

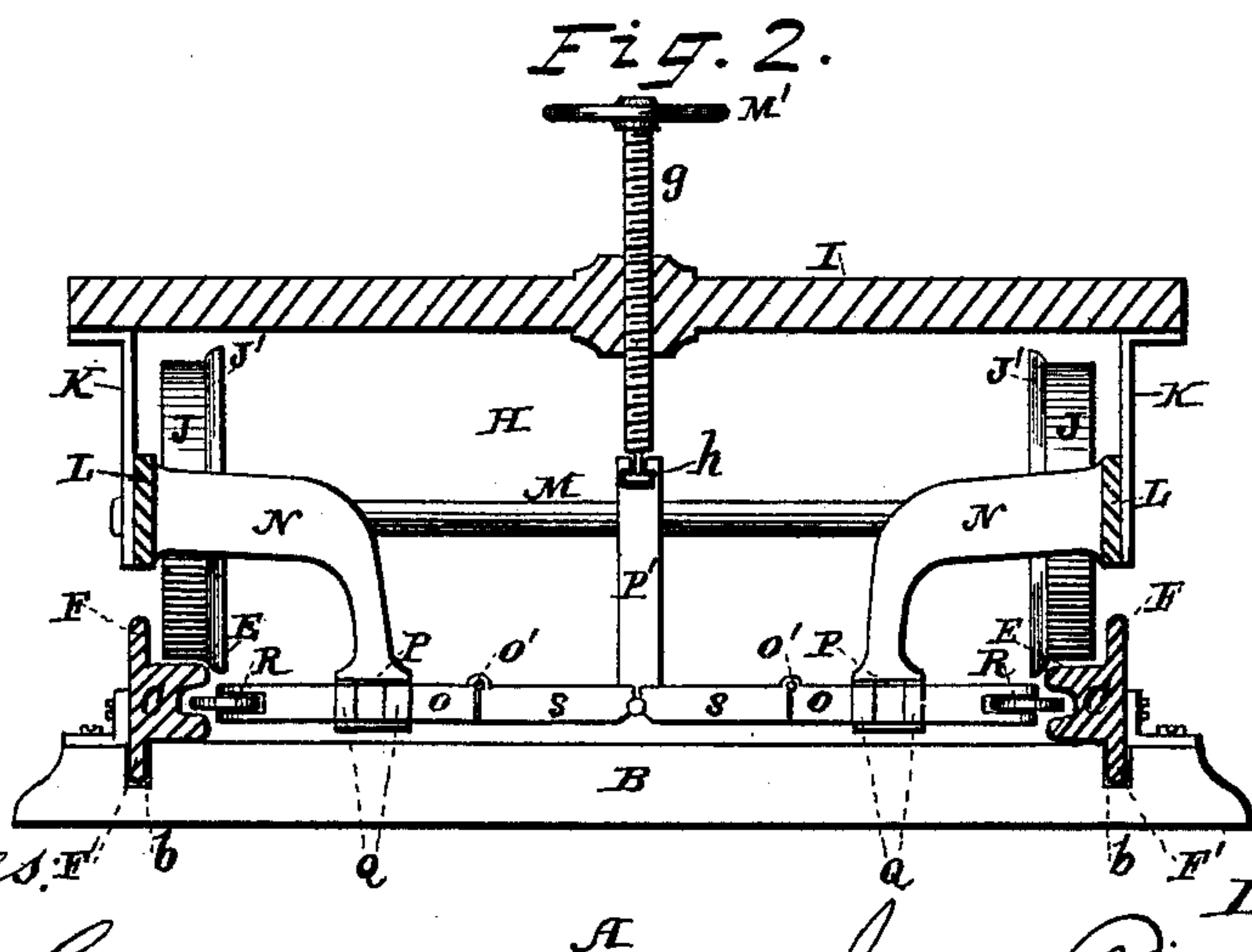
