(No Model.)

R. T. SMITH.

STREET RAILWAY SWITCHING DEVICE.

No. 433,547. Patented Aug. 5, 1890.

FIG. 1.

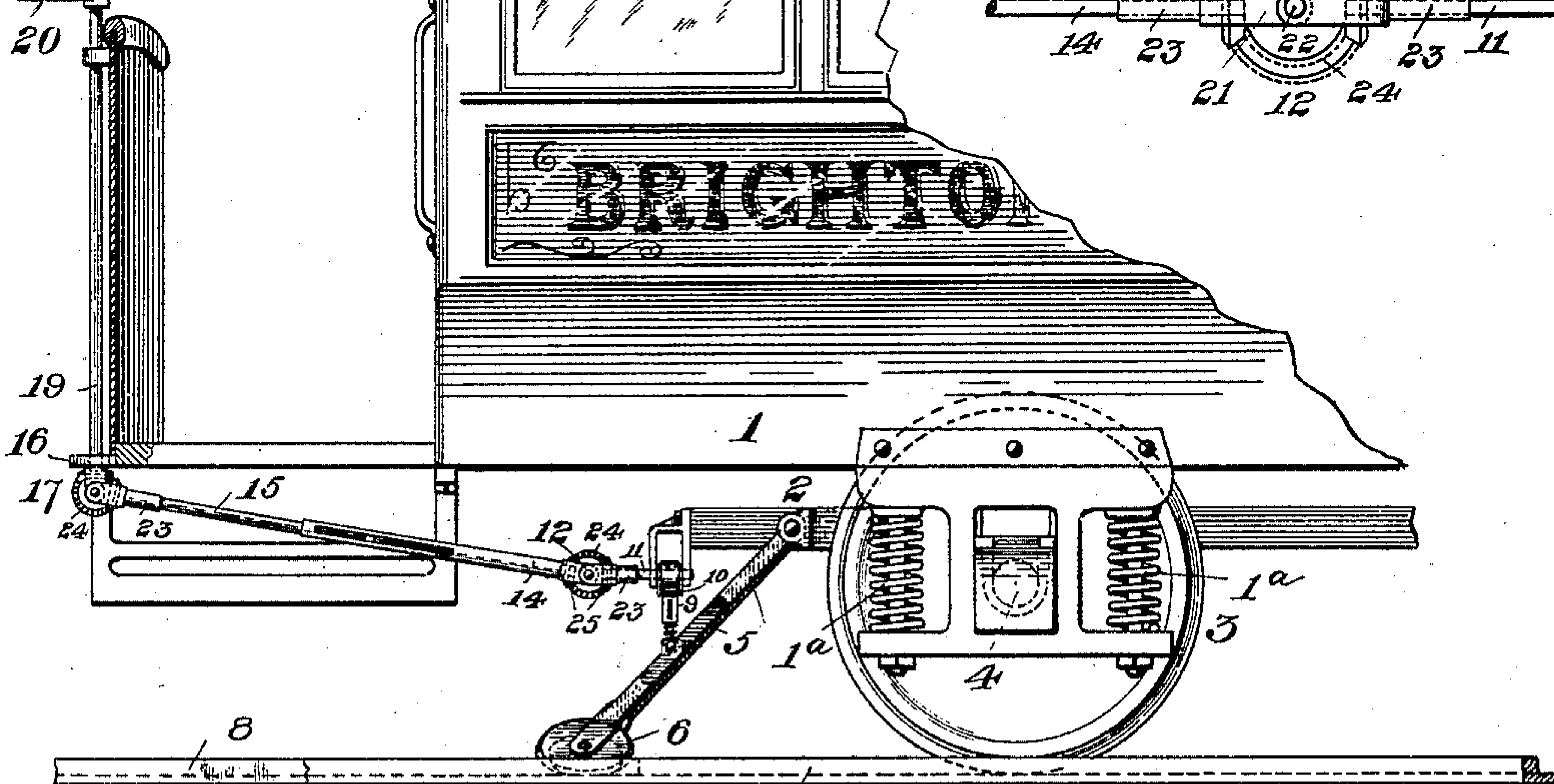


FIG. 5.

