

(No Model.)

J. A. MILLER.

RAILWAY TRAIN SIGNAL.

No. 341,677.

Patented May 11, 1886.

Fig. 1.

Fig. 2.

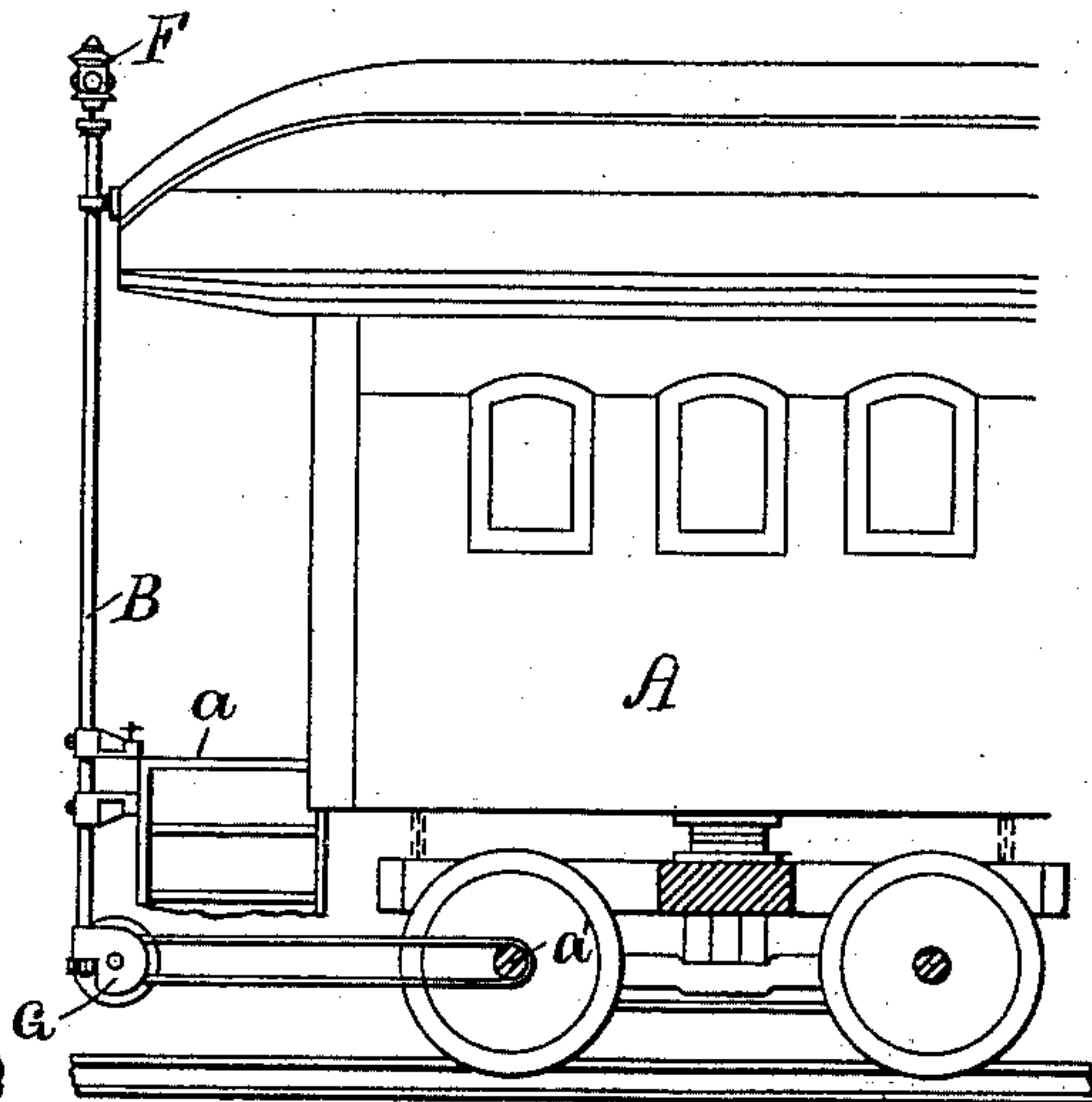
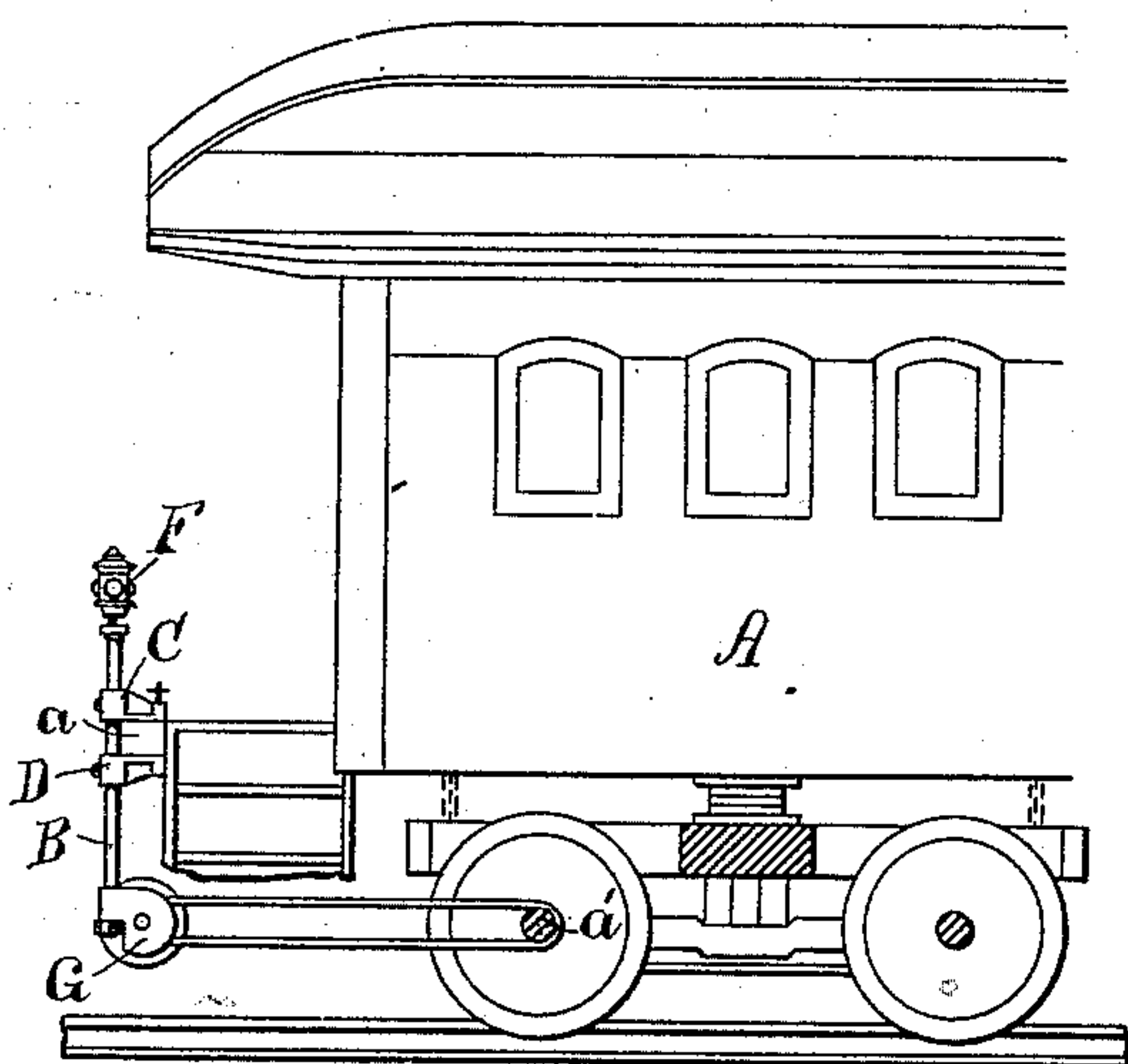