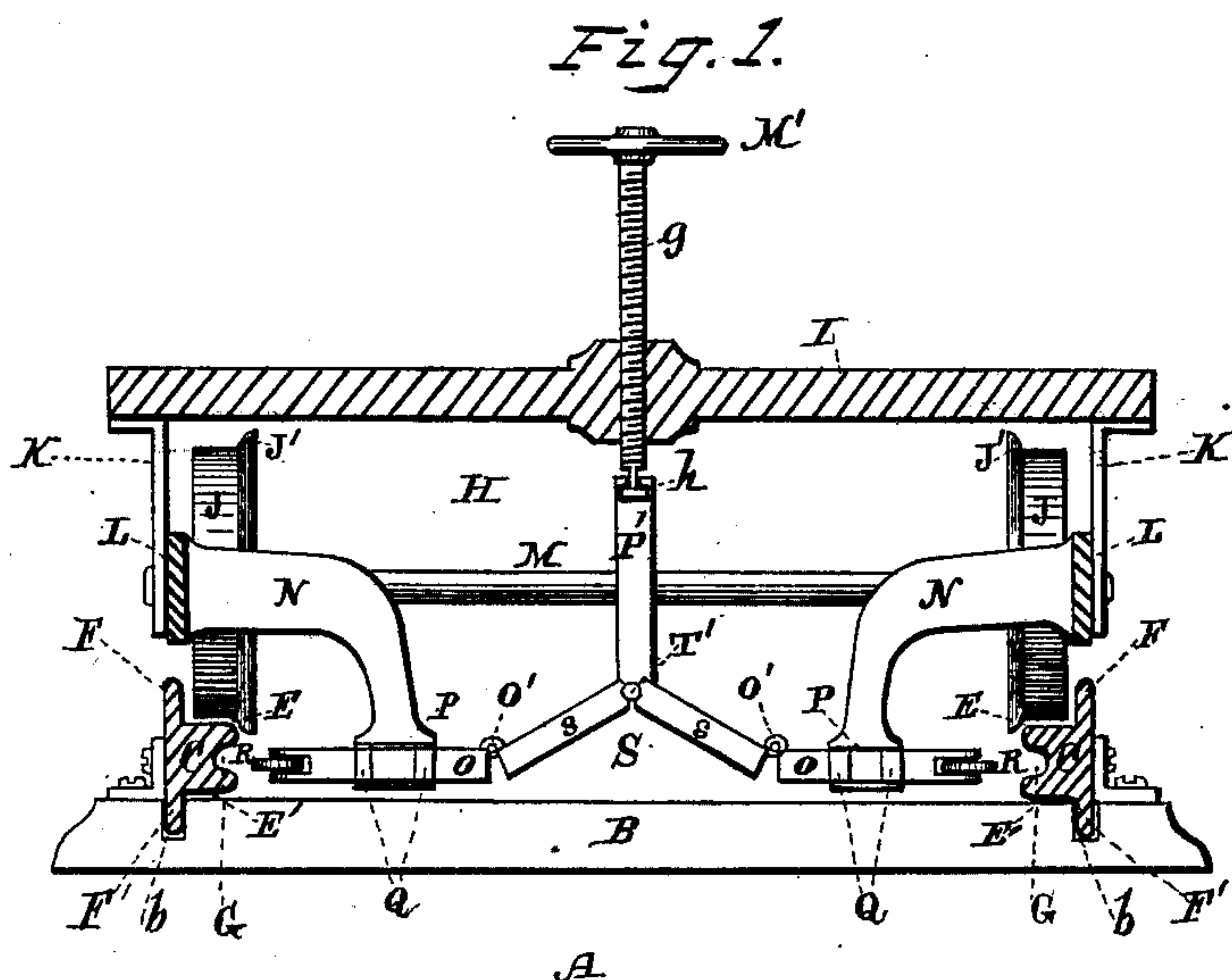
(No Model.)