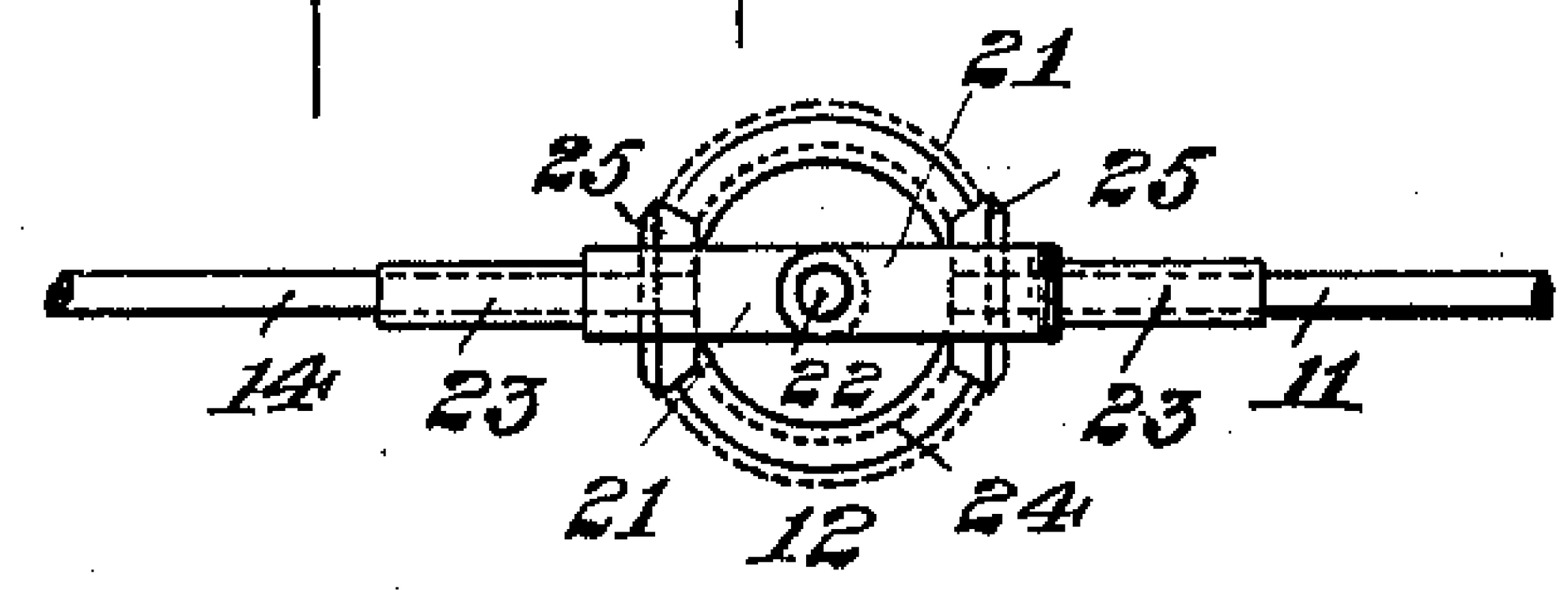


FIG. 4.

