(No Model.) 2 Sheets—Sheet 1.

C. B. ASKEW.

RAILWAY SYSTEM.

No. 413,158. Patented Oct. 22, 1889.

Fig 1.

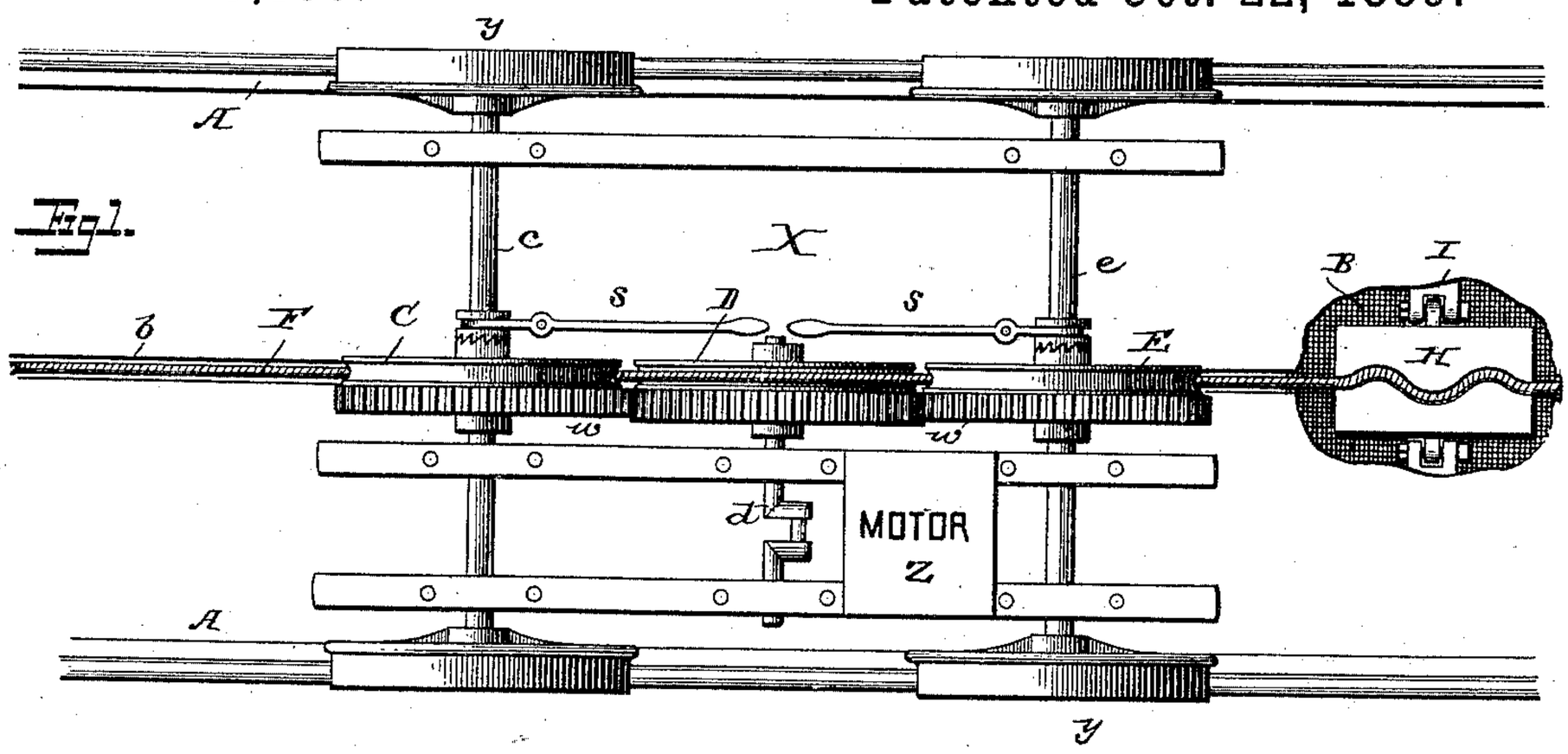


Fig 2.