3 Sheets—Sheet 1.

J. DÉNÉCHAUD.  
Safety Railway Car.

No. 235,135.

Patented Dec. 7, 1880.



Witnesses:  
Geo. H. Strong  
Frank A. J. J. J.

A

Inventor:  
Jean Dénéchand  
By Dewey & Co.  
Attys

(No Model.)

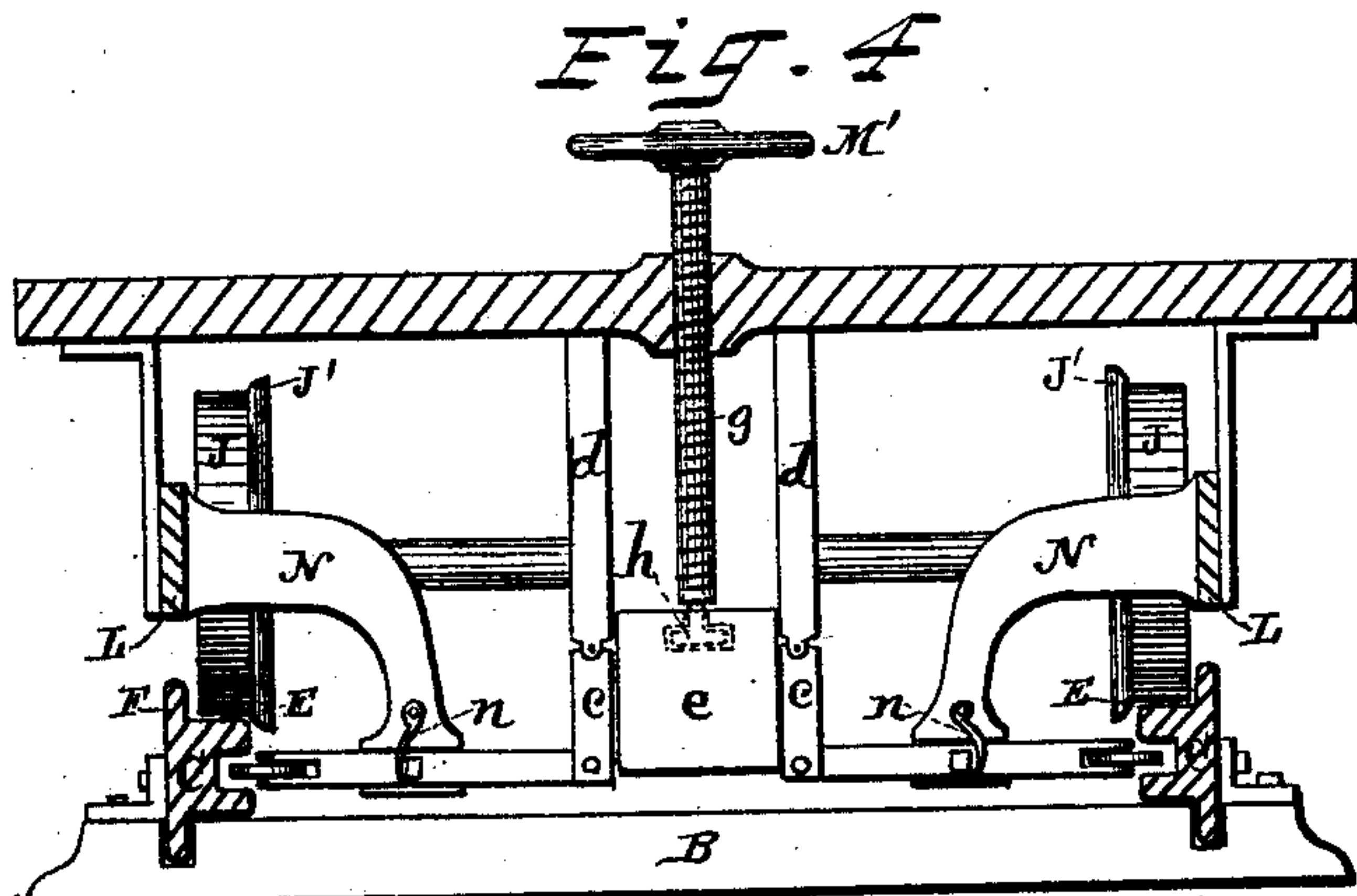
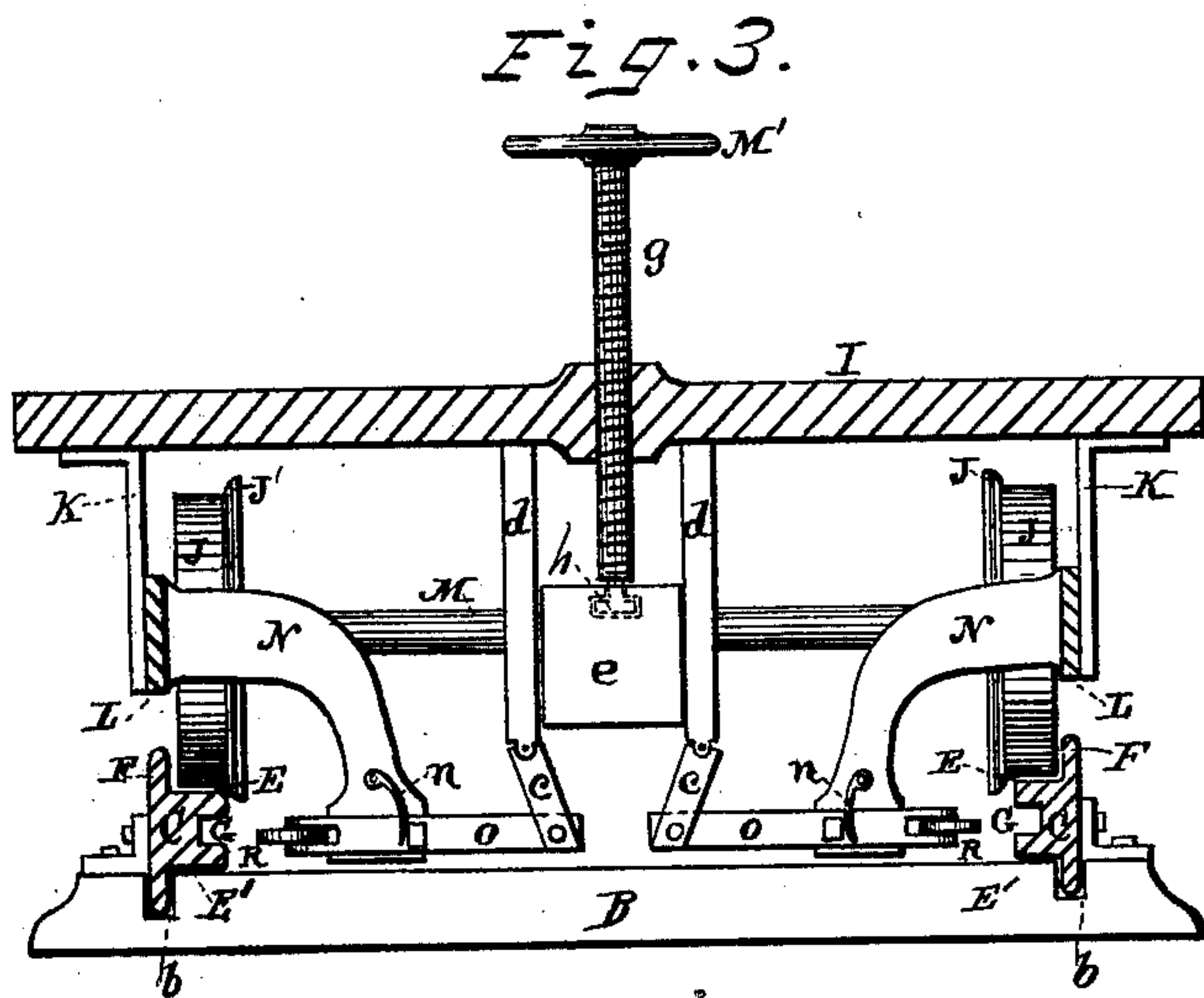
**3 Sheets—Sheet 2.**