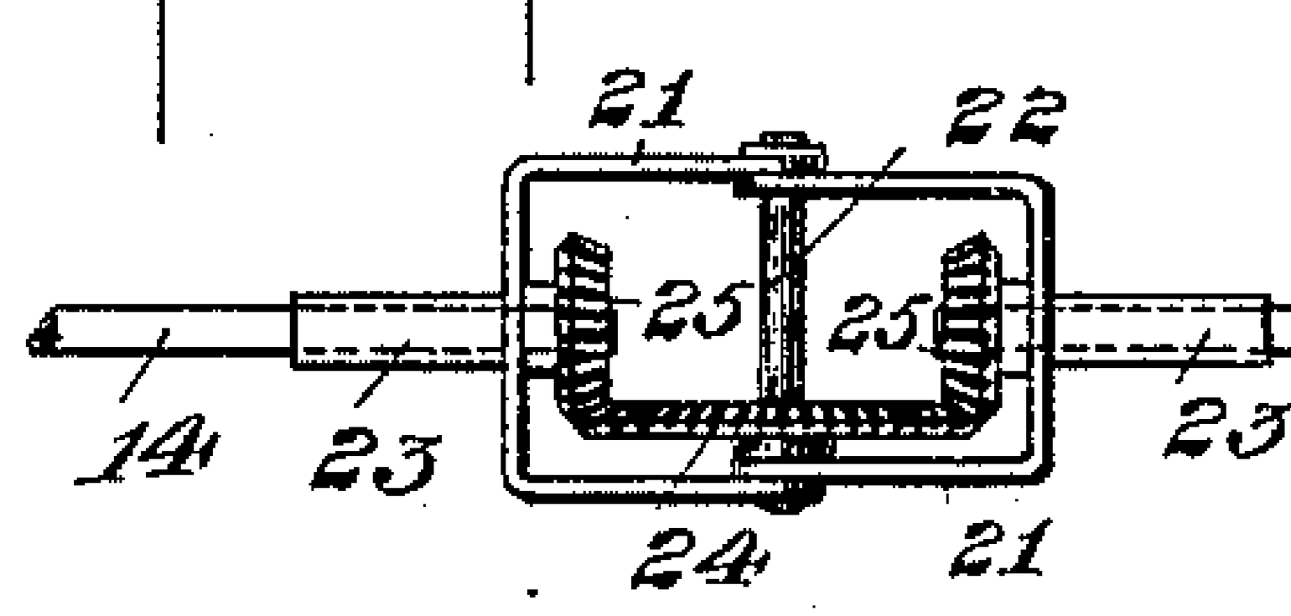


FIG. 2.