Fig. 5.

Fig. 4.

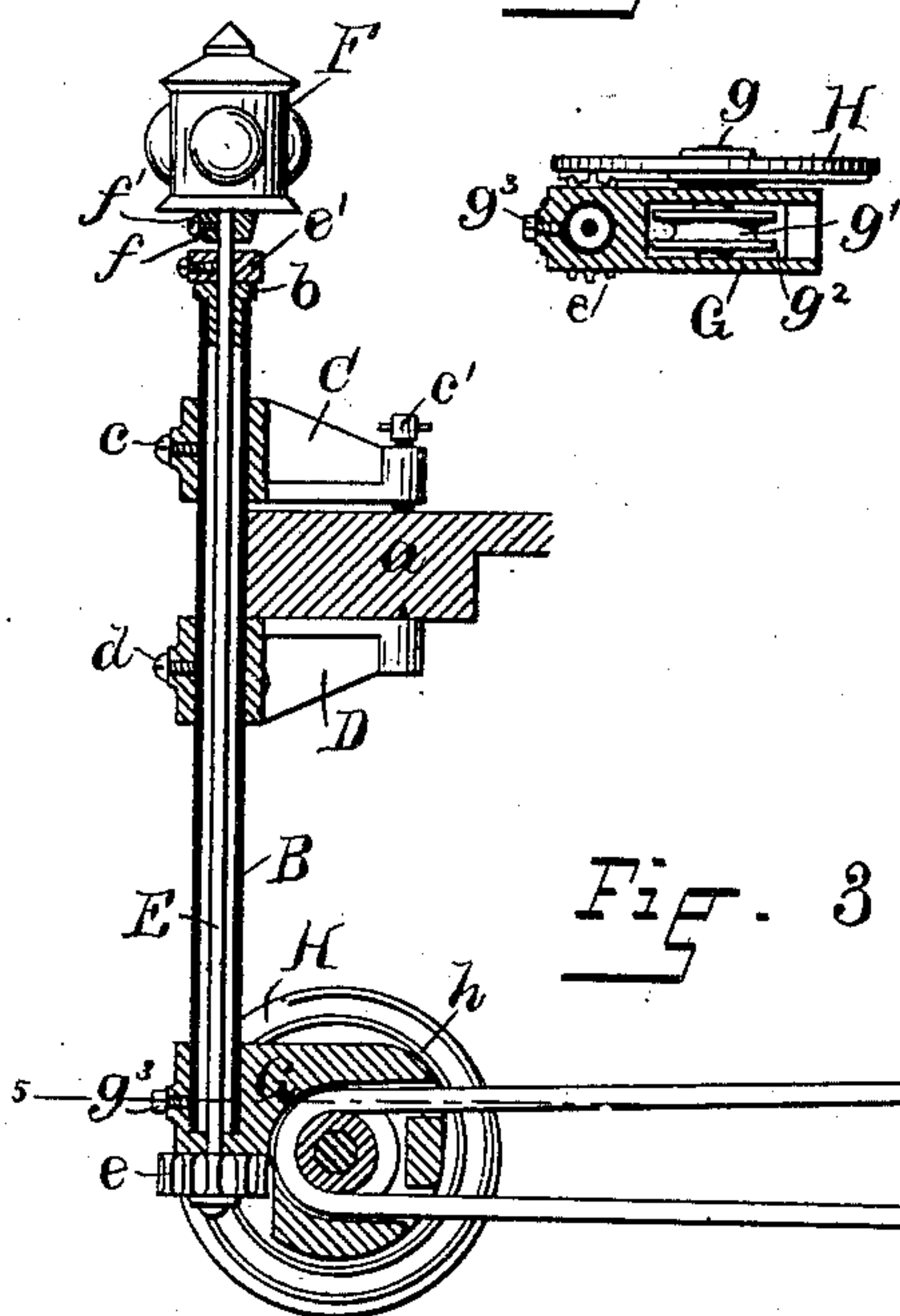


Fig. 3.

