

(No Model.)

W. O. COOKE.

AUTOMATIC CAR BRAKE.

No. 356,622.

Patented Jan. 25, 1887.

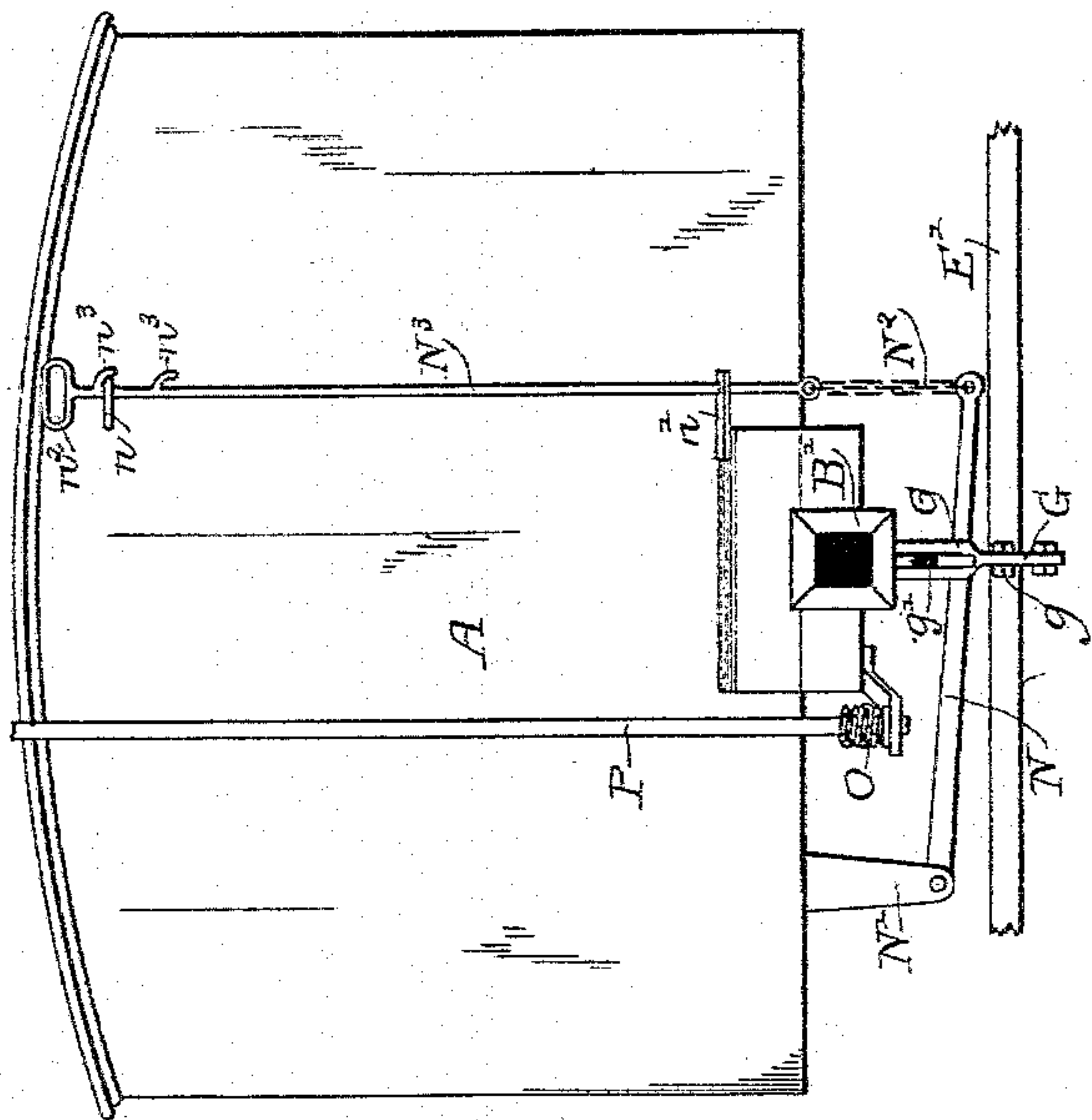


Fig. 2.

