

S. McCAMBRIDGE.
CAR BRAKE.

No. 61,844.

Patented Feb. 5, 1867.

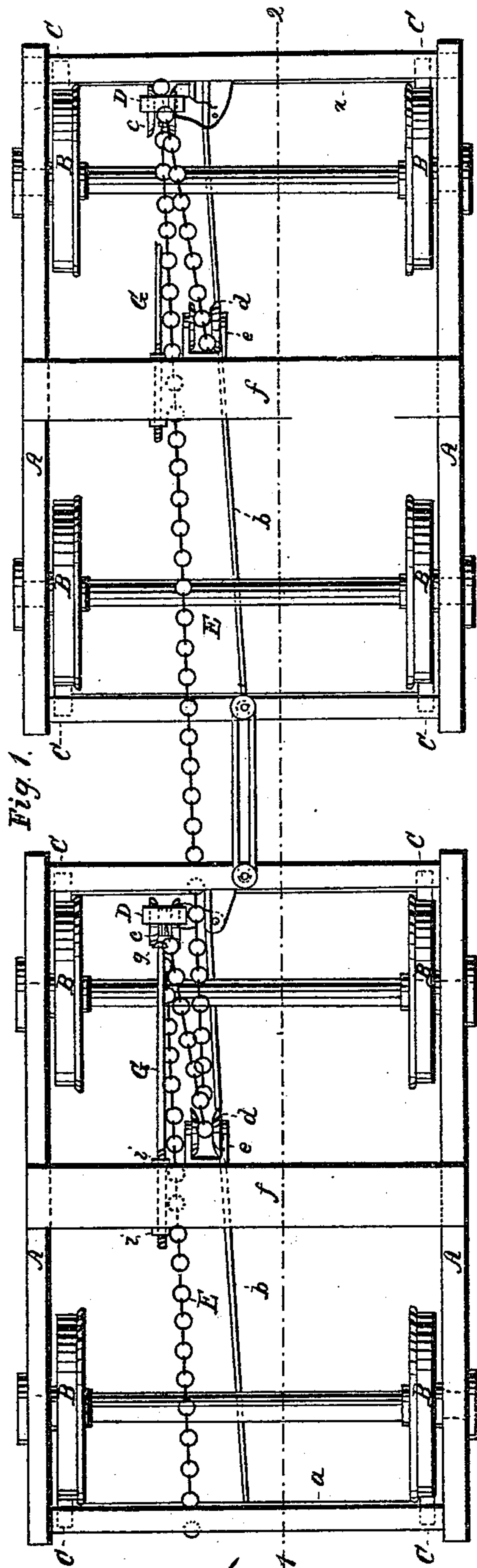


Fig. 1.

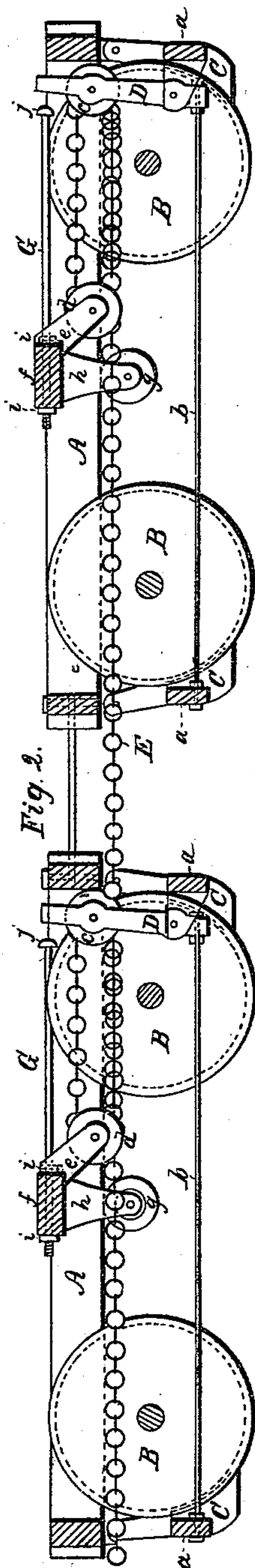


Fig. 2.

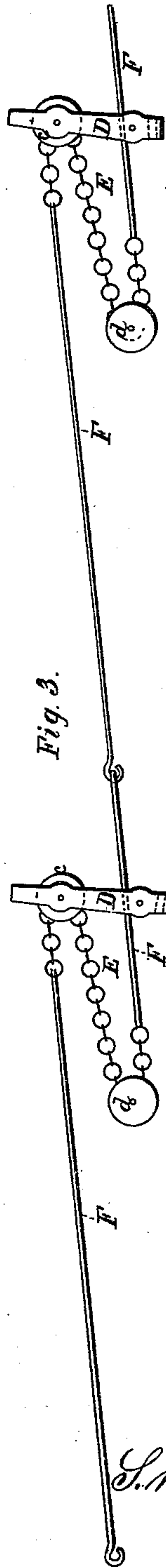


Fig. 3.

