

R. L. SMITH.
Car Brake.

3 Sheets—Sheet 1.

No. 17,058.

Patented Apr. 14, 1857.

Fig. 3.

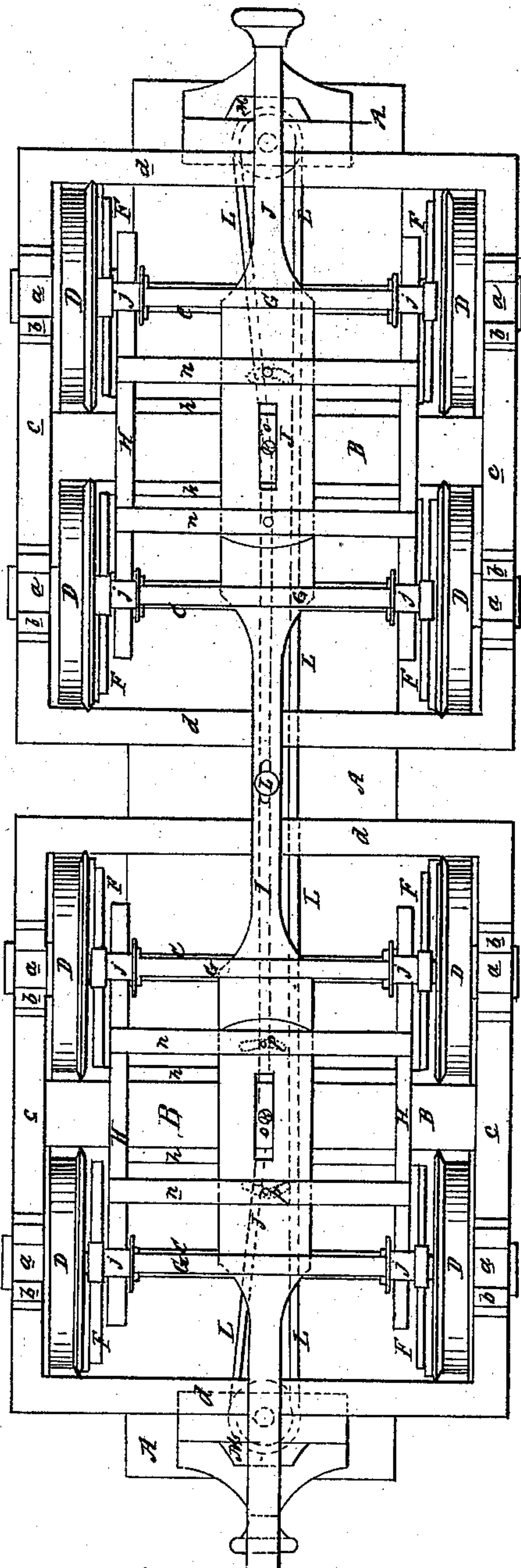
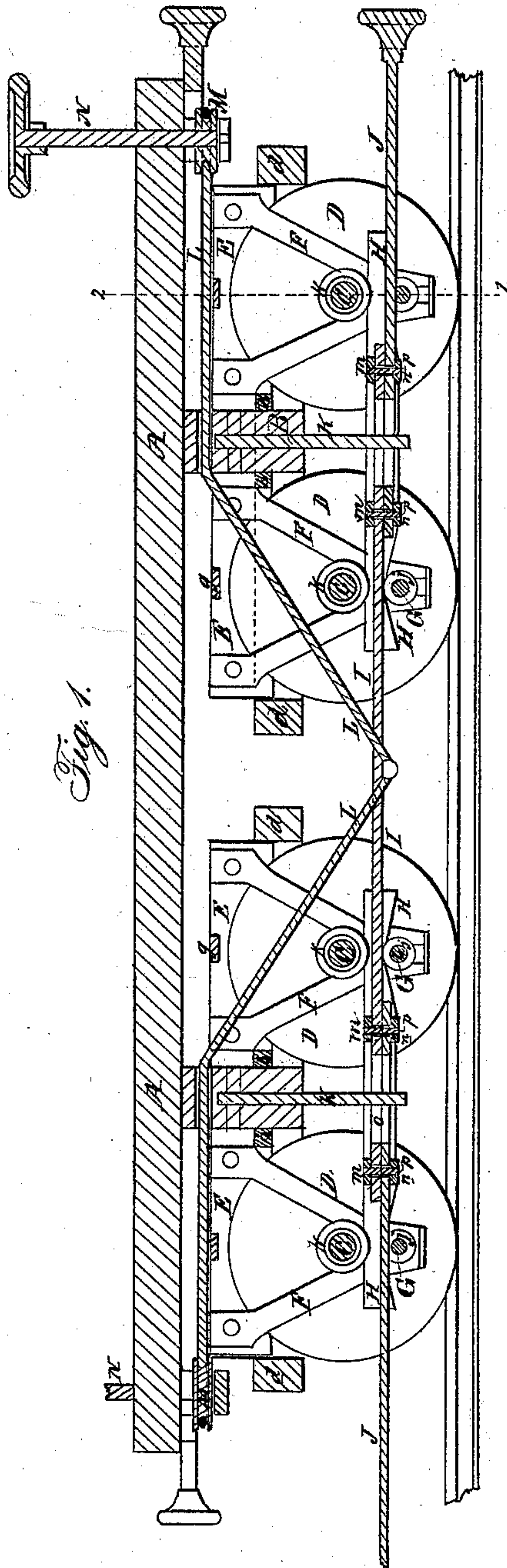


