

(No Model.)

J. W. HARTIGAN.  
CAR BRAKE.

No. 459,782.

Patented Sept. 22, 1891.

Fig. 1.

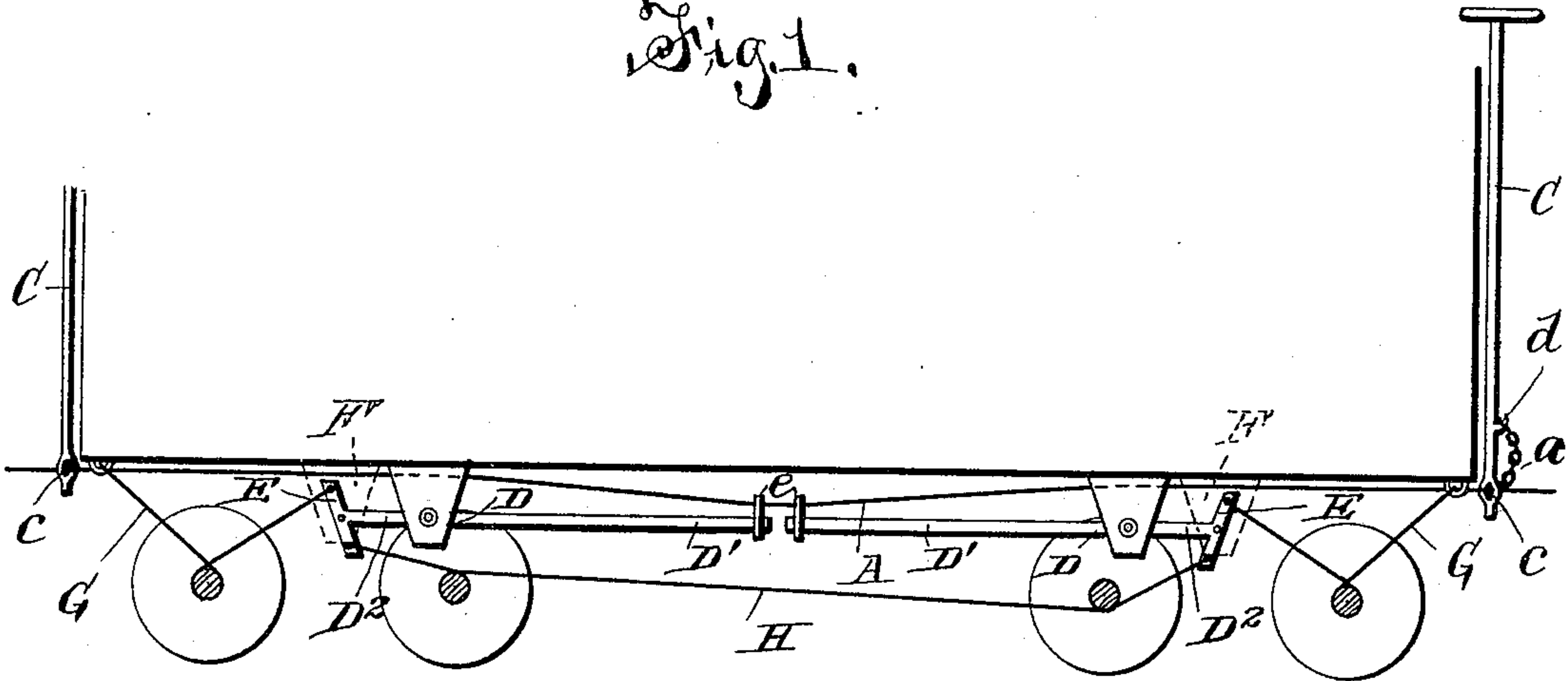


Fig. 3.

Fig. 2.

