

(No Model.)

2 Sheets—Sheet 1.

J. R. FLAGG & C. E. LILLY.
RAILWAY SWITCHING DEVICE.

No. 569,751.

Patented Oct. 20, 1896.

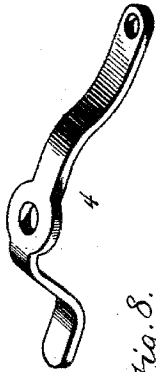


Fig. 8.



Fig. 7.

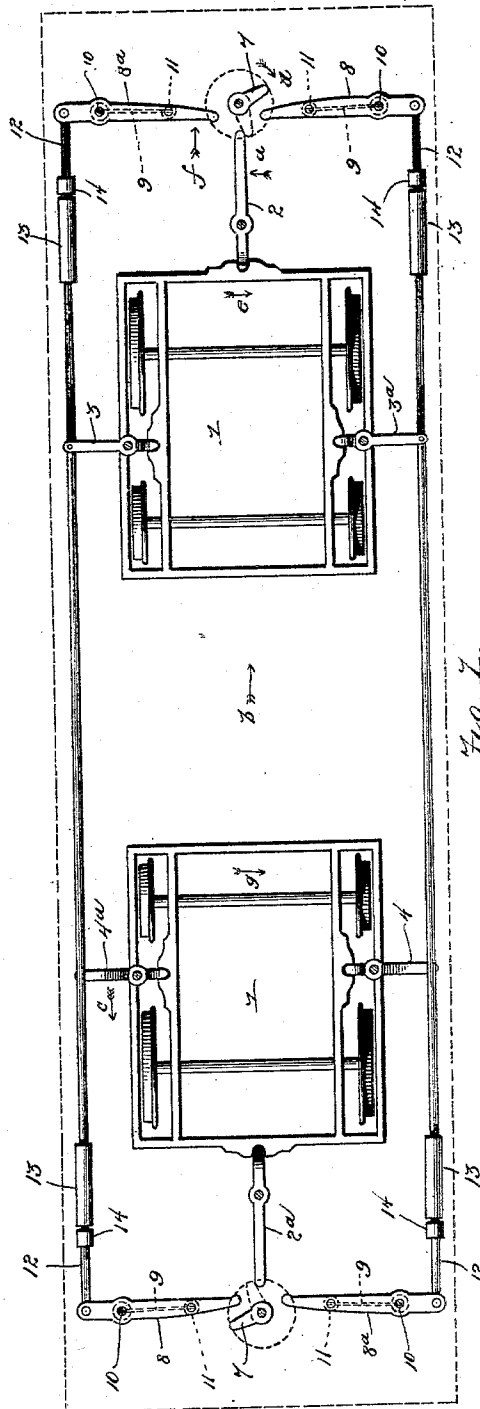


Fig. 1.

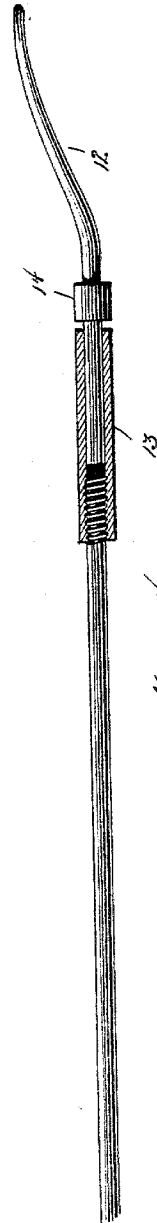


Fig. 4.

Witnesses

E. H. Monroe
O. E. Doyle

By their Attorneys,

C. A. Snow & Co.

Inventors
James R. Flagg.
Charles E. Lilly.

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2 Sheets—Sheet 2.