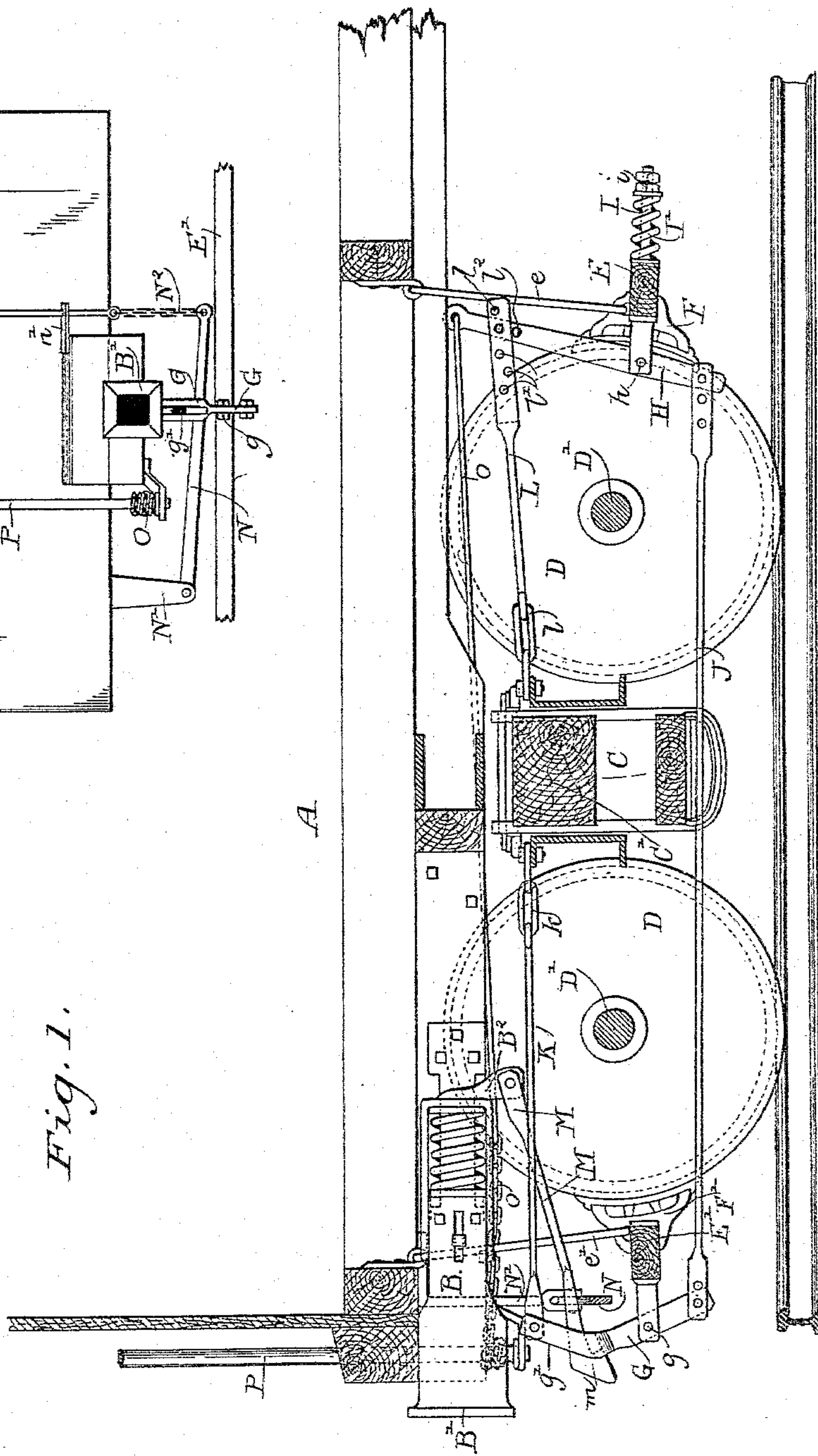


Fig. 1.

WITNESSES

Wm A. Skinkle
Geo. W. Young.

INVENTOR

William D. Cooke

By his Attorneys *Wayton & Poole*

UNITED STATES PATENT OFFICE.

WILLIAM O. COOKE, OF NEW YORK, N. Y.

AUTOMATIC CAR-BRAKE.

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Application filed November 2, 1886. Serial No. 217,770. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. COOKE, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Car-Brakes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of brakes which are operated automatically by the movements of the draw-bar of the car, and more especially to that class of brakes of the character referred to in which the brake-beams of a car-truck are connected by rods and operating-levers, which are actuated by the draw-bar in the rearward or inward movement of the latter, so that when the cars in a train are brought or forced together by the impetus of the rear cars at times when the speed of the engine is checked the brakes will be applied.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a sectional elevation of a car-truck and adjacent parts of the freight-car, showing my invention applied thereto. Fig. 2 is a detail end elevation of the draw-bar and adjacent parts.

As illustrated in the said drawings, A is the car-body; B, the draw-bar, provided with the usual draw-head, B'; C, the truck; D, the wheels, and D' the wheel-axles. The truck C is constructed with a main or central cross-beam, C', which connects the horizontal side pieces of the truck in the usual manner.

E E' are the brake-beams, which are sustained by links e e' from the truck-frame, and are provided at their ends with brake-shoes F F', arranged to bear upon the wheels D D, these parts being constructed in a familiar manner.

