J. W. GIBBS.

Car Brake.

No. 53,971. Patented Apr. 17, 1866.

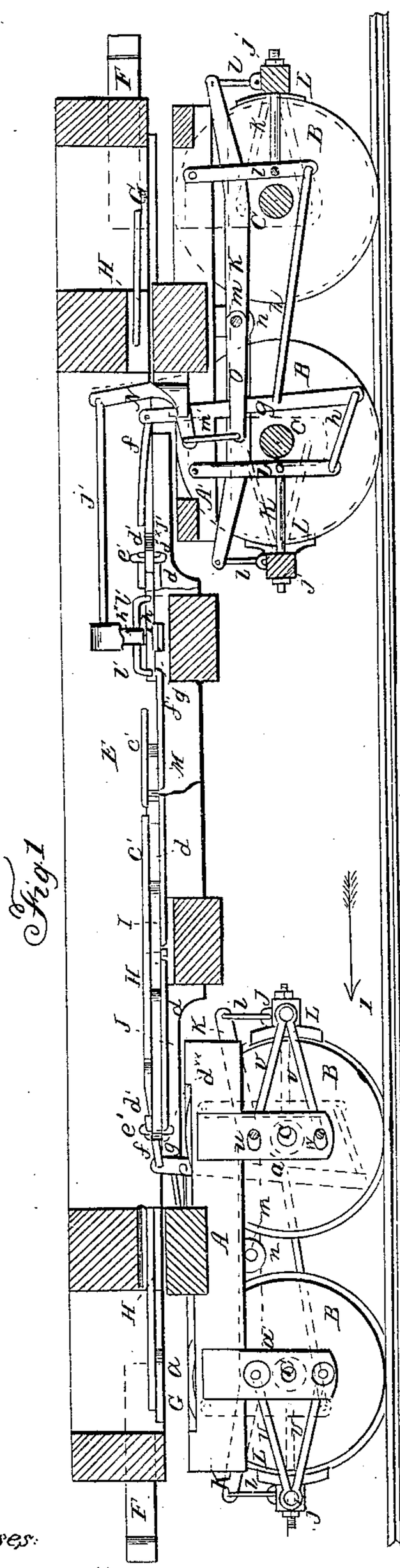

Fig 1

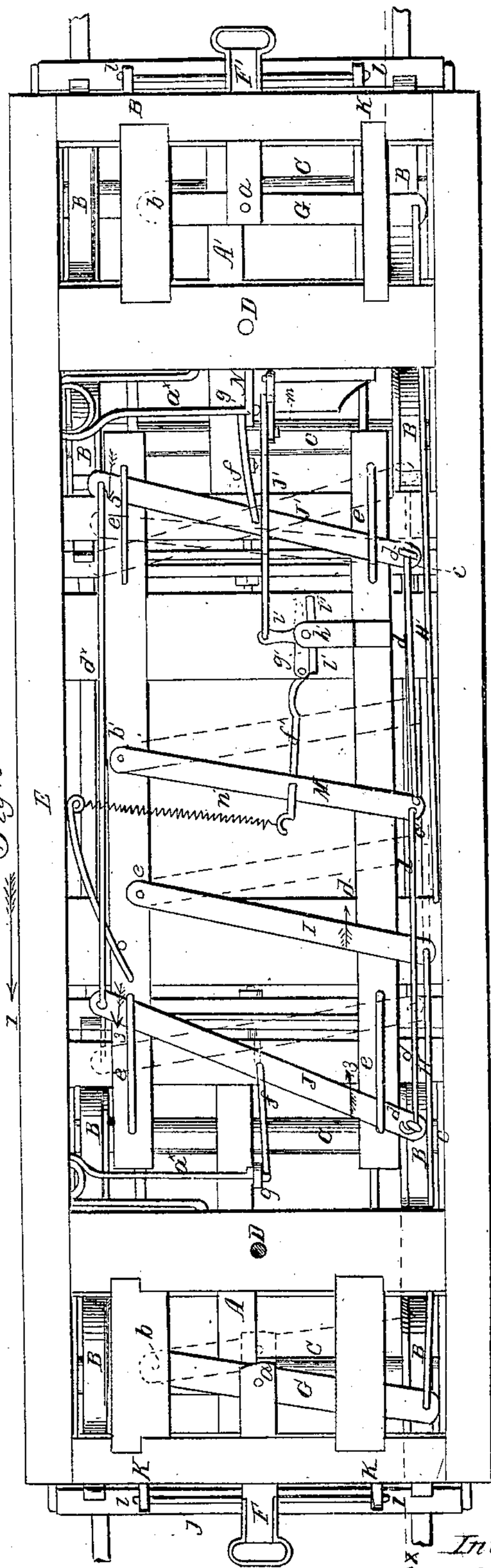

Fig 2

Witnesses:

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UNITED STATES PATENT OFFICE.

J. W. GIBBS, OF NEW HAVEN, CONNECTICUT.

IMPROVED CAR-BRAKE.

Specification forming part of Letters Patent No. **53,971**, dated April 17, 1866.

To all whom it may concern:

Be it known that I, J. W. GIBBS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and Improved Car-Brake; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same.

Similar letters of reference indicate like parts.

This invention has for its object the dispensing with brakemen, and to arrange the working parts of the brake in such a manner that the brakes of all the cars comprising a train will be simultaneously applied by the momentum of the train whenever the speed of the locomotive is checked, and the brakes thrown off whenever the locomotive has its speed increased or is started from rest, the above results being attained whether a train be moved forward or backward.

The essential features of the construction and arrangement of the several parts comprising my invention are described as follows. The details, however, may be varied or modified as circumstances may require.

A A′ represent two car-trucks; B, the wheels; C, the axles, and D the pins which connect the trucks with the car-bed E. These parts may be of usual construction, and therefore do not require a minute description.

F F′ represent the draw-heads at the ends of the car-bed E. The inner ends of these heads are connected by pivots *a* to levers G G, one end of which is pivoted to the under side of the car-bed, as shown at *b*, and the opposite free or disengaged ends have rods H H′ connected to them, which extend inward toward the center of the car-bed at one side of the same. One of these rods, H, is connected at its inner end to one end of a lever, I, the opposite end of I being pivoted to the car-bed, as shown at *c*, and the free or disengaged end of lever I is connected by rods *d d* to levers J J′, the ends of the rods *d* being bent in hook form to work in loops $d^{\times\times}$, attached to levers J J′. The ends of the levers J J′ work in guides *e e* on the car-bed, and said levers are connected at the ends opposite to where the rods *d* are attached by a rod, $d^{\times}$, and connected at their centers by rods *f f* to levers *g g*, which have springs $a^{\times}$ connected to them, the latter being connected by rods *h h* to levers *i i*, to which the shoe-bars *j* are connected by rods *k*. (See Fig. 1.) The shoe-bars *j* are suspended by rods *l* from the ends of levers K K, two in each truck, and extending the whole length of the same, one at each side, and attached to a shaft, *m*, on which the levers are balanced or counterpoised, the bearings *n* of said shaft being attached to the trucks. This arrangement admits of the shoe-bars rising and falling in the path of a circle, and the length or distance of this movement is determined or limited by rods *v v*, attached to the ends of the shoe-bars, the inner ends of said rods being fitted in slots *w* in hangers *a′*, attached to the sides of the trucks. (See Fig. 1.) These rods *v v* not only limit the motion of the shoes, but also, on account of their obliquity, very much increase the pressure of the shoes upon the wheels.

A description of the operation of the parts above described: Suppose the train to be moving in the direction indicated by arrow 1 and the speed of the locomotive checked, the momentum of the cars will press or push the draw-head F inward, and the lever G will also be pressed inward, and the rod H of each car will press the lever I in the direction indicated by arrow 2, and the levers J J′ will be moved in the direction indicated by arrow 3, and said levers J J′ being connected to the levers *g i* of the brake mechanism, as shown, the shoes L of the trucks will be pressed against the wheels B, the front shoes, in consequence of the shoe-bars being attached to the levers K, being pressed down under the action of the wheels as far as the rod *v* will permit, while the rear shoes will correspondingly rise. When the locomotive is started the draw-heads F will be pulled outward and a reverse action takes place, the shoes being instantly thrown out from the wheels.