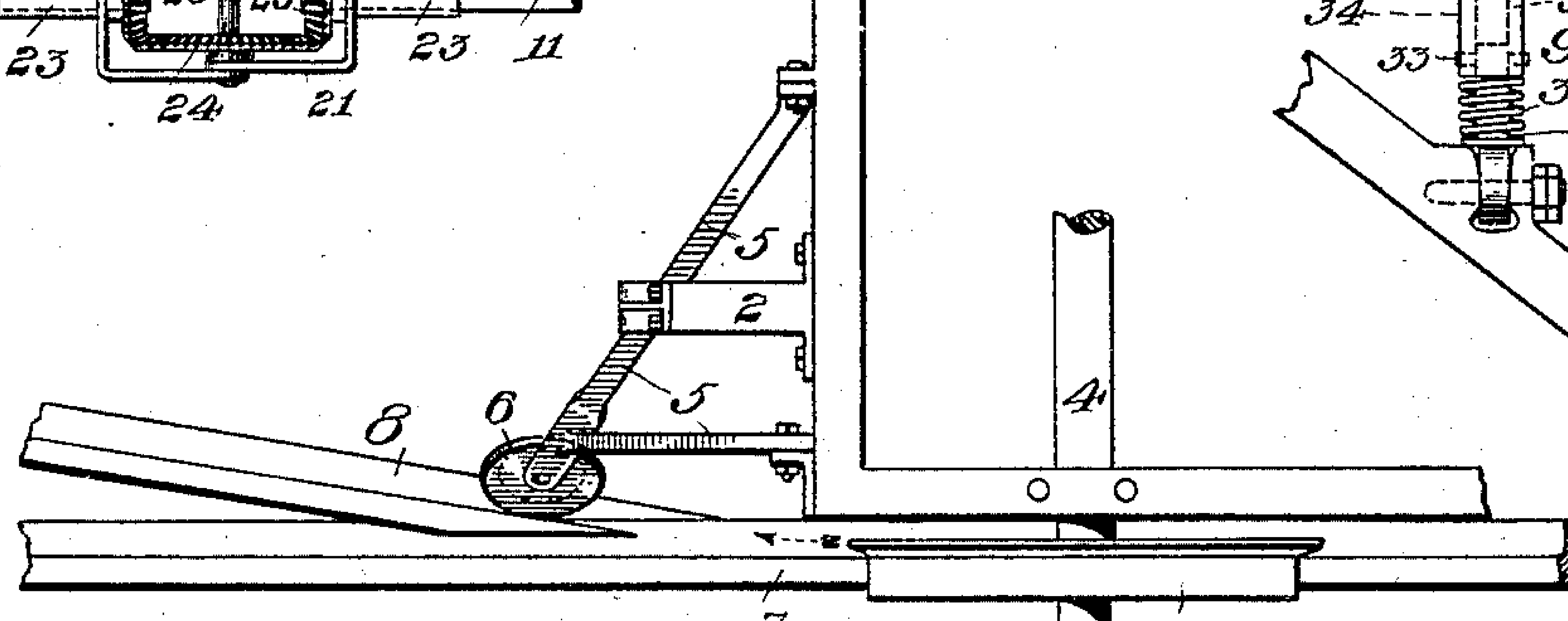


FIG. 6.