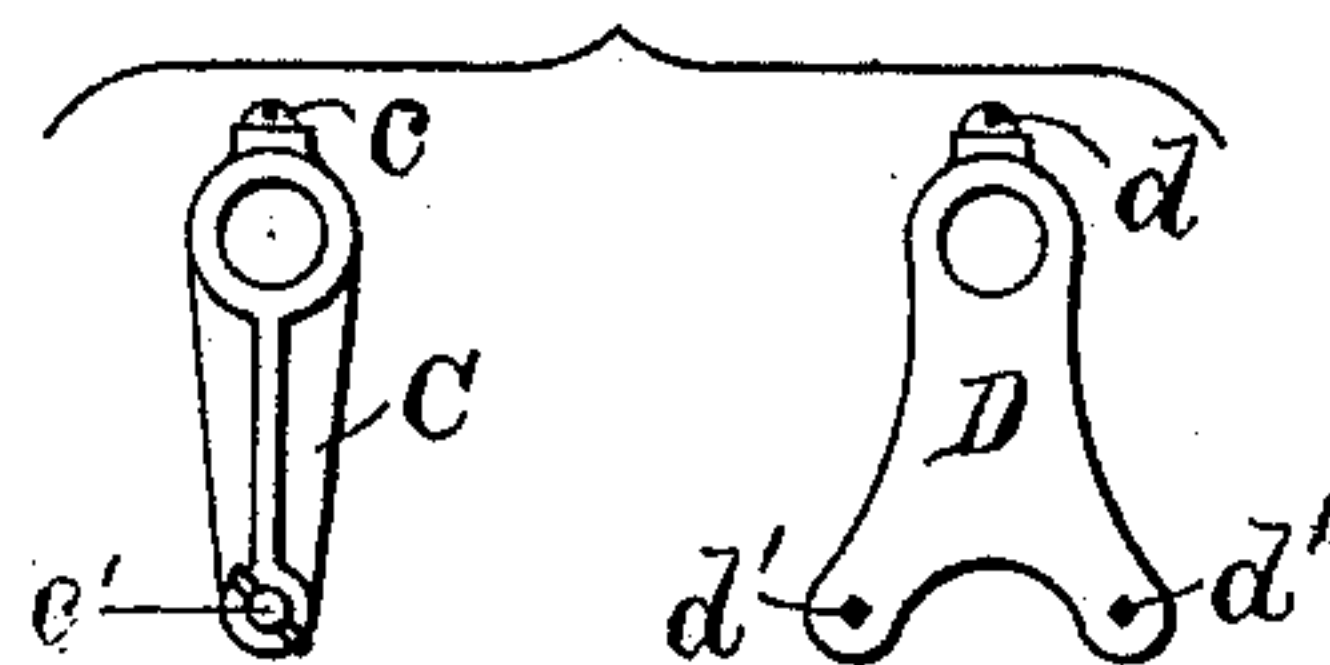


Fig. 6.



WITNESSES:

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JOHN A. MILLER, OF CAIRO, ILLINOIS.

RAILWAY-TRAIN SIGNAL.

SPECIFICATION forming part of Letters Patent No. 341,677, dated May 11, 1886.

Application filed September 2, 1884. Serial No. 142,033. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. MILLER, of Cairo, in the county of Alexander and State of Illinois, have invented certain new and useful Improvements in Railway-Train Signals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to that class of signals which are attached to railway-trains and are operated by the truck-axle, for the purpose of indicating to a following train the speed of a preceding train.

The objects of my invention are to produce a signaling apparatus which may be readily detached from one end of the car or train of cars and attached to the opposite end of such car or train; also, to secure regular movements of the signaling device; also, to secure a direct working strain in the driving-connection; also, to provide a firm support for the apparatus to overcome the effects of irregularities in the axles and to prevent clogging of the driving-belt due to accumulations of dust, &c.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement of the driving and transmitting devices and of the devices for supporting the apparatus, as hereinafter described and claimed.

Train-signals of the class to which my present invention relates consist of a lantern or other signal, which is rotated by power transmitted from the truck-axle. This class of signals has been heretofore so constructed that the various changes in the position of the car-body while in motion upon its trucks, and the irregular form of the truck-axle, have all rendered the signal irregular and uncertain in its action. Furthermore, previous devices have not been capable of ready detachment from one end of a car or train of cars and ready attachment to the other end of the car or train. Thus the efficiency of such previous devices has been seriously impaired, if not totally destroyed. My invention perfectly overcomes these objections and produces a thoroughly efficient, durable, and simple signaling apparatus.

In order that my invention may be fully

understood, I will proceed to describe it with reference to the accompanying drawings, in which--

Figure 1 is a sectional view of one end of a car and its truck with my improvements applied. Fig. 2 is a similar view showing a modified form of my invention. Fig. 3 is a detached view in vertical section of my improvements. Fig. 4 is a detached view of the clamping-arms. Fig. 5 is a horizontal section of the box G on line 5 of Fig. 3. Fig. 6 is a detached view of a portion of the driving-belt.

In the said drawings, A designates the body of a railway-car. *a* designates the platform of the car, and *a'* designates the truck-axle which is nearest to the platform.

Upon the end of the platform *a* is secured a tube, B, which is held by two arms, C D, respectively. The arm C rests upon the upper side of the platform, and is a straight bar having an eye at its outer end, through which the upper part of the tube B passes, and in which eye the said tube is held by a binding-screw, *c*. At its inner end the arm C is formed with an internally screw-threaded eye, into which works a clamping-screw, *c'*.

The arm D is of the Y form, as shown in Fig. 4, and its outer member is formed with an eye, through which the tube passes, and in which eye the said tube is held by a binding-screw, *d*. This arm D is placed beneath the platform *a*, and upon the upper side of each of its inner members is formed a stud, *d'*, which is designed to enter the under side of the platform. Thus it will be seen that by the combined action of the arms C D the tube B will be held against any movement which the bounding and swaying of the car-body would tend to produce.

