T. J. Whitney

Sheet 1, 3 Sheets.

Car Brake.

No. 39,440. Patented Aug. 4, 1863.

Fig: 1.

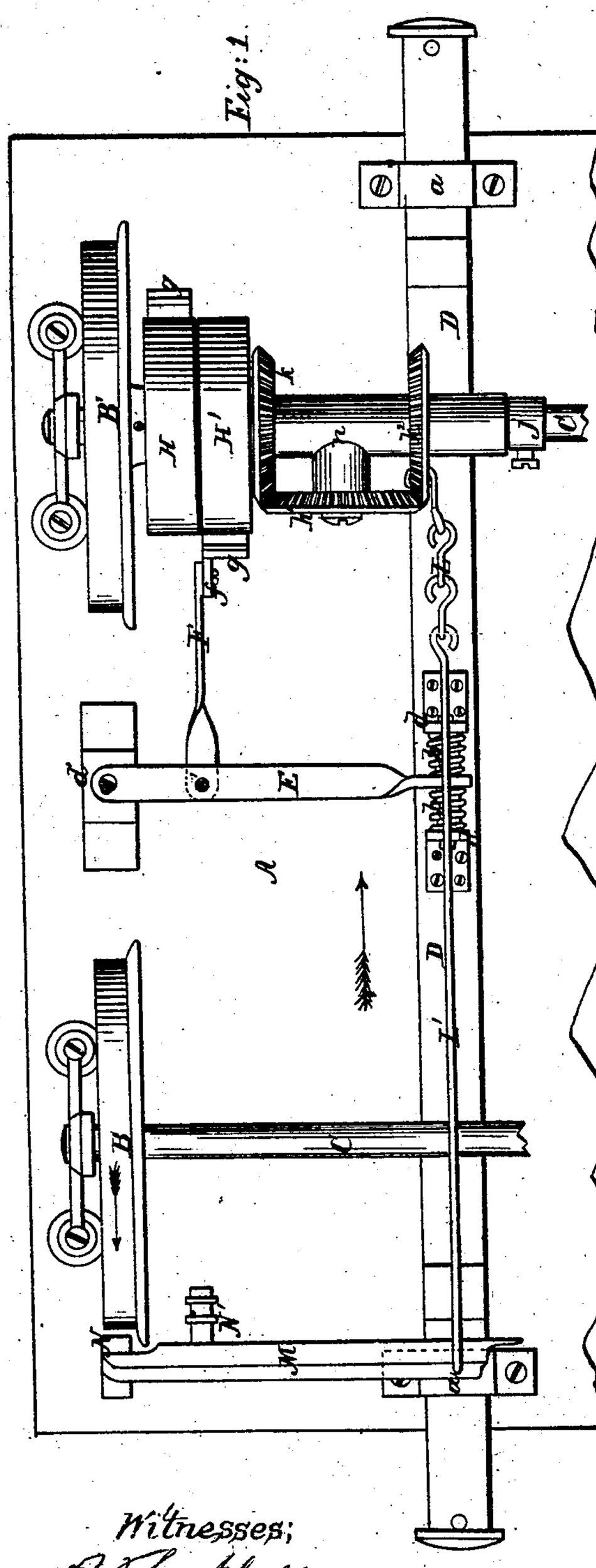
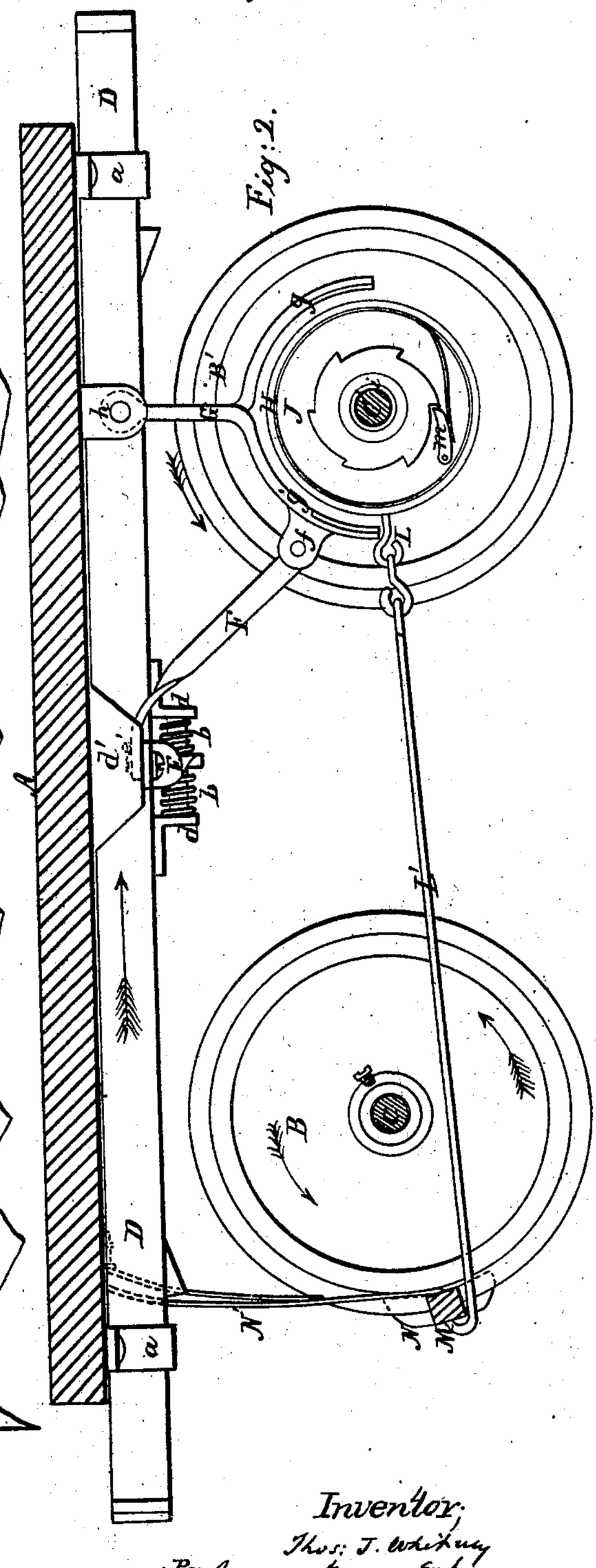