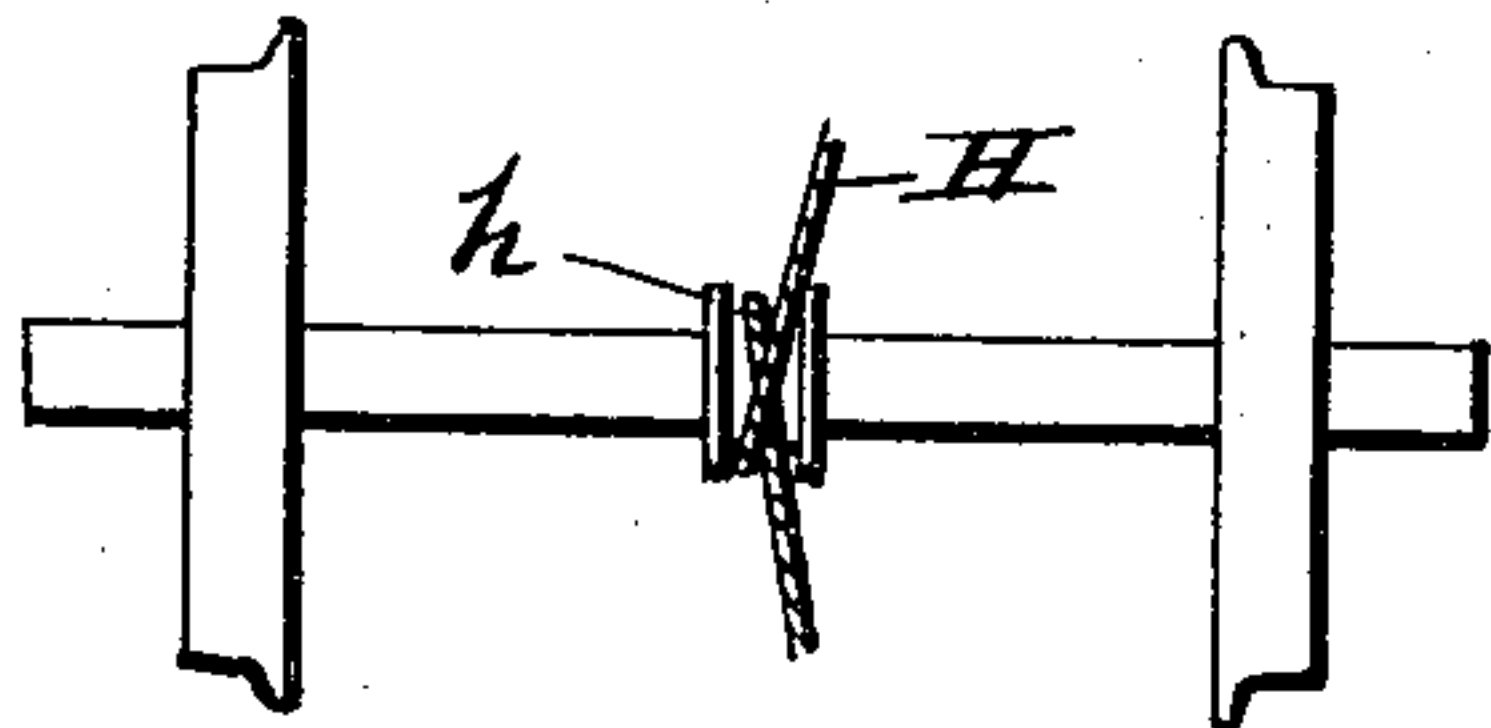
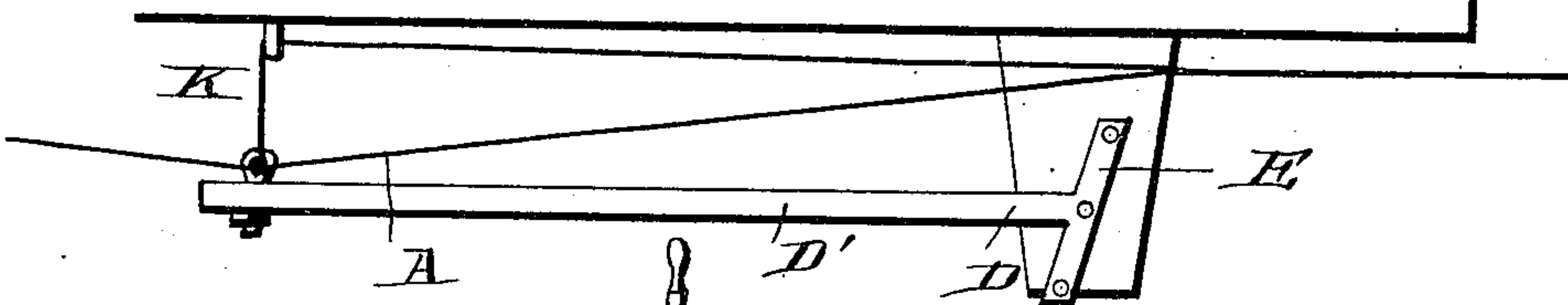