G is a vertical lever, which is pivoted to the middle part of the brake-beam, E', nearest the end of the car.

H is a second vertical lever, pivotally connected with a rod, I, which extends horizontally through the middle part of the brake-

beam, E, remote from the end of the car, and is provided at its end with a nut or collar, i, between which collar and the brake-beam E is applied a spiral spring, I'. The lower ends of the levers G and H, which extend below the pivots g and h, connecting them with the brake-beam E and rod I, respectively, are connected by a rod, J, pivoted at its opposite ends to said levers. The upper end of the lever G is connected with the main cross-bar C' of the truck-frame by means of a linked connection, herein shown as consisting of a rod, K, provided with a loose ring or link, k, and the upper end of the lever H is similarly connected with the said beam C' by a connecting-rod, L. A loose or flexible connection between the upper end of said lever H and the rod L is preferably formed by slotting the end of the rod to receive the lever, and inserting through the slotted end of the rod a pin, l, to limit the outward movement of the upper end of the lever, and by placing in the lever below the slotted end of the rod a pin, b², upon which the said slotted end of the rod may rest and slide. Said lever G is preferably forked at its upper end, so as to form a slot, g', (more clearly shown in Fig. 2,) and the rod K is connected thereto by being pivoted between the upper ends of the fork, as clearly shown in the drawings. The rod L is provided at its end adjacent to the lever H with a series of holes, l' l', through either of which may be inserted the pin l, thereby enabling the extent of outward movement in the upper end of the lever to be changed as desired.

M is a swinging arm or bar pivoted at one end to a depending arm or bracket, B², upon the inner end of the draw-bar B, and provided at its opposite end, or free end, adjacent to the end of the car-body, with a hook, m, adapted to engage the upper part of the lever G. Said hook is conveniently inserted and held in the slot g' of the said lever, and is constructed to engage a beveled surface at the lower end of the slot, as indicated by dotted lines in Fig. 1.

N is a horizontal lever pivoted at one end to a depending bracket, N', upon the car-body, Fig. 2, and connected at its opposite end with a chain, N², which extends to the top of the car or other place convenient of access for the

brakeman. The lever N extends beneath the free end of the hooked bar M, and is so arranged that when the said lever N is lifted by drawing upwardly upon the chain N² the hooked end of the said bar M will be lifted and held free from engagement with the lever G.

To provide means for holding the lever N in its lifted position, it may be conveniently connected, as shown in Fig. 2, with a vertically-sliding bar, N³, held by staples or guides *n n'* upon the upper part of the end wall of the car, said bar being provided with a handle, *n²*, at its upper end and with a hook, *n³*, at one of its sides, adapted to engage the staple *n* when the chain is drawn upwardly and the lever N is in its elevated position.

The lever H is extended somewhat above its point of pivotal connection with the rod L, and to the upper end of said lever is attached a chain, O, which extends from the lever to the adjacent end of the car-body, where it is wrapped about the lower end of the vertical rotating shaft P of a hand-brake, said shaft being shown as extended to the top of the car and provided with the usual brake-wheel.

The operation of the parts above described is as follows: When the hook *m* of the bar M is engaged with the lever G, a rearward or inward movement of the draw-bar, caused by the rear cars of the train crowding or pressing forward upon the cars in front of them when the engine is checked, will operate to carry the upper end of said lever inwardly, thereby pressing the brake-shoe F' against the wheel D, and at the same time, by drawing upon the rod J, to carry the lower end of the lever H toward the end of the car, and thereby actuate the brake-shoe F, the upper end of said lever H in this operation being held from outward movement by the pin *l* in the slotted end of the rod L, said pin *l* in this case acting as the fulcrum of the lever. In the movement of the lever G in the manner described, the rod K will obviously be shortened or allowed to slack, owing to the movement of the upper end of the said lever G toward the cross-bars C' of the truck, the link being employed to permit such shortening of the rod.

For operating the brake by hand, the brake-rod P is turned in the usual manner to wind up the chain O and thereby draw the upper end of the lever H toward the end of the car. In this operation the brake-shoes F' and F will be applied in the same manner as before described. The rod K in this case serves as a pivotal support for the upper end of the lever G, and the upper end of the lever H slides in the upper end of the rod L as the upper end of the lever H is carried toward the center of the truck-frame.

