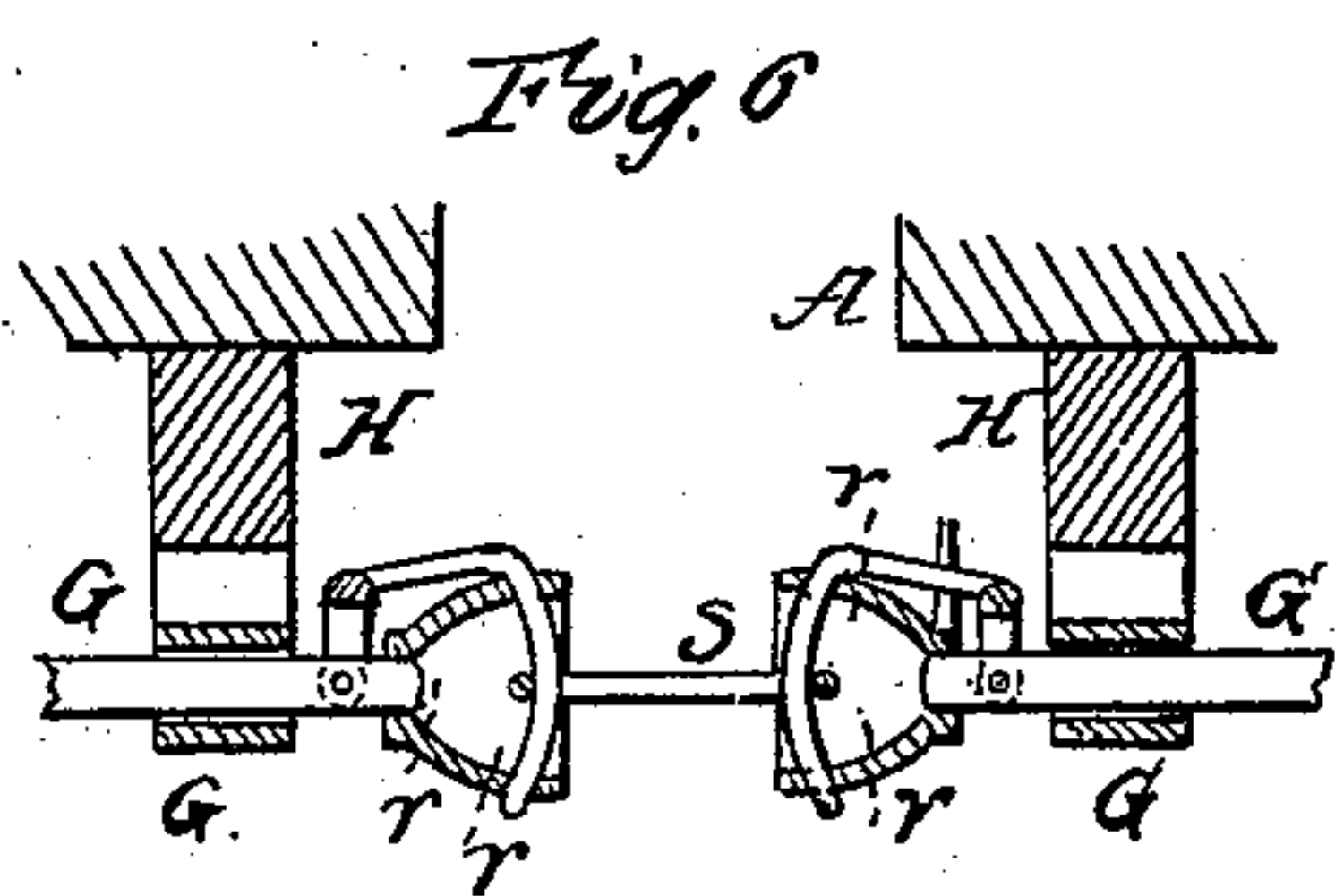