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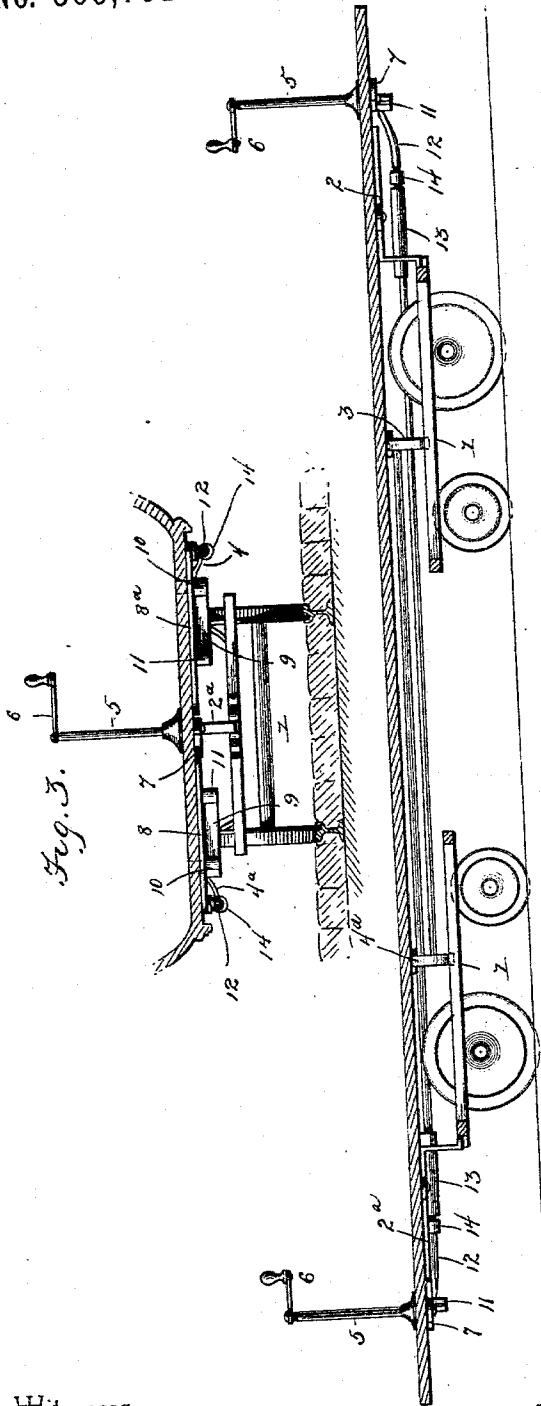


Fig. 2.

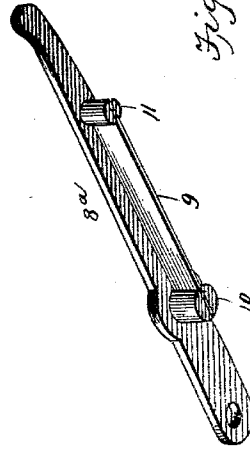


Fig. 5.

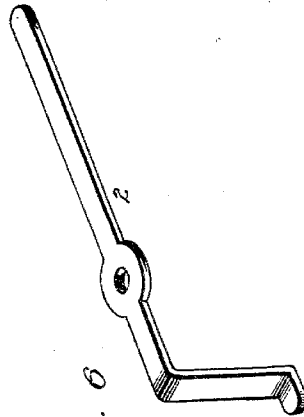


Fig. 6.

Witnesses

E. H. Monroe
[Signature]

By *their* Attorneys,

C. A. Snow & Co.

Inventors
James R. Flagg
Charles E. Lilly

UNITED STATES PATENT OFFICE.

JAMES R. FLAGG, OF FREWSBURG, AND CHARLES E. LILLY, OF JAMESTOWN, NEW YORK.

RAILWAY SWITCHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 569,751, dated October 20, 1896.

Application filed July 22, 1896. Serial No. 600,137. (No model.)

To all whom it may concern:

Be it known that we, JAMES R. FLAGG, residing at Frewsburg, and CHARLES E. LILLY, residing at Jamestown, in the county of Chautauqua, State of New York, citizens of the United States, have invented a new and useful Railroad-Switch, of which the following is a specification.

Our invention relates to switch mechanism for street-cars, and has for its object to provide simple and efficient means, especially adapted for use in connection with eight-wheeled cars, for turning the trucks to enter switches, the front and rear trucks being operated successively by the same means under the control of the grip or motorman.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of car-trucks and switch mechanism constructed in accordance with our invention, showing the car in dotted lines. Fig. 2 is a longitudinal section of the switch mechanism, showing the contiguous portions of the car and trucks. Fig. 3 is a transverse section. Fig. 4 is a detail view, partly in section, of one of the connecting-rods. Fig. 5 is a similar view of one of the intermediate levers with its actuating-spring. Fig. 6 is a similar view of one of the end shifting-levers. Figs. 7 and 8 are similar views of the side shifting-levers employed, respectively, in connection with the front and rear trucks.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the trucks, which are mounted, as in the ordinary construction, to turn and thus facilitate the switching of the car, and in connection with the trucks we employ end switch-levers 2 and 2^a and opposite lateral switch-levers 3 3^a and 4 4^a.

It will be seen that the movement of the end switch-lever 2 in the direction indicated by the arrow *a* in Fig. 1 will swing the front end of the contiguous or front truck (assuming that the car is moving in the direction of the arrow *b*) toward the right to enter a switch

leading in that direction, and that a movement of the lateral lever 4^a in the direction indicated by the arrow *c* will have a corresponding effect upon the rear truck, or will swing it to the right to follow the front truck.

In order to secure this coöperation of the switch-levers and thus manipulate the trucks successively as they approach the switch which it is desired to enter, we employ an operating device consisting of a crank-shaft 5, preferably provided, within reach of the gripman or motorman, with a handle 6, and having a crank 7, which swings in the plane of the long arm of the switch-lever 2, and hence is adapted to engage the same to move it in the direction above mentioned or in the opposite direction, as may be required.