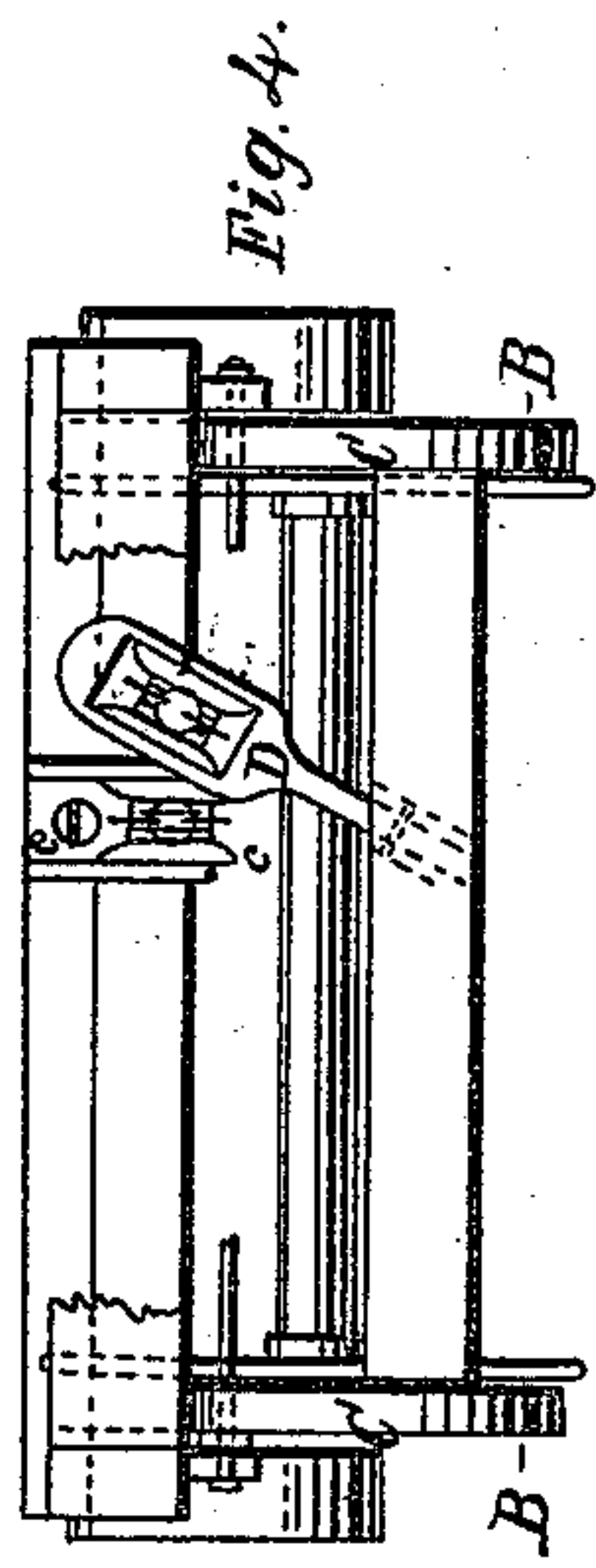


Fig. 4.

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SAMUEL McCAMBRIDGE, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 61,844, dated February 5, 1867.

IMPROVED 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, SAMUEL McCAMBRIDGE, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and improved Mode of Operating the Brakes of a Train of Cars; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, which make a part of this specification, in which—

Figure 1 is a plan or top view of two trucks, coupled together to represent two cars, with the improvement attached.

Figure 2 is a vertical longitudinal section at the red line 1-2 of fig. 1.

Figure 3 represents a modification of the mode of weaving the chain E.

Figure 4 is an end view.

Like letters in all the figures indicate the same parts.

The nature of my invention and improvement consists in operating the brakes of a train of cars by means of a chain connection with a series of sheaves, in such a manner as to check the rear car of a train first, and so on in succession until the front car is checked. The usual mode is to check the front car first and the rear car last. This, as is well known, causes considerable bumping of the cars, which causes much jostling of the passengers, and adds much to the wear and tear of the machinery, besides endangering loss of life of persons who may happen to be on the platforms at the time. But on my plan, as the rear car is checked first and the front one last, and the intermediate cars in regular succession from the rear one, the bumping is avoided. In consequence of this the train can be brought to a stop in much less time than by the old method, which is an additional security in travelling, and lessens liability of injury to persons a short distance in front of the train.

To enable others skilled in the art to which my improvement appertains to make and use my invention, I will proceed to describe its construction and operation.