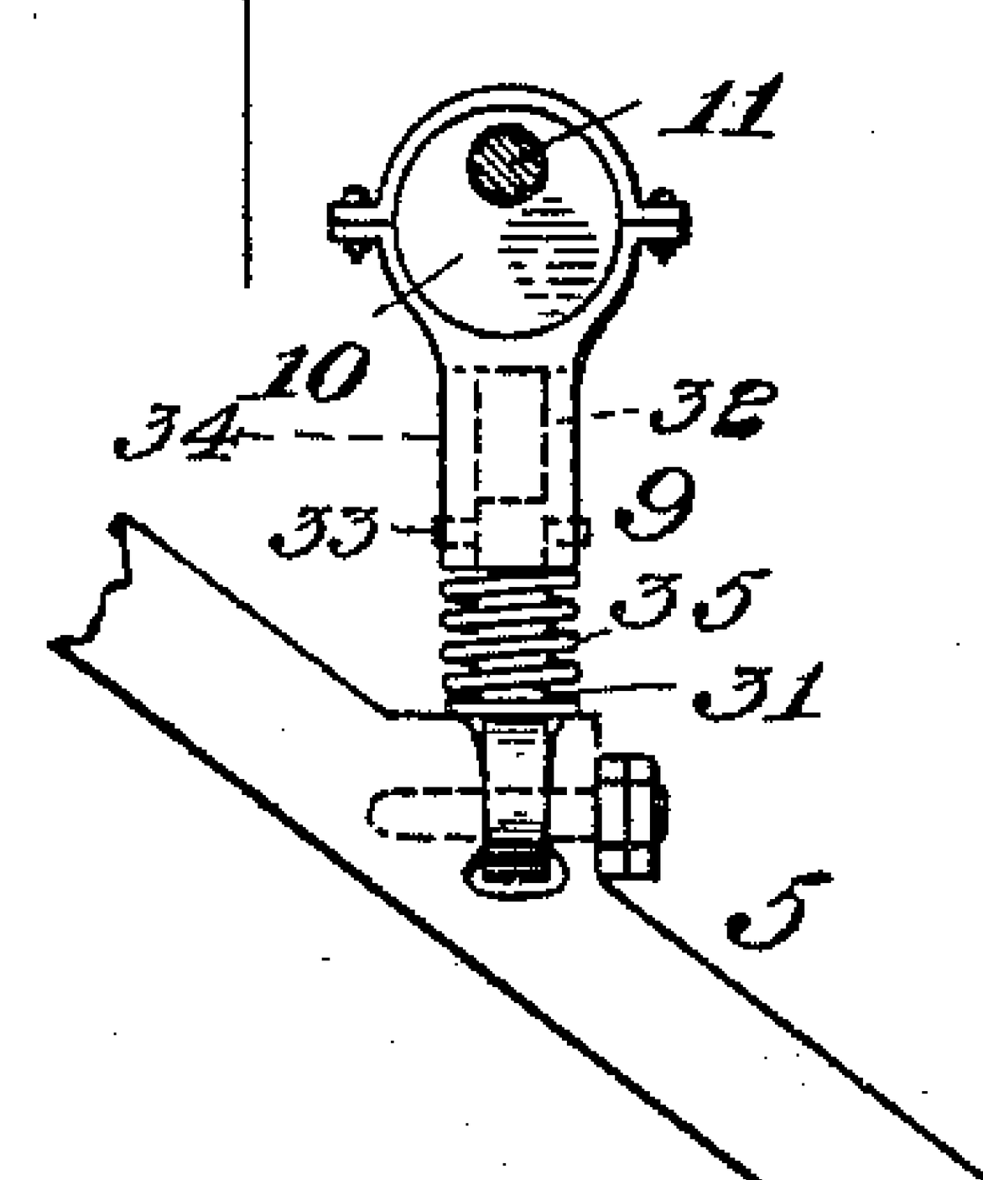
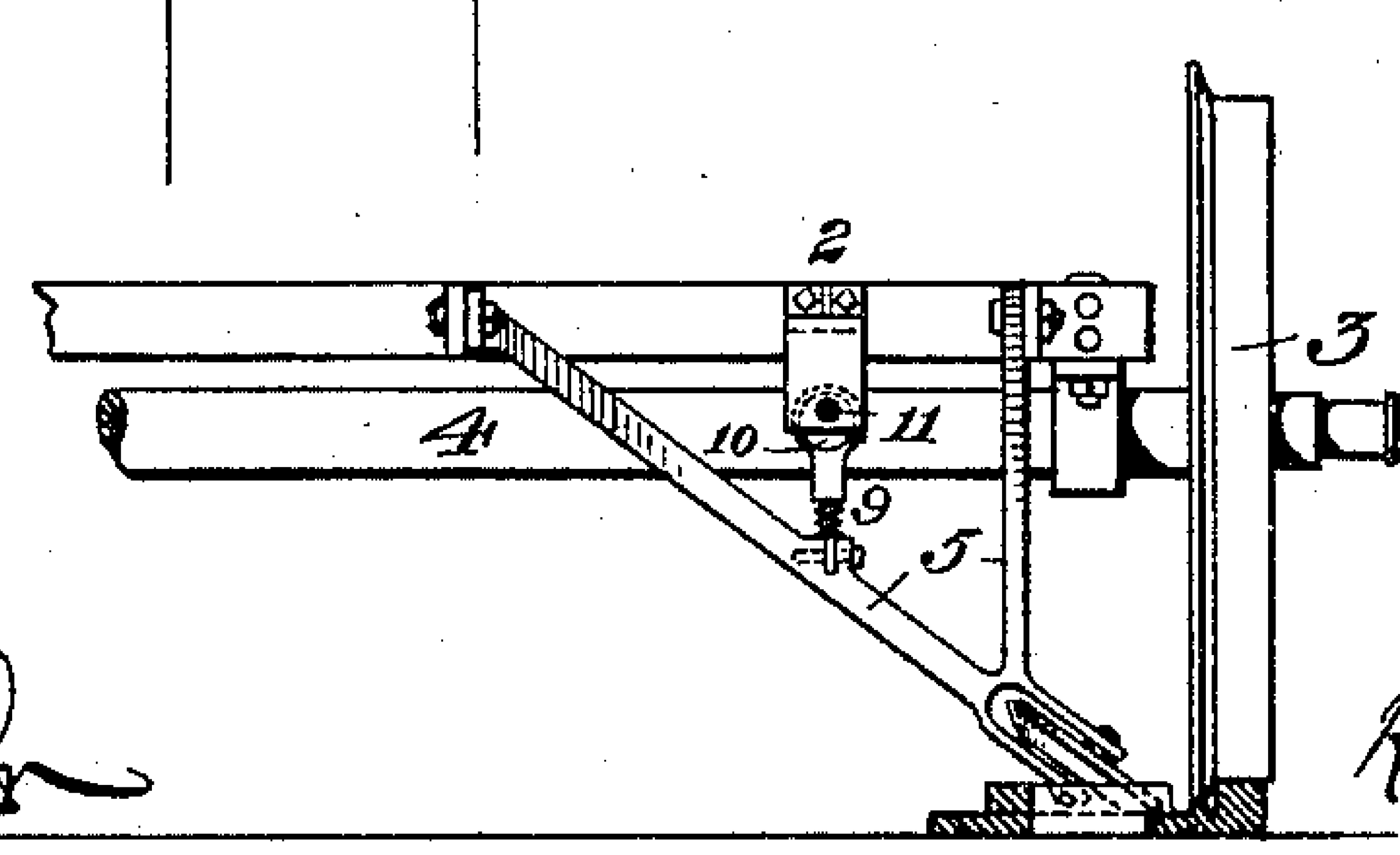