Yielding intermediate levers 8 and 8^a are arranged upon each side of the crank-shaft with their contiguous inner extremities in the path of the crank-arm 7, each of said levers being provided with a return-spring 9, which is connected at one end to the stub-shaft 10, upon which the lever is mounted, and at its other end to a depending stud 11 on the lever near its free end, and the outer or short arm of each intermediate lever is connected with one of the lateral switch-levers by means of a rod 12, the lever 8 at one end of the car (namely, that end which we have assumed to be the front end) being connected by means of its rod with the lateral switch-lever 4 of the rear truck, while the lever 8^a at the same end of the car is connected with the lateral lever 4^a at the opposite side of the rear truck. In the same way the levers at the rear end are connected with the lateral levers of the front truck respectively upon corresponding sides of the car.

Each connecting-rod is of sectional construction with its sections connected by a sliding joint 13, consisting of a tube attached to the extremity of one section to receive the extremity of the other section, the movable section, which is preferably connected to the intermediate lever, being provided with a collar 14 to engage the end of the tube and thereby impart longitudinal movement to the body or main portion of the rod.

The operation of the mechanism is as follows: Starting with the parts in the positions

illustrated in full lines in Fig. 1, with the crank-arm at the front end of the car in advance of the contiguous extremities of the intermediate levers, if it is desired to enter a switch toward the right the crank-arm is turned in the direction indicated by the arrow *d* until it passes the end of the intermediate lever 8, which yields and is returned to its normal position by means of its actuating-spring without affecting the position of the body portion of the connecting-rod. The crank-arm then comes in contact with the extremity of the front shifting-lever 2 and turns the latter in the direction indicated by the arrow *a*, thus turning the front truck to the right, as shown by the arrow *e*. The truck should be held in this position until it has entered the switch, when the continued turning of the crank-arm will release the lever 2 and bring the crank-arm in contact with the extremity of the intermediate lever 8^a, thus swinging the latter in the direction indicated by the arrow *f*, and communicating motion in the direction of the arrow *c* to the side shifting-lever 4^a of the rear truck and turning the latter toward the right, as shown by the arrow *g*. After the rear truck has entered the switch the crank should be turned to release it from the lever 8^a and thus arrange the crank-arm in advance of the extremities of the intermediate levers, where it is in position for subsequent operation to turn the trucks either toward the right (as above described) or toward the left.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described our invention, what we claim is—

1. The combination with pivotal trucks, of shifting-levers mounted for horizontal movement and operatively connected with the trucks, a crank-shaft, and operating connections between the crank-shaft and said levers whereby the rotation of the crank-shaft in one direction will communicate motion to levers connected respectively with the front and rear trucks, to turn said trucks in the same direction, substantially as specified.

2. The combination with pivotal trucks, of shifting-levers mounted to swing in a horizontal plane and operatively connected respectively with the front and rear trucks, crank-arms arranged in operative relation respectively with the shifting-levers connected with the contiguous trucks, intermediate le-

vers arranged in the paths of said crank-arms, and connections between each intermediate lever and a shifting-lever connected with the remote truck, whereby the operation of one crank-arm communicates motion in the same direction to the contiguous and remote trucks, substantially as specified.

3. The combination with pivotal trucks, of end and lateral shifting-levers operatively connected respectively with the front and rear trucks, a crank-arm arranged in the path of the end shifting-lever of the front truck, opposite intermediate levers arranged with their free ends in the path of the crank-arm, and operating connections between said intermediate levers and the lateral shifting-levers of the rear truck, substantially as specified.

4. The combination with pivotal trucks, of end and lateral shifting-levers operatively connected respectively with the front and rear trucks, a crank-arm arranged in the plane of the end shifting-lever, intermediate yielding-mounted levers arranged with their free ends in the path of the crank-arm, and connections between said intermediate levers and the lateral shifting-levers, each connection including a sectional connecting-rod having its sections mounted for independent sliding movement in one direction, whereby the intermediate lever is adapted to yield independently when encountered by the crank-arm moving in one direction, substantially as specified.

5. The combination with pivotal trucks, of end and lateral shifting-levers operatively connected respectively with said trucks, a crank-arm mounted in the plane of the end shifting-lever, intermediate spring-actuated levers arranged with their free ends in the path of said crank-arm, and a sectional connecting-rod between the outer end of each intermediate lever and the corresponding lateral lever of the rear truck, the sections of said rod being connected by a sliding joint including a tubular guide fitted upon one section to receive the extremity of the other section, and a shoulder on the second-named section to engage the extremity of the guide, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JAMES R. FLAGG.
CHARLES E. LILLY.

Witnesses:

FRED M. COOPER,
CLARE A. PICKARD.