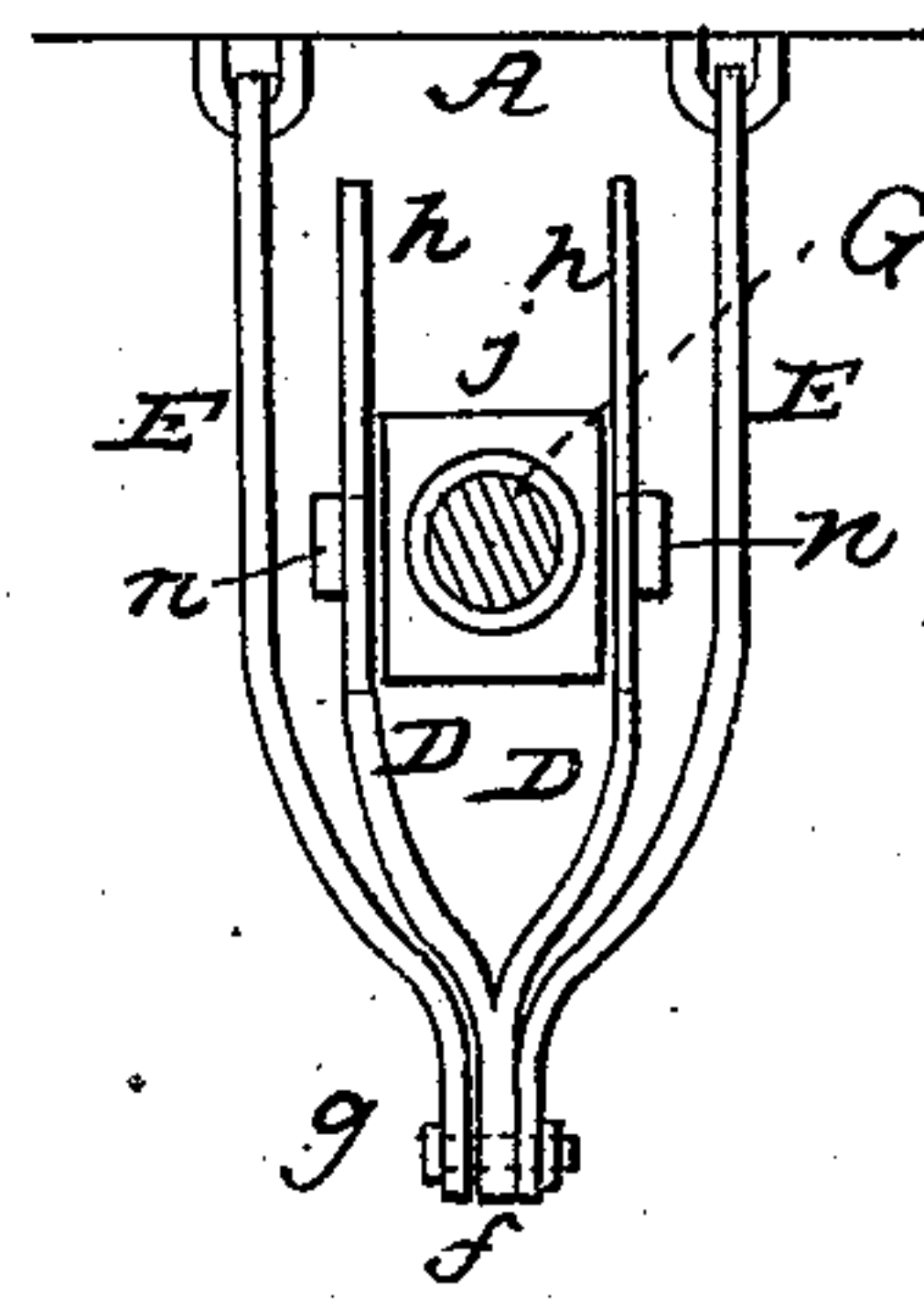