FIG. 3.



WITNESSES

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ROSWELL T. SMITH, OF NASHUA, NEW HAMPSHIRE.

STREET-RAILWAY SWITCHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 433,547, dated August 5, 1890.

Application filed April 29, 1890. Serial No. 349,945. (No model.)

To all whom it may concern:

Be it known that I, ROSWELL T. SMITH, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Street-Railway Switching Devices, of which the following is a specification.

My invention relates to switching devices of the class wherein movable rails or frogs are dispensed with, and the car is crowded or pushed from the main track to the turn-out, or vice versa, as it advances by the engagement of a crowding or guide wheel carried by the car with a fixed rail. As is well known, the car-body is in an almost constant state of motion with respect to the truck-frame, oscillating from end to end, or from side to side, or springing up and down. It is evident, therefore, that the guide-wheel must act with reference to the wheels and the truck-frame, and that if it is so supported as to sustain a certain relation to the car-body rather than the truck-frame, it cannot perform its functions properly; but may or may not engage with the fixed guide-rail according to the position in which the car-body happens to be with reference to the truck-frame. It is the object of my invention to overcome these difficulties and at the same time to provide a simple, cheap, and thoroughly practical switching device applicable to horse-cars, electric cars, or to any other form of car which it would be practicable to move by such a device.

To these ends my invention consists in the devices hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of a portion of a street-car having my improvement applied thereto, parts being broken out and a portion of the track being shown. Fig. 2 is a plan view of a portion of the truck-frame and one side of the track at a turn-out or switch. Fig. 3 is an end elevation of the same. Figs. 4, 5, and 6 are details to be referred to.

The car-body 1, supported by springs 1^a, the truck-frame 2, and the wheels and axles 3 4 are and may be all as usual. In fixed relation to the axles, either to the axles themselves or to the truck-frame 2, is pivoted a vertically-swinging bracket 5, which carries a guide-wheel 6 at its lower end and normally about two feet (more or less, as each case may require) in advance of the front wheel 3 and about two inches inside of and above the highest portion of the rail 7. The turn-out or switch rail 8 is fixed and rigid. As the car approaches the turn-out, the guide-wheel 6 is lowered by means hereinafter described until it is in position to engage with the higher portion of the rail 8. As the car continues to move forward, it will be crowded over bodily and gradually by the engagement of the wheel 6 with said rail 8 sufficiently to cause the car-wheels to leave the main track and to take the rails of the switch or turn-out.