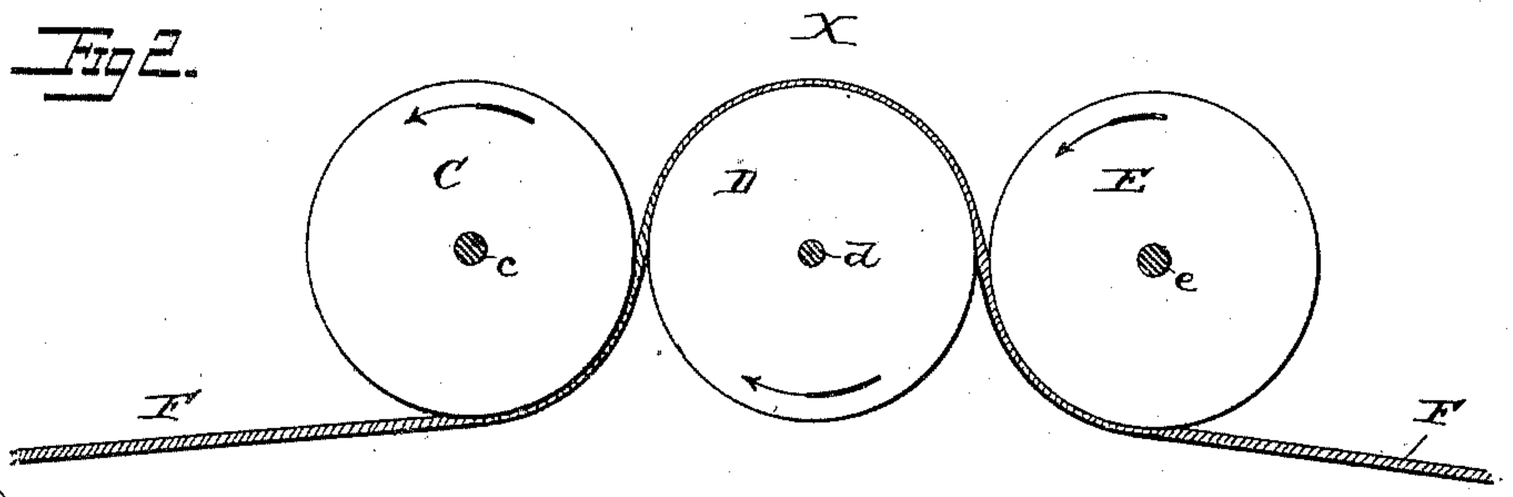
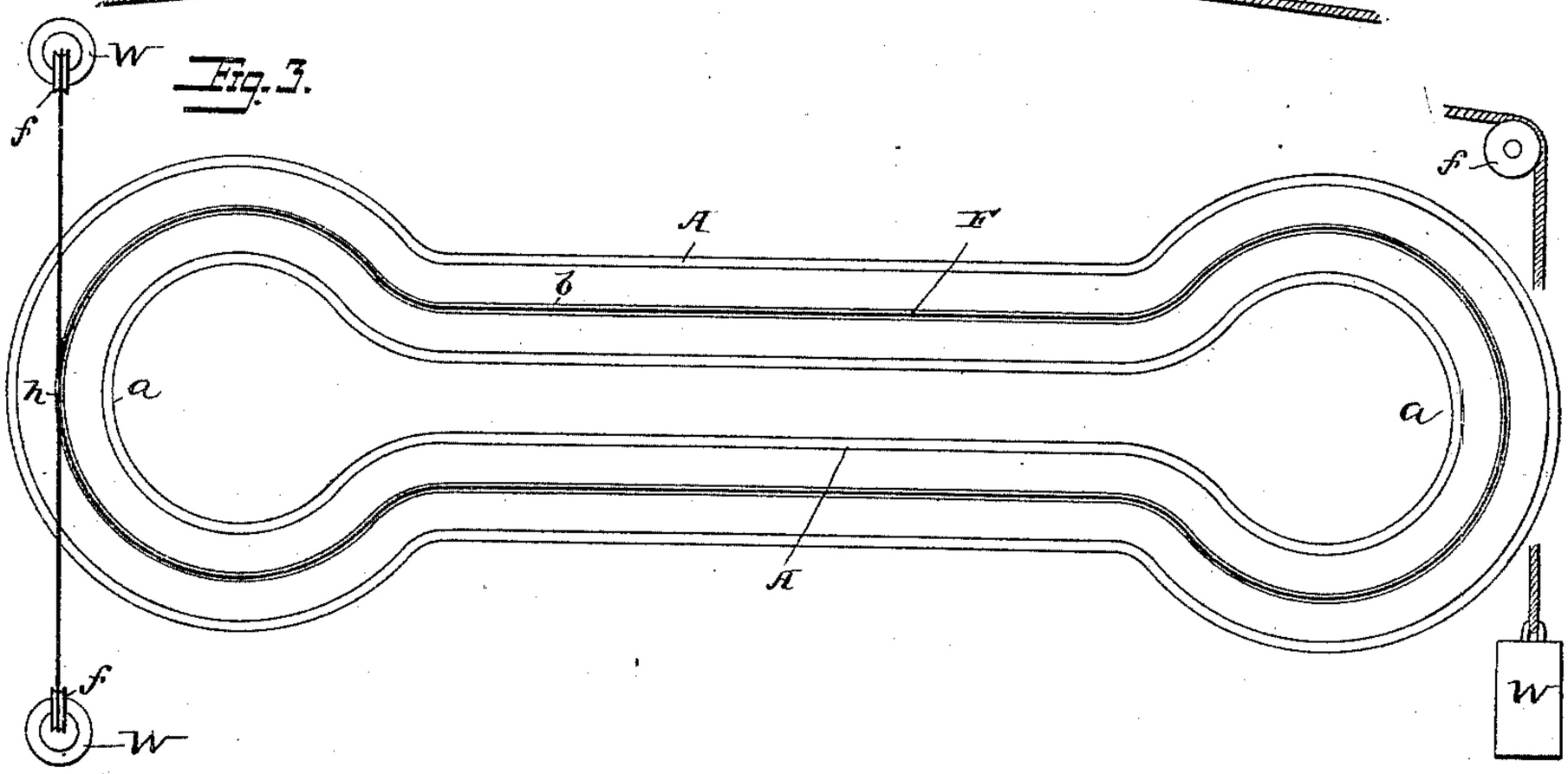