Fig: 2.



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T. J. Whitney. Sheets 2, 3 Sheets

Car Brake.

No. 39,440. Patented Aug. 4, 1863.

Fig: 4.

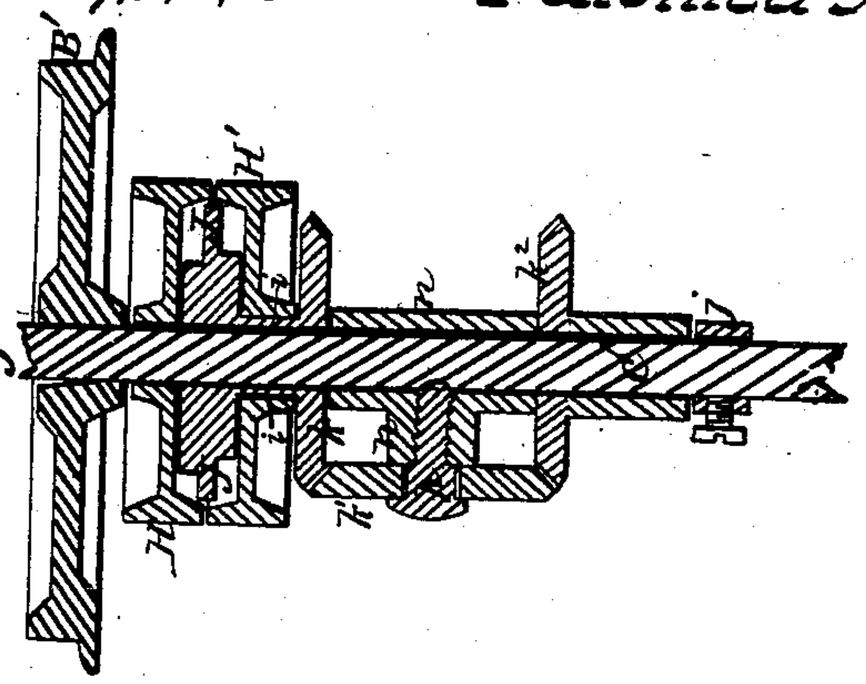


Fig: 3.