J. DÉNÉCHAUD.

# Safety Railway Car.

**No. 235,135.**

**Patented Dec. 7, 1880.**



*Witnesses:*

*Inventor.*

Geo. H. Strong.  
Frank A. Brooke

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(No Model.)

3 Sheets—Sheet 3.

J. DÉNÉCHAUD.  
Safety Railway Car.

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Fig. 5.

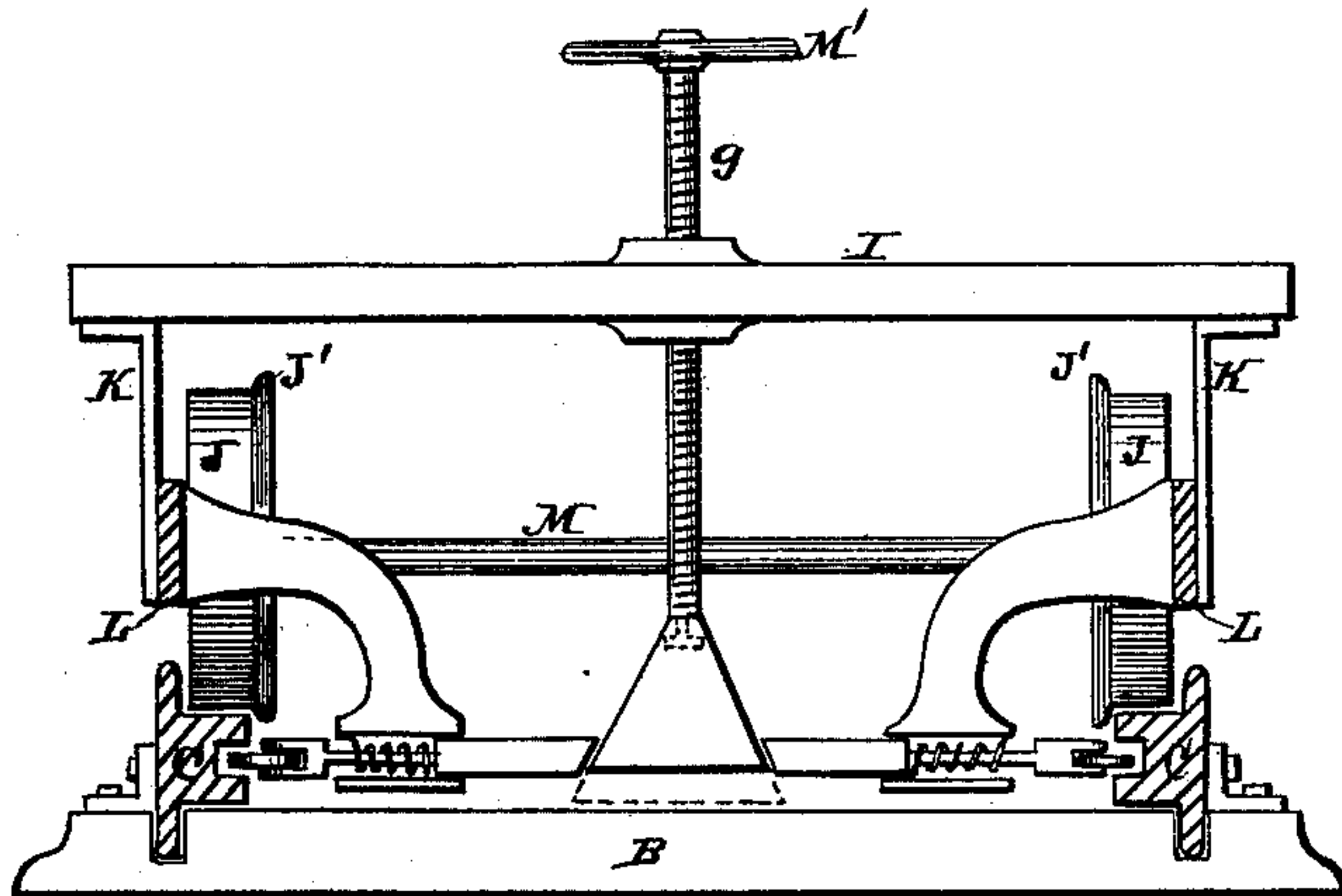
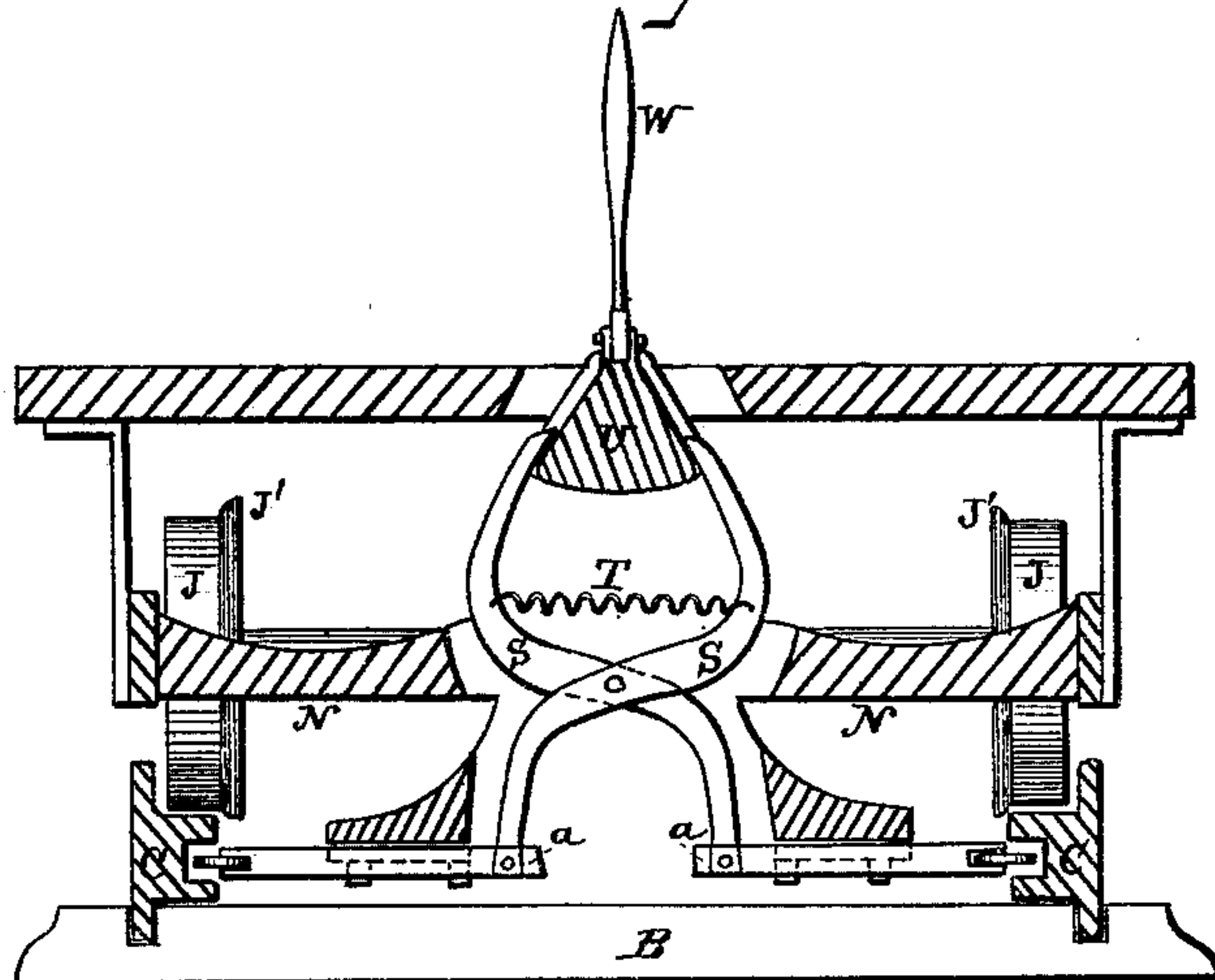