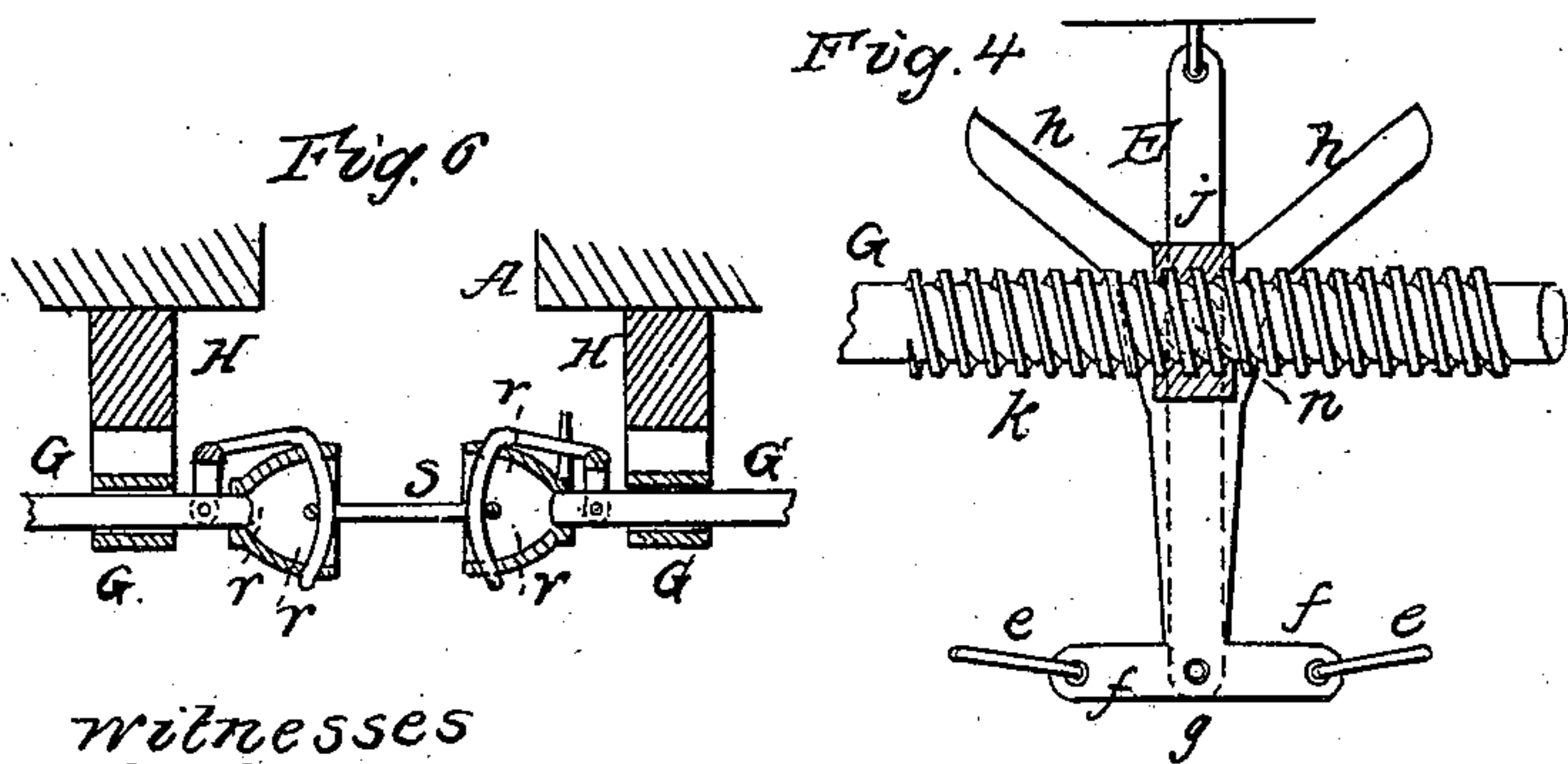
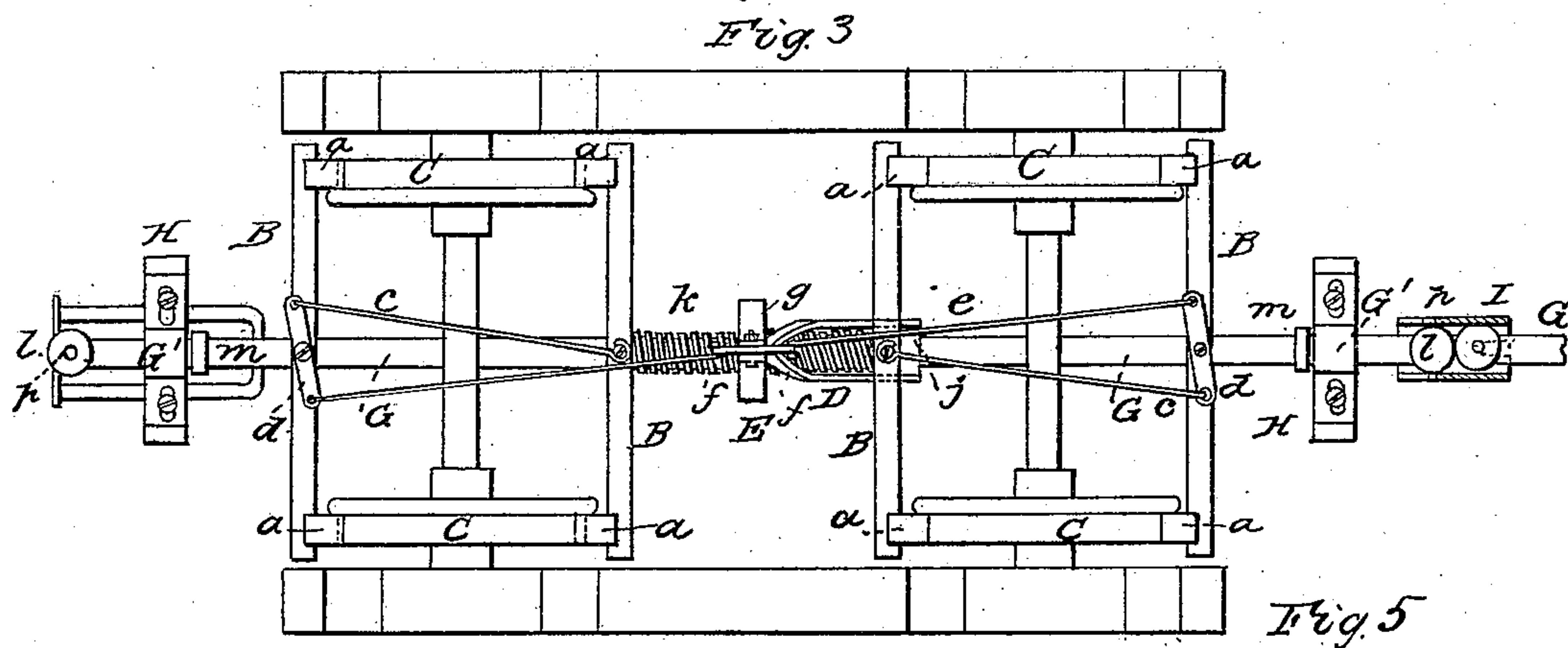