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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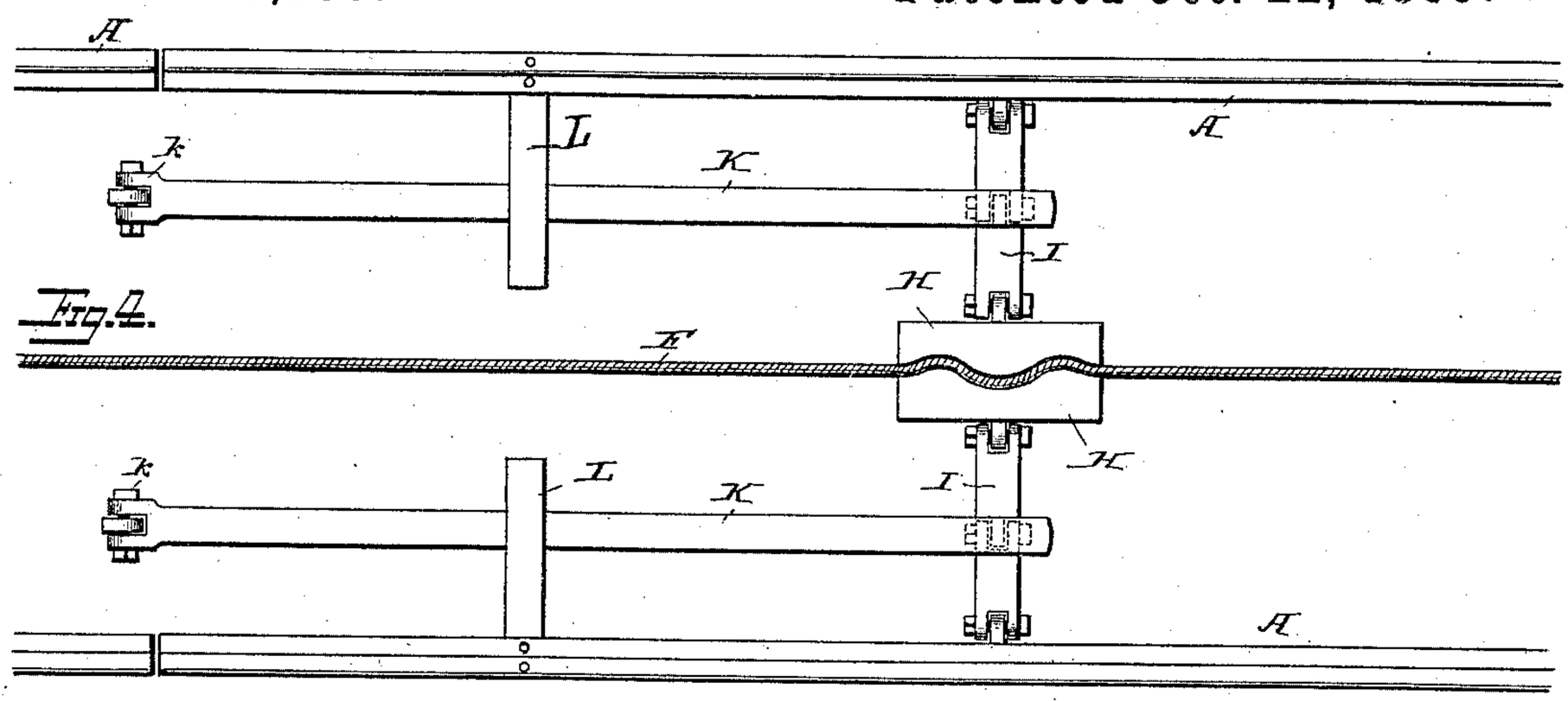