Fig. 1.



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Fig. 8.

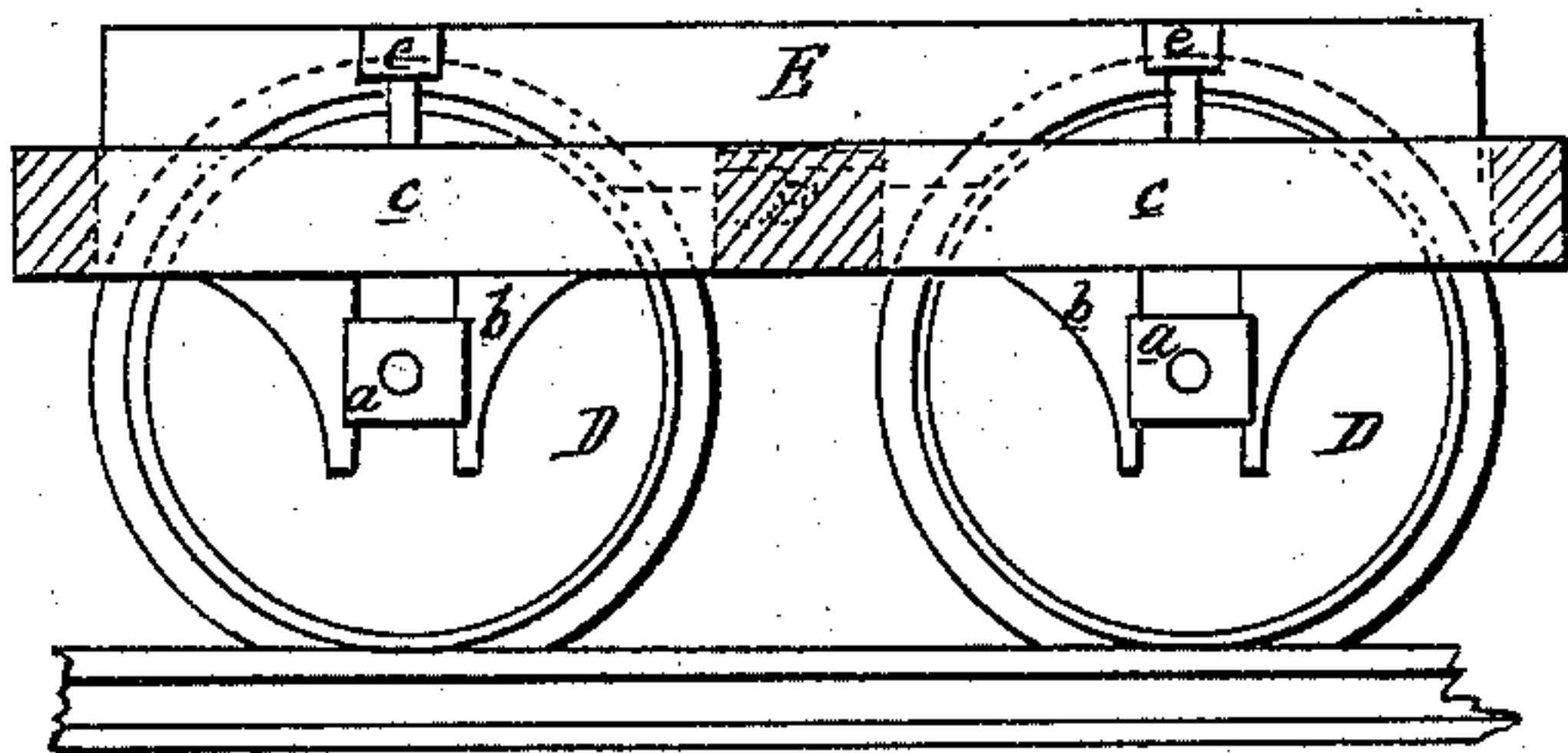


Fig. 7.