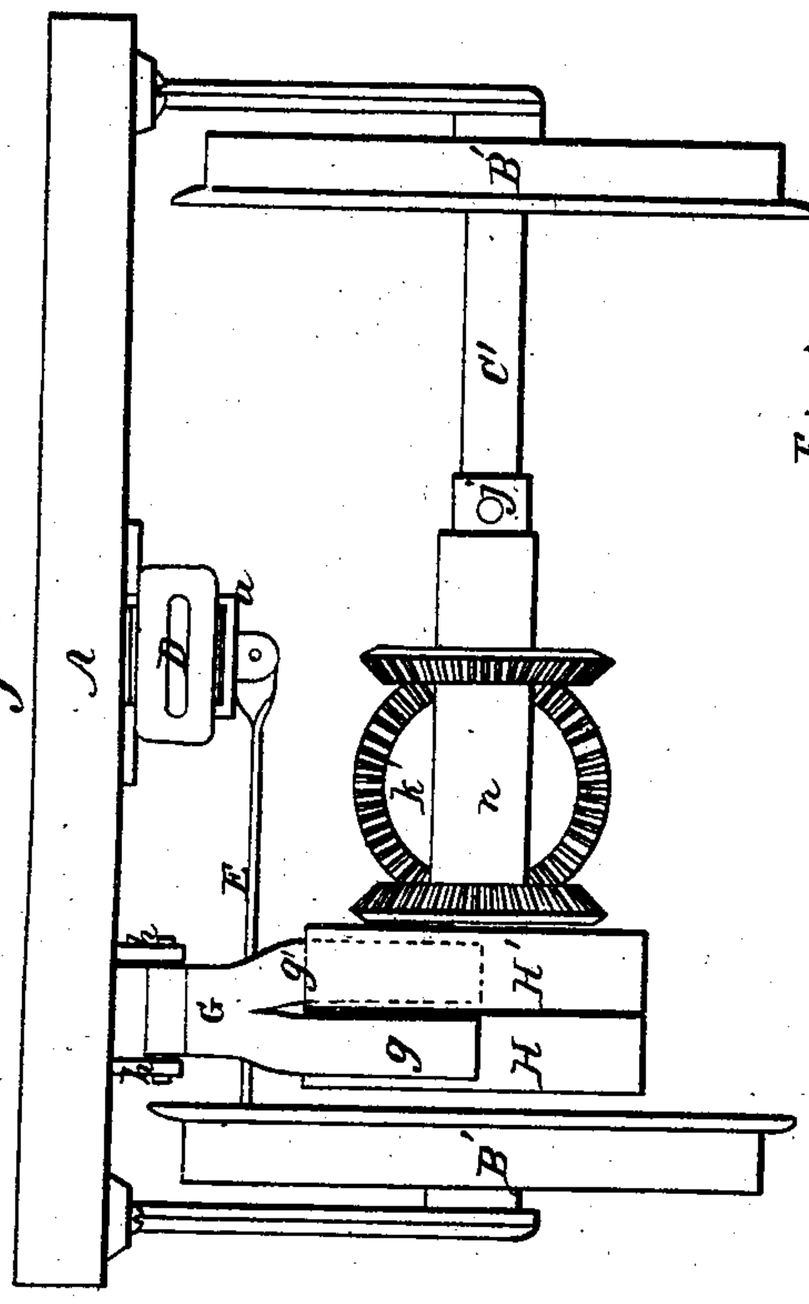
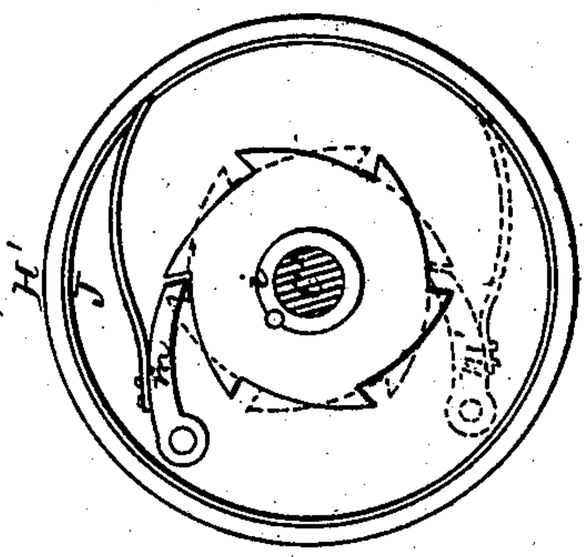