Fig. 4.

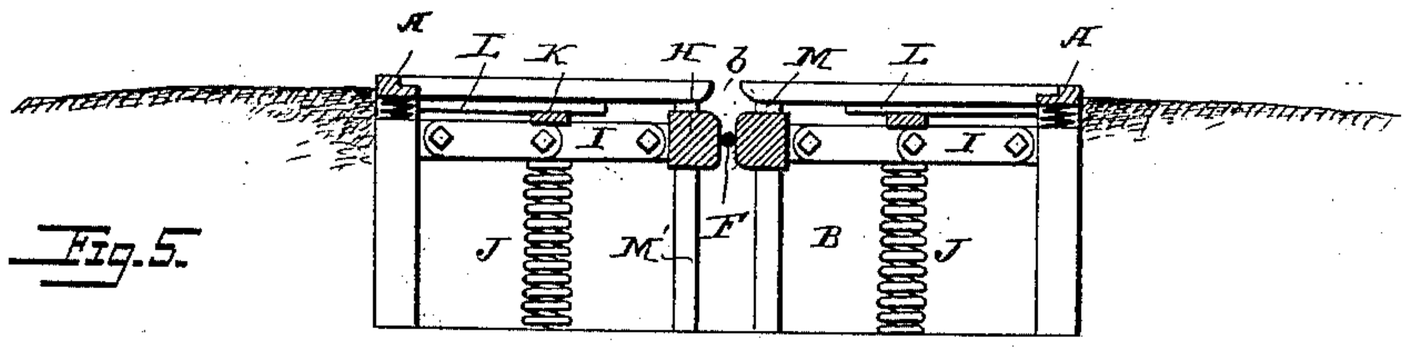


Fig. 5.

Fig. 6.