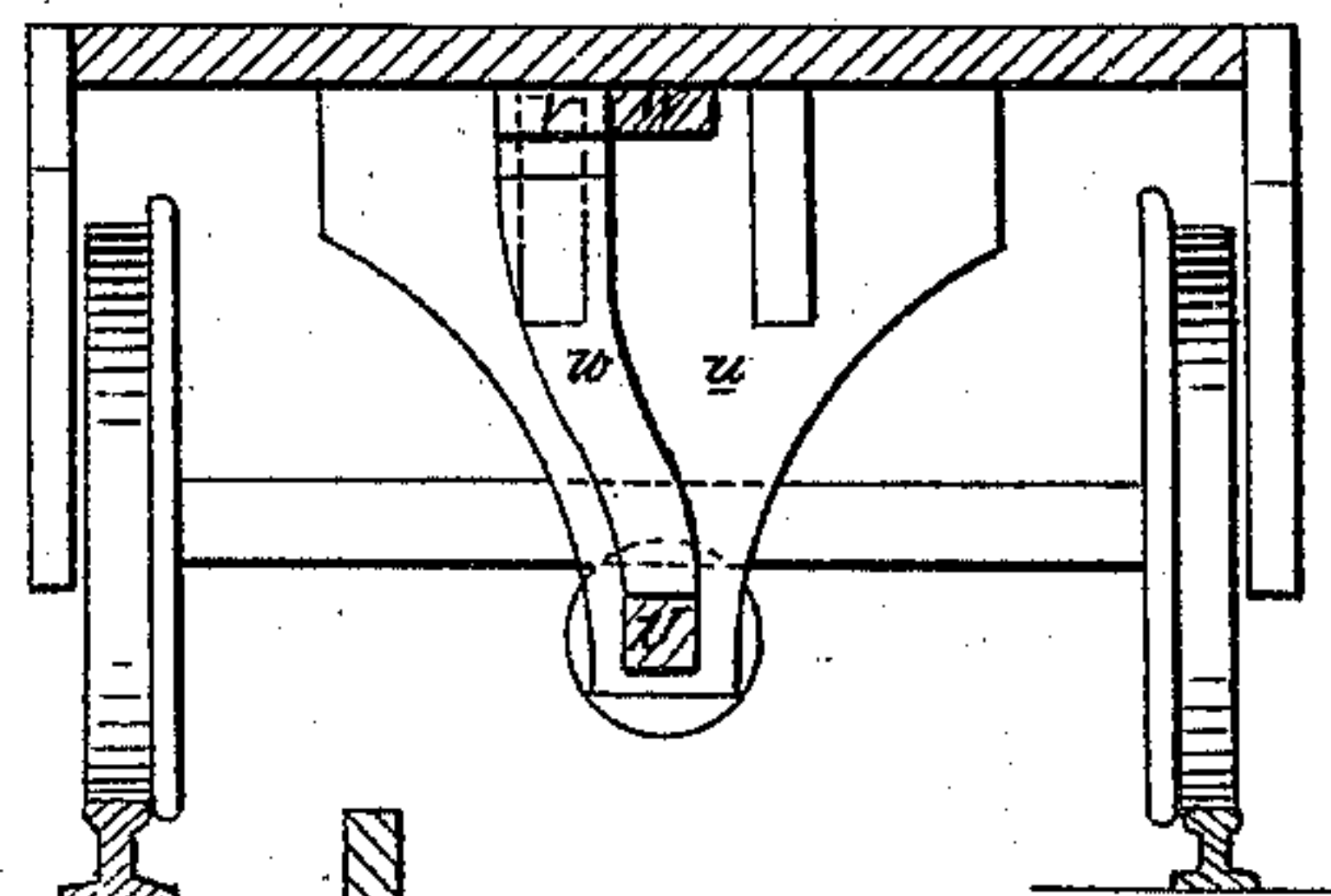


Fig. 4.