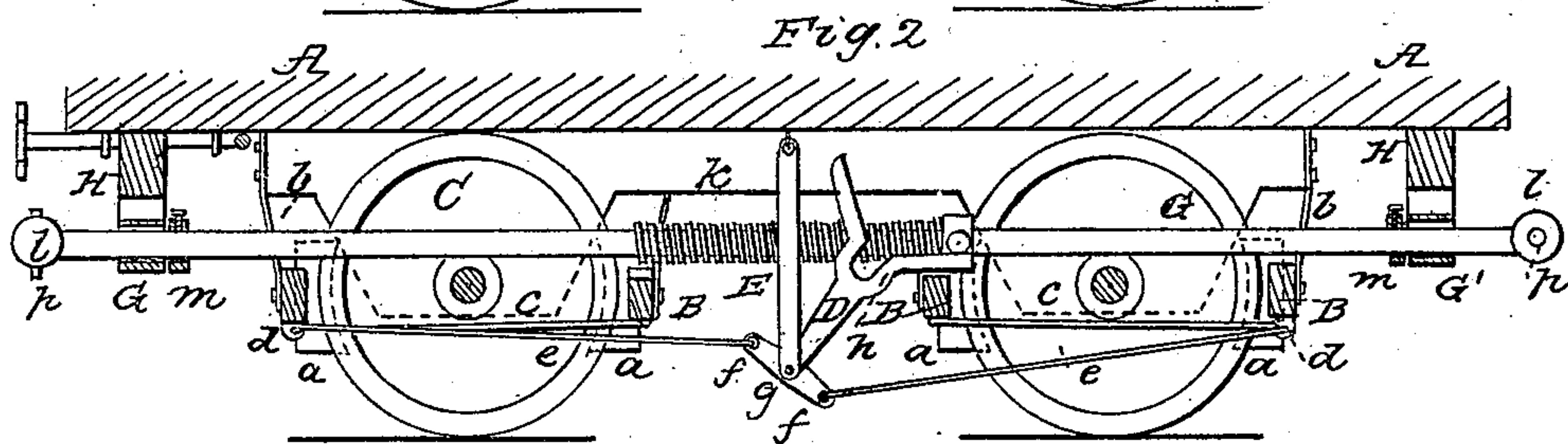