It will be seen that as the guide-wheel is carried by the truck-frame it will stand always in a certain relation to the track, except as it is moved intentionally, and that this relation will not be affected by any variation in the load of the car or by the oscillation of the body with respect to the truck-frame. Inasmuch, however, as the guide-wheel must be under the control of the driver as he stands upon the platform of the car-body, provision must be made whereby the means for raising and lowering the guide-wheel may yield to the aforesaid variations in the relative positions of the car-body without affecting the position of the guide-wheel. The means which I have devised for this purpose will now be described. The bracket 5 is connected by a link 9 with an eccentric or cam 10, carried by a short shaft 11, journaled in bearings on the truck-frame. The shaft 11 is connected through a joint 12 with an extensible shaft 14 15, one portion of which is free to move longitudinally, but not to turn within the other. The shaft 14 15 is again connected through a universal joint 17 with a vertical shaft 19, supported in bearings 16 on the platform of the car-body and having a crank 20. The joint 17 should be a universal joint, while the joint 12 may be such, but is not necessarily. The universal joint which I have found well adapted for this purpose is shown in detail in Figs. 4 and 5. The shafts 11 and 14 or 15 and 19, as the case may be, are supported end to end in bearings 23, carried by U-shaped frames 21, which receive in the ends of their arms, and are them-

selves pivoted thereon, the shaft 22. A bevel-gear 24, carried by the shaft 22, engages with bevel-gears 25 upon the ends of the shafts first mentioned. It will be seen that a half-turn of the crank 20 will at any time raise or lower the bracket 5 and wheel 6 out of or into operative position, and that the extensible shaft 14 15 and universal joint 17 will allow movement of the car-body in every direction with respect to the truck-frame without in any way affecting the position of the guide-wheel with respect to the rails.

Should the track be covered with ice or other such obstruction, the guide-wheel and bracket might lift the front wheel 3 from the track if the link 9 were absolutely rigid. It may be desirable, therefore, to make the link yielding, and I have shown in Fig. 5 a convenient construction for that purpose. The link is made in two parts 31 32, one of which has a limited movement with respect to the other, the extent of movement being limited by a pin 33 in one part 31, which enters slots 34 in the other. The parts 31 32 are maintained in extended relation by a heavy spring 35, which is stiff enough to hold the guide-wheel and bracket in fixed relation to the truck-frame under all ordinary conditions, but will yield under stress of necessity.

It will be noticed that the triangular form given to the bracket 5 and the pivoting of both members to the frame peculiarly fit it to receive the shock of impact with the rail and to perform its function of thrusting the car over bodily.

I claim—

1. A switching device for street-cars, consisting of a swinging bracket carrying a guide-wheel, a cam and link for moving said bracket, an extensible shaft for rotating said eccentric, and a hand-shaft connected to said extensible shaft by a universal joint, substantially as described.

2. The combination of the truck-frame, a swinging bracket carrying a guide-wheel, a cam and link for moving said bracket, and means for rotating said cam, substantially as described.

3. The combination of the truck-frame, a swinging bracket carrying a guide-wheel, a cam and a yielding link for moving said bracket, and means for rotating said cam, substantially as described.

4. The combination of the spring-supported car-body, the truck-frame, a swinging bracket pivoted thereto and carrying a guide-wheel, a cam supported by the truck-frame and a link for moving said bracket, an extensible shaft for rotating said cam, and a hand-shaft supported by the car-body and connected to said extensible shaft by a universal joint, substantially as described.

5. The combination of the truck-frame, the swinging bracket pivoted thereto and carrying a guide-wheel, a cam supported by the truck-frame and a yielding link for moving said bracket, and means for rotating said cam, substantially as described.

6. The combination of the truck-frame, the vertically-swinging triangular bracket 5, having both of its members pivoted to the frame and carrying at its apex a guide-wheel, a cam and link for moving said bracket, and means for rotating said cam, substantially as described.

7. The combination of the car-body, the truck-frame, swinging bracket 5, carrying guide-wheel 6, link 9, cam 10, extensible shaft 14 15, for rotating said cam, universal joint 17, and hand-shaft 19, supported by the car-body, substantially as described.

In witness whereof I have hereunto set my hand.

ROSWELL T. SMITH.

Witnesses:
ALICE L. INGALLS,
S. J. M. SMITH.