Fig: 1.



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T. J. Whitney. Sheet 3, 3 Sheets.

Car Brake.

No. 39,440 Patented Aug. 4, 1863.

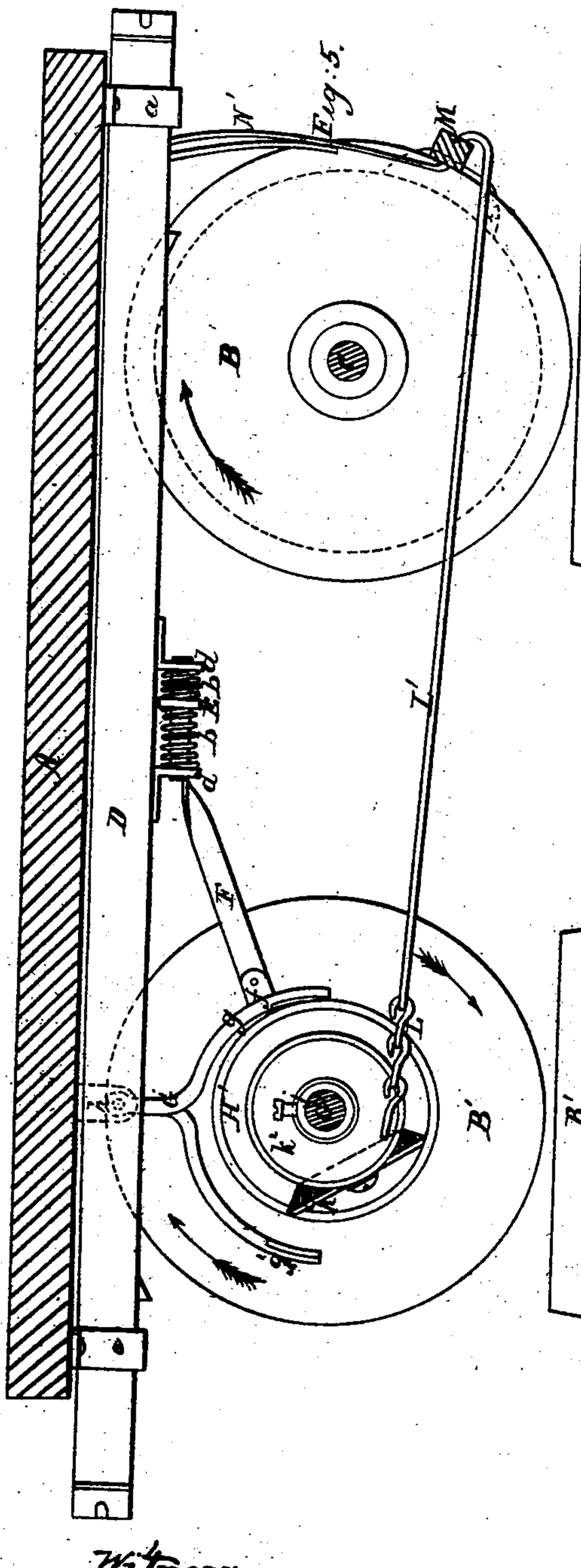

Fig: 5.