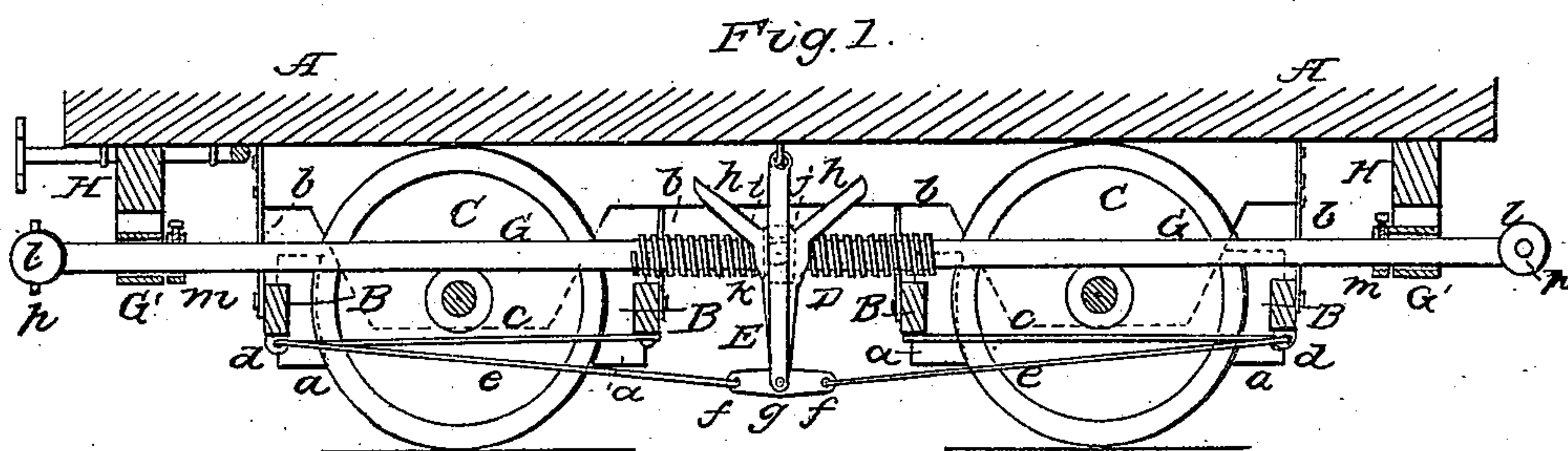