I have represented two trucks, A A, coupled together, to represent two cars of a train. Combined with the wheels B are the usual check-blocks C, the connecting-bar *a* of one pair being connected with the bar of the other pair of the same truck by means of the longitudinal rod *b* and lever D, as seen in figs. 1 and 2. In the upper end of each lever there is a sheave, *c*, and near the middle of the truck a similar sheave, *d*, the latter being supported by means of the hanger *e*, confined to the bolster *f*. The arrangement just described is carried out uniformly with all the cars of a train. There is a chain, E, woven over all the sheaves throughout a whole train of cars in the manner represented in figs. 1 and 2, the chain taking a half turn over each sheave, that is to say, the front end of the chain is fastened to a counter-shaft which is geared to the shaft C' of my machine for operating car-brakes, patented November 28, 1865, which is placed beneath the engineer's platform, and the chain passes over the trucks of the tender, and the sheave *c*, in the upper end of the lever D of the front truck of the train of cars, taking a half turn round said sheave, and, passing towards the front of the truck to the sheave *d*, it takes a half turn over it and then passes backward over the sheave *c* of the second lever D, over which it takes a half turn, and runs forward to the sheave *d* of the same truck, over which it takes a half turn, and passes again towards the rear of the train to the sheave *c* of the lever D of the third truck, and takes a half turn over it, from which it passes forward to the sheave *d* of the same truck, and so on in succession the operation is continued of weaving the chain throughout the whole train of cars. Then the rear end of the chain is fastened to the last car behind the lever D. There should be a number of sheaves, *g*, in hangers *h*, to prevent the chain swagging, it being necessary to have the chain loose on all the sheaves so as to pull first on the rear lever D, to accomplish my object of checking the rear car first. Instead of the chain being continuous from end to end, as represented in figs. 1 and 2, there may be rod connections with pieces of chains, as represented in fig. 3, the pieces of chains being long enough to secure the weaving operation around the sheaves. In figs. 1 and 2 the lever sheaves *c* and hanger sheaves *d* are in line as to height, which makes it necessary to have them out of line laterally, so as to prevent the direct and return portions of the chain striking each other. The arrangement is modified in fig. 3, the sheaves being all in line laterally, but out of line as to their height, to secure the free action of the chain. In this figure, as above stated, the connection between the machine, on the locomotive, for operating the brakes and the last car in the train, is formed by means of the

pieces of chains E and the rods F, which is the plan I should usually adopt in practice, there being a hook connection of the rods at the ends of the cars, as represented, or any other convenient mode of readily making the connection when cars are added to the train or breaking the same when detached therefrom.

The operation is as follows: We will suppose one end of the chain E to be connected with my machine for operating the brakes, as above stated, and the other end to be fastened to the last car of the train, as described in rear of the lever D. Then, when the engineer wishes to stop the train, he puts the machine in motion by a lever which draws the chain E, and the latter being slack it runs over all the sheaves, and the slack is first taken upon the sheave of the rear lever D, and the sheave *d*, in the hanger *c*, which causes the upper end of the lever to be borne forward and the lower end backward, and thus drawing the brake-bars *a* towards each other and binding the check-blocks C against the wheels of the truck. This being accomplished, the same action on the chain E brakes the next car, and so on in succession to the front one. To prevent the slipping of the wheels I provide adjustable stop-rods G, the screw ends of which pass respectively through the bolsters *f*, and are adjustable longitudinally by means of the nuts *i*, as represented in figs. 1 and 2, to set the heads *j* so that the upper ends of the levers D will bear against them when the latter are borne forward far enough to act with sufficient force on the check-blocks C.

The above-described attachment for operating the brakes may be used in connection with hand levers or cranks, if desired, at the same time the engineer applies the machine for that purpose. The hand-brake rod is attached to the top of the lever D and the chain is wound up in the usual way.

It will readily be seen that my attachment can be applied to cars without disturbing or altering the brakes already thereon. In case a coupling breaks the separation of the cars applies the brakes which checks the whole train of cars.

Having thus fully described my improved mode of operating the brakes of a train of cars, what I claim therein as new, and desire to secure by Letters Patent, is—

I do not claim broadly connecting the brakes of a train of cars by means of a continuous chain winding around sheaves, in the ends of levers which operate the brakes, as that is not new; but

I claim the combination of the chain E, (connected at each end as described,) with the sheaves *e*, in the ends of the levers D, and the fixed sheaves *d*, arranged as described, the chain taking a half turn around each sheave throughout the whole train of cars; substantially as described and for the purpose specified.

In testimony that the above is my invention, I have hereunto set my hand and affixed my seal this twenty-seventh day of January, 1866.

S. McCAMBRIDGE.

Witnesses:

STEPHEN USTICK,

JAS. C. POWERS.