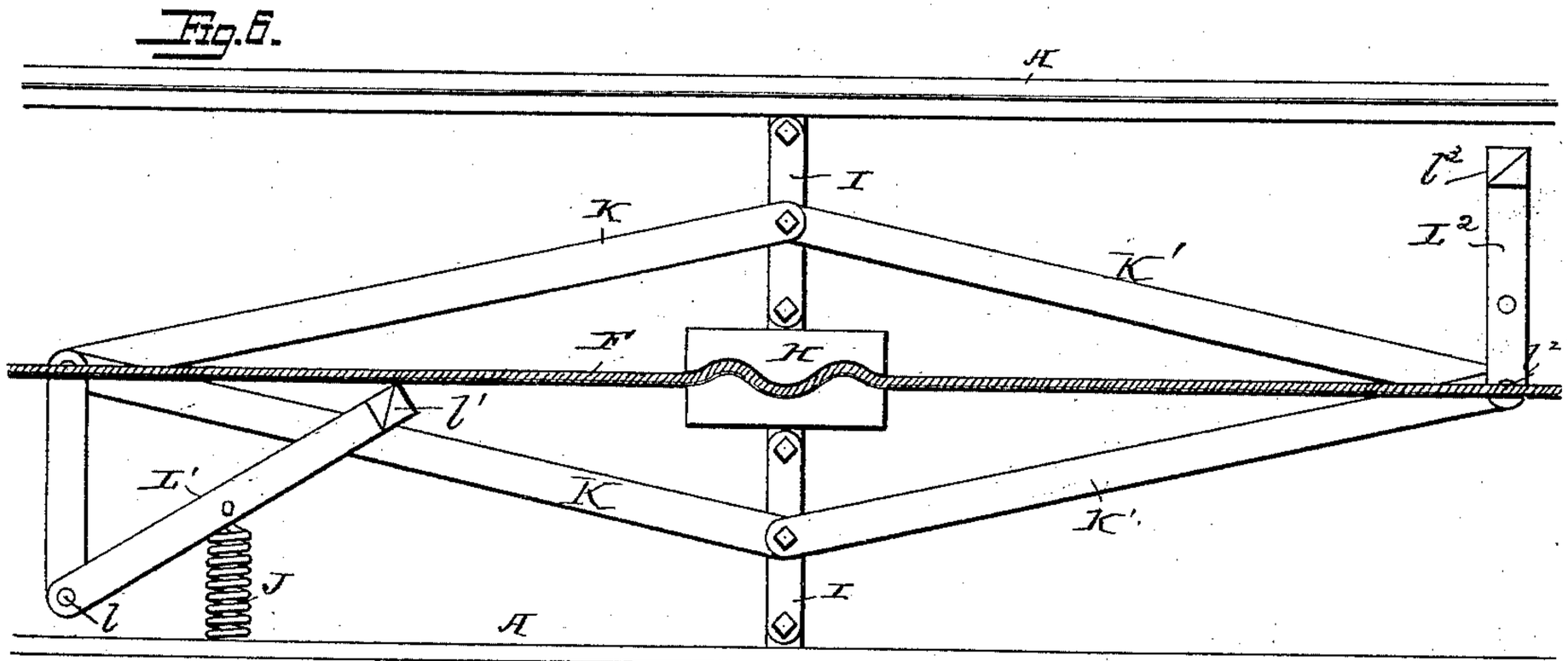
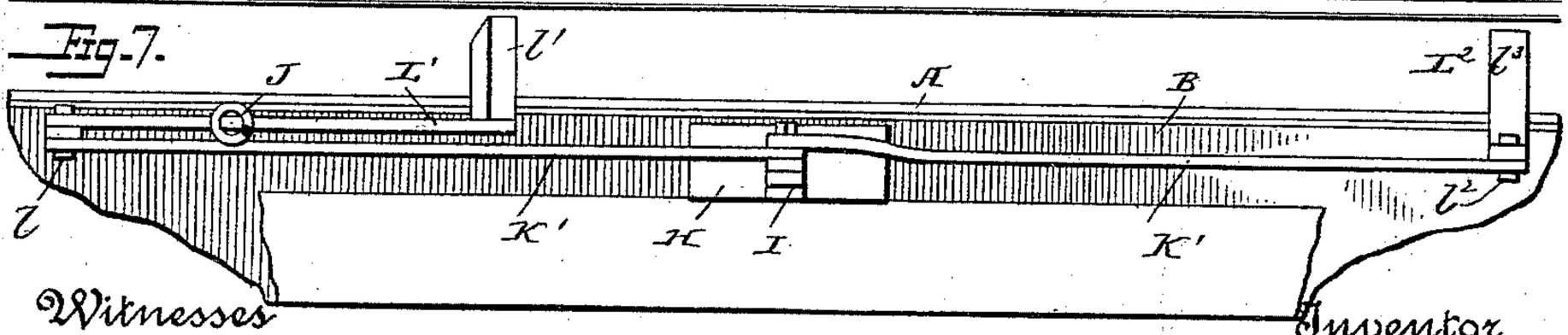


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES B. ASKEW, OF CHICAGO, ILLINOIS.

RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 413,158, dated October 22, 1889.

Application filed August 24, 1888. Serial No. 283,661. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. ASKEW, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway Systems, of which the following is a full, clear, and exact description.