Fig. 6.



witnesses:

Geo. H. Strong.

Frank A. Brooks

Inventor:

Jean Dénéchaud  
By Dewey & Co.  
Atty



# UNITED STATES PATENT OFFICE.

JEAN DÉNÉCHAUD, OF SAN FRANCISCO, CALIFORNIA.

## SAFETY RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 235,135, dated December 7, 1880.

Application filed September 20, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JEAN DÉNÉCHAUD, of the city and county of San Francisco, and State of California, have invented an Improvement in Railways and Cars to Prevent Derailment; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an improved construction of the rails on which railway-trains travel, together with a novel device attached underneath the cars, whereby derailment is rendered impossible.

The rail is made very deep, its outer surface being flat and smooth and set on its edge in slots prepared in the cross-ties. Its inner surface is provided with a groove formed by the double flanges projecting from the inner side, as shown.

Under the car, and between the axles of the wheels, are elbow-shaped metal stays, supported by having their upper ends fastened to immovable lateral plates of metal joining the supports of the axles, and their lower edges provided with a channel or groove, in which move two bolts having horizontal rollers in their ends. These bolts work in opposite directions, and are at such a distance from the bottom of the car as to fit their horizontal rollers into the grooves of the rails when directed therein. They are projected or withdrawn by means of a mechanism which may be operated from the car, as will be more fully described hereinafter.

The object of my invention is to prevent the cars from jumping the track and turning over where, by reason of a sharp curve, they incline to one side.

Referring to the accompanying drawings, Figure 1 shows my invention with the bolts withdrawn from the grooves in the rails. Fig. 2 shows it with the bolts projected within the grooves. Fig. 3 shows a modification of my invention in the manner of projecting the bolts. The bolts are here withdrawn from the grooves. Fig. 4 shows the modification of Fig. 3, with the bolts projected. Fig. 5 shows a further modification in the manner of projecting the bolts. Fig. 6 shows yet another modification.

Let A represent the road-bed; B, the cross-

ties, with their transverse slits *b* to receive the rails; C, the rails laid therein and fastened securely.

E shows the rolling surface or seat of the rail; F, the outer projecting flange or back of the rail; E', the lower or reversed rolling surface or seat, and F' the lower protecting flange or back of the rail. Between the two seats E and E', and formed thereby, is the groove G.

Let H represent a truck of a car with its platform I. The wheels J fit upon the rails with their flanges J' to the inside. The wheels are connected to the platform in the ordinary manner. Between the supports L of the axles M are the laterally-placed metal plates K, fastened strongly to the supports. Fastened to these plates K, about midway between the axles M, are the elbow-shaped metal stays N N, projecting inwardly. On their lower ends are the channels or grooves P, in which the bolts O O slide, being secured therein by strong bands or guides Q. They have on their outer ends the rollers R R. These bolts O O work outwardly in opposite directions, and are in a horizontal plane with the groove G in the rails. They are projected by means of the knee or toggle-joint lever S', having its arms s hinged to their inner ends, as shown at O' O'. These arms s form a toggle-joint at T', and are actuated by the upright bar P', fastened to them at the joint. The shank *g* is fastened to this bar P' by a socket-joint, *h*, which allows it to revolve. It moves up and down by the screw *l*, as shown, and is provided with the hand-wheel *m*. When the shank *g* is screwed down it forces the bar P' upon the toggle-joint lever S', the arms s of which are made to assume a horizontal position, and the bolts O O are pushed out into the groove G. When the shank *g* is turned up the bar P' draws the toggle-lever S' up, whereby the bolts O O are withdrawn from the groove G.