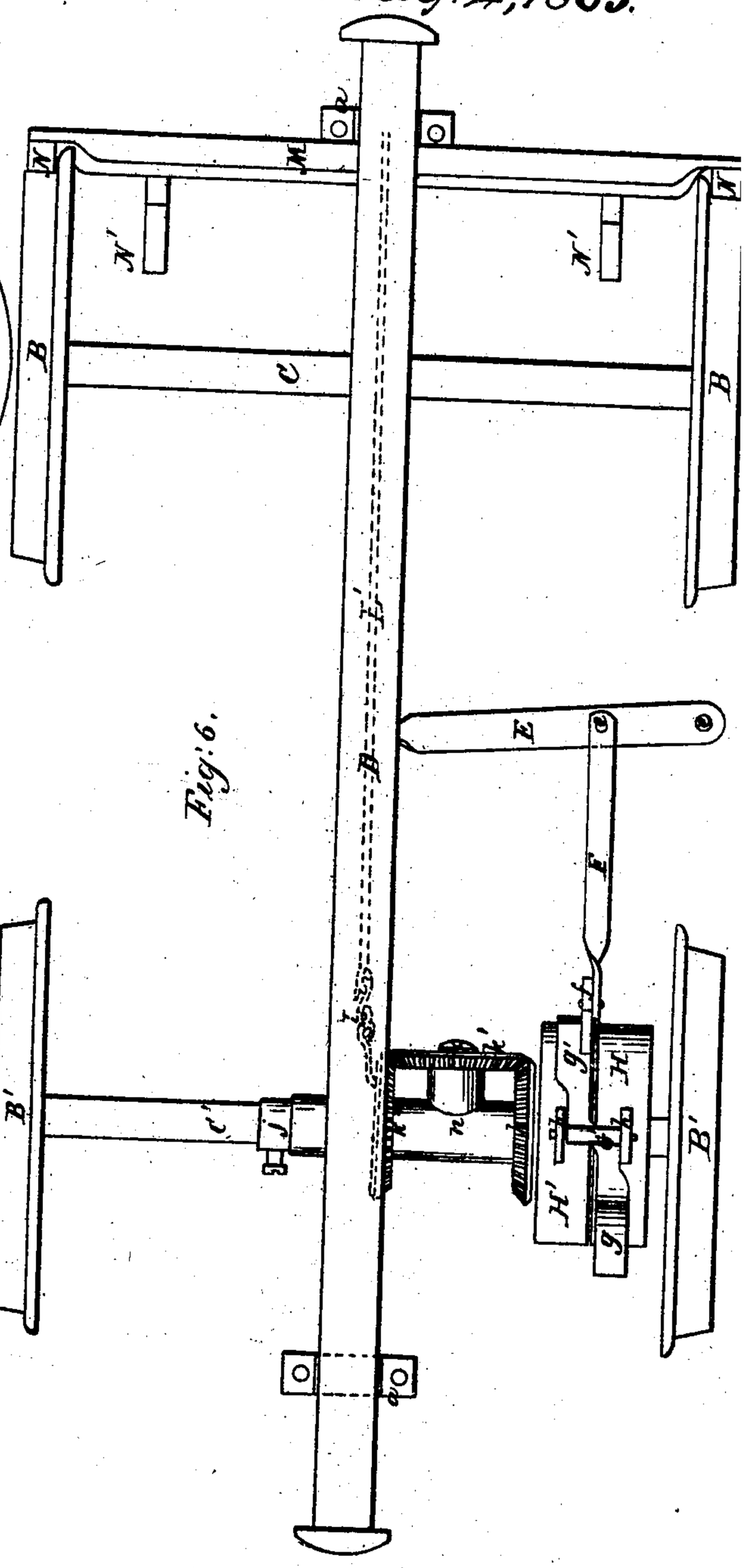

Fig: 6.

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UNITED STATES PATENT OFFICE.

THOMAS J. WHITNEY, OF BROAD AXE, PENNSYLVANIA.

IMPROVEMENT IN RAILROAD-CAR BRAKES.

Specification forming part of Letters Patent No. **39,440**, dated August 4, 1863.