This invention relates to railway systems wherein a stationary cable is employed which is adapted to pass over a driven winding drum or wheel carried by the car, whereby by drawing upon the cable the car is propelled; and it consists in arranging or mounting the cable with one or both ends thereof free and weighted; in providing stationary gripping devices arranged to clamp the cable between its ends, and to be released therefrom as the car approaches, so the cable may be free to pass to the winding-wheel, and in certain other features of invention, which are hereinafter pointed out, and illustrated in the drawings, wherein—

Figure 1 is a plan view of a railway-track and motor-car embodying my invention. Fig. 2 is a central longitudinal section thereof. Fig. 3 is a diagrammatic view illustrating my invention applied to a continuous looped track-line. Fig. 4 is a top plan view of one form of cable-gripping device. Fig. 5 is an end view thereof. Fig. 6 is a top plan view of another form of cable-gripping device; and Fig. 7 is a side view thereof, partly in section.

In the drawings, A A represent the rails, and B a channel or conduit situated between the rails and provided with the usual slit *b*. Mounted within this channel is a stationary cable F, having sufficient slack between its ends to permit it to pass upward through the slot *b* to engage with the one or more sheaves or pulleys mounted upon the cars X, which are adapted to take up the cable from in front and to pay it out in rear, and thereby, by drawing upon the stationary cable, to propel the car. The particular arrangement of the devices for securing this result may be almost indefinitely varied. I have, however, shown the car X mounted upon the traction-wheels Y, carried by the axles *c e*, which are positively driven by a motor Z, the axles also carrying grooved wheels or pulleys C and E of the same diameter as are the supporting and driving wheels Y, and arranged directly over the slot *b* in the cable-channel. Between the wheels C and E, and in line therewith, is another grooved wheel D, positively mounted upon the shaft *d*, which is driven from the motor. This shaft *d* also carries a gear-wheel which drives the gear-wheels *w* on the shafts *c e*, which are connected with and drive the pulleys C E. The cable as it is drawn from the channel by the advancing car passes upward, first contacting with the lower edge of the pulley C, thence passes over pulley D and back to the channel, contacting in its passage with the lower face of the pulley E, which pulleys, being positively driven, tend to propel the car by drawing upon the stationary cable. This construction is simple and effective in its operation, and permits the cable to be instantly thrown off from the winding-wheels should it become broken or otherwise disabled, allowing the car to proceed by means of its own traction.

By preference the wheels C and E, instead of being fast upon the shafts *c* and *e*, are mounted upon sleeves loose thereon and adapted to be clutched to the shafts in any usual manner, as by the shipping-levers *s*. This is desirable, since by reason thereof the cable may be wound up before starting the car, should it from any cause be slack in front thereof.

Instead of securing the cable permanently at each end, as has heretofore been customary in this style of car-propulsion, I pass one or both ends thereof over a pulley or pulleys *f*, securing to one or both ends a weight W, which hangs in a well or pit provided therefor and keeps the cable taut, and yet permits it to be drawn out of the channel or conduit and passed around the winding-wheels on the cars, as hereinbefore set forth.

Between the ends of the cable or the termini of the road I interpose stationary gripping devices operating to clamp or hold the cable and divide it into a number of sections, each shorter than the length of the whole line. These gripping devices I consider essential, since in order that a railway system such as I have described, employing a stationary cable, may work successfully when the cars run

at high rates of speed a very flexible cable, and hence one of small diameter, must be used. Such a cable could not stand the strain to which it would be subjected from a large number of cars were it secured only at its ends; but by subdividing it into a number of short sections by means of the gripping devices, in each of which sections but few cars will ordinarily be operating simultaneously, the danger of breaking the cable is reduced to a minimum. These stationary gripping devices may be varied in many ways, it being only essential that they should ordinarily clamp the cable and yet open to free it when the car is about to pass, in order to permit the withdrawal of the cable, so that it may pass over the winding-wheels on the cars. I have illustrated two forms of such gripping devices.