E designates a rod or shaft, which extends vertically through the tube B, and which carries at its lower end a pinion, *e*, the purpose of which will be hereinafter explained. At its upper portion the rod E passes through an eye in a cap, *b*, which is threaded into or otherwise secured to the upper end of the tube B. The rod E is also provided with a collar, *e'*, which rests upon the cap *b* and supports the rod E in its operative position. At its upper end the rod E carries the signal-lantern F, which is formed at its base with an inverted socket, *f*, into which the upper extremity of

the rod E fits, a binding screw, f' , being used to hold the lantern F upon the rod E. Thus it will be seen that the lantern F must move with the rod E.

5 G designates a box, which is of the form shown in Figs. 1, 3, and 5. This box carries a shaft, g , which extends transversely of the car and in horizontal position, the said shaft having two bearings in the box G, as shown.
10 The shaft g carries the belt-pulley g' , which works in an aperture, g'' , in the box G.

H designates a disk, which is mounted upon one end of the shaft g , and which carries upon its face a worm or spiral, h , which engages the teeth of the pinion e . The outer end of the box G is formed with a socket, into which the lower end of the tube B is placed, and said box is held upon the tube by a binding-screw, g''' , as shown. Opening from the bottom of the said socket, and in central alignment therewith, is an eye through which passes the lower end of the rod E, the pinion e lying just beneath said eye.

Upon the truck-axle a' is placed a suitable pulley, and a belt, I, passes over said pulley and thence over the pulley g' . The belt I is formed of spiral steel wire, and this particular construction of the belt renders it a peculiar and novel feature of my invention.

30 Owing to the fact that the axles of car-wheels are not turned true, but are only hammered, they do not furnish a uniform source of tension upon a driving-belt; hence, in order to secure a uniform action of the belt, it must possess considerable elasticity and strength. Heretofore rubber belts have been used for this purpose; but it has been found that these belts were defective, because of their peculiar texture. Rubber belts become covered with dust and dirt, and owing to their peculiar texture, press the dirt upon the pulley and axle, the result being that the working of the belt is soon seriously impeded and ultimately prevented. The spiral-wire band, on the contrary, being of open work, possesses not only the requisite degree of elasticity, but it prevents any accumulation of dust or dirt and removes the same from the axle and pulley.

50 A feature of great importance in my invention is the fact that the device may be readily detached from one car and placed upon another by simply unscrewing the clamping-screw c' and removing the belt I, which latter should be so arranged that it may be readily disconnected for this purpose.

The lantern F may be placed upon the roof of the car, if desired, as shown in Fig. 2, and this is accomplished simply by using a tube, 60 B, and rod E of increased length and securing the upper end of the tube to the car-roof.

As the result of my invention all rapid variations in the driving connections are equal-

ized by the worm h and pinion e , so that the lantern revolves steadily, and therefore correctly, and clearly indicates the speed of the train.

The device is so firmly supported that it will not be dislodged by the swaying, jolting, or bounding of the car, and the belt will readily adjust itself to these various movements of the car-body. It will be seen that the strain exerted by the belt is a direct strain from the axle to the box G, and continues so under all conditions. The spiral or worm h operates like a single continuous tooth in meshing with the pinion e . Obviously there is a great advantage in its office in decreasing the speed of revolution of the signal-carrying rod, since one complete turn of the spiral h advances the pinion e the space of a tooth in the revolution of the pinion.

The device is simple and durable, and perfectly reliable in its action.

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

1. The combination, with the signal-carrying rod having a pinion on its foot, of the actuating-pulley whose radial plane lies in an axial plane of said rod, said pulley operating a disk which has a spiral or worm meshing with said pinion, for the purpose described.

2. The box G, having the aperture g'' , in combination with the shaft g , carrying the pulley g' , the signal-carrying rod E, with its pinion e , and the disk H, having the worm h , substantially as described.

3. The combination, with the tube, the rod carrying the pinion and the clamping-arms, of the box G, the driving-shaft carrying the pulley and worm-disk, the axle, and the belt having direct working strain between the axle and the shaft-pulley, substantially as specified.

4. The combination, with the tube having the cap, the rod or shaft carrying the lantern and pinion, and the clamping-arms C D, of the box G, secured to the tube, the shaft g , mounted in said box and carrying the pulley and worm-disk, the axle and the open spiral wire belt connecting the shaft-pulley with the axle, as set forth.

5. The combination, with the tube B, having the cap, the rod E, having the collar e' , and pinion e , and the clamping-arms C D, having the eyes, binding-screws, and clamping-screw, of the box G, having the binding screw g''' , the shaft g , having the pulley g' , and disk H, with its worm h , and the belt I, for connecting the axle with the pulley g' , and the axle, as described.

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Witnesses:

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