To all whom it may concern:

Be it known that I, THOMAS J. WHITNEY, of Broad Axe P. O., in the county of Montgomery and State of Pennsylvania, have invented a new and Improved Brake for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a bottom view of one-half of the truck-wheels and platform of a railroad-car having my improved brake applied to the same. Fig. 2 is a longitudinal section taken in a vertical plane through one side of a railroad-car with my invention applied. Fig. 3 is an end view. Fig. 4 is a diametrical section through one of the truck-wheels, and the mechanism which is applied to the axle thereof for actuating the brake. Fig. 5, Sheet 2, is a vertical longitudinal section through a car, showing the position of the parts when the brake is applied to the wheels. Fig. 6, Sheet 2, is a top view of the running-gear and brake machinery as seen by removing the platform. Fig. 7, Sheet 2, is a view representing the double ratchet-plate and its pawls, which are inclosed within the two friction-brake drums.

Similar letters of reference indicate corresponding parts in the several figures.

This invention has for its object the application to railroad-cars of any of the well-known forms of construction, a novel system of brakes, which are entirely automatic in their operation, they being controlled by the speed or momentum of the cars, instead of by the engineer or brakeman, and which will operate upon every car throughout the train with greater or less force in proportion as the weight or momentum of any one car exceeds that of the engine, or any other preceeding car, as will be hereinafter described.

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

I have represented in the accompanying drawings my improved system of self-acting brakes applied to a single car; but, as the same contrivance is applied to each car throughout the entire train, a description of one car will give an understanding of its general application.

A represents the platform of a car, B B′ are the car-wheels, and C C′ are the axles thereof, all of which may be constructed and arranged in any of the present or most improved forms. D is a buffer-rod, which runs from one end to the other of the platform and underneath of the same. This longitudinal rod D passes through the stirrups *a a*, which are bolted to the bottom and in the middle of the platform, and the ends of the rod D project a sufficient distance from the front and rear ends of the platform to abut against corresponding rods on other cars, so that a train of cars, when connected together, will have a line of buffer-rods running from one to the other, all of which will have a simultaneous lengthwise movement.

At an intermediate point between the ends of rod B, and on the lower side thereof, is a compound spring, *b*, which is made up of two helical springs, wound around a rod, which is fixed at its ends of cars *d d*. Between the two springs *b* plays the end of a vibrating arm, E, which is pivoted to a projecting support, *d′*, at *e*, Fig. 1, and connected by a pivot, *e′*. To this arm is a rod, F, which inclines downward, and is pivoted at its lower end to a projecting ear, *f*, which is on one arm of a bifurcated friction-brake, G. (Shown in Figs. 2, 3, 5, and 6.) This brake G consists of two curved arms, *g g′*, united to a straight portion, which is pivoted at its upper end to the bracket *h* on the platform A, which bracket is directly above or in a vertical plane with the axis of the axle C′. These curved brake-arms *g g′* embrace two hollow friction-drums, H H′, the arm *g* being intended for the drum H, and the arm *g′* for drum H′, as shown in Figs. 3 and 6. Between these two friction-drums, and inclosed within the same, is a circular plate, J, with ratchet-teeth on both sides, which run in opposite directions to each other, as shown in Fig. 7. This double ratchet-wheel is keyed to a short tube or hub, *i*, Fig. 4, which carries on its outer end, outside of the drum H′, a bevel spur-wheel, *k*, so that this wheel *k* and the ratchet-wheel J both turn together. Each ratchet-wheel, or ratchet-surface on wheel J, is furnished with a pawl, Figs. 2 and 7; and these pawls *m m′* are pivoted to the inside surfaces of their respective drums H H′, and held in place by springs, as shown in the drawings. The bevel spur-wheel *k* engages with a spur-wheel, *k′*, of a correspond-

ing diameter to *k*, which has its bearings in the projecting portion of a T-shaped collar, *n*, which collar is slipped on the axle C′ and keyed to this axle by the screw-bearing *p*, or by any other suitable means. The bevel-wheel *k′* engages with the teeth of wheel k^2, which has its bearings on the axle C′, and which is slipped loosely on this axle, and kept in its place by means of a short collar, *j*, which is suitably keyed to axle C′. To the wheel k^2 is suitably pivoted a short hog chain, L, which is attached to the end of a longitudinal rod, L′, that extends from the chain L to the transverse brake shaft M, and is connected rigidly to the middle of this rod, as shown in Fig. 1. The rod M carries on its ends the brake blocks or shoes N N, which are curved on their inner surfaces, and adapted to fit against the peripheries of their respective wheels B B when brought in contact therewith. The brake-rod M is suspended beneath the platform of the car by means of springs N′ N′, which are of sufficient strength to keep the brakes off from the wheels when it is not desired that they should be applied.