The hooked end *m* of the bar M may be arranged to engage the lever G at the time the draw-bar is in its normal position, so that as soon as the draw-bar is thrust inwardly by pressure thereon the lever will be moved and the brakes applied. I prefer, however, to so

locate the said hook *m* that when the draw-bar is in its normal or usual position the hook will rest against the lower edge of the slot *g'* of the lever G, and will be disengaged from the said lever, as shown in Fig. 1. When the parts are thus constructed, the said hook will not become engaged with the lever until the draw-bar has been carried slightly forward by the tension thereon caused in starting the train, so that when the tension is relaxed the lever G will be moved slightly to take up all of the lost motion in the several connected parts. By this means, as soon as any compression takes place sufficient to thrust the draw-bar slightly backward from its normal position, the brakes will be immediately applied. By the use of the chain N² and the lever N the hooked end *m* of the bar M will be held free from the lever G, so as to prevent the operation of the device when it is desired to apply the brakes solely by hand in backing the train, or when for other reasons it is desired to prevent the automatic setting of the brakes.

The spring I', applied between the rod I and the brake-beam E, is for the purpose of preventing an excessive strain upon the parts when the draw-bar is thrust inwardly a greater distance than is necessary for applying the brakes, said spring being made of sufficient strength or stiffness to transmit the maximum amount of pressure required in the operation of the brakes. By the employment of the spring I' the draw-bar may be thrust backwardly when the hook *m* is engaged with the lever G without throwing undue strain upon the parts, even when the brake-shoes have been previously set against the wheels by hand, it being entirely obvious that the actuation of the lever G in such case will merely serve to increase the pressure thrown upon the brake-beams until the spring I' yields to allow the movement of the parts by the actuation of the said lever G in the manner described.

Automatic brakes of the character above described and herein shown have been made heretofore, in which the brake-beams at opposite ends of the truck have been actuated by means of a device comprising two vertical levers pivoted between their ends, one to each of said beams, and a connecting-rod joining the lower ends of said levers. The said levers were connected at their upper ends, one with the draw-bar and the other with the hand-actuating device, in the same manner as in the brake herein shown; but any parts corresponding in construction and function with the links or rods K and L were absent. In said prior device the upper end of that one of the brake-levers which is connected with the hand-actuating device is obviously held from movement by its connection with the said hand-actuating device when the brakes are applied automatically by the action of the draw-bar, so that said connection forms the center of motion of fulcrum of the said lever at such time, and, similarly, a fulcrum for the

upper end of the lever adjacent to the draw-bar is afforded by the devices connecting it with the draw-bar when the hand actuating devices are used.

5 In a brake device embodying the main features of my invention the upper end of the brake-lever, which is immediately acted on by the draw-bar, is connected with the car or truck frame by means (such as the linked rod
10 K described) adapted to hold the said upper end of the lever from outward movement in applying the brakes by hand, while at the same time allowing the necessary inward movement of the lever under the action of the draw-
15 bar. By this construction the hand-brake is rendered independent of the automatic devices actuated by the draw-bar when the said automatic devices are not in operation.

In a device embodying my invention, furthermore, the break-lever connected with the hand-actuating devices is also preferably connected with the car or truck frame by a connection similar to that above described, (shown
25 L,) whereby the upper end of the said lever is held from outward movement when the other lever is acted upon by the draw-bar, one advantage gained by this construction being that the automatic actuating devices are thereby
30 maintained in position for operation without reference to the position of the hand-brake.

I claim as my invention—

1. The combination, with a yielding draw-
bar and the brake-beams, of two vertical levers
35 severally pivoted to said brake-beams, a connecting-rod joining the lower ends of said levers, means detachably connecting the upper end of one of said levers with the draw-bar, a
40 hand brake device connected with the upper end of the other of said levers, and a sliding or loose connection between the upper end of

one of said levers and the car or truck frame, constructed to allow an inward movement of the upper end of said lever while operating to limit the outward movement of said upper end
45 of the lever, thereby forming a fulcrum for said lever when pressure for actuating the brakes is applied to the lever at the opposite end of the truck, substantially as described.

2. The combination, with a yielding draw-
bar and the brake-beams, of two vertical levers
50 severally pivoted to said brake-beams, a connecting-rod joining the lower ends of said levers, means detachably connecting the upper end of one of said levers with the draw-bar, a
55 hand brake device connected with the other of said levers, and loose or sliding connections joining the upper parts of both of said levers with the car or truck frame, whereby the automatic and hand brake devices are adapted
60 for independent operation, substantially as described.

3. The combination, with a yielding draw-
bar and brake-beams, a vertical lever, G, piv-
65 oted to one of said beams, a rod joining the lower end of said lever with the other of said beams, a bar pivoted to the draw-bar and provided at its free end with a hook adapted for engagement with the said lever G, a horizontal
70 lever, N, pivoted at one end to the car-frame and engaging the free end of said hooked bar, and a movable supporting device connected with the said lever N and extending to a point
75 on the car convenient for the operator, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

WILLIAM O. COOKE.

Witnesses:

C. CLARENCE POOLE,
CHARLES T. LORING.