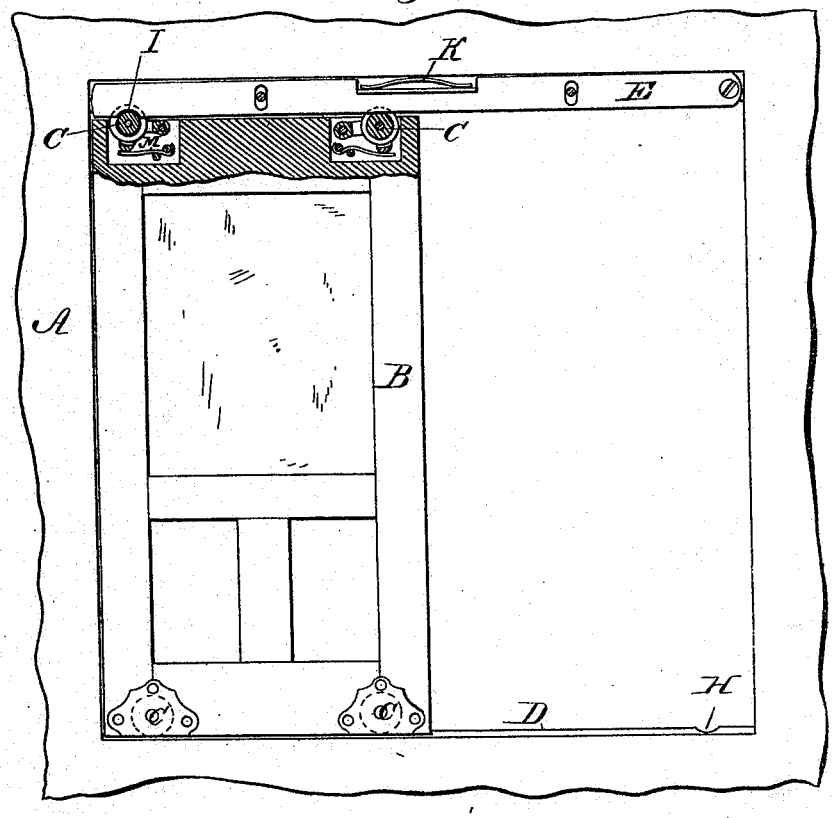
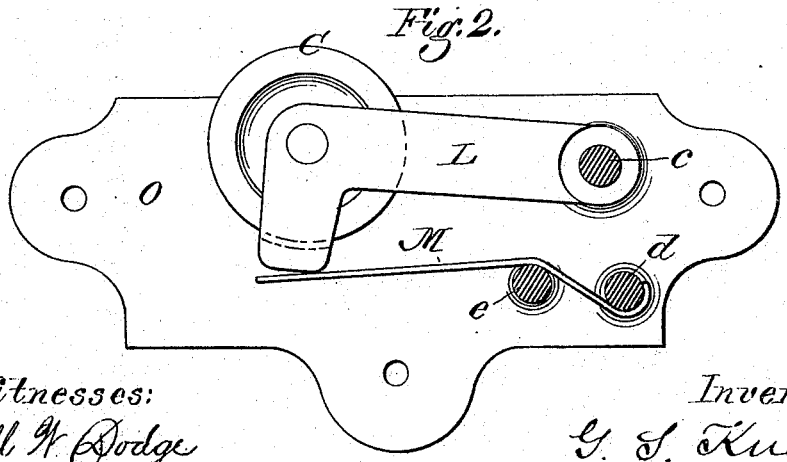


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE S. KNAPP, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MOUNTING CAR-DOORS.

Specification forming part of Letters Patent No. **162,930**, dated May 4, 1875; application filed February 25, 1875.

To all whom it may concern:

Be it known that I, GEORGE S. KNAPP, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Mounting and Holding the Sliding Doors of Street-Cars, of which the following is a specification:

My invention consists in the combination of a sliding car-door on rollers, and rails having notches for the rollers to ride into, in order to hold the door open and shut, the rollers or the rail being made movable and pressed outward by means of a spring.

The object of the invention is, mainly, to provide a cheap, simple, and reliable arrangement for locking the sliding doors of street-cars open and shut, and, incidentally, to prevent the doors from rattling in their frames.

When there are rollers and a guiding-rail at the top of the door, the rail may be notched and forced downward upon the rollers by means of a spring, or the rail may be fixed, and the rollers forced upward against it by means of springs.

I prefer to use rollers and rails at both the top and the bottom of the door, and to make all the rollers movable, and force them against the rails by springs, as in such case the parts move more easily and smoothly, and the door is also held from rattling in its frame.

In the accompanying drawings my arrangement is clearly shown.

Figure 1 represents an elevation of a car-door provided with my improvements, the top of the door being shown in section, in order to expose the parts more clearly. Fig. 2 represents a vertical section through one of the yielding rollers.

A represents the body of the car; B, the sliding door; C, the rollers or wheels attached to the door; D, the rail or track on which the bottom rollers travel, and E the rail on which the top rollers travel, the general arrangement of these parts being the same as in the cars now in common use. The lower rail D is provided, as shown, with a notch or depression, H, near one end, so that when the door is wide open one of its rollers C will drop into the notch and hold the door from moving. The upper rail E is also provided near one end with a notch, I, to receive one of the top rollers when the door is shut, in order to hold the door from opening.

The drawing represents two arrangements for causing the top roller to enter the notch in the top rail; but it should be understood that only one arrangement will be used at a time, or, in other words, that the two are substitutes for or equivalents of each other. One arrangement consists in pivoting the rail or track at one end, or otherwise arranging it so that it can move vertically, and placing a spring, K, above it to force it down upon the rollers. The other arrangement consists in mounting the rollers each in the end of a pivoted arm, L, with a spring, M, to force the arm upward and press the roller against the rail. In order to keep the door from rattling, the rollers at both the top and the bottom of the door may be thus arranged in spring or yielding bearings. The swinging arm L is mounted on a journal or pivot, *c*, between two plates, O, and is slotted or recessed to receive the roller in its middle, and also provided with a strap or stirrup, which passes over the edge of the wheel to form a bearing for the end of the spring. The spring consists of a flat plate, having its rear end bent and seated against two studs or pivots, *d* and *e*, as shown in Fig. 2. The three studs *c*, *d*, and *e* are cast on one of the plates, and their outer ends seated in holes in the other plate, this construction rendering the device both strong and cheap.

The device is applied by cutting away the door at the proper point, and screwing the two plates to its opposite faces, as shown. In the event of the spring being broken, it is only necessary to withdraw the door, swing the arm outward, and slip a new spring in place, after which the arm is turned back in place and the door placed in position.

It is obvious that, while in the drawing I have represented the notch to hold the door open in one rail, and the notch to hold it shut in the other rail, they may both be made in either one of the rails. It is also obvious that, instead of using two locking-notches, a single notch may be used, and the front and rear rollers arranged to lock therein alternately—one when the door is open and the other when it is closed.

By combining the rollers and the notched rails in either of the ways above described, I produce a very cheap, simple, and reliable arrangement for holding the doors from opening or closing as the car rattles along upon the track and around the curves; and when the springs are used, I also prevent the noisy rattling of the doors—a source of great annoyance in the ordinary cars.

Having described my invention, what I claim is—

1. The sliding car-door mounted on rollers, and a notched rail or track therefor, the rollers or the rail being made movable, and acted upon by a spring, all combined substantially as shown.

2. In combination with the sliding car-door and the notched rail or track, the swinging arm L, roller C, and spring M, to operate substantially as shown.

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