The operation of my invention is as follows: We will suppose a train of cars coupled together by suitable couplings applied to the ends of their respective rods D, to be moving in the direction indicated by the arrows in Figs. 1 and 2, Sheet 1, and the engineer desires to stop the train at a certain point some distance ahead. He will check the engine at a proper time, and this will cause the train behind the engine to move forward in proportion to the momentum which each car has acquired when the train was running at a high speed, thus thrusting the rods D backward through their entire line and producing thereby the following result: When the rod D, Figs. 1 and 2, is thrust in the direction indicated by the arrow, it will act upon the lever E and connecting-rod F, and press the curved arm *g′* of the friction-brake G hard against the periphery of friction-drum H′. This checks the drum H′, engages its pawl *m* with the ratchet-wheel J, and causes the wheel K^2 to wind up the chain, and thus to draw the brakes hard up against their wheels B B. The middle wheel, K′, will still continue to revolve around the axle C′ and act with greater or less force upon the wheel K^2, and brakes in proportion to the force which is brought to act upon the friction-drum H′, and while this is the case it will be seen that the drum H′ will slip more or less in proportion to the pressure of the arm *g′* upon its surface, thus preventing, if the parts be made suitably strong, the twisting of the axle C′ or the derangement of any of the parts. The compound spring *b*, between which that end of the lever E which is attached to the buffer-rod D is interposed, also prevents, by its yielding pressure, the friction brake-arms *g g′* from suddenly and completely checking the motion of the drums H H′. When the train of cars is moving backward, and it is desired to apply the brakes to the wheels, the engine is checked as before, and the same parts will be brought into action, as before described, excepting that in this case the buffer-rod D will be thrust in the opposite direction to that indicated by the arrow in Figs. 1 and 2, which will bring the arm *g* of the friction-brake G in contact with the friction-drum H and cause the pawl *m′* of this drum to act upon the ratchet-wheel J, thus checking the bevel-wheel K and causing the wheel K′ to act upon wheel K^2, and to wind up the chain L, applying the brakes, as before, to the wheels B B. It will now be seen that it is immaterial which end of the car is coupled to the locomotive, or whether the cars are moved backward or forward, still the operation of the brakes will be the same, and they will be applied with greater or less force in proportion as the momentum of the train or any one car exceeds that of the engine or any other car, and by retarding the momentum of the engine or any one car the brakes are applied to every car in the train in proportion as the weight or momentum of one car exceeds that of another. Each car acts independently of the rest, and, as the momentum of a loaded car is greater than that of an empty one, (other things being equal,) the loaded car will be "braked off" in proportion to its momentum and the empty car according to its momentum.

My improved brake attachment is so graduated that it accommodates itself to all the wearing of the shoes or brake-blocks upon the car-wheels, and will tighten the brakes equally as well whether it requires one inch or a foot of the chain to be wound up.

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

1. Combining with the longitudinally-sliding buffer rods D, running in a continuous line through the entire train of cars, the lever E, connecting-rod F, friction-brake G, drums H H′, double ratchet-wheel J, pawls *m m′*, wheels *k k′* k^2, chain and rod L L′, and brake-bar M, all operating substantially as herein described.

2. The spring *b*, applied to the buffer-rod D, in combination with the lever E, and operating substantially as herein described.

3. The friction-drums H H′, double ratchet-wheel J, pawls *m m′*, in conjunction with the vibrating bifurcated brake G, and sliding buffer-rod D, operating substantially as herein described.

4. The application of the compound gearing *k k′* k^2, with the double ratchet-wheel J, drums H H′, and brake-arms *g g′*, to the axle of a car, substantially as and for the purposes herein described.

THOS. J. WHITNEY.

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FREDK. F. CHRISTINE.