T. TOWNSEND.

Car Brake.

No. 92,230.

Patented July 6, 1869.



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# United States Patent Office.

FREDERICK TOWNSEND, OF ALBANY, NEW YORK.

Letters Patent No. 92,230, dated July 6, 1869.

## IMPROVED RAILWAY-CAR BRAKE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FREDERICK TOWNSEND, of the city and county of Albany, and State of New York, have invented certain new and useful Improvements which are applicable to Railroad-Car Brakes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a section, taken longitudinally and centrally through a railroad-car bed, having my improvements applied to it, and showing the relative positions of the parts when the brakes are released from the wheels.

Figure 2 is a similar view of the same parts, showing the relative positions of the parts when the brakes are applied to the wheels.

Figure 3 is a bottom view of the car-bed, showing the several parts for actuating the brakes, in the relative positions as indicated in fig. 1.

Figure 4 is a sectional view, showing one portion of the bifurcated lever, its nut, and the screw-portion of the rotary brake-shaft.

Figure 5 is an end view, showing the bifurcated lever, its pendants, nut, and brake-shaft.

Figure 6 is a sectional view, in detail, showing one mode of connecting the ends of the brake-shafts together by a coupling-link.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements which are designed for operating railroad-car brakes, by means of a rotary screw-threaded shaft, extending longitudinally from one end to the other of a car-bed, in combination with a travelling-nut, and with certain levers, to which the brake-bars are connected.

The nature of my invention consists—

First, in a centrally-arranged screw-shaft, which is sustained beneath a car-bed by laterally-adjustable journal-boxes, so that such shaft will compensate, by its lateral movements, for the lateral vibrations of a car while in motion, and thereby prevent those devices, through which the screw-shaft acts upon the brakes, from working hard, as will be hereinafter explained.

Secondly, in a double-acting bifurcated lever, to which the brake-bars are connected, which is so constructed and arranged as to be acted upon by a travelling-nut upon the screw-portion of the longitudinal screw-shaft, by turning the latter either toward the right hand or the left, thus adapting the mechanism to be successfully operated to apply or release the brakes from either end of the car, as will be hereinafter explained.

Thirdly, in so constructing the forked ends of the double-acting lever, that when the brakes have been fully applied to their wheels by the operation of the

travelling-nut upon said lever, there will be no further movement of this lever, nor force applied to the brakes, notwithstanding the movement of said nut be continued in the same direction, thereby preventing derangement or breakage of the mechanism, as will be hereinafter explained.

Fourthly, in pivoting the double-acting bifurcated lever to arms which depend from the car-bed, and which are connected loosely to said bed, so as to allow the lever a free lateral, as well as longitudinal movement, for the purpose of allowing it to accommodate itself to the movements of the trucks and the screw-shaft, as will be hereinafter explained.

The following description will enable others skilled in the art to understand how to carry my invention into practical effect.

My invention is applicable to railroad-cars as at present constructed, without any material change in the arrangement.

In the drawings—

A represents a car-bed, mounted upon trucks, which may be constructed in the usual well-known manner.

B B B B represent brake-bars, which are arranged in horizontal planes, and transversely, with respect to the length of the car-bed A.

These bars carry brake-shoes *a a* on their ends, which are intended to be drawn against the peripheries of the truck-wheels C C when it is desired to check or stop the motion of the train.

By means of hangers *b b*, depending from the truck-frame, the brake-bars B are suspended.

The drawings represent two pairs of brake-bars B, each pair being applied to the wheels of their respective truck.

Each pair of brake-bars should be connected together by means of a rod, *c*, fastened at one end, at the middle of the length of one bar, B, and connected at the opposite end to one arm of a short lever, *d*. This lever *d* has arms of equal length, and it is pivoted to the outer brake-bar, at the middle of its length.

This lever *d* is connected, by means of a rod, *e*, to one arm, *f*, of a bifurcated lever, D, the other arm of this lever being similarly connected to the brake-bars of the opposite truck.

The lever D is pivoted at *g* to the lower ends of pendants E E, which are connected loosely to the bottom of the car-bed A, at or near the middle of the length thereof, as shown clearly in the drawings.

It will be seen, from the above description, that all the brakes can be applied to the wheels simultaneously, by inclining lever D either to the right or left hand of a perpendicular line, in a direction with the length of the car-bed.

The lever D is constructed with forked arms *h h*, arranged at about an angle of forty-five degrees to one another, and also with slots *i i*, at the junction or crotches of these arms.



The two side-portions of this lever receive between them a nut, *j*, which is upon the screw-portion *k* of a shaft, *G*, which nut is constructed with studs *n n* on opposite sides, that are received by the slots *i i* on the side-portions of lever *D*, as shown by fig. 5.

