

(No Model.)

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