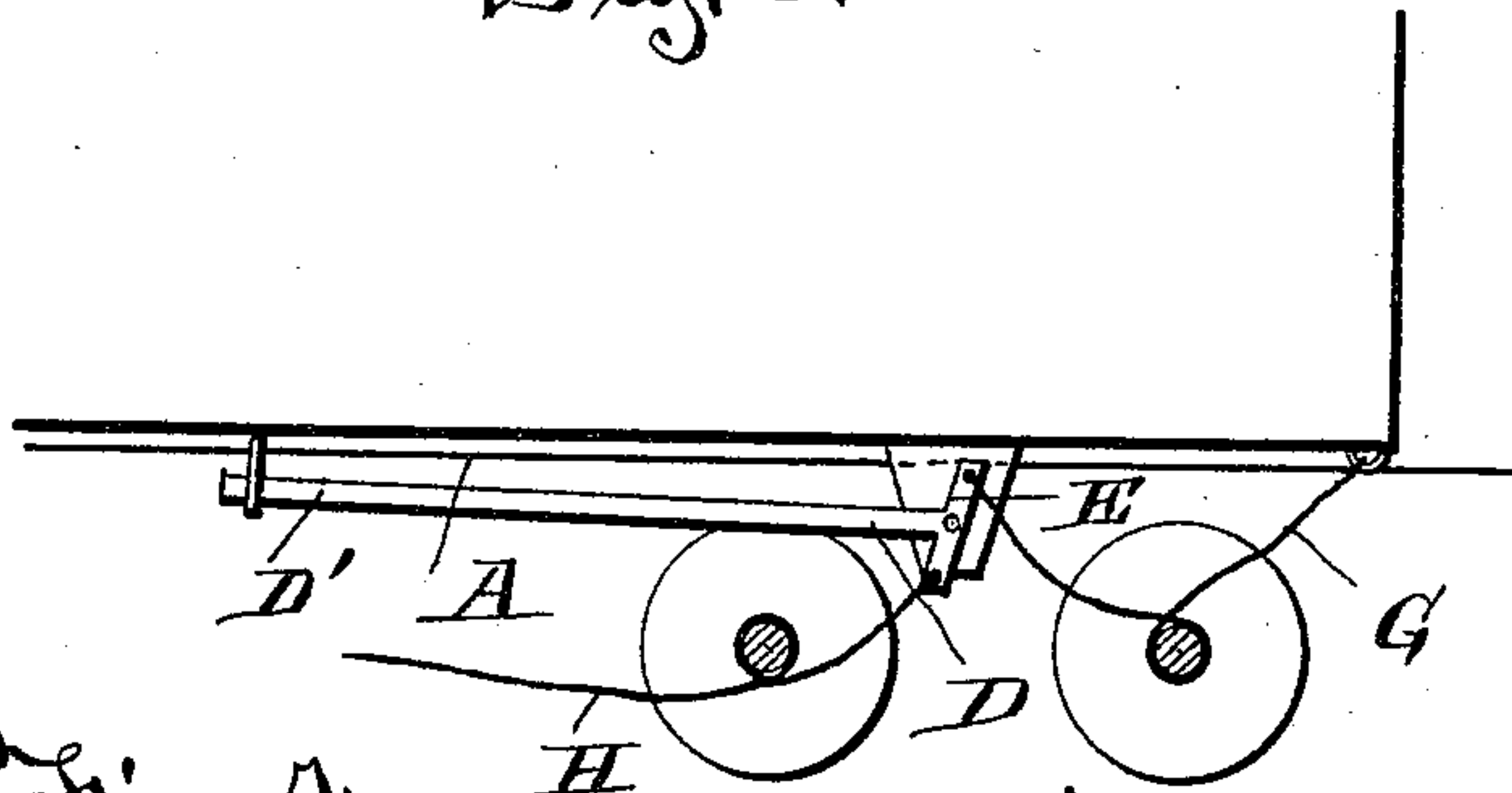