Thus it will be seen that by this simple arrangement a perfectly automatic brake is obtained so far as the forward movement of the cars is concerned; but it will also be seen that without some suitable appliance the train can-

not be backed, as the shoes will press against the wheels. This difficulty is obviated as follows: M is a lever, attached to the car-bed by a pivot, b', and having its free or disengaged end connected by rods c' to the levers I I′, the ends c' being bent to form hooks d', to pull the levers I I′, when moved in one direction, and to slide loosely in eyes c' when moved in the opposite direction. This connection is the same as that of the rods d to the levers I I′. This will be fully understood by referring to Fig. 2. This lever M is connected by a rod, f', with an arm, g', projecting from a vertical shaft, h', which has its bearings attached to the car-bed. This shaft and arm have space to turn to the extent only of one half-revolution, at either end of which half-revolution the arm g' and rod f' lie essentially in the same straight line, so as to hold the lever M firmly in either of its two extreme positions. To give still greater stability to these parts in their extreme positions, a spring, n', is added, the elasticity of which tends to press the rod f' and arm g' into these positions and keep them there. This shaft h' has fitted loosely about it a sleeve, $h^{\times}$, bearing three arms, of which two, l' l'', on opposite sides, are to act against the arm g', while the third, i', is connected by a rod, j', with the upper end of the bent lever N, which is secured in the truck directly back of the main pin, D, and has its lower end connected by a link, m', to an arm, O, on the lever-shaft m of the truck A, as shown in Fig. 1.

When the brakes are applied during the movement of the car in the direction indicated by arrow 1 the lever M will be moved in a forward position, the arm g' being on the side of the shaft h' nearest to lever M, as shown clearly in Fig. 2.

Now, in case the car or train is backed the rear shoes, L, which were elevated when the brakes were applied by the friction of the wheels, will be forced down under the action of the wheels, and before the rear shoes, L, get fully down the arm O will have moved the bent lever N so that the rod j' will turn the sleeve $h^{\times}$ and the arm l' of the said sleeve strike the arm g' and start it from its position. As soon as this arm is started the rod f' will draw it through a semicircle, the parts M J′, &c., taking the positions indicated by the dotted red lines, and the shoes being thrown from the wheels. These motions are the combined effect of the pushing in of the draw-head by the locomotive and the elasticity of the springs $a^{\times}$ $a^{\times}$, which continually tend to throw the shoes off from the wheels. The spring n' also helps to complete this movement and to keep g' and f' firmly in the positions to which they come.

When the car or train is again moved forward the levers and all the parts will assume their original positions, the arm l'' throwing the arm g' back; but while the train is backing the lever M will remain in the position indicated by the dotted red lines, and the brakes will be available for checking this backward motion of the train essentially in the same way in which I have shown that they check the forward motion, with this exception, that when advancing the pushing in of the draw-head puts on the brakes and in backing the pulling out of the draw-head puts on the brakes.

So far I have supposed the locomotive to be at the end of the train to which the arrow 1 points. When it is at the other end the rod H must be detached from the lever I and the rod H′ attached.

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

1. The combination and arrangement of the levers J J′, operating the brake mechanism of the trucks, the lever I, operated by the draw-head, and the lever M, which is held fast in one of two positions, with the rods connecting them, the whole operating substantially in the manner and for the purpose aforesaid.

2. The arm g' and rod f', which usually lie in one line, so as to hold the lever M securely, with the spring n', to keep the above parts in a line, operating substantially in the manner and for the purposes aforesaid.

3. The three-armed sleeve $h^{\times}$, or its mechanical equivalent, operated by the levers in the trucks, which support the shoes, to start the arm g' and rod f' from the line in which they lie, substantially in the manner and for the purposes aforesaid.

4. The oblique rods v, to operate substantially in the manner and for the purposes aforesaid.

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Witnesses:

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