Referring to Figs. 4 and 5, wherein there is shown a pair of grippers intended to release the rope by the weight of the passing cars, H H represent blocks or jaws mounted between the guides M M′, upon opposite sides of the cable F, which they grip as they are forced toward each other, their contiguous edges being by preference provided with alternate interlocking projections and recesses to increase their clamping or gripping action. I I are toggle-links extending horizontally from the walls of the channel B and connected to the blocks H, the links being normally held in line with each other, thus forcing the blocks H together by means of strong springs J J, mounted below the links. K K are levers bearing upon the links I, and arranged to be moved by the weight of a passing car, so as to move the links against the action of the springs, and thereby withdraw the blocks from engagement with the cable. I effect these movements by so arranging a portion of the rails A that they shall be depressed somewhat as a car passes upon them, which motion is transmitted to the levers through a bar L, connecting the rails and bearing upon the levers K between the points where they engage with the links I and their pivots *k*. So long as the levers K are depressed by the weight of a passing car the gripping-blocks H will be separated and the cable free to pass over the winding-drums upon the car; but as soon as the car passes the track-portions which are arranged to be depressed the blocks are forced together by the springs J and again grip the cable.

Another form of gripping device is shown in Figs. 6 and 7, wherein the contact of some portion of the car with some movable part of the gripping devices releases the grip. In this construction the gripping-blocks are moved by the toggle-links I, which in this instance move in horizontal instead of vertical planes, as in the other construction. K′ are links connected with the toggle-links, and also with one arm of an elbow-lever L′, fulcrumed at *l*, which has an arm *l′* projecting upward into a position to be struck by some projecting part of the car and moved against the action of the springs J, which hold the blocks clamped upon the cable. If preferred, the blocks may be positively forced to again clamp the cable after having been released by a moving car by connecting with the links I, by means of links K, a lever L^2, fulcrumed at l^2, and having a projecting arm l^3, adapted to be struck by some projection from the car and moved to close the blocks, as will be understood without detailed description.

These gripping devices are interposed at suitable intervals, the distance apart depending upon the travel upon the road, one to each half mile or less being sufficient, and are employed at all curves in order to keep the cable within the channel at such places.

In Fig. 3 is indicated a continuous track-road provided with loops *a* at its ends, whereby the track is made continuous. In this construction but a single cable is employed, the ends thereof crossing each other at *h*, and being each provided with a weight W. This construction permits a car to make the complete circuit of the road without having to stop and change the cable upon the winding-wheels on the cars, it only being necessary to change the cable at the point *h*. The channel or conduit B may be dispensed with under certain circumstances—as when my invention is used upon an elevated railroad—in which case the cable might lie upon the cross-ties.

I do not wish to be limited to the precise details of construction shown, since it is evident that many devices the mechanical equivalents of those shown might be employed—as, for instance, in the winding mechanism and the gripping devices—those which I have shown and described being selected merely to show an operative system.

I claim—

1. In a railway system, a track, a car provided with a driven winding-wheel, and a stationary cable mounted adjacent to the track and arranged to pass over the said winding-wheel on the car, the end of the cable being free and weighted, substantially as described.

2. In a railway system having a continuous looped track, a single stationary cable mounted adjacent to the track, having its end portions crossed, and a car provided with a winding-wheel, substantially as and for the purpose set forth.

3. In a railway system having a continuous looped track, a stationary cable mounted in a channel adjacent to the track, and having its end portions crossing each other and free and weighted, and a car provided with a winding-wheel for the cable, substantially as described.

4. In a railway system, the combination of a stationary cable lying adjacent to the track and stationary gripping devices for engaging with the cable between its ends, substantially as described.

5. In a railway system, a track, a car traveling thereon provided with a winding-wheel, a stationary cable arranged adjacent to the track, and a stationary gripping device having blocks or jaws which clamp the cable and connected to be separated by the passing of a car, substantially as described.

6. In a railway system, a track, a car traveling thereon provided with a driven winding-wheel, a stationary cable arranged adjacent to the track, the stationary cable-clamping blocks or jaws, the springs which hold the jaws clamping the cable, and levers connected with the blocks or jaws and operated by a passing car to separate the blocks or jaws against the action of the springs, substantially as described.

7. In a railway-car, the combination of the traction-wheels, a driven wheel *w*, mounted loosely on the axle of the wheels, a clutch whereby the wheel *w* may be connected with the axle to drive the traction-wheels, and a cable-winding pulley connected with the wheel *w*, to be driven thereby, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES B. ASKEW.

Witnesses:
FORÉE BAIN,
H. Y. LAZEAR.