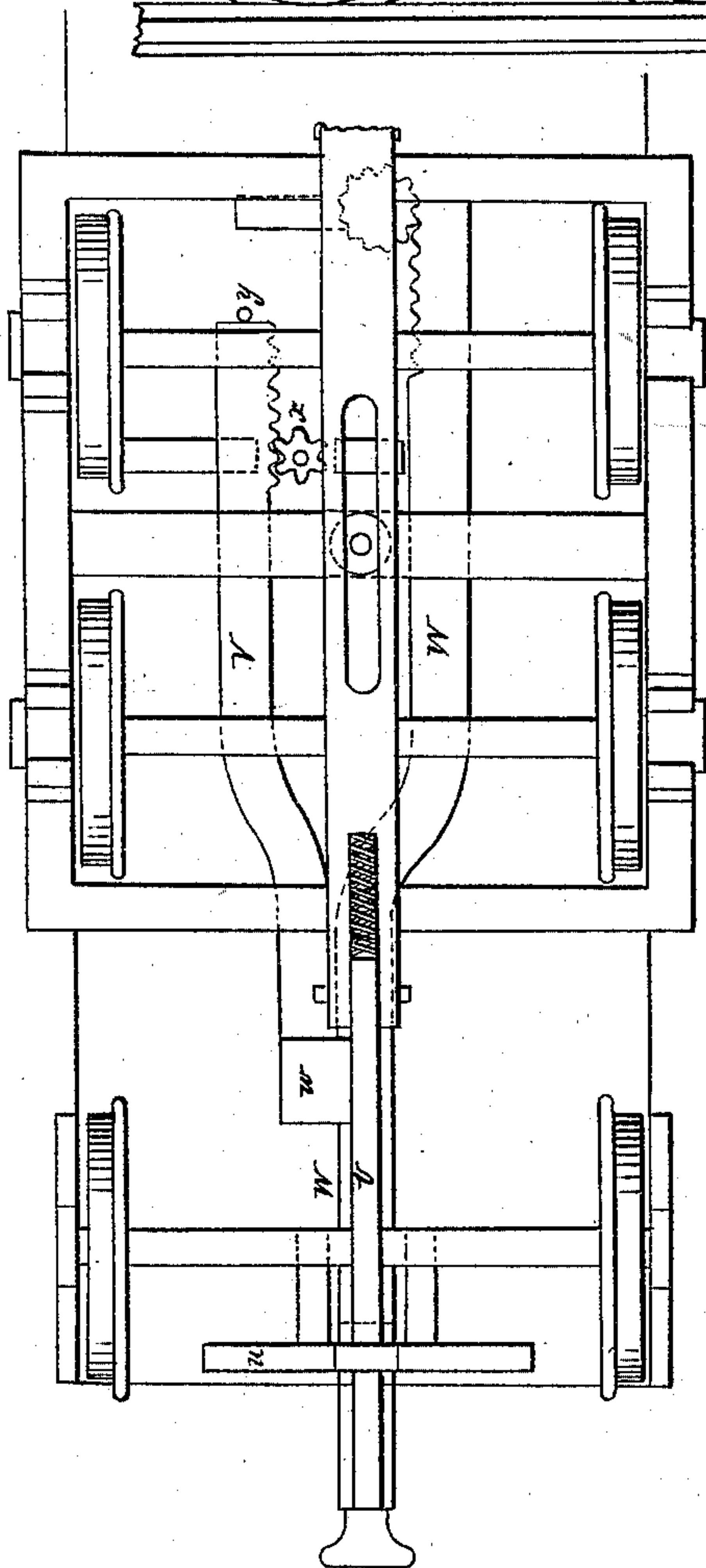
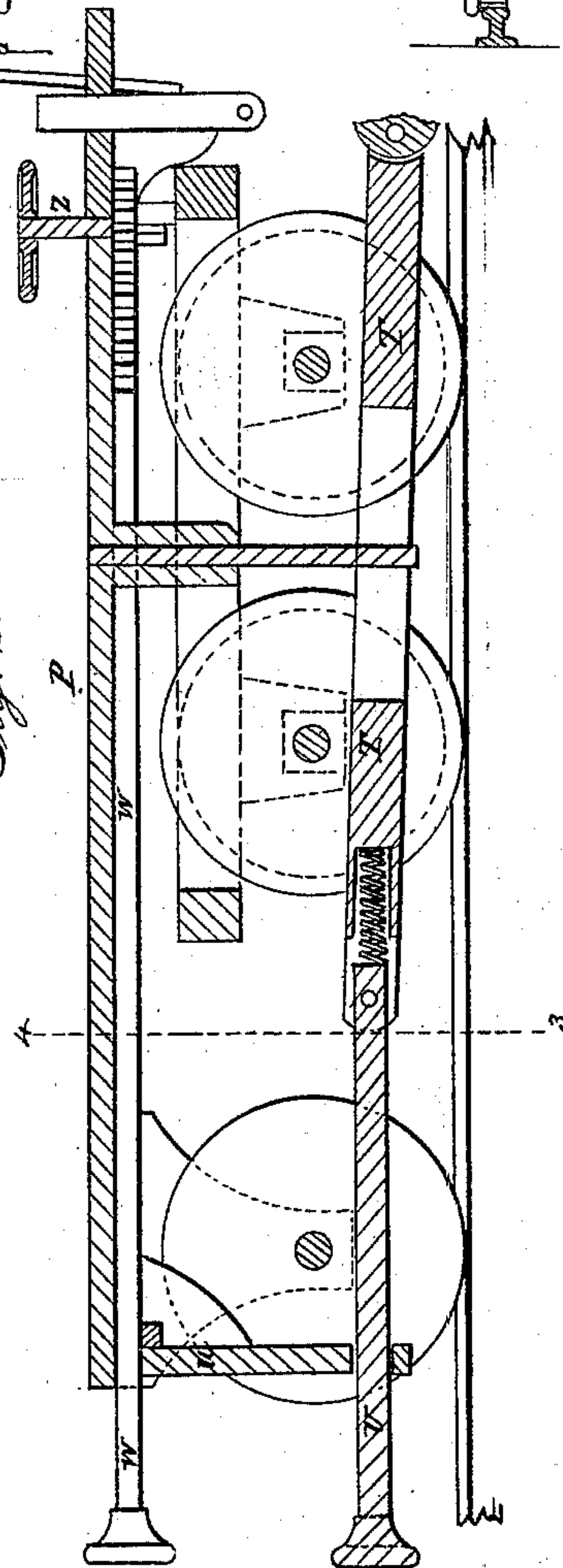


Fig. 2.



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Fig. 5.

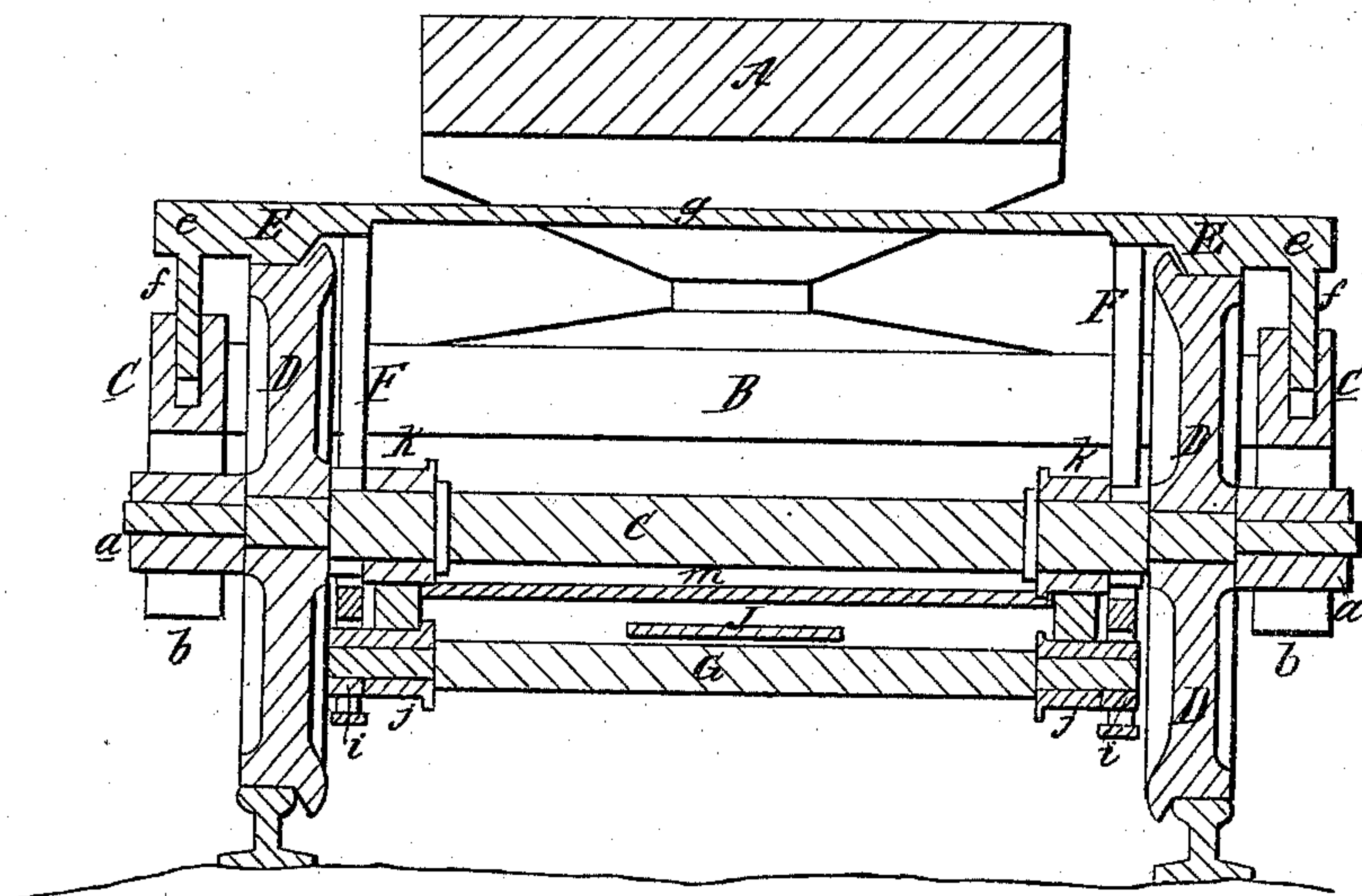
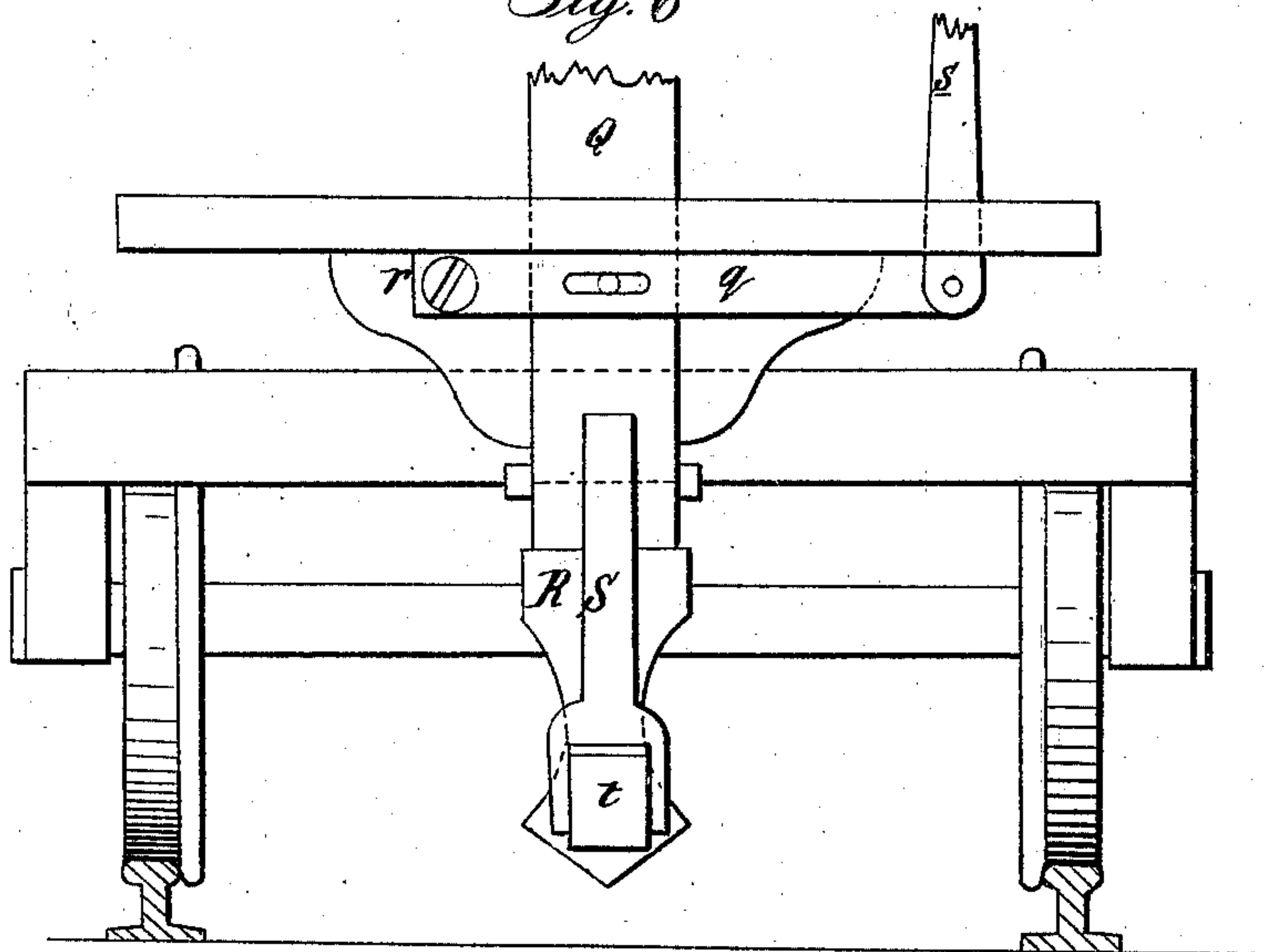


Fig. 6



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UNITED STATES PATENT OFFICE.

RICHD. L. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

RAILROAD-CAR BRAKE.

Specification of Letters Patent No. 17,058, dated April 14, 1857.

To all whom it may concern:

Be it known that I, RICHARD L. SMITH, of the city of Philadelphia and State of Pennsylvania, have invented a new and Improved Mode of Constructing and Operating Railway-Car Brakes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention consists in the employment of sliding rods situated below the axles and extending the whole length of the car, the sliding rods are connected to bars passing between rollers on the axles and similar rollers on shafts which have their bearings in hangers attached to the rubbers.

The bars which pass between the rollers are furnished with inclined planes, so arranged that on the said bars being pushed in one direction or the other by means of the sliding rods, the inclined planes will act on the lower rollers and cause the rubbers to bear hard on the wheels. The sliding rods are so connected to each other and to the brake bars that the motion of the trucks do not interfere with their operations. In order to operate the sliding rods of each car of the train suddenly in case of collision I employ in front of the brake van or tender a bar with two arms, one arm having a pointed projection, and the other a roller so arranged that the bar may be depressed and the pointed projection brought in contact with the ground when the arms will through the momentum of the cars be suddenly driven back until the projecting point is forced from contact with the ground by the action of the roller on the other arm as a fulcrum. This movement of the arms is communicated by means of a rod to the sliding rods of the car, and so on throughout the whole train of cars simultaneously, thereby pressing the rubbers against their respective wheels. In order to regulate the amount of movement of the jointed sliding bars when the train is required to make an ordinary stoppage, or to prevent any movement whatever of the said rods, when the train descends an inclined plane, I employ underneath the floor of the tender or brake van a bumper rod which is so arranged that its end may be brought nearer to or farther from the bumper of the first car at pleasure.

In order to enable others skilled in the art to make and use my invention I will now

proceed to describe its construction and operation.

Figure 1 is a sectional elevation through the center of an ordinary rail road car, with the body removed and showing my improved braking apparatus; Fig. 2, the same of a luggage or brake van or tender; Fig. 3, an inverted plan of Fig. 1; Fig. 4, the same of Fig. 2; Fig. 5, a transverse section on the line 1—2 (Fig. 1); Fig. 6, a view of the front end of the brake van or tender Fig. 2; Fig. 7, a transverse section on the line 3—4 (Fig. 2); Fig. 8, an external elevation of one of the trucks.

The same letters of reference allude to similar parts throughout the several views.

A is the flooring for receiving the body of the car, this rests on and is connected to the center beams B, B, of the trucks in the usual manner.

D, D, are the wheels secured to the axles C, C, which have their bearings in boxes *a a* sliding in hangers *b b* attached to the side frames *c, c*, of the trucks as in ordinary cars.

E, E are the rubbers of such a length that their ends are nearly in contact with the inside of the end beams *d* and *d* of the trucks. These rubbers have two curved recesses adapted to the circumference of the wheels D, D, and have in the middle a slot fitting accurately over the center beam B of the truck as seen in Fig. 8.

Immediately over the center of each wheel the rubbers are furnished with projections *e, e*, to which are connected pins *f* fitting into orifices in the side beams *e* of the truck, and between the end of the pins and bottom of the orifices intervene spiral springs or pieces of gum elastic which serve to keep the rubbers free from contact with the wheels when not caused to bear on the same by means hereafter described. The opposite rubbers on each truck are connected together by means of the upper cross pieces *g, g*, and lower cross pieces *h, h*. To the inside of the opposite rubbers are attached two hangers F, F, between the legs of which pass the axles *c, c*, and in the bottom of these hangers slide boxes for receiving the ends of the shafts G, G, a small spring of gum elastic or other suitable substance intervening between the bottom of the boxes and that of the hangers.

Inside the hangers F, F the shafts G, G, are furnished with flanged rollers *j j*, and

the axles c, c , with similar, but larger rollers k, k , both sets of rollers being arranged to run loose on their respective shafts. Between the upper and lower rollers intervene the bars H, H on the underside of which are formed two double inclined planes, the point where the two inclines meet coinciding with the center of each axle, when the rubbers are free from contact with the wheels. The opposite bars H, H are connected together by means of the upper cross pieces m, m , and lower cross pieces n, n .

I is the central sliding rod, and J the two end sliding rods of the car, these lap over each other as seen in Figs. 1 and 3, and are arranged to fit easily between the upper and lower connecting cross bars m, m , and n, n , of the bars H, H . The central pin K on which each truck turns is extended downward and passes through a longitudinal slot o in the sliding bars I and J, J , at the point where the latter lap over each other, and at an equal distance on each side of the pin K are pins p, p , which are permanently attached to the upper and lower cross pieces m, m and n, n , and which pass through curved slots in the sliding bars I and J, J .

A chain or cord L traverses the underside of the flooring A , passes around pulleys M, M on the vertical spindles N, N thence through an orifice in the beams, resting on the center beams B, B , of the trucks, the two ends of the chain meeting at the middle of the central sliding rod I to which they are attached. In order to diminish the friction the orifices in the beams may be furnished with pulleys for the chain to pass over. The flooring P of the brake van or tender has a slot in which slides the bar Q , from the latter projects a pin which passes through a slot in the lever q which has its fulcrum on the pin r . To the extreme end of the lever is jointed a rod s which is connected to any convenient apparatus for raising and lowering the same. To the bar Q are jointed two arms R and S the former being furnished with an angular point and the latter with a roller t . To the arm R is jointed a rod T which is guided laterally by means of the continuation of the pin on which the truck of the van turns. To the end of the rod T is jointed another rod U which passes through and is guided by a hanger u suspended from the rear of the van or tender.

At the junction of the two rods T and U is a spiral spring v lodged in a recess on the end of the former rod, and pressed again by the end of the latter rod, the pin connecting the two rods together passing through longitudinal slots in the rod T in order to allow the spiral spring to be acted upon. To the rod U is connected by means of the bent arm w the rod V which slides in guides underneath the flooring P , and which is fur-

nished with teeth at the end gearing into the teeth of the pinion x the shaft of the latter passing through the flooring P so as to be within the control of the attendant brakeman or engineer. A pin y also passing through the flooring and capable of being removed and replaced at pleasure serves as a stop when occasion requires to the forward movement of the bar V . W is another bar also sliding in guides underneath the flooring P and having also teeth gearing into those of a pinion in the vertical shaft z which like the former passes through the flooring so as to be within reach of the brakeman.

The end of the bar W is arranged to coincide as nearly as possible with the bumpers of the car, and the end of the rod V with that of the sliding rod J , the two latter as well as those of the remaining cars on the train being rigidly linked together in any convenient manner.

Operation: When it is desirable in order to avoid a collision or other accident to stop the train of cars as quickly as possible, the brakeman or engineer depresses the rod S and with it the lever q and bar Q this brings the pointed projection of the arm R in contact with the ground, and consequently the arm, and with it the rod T are forced suddenly back to such a distance, that the pointed projection may be freed from the ground by the action of the roller t on the arm S , as a fulcrum. This movement of the rod T is communicated to the rod U , sliding rods J and I of the first car, and to the sliding rods of the remaining cars throughout the train simultaneously. The sudden shock caused by the contact of the point of the arm R with the ground when the train is running at a rapid rate is obviated by the spiral spring v which intervenes between the end of the rods V and T . This movement of the sliding rods J and I gives similar movement to the bars H, H , the inclined planes of which act on the rollers j, j , on the shaft G in such a manner as to depress the same, and with it the hangers F, F , and the rubbers E, E , thus bringing the latter to bear hard on the wheels D, D , and as the same action takes place in every car throughout the train simultaneously, the latter must be quickly stopped.

When an ordinary and moderately slow stoppage of the train is required the arm R with its projecting point is not brought into requisition, but the rod W is, by means of the pinion on the spindle Z , withdrawn a suitable distance from the bumper of the car, when on the retarding of the engine and tender consequent upon shutting off the steam, the cars will through their momentum cause the ends of the sliding rods J to be forced against the end of the rod U causing the sliding bars throughout the

train to move and the rubbers to bear upon the wheels in the manner before described.

On descending an inclined plane the cars have a tendency to force themselves against each other in this case it will be necessary by turning the spindle Z to project the bar W so close to the bumper of the first car that no action may take place on the sliding rods J and I and consequently no bearing of the rubbers on the wheels.

The pinion *x* serves to regulate the amount of projection of the bar U from the rear of the brake van or tender.

When it is desirable to back the train of cars, when the rubbers are in contact with the wheels, the pin *y* is withdrawn and the pinion *x* put in operation so as to withdraw the bars V, U and consequently the sliding bars J, J, and I thus freeing the rubbers from contact with the wheels. When it is desirable to stop the cars by hand without employing the above means, either of the vertical spindles N N may be turned in either one direction or the other which through the pulleys M, M operates the chains or cords in such a manner as to move the sliding rods I and J, J, and cause the rubbers to bear on the wheels as before.

On account of the curved slots at the point where the rods I and J, J, overlap each other through which slots the pins *p*, *p*, which connect the sliding rods to the brake bars, pass, the said sliding rods will not be interrupted in their operations although the cars are passing an abrupt curve and the trucks consequently turned at a considerable angle.

I do not desire to claim the employment of sliding rods for causing a simultaneous braking of the wheels of cars throughout the whole train; neither do I claim exclusively the use of inclined planes for operating the rubbers; but

What I claim and desire to secure by Letters Patent is—

The sliding rods I, I, and J, J, with the bars H, H, having double inclined planes, in combination with the rollers *j*, *j*, and the rollers K, K, when the latter are hung to the axles, the whole being arranged and constructed substantially in the manner and for the purpose herein set forth.

RICH'D. L. SMITH.

Witnesses:

HENRY HOWSON,
WILLIAM E. WALTON.