Fig. 4.



WITNESSES

Samuel Ker,  
Philip Masie.

Fig. 5.

INVENTOR

J. W. Hartigan,  
by E. W. Anderson,  
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# UNITED STATES PATENT OFFICE.

JAMES W. HARTIGAN, OF MORGANTOWN, WEST VIRGINIA.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 459,782, dated September 22, 1891.

Application filed March 12, 1891. Serial No. 384,846. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES W. HARTIGAN, a citizen of the United States, residing at Morgantown, in the county of Monongalia and State of West Virginia, have invented and produced a new and original Improvement in Car-Brakes, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

Figure 1 is a longitudinal section of car, showing my design when the brake is applied. Fig. 2 is a view of axle and wheels, showing the relation of my brake to the axle. Fig. 3 is a longitudinal section of one end and truck of a car, showing my invention when the brake is off. Fig. 4 is a section of my invention, showing relation of lead and lift chains to the brake-lever when the brake is set. Fig. 5 is a drawing showing the lever on the locomotive for throwing on or off the brakes and the method of attachment to the lead-chain.

The invention consists in the application of a wire cable or chain to car-wheels in such a manner so as to act as a brake thereto, and in the provision of suitable means, whereby such brake may be applied either from the engine or from any car.

In the drawings, the letter A designates a lead-chain running underneath the cars the entire length of the train, and connected between the cars by a suitable coupling *a*. At its forward end this chain or cable is connected to any one of several points on the segment-arm *b* of a lever B in the locomotive, which, when operated, will serve to increase or diminish the tension on said chain, the various points of the connection of said chain serving to take up more or less slack which may occur.

On each end of each car I provide a vertical rod or shaft C, provided at its upper end with a wheel or other suitable means for its operation. The lower end of these shafts have an eye *c*, through which the lead-chain is passed. A hook *d* may also be formed thereon, by means of which the chain may be supported when the cars are uncoupled.

Pivottally supported underneath each car are longitudinal lever-bars D, the longer arms D' of which extend toward each other between the trucks. On the short arm D<sup>2</sup> of

each lever is a T-head E. The point at which the levers D are attached to the car may be varied, as indicated at F, according as it is desired to obtain a greater or less leverage for light and heavy cars. Near the ends of each of the longer arms D' of these levers is an eye *e* through which the lead-chain passes.

To the upper end of each T-arm E is connected a chain or cable G, which passes any suitable number of times around the axles of the end pair of wheels of the respective trucks, and thence up and secured to the car-frame.

To the lower end of one of the T-arms E is secured a chain or cable H, which passes several times around the axle of the inner pair of wheels of the truck at that end, thence to the inner axle of the opposite truck, which it also passes around, and is then secured to the lower end of the T-arm of the other lever.

Where the brake-chains pass around the axles I may provide a flanged collar *h*, which may be either metallic or of some composition or rubber to increase the friction. When the train is in motion, the lead-chain is kept taut, holding the chain A up in the position indicated by dotted lines, Fig. 1, and as shown in Fig. 3, slacking the tension on the brake chains or cables, and permitting the axles to turn freely within their surrounding coils.

When, however, the tension of the lead-chain is relaxed, either from the engine or from any car, or by the accidental breaking away of any car, the long arms D' of the levers D will fall by gravity, drawing the brake chains or cables tightly around the axles. In the latter case the brakes are applied entirely automatically. When the said chains or cables are wound around the axles they are so arranged that their leaving ends overlap one or more turns of the cable, so that when the long arms of the levers fall the revolutions of the axle will wind up the cable, acting as a windlass, so that the longer the axle turns the tighter the brake is applied. When the lever-bars D are long or in the case of a long train, I find it advisable to use the lift-chains K, one of which is shown in Fig. 4. These chains are attached at one end near the end of the long arm of the lever, running thence over a pulley on the car-frame and connected at its other end to the lead-chain. When the lead-



chain is made taut the lift-chains are also tightened, and the lever-bar is raised by the combined action of both.

The brake-cables might be all in one piece instead of in three parts, as above described.

What I claim is—

1. In a car-brake, the combination, with a lead-chain running throughout the train and connected to an operating-lever in the locomotive and engaged by a rod or shaft on each car, of the levers having a connection with said chain and brake chains or cables connected to the opposite arms of said levers and passing around the car-axles, substantially as specified.

2. In a car-brake, the combination, with the lead-chain and means for changing the tension of said chain on the locomotive and on each car, of the lever-bars, the longer arms of which have a connection with said chain, said levers having a T-head on their shorter arm,

a chain or cable connected to the upper end of each T-head, passed around the end axle of the respective truck, and connected to the car, and a chain or cable connected at each end to the lower ends of the said T-heads, and passing around the inner axles of both trucks, substantially as specified.

3. The combination, with the lead-chain and its operating devices, of the levers having their longer arms engaging said chains, and their shorter arms having the brake chains or cables connected thereto, of the lift-chains connected at one end to one of said levers passing over a pulley and connected at the opposite end of said lead-chain, substantially as specified.

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Witnesses:

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E. E. CHADWICK.