As long as the studs *n n* are in the said slots *i i*, and nut *j* is moving, the lever *D* will be moved in a corresponding direction, and will be caused to act upon the brakes, either to apply them to their respective wheels or to release the wheels from them; but when the nut has moved beyond a certain point on either side of the middle of the length of the car-bed, so as to cause its studs *n n* to pass over the arms *II*, the further movement of the lever *D* will cease, although the said nut may continue to move.

The screw-shaft *G* extends the entire length of the car-bed, and is provided with coupling-balls *l l* on its extremities, which will be hereinafter referred to more particularly.

This shaft is sustained by flanged journal-boxes *G' G'*, which are secured to rigid hangers *II II*, depending from the car-bed *A*, so that the boxes *G' G'* and their shaft are allowed to move laterally on one side or the other of the longitudinal centre of the car-bed.

The collars *m m*, which are secured to the shaft *G*, will prevent it from having endwise motion, but allow it to be rotated freely.

In carrying my invention into practice, I shall employ slotted-sleeve coupling-boxes *I*, like the one shown in fig. 3, and have balls *l l* on the ends of the shafts *G*, which will fit into said boxes *I*, and by means of studs *p p* on the balls, fitting loosely into the slots in said boxes, one shaft, *G*, can be made to transmit the rotary motion which it receives to other shafts; at the same time the shafts will have universal motion allowed to them at their junctions, one with another, throughout an entire train.

Instead of the ball-and-socket box-connections, the same result may be accomplished by other means, as, for instance, the link-connection *s*, represented in fig. 6, might be adopted.

This consists of bell-mouths *r r*, applied fast on the ends of the shafts *G*, and provided with curved or straight coupling-pins *r'*.

The coupling-pin *r* of each bell-mouth, shown in fig. 6, is pivoted so as to swing in the arc of a circle and be guided in its movements by the manner in which it is pivoted. Some such coupling will be required for connecting the rods *G* throughout a train of cars, if it is intended to place the control of all the brakes under charge of the engineer, and to have him operate all the brakes from his station on the engine; but if it is intended to have brakemen stationed upon the plat-

forms of each car, and to give these men control of the brakes, the rods *G* will not be connected together, but must be operated by hand-wheels or other equivalent means.

It will be seen, from the above description, that I employ, in combination with a travelling nut, *j*, on a longitudinal screw-shaft, *G*, a double-acting lever, *D*, to which the brakes of both trucks are connected, so that, by the movement of said nut *j* in either direction from its central position, indicated in figs. 1 and 4, the brakes can be applied simultaneously to all the wheels.

It will also be seen that the arms *h h*, on lever *D*, in combination with the studs *n n*, on the nut *j*, allow this nut to be moved past the point required to fully apply the brakes without producing undue strain upon the lever or the parts connected therewith.

In practice, I shall apply stops or spring-collars at the termini of the screw-thread, so that should the nut *j* be casually moved so far as to leave its thread, the said stops would hold it in such position as to cause the thread to take the nut again upon reversing the rotary movement of the screw-shaft.

I shall also apply turn-buckles to the rods *e e* and *e*, for the purpose of adjusting their length, according to circumstances; also to compensate for wear of the brake-shoes.

I am aware that, broadly considered, it is not new to employ a rotary screw-shaft, arranged beneath a car-bed, and adapted for operating devices which in turn actuate the brakes; but I am not aware that a double-acting contrivance, which would operate substantially as described, has ever been known or used before my invention thereof.

Having described my invention,

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

1. A laterally-movable screw-shaft, provided with couplings on its extremities, and adapted for operating railroad-car brakes, substantially as described.

2. A double-acting lever, *D*, or its equivalent, interposed between a travelling nut, on a rotary screw-shaft, *G*, and a system of brakes, substantially as described.

3. Lever *D*, constructed with forked arms *h h*, and combined with a travelling nut and a system of brakes, substantially as described.

4. The manner of suspending the lever *D* from a car-bed, so that it will accommodate itself to the motions of the shaft *G* and car-trucks, substantially as described.

FREDK. TOWNSEND.

Witnesses:

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H. W. GARFIELD.