It will be seen that I may operate the bolts O O in ways other than that which I have described. I have shown in the drawings some of the other ways.

Referring to Figs. 3 and 4, the bolts O O are run in grooves in the metal stays N N and are pivoted to the strips *c c*, which, in turn, are



jointed to the main upright plates *d d*. Within these upright plates the block *e* slides up and down by means of the shank *g*, fastened thereto by a socket-joint, *h*, which allows it to revolve within the block *e*. Springs *n n* are set in the grooves with the bolts *O O*, which keep the pieces *c c* inclined toward each other, as shown. When the shank *g* is screwed down it forces the block *e* down between the strips *c c*, parting them and driving the bolts *O O* into the groove *G* in the rails, as shown in Fig. 4. When the shank *g* is turned up and the pressure on the bolts removed the springs *n n* force them to return to the normal positions.

I can apply the same device as shown in Fig. 5 by having the block *e* wedge-shaped and below the bolts *O O*, so that when raised it will force the bolts out; or, as shown in Fig. 6, I can have another mechanical device for projecting the bolts *O O*. Instead of the elbow-shaped stays *N N*, there is the strong piece of iron *N*, placed transversely midway between the two axles *M*. Its lower end is of a width less than that between the rails. On its lower edge, and extending its length, is the channel or opening *P*, in which the bolts *O O* slide. They are projected by means of the curved lever arms or jaws *S S*, which have their lower ends attached to the inner ends of the bolts, as at *a*, and thence passing up through a chamber in the transverse piece *N*, approach in an *O*-shaped curve very near each other just under the platform.

The spring *T* operates to keep the lower ends together, and the bolts, with their rollers, away from the rails.

Sliding on the inner edges of the upper part of the lever-arms *S S*, and between them, is the V-shaped wedge *U*, raised or lowered by the bell-crank lever *W* passing through the platform or floor of the car.

The peculiar construction of the rails would alone be sufficient, in ordinary cases, to prevent

the cars from leaving the track, for their projecting flanges, together with the inner flanges of the wheels, would form an inclosed road, to escape from which an extraordinary cause would have to be manifested; but when such an emergency does present itself—as, for instance, in turning a very sharp curve on a narrow-gage road—it can be met by the application of my device for throwing out supports and guides into the grooves of the rails.

The device for projecting the bolts can be put on both ends of the car, if deemed best. If it is put on the locomotive the lever or shank which operates the device should be placed within reach of the engineer or fireman, so that they can use it without leaving their stations.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with railroad-cars, the lateral metal plates *K*, the elbow-shaped metal stays *N N*, fastened thereto, having the operating-bolts *O O* in their lower edges, with their rollers *R R*, the said bolts being projected by means of the knee or toggle-joint lever *S'*, operated upon by the bar *P'*, fastened thereto, and the shank *g*, or an equivalent device, substantially as and for the purpose herein described.

2. In combination, with the reversible double-flanged rail *C*, having the projecting flanges *F F'* and the groove *G*, the projecting bolts *O O*, and the rollers *R R*, fitting into the groove *G*, and operated by the knee or toggle-joint lever *S'*, and the screw-shank or other equivalent device, substantially as described.

In witness whereof I have hereunto set my hand.

J. DÉNÉCHAUD.

Witnesses:

GEO. H. STRONG,  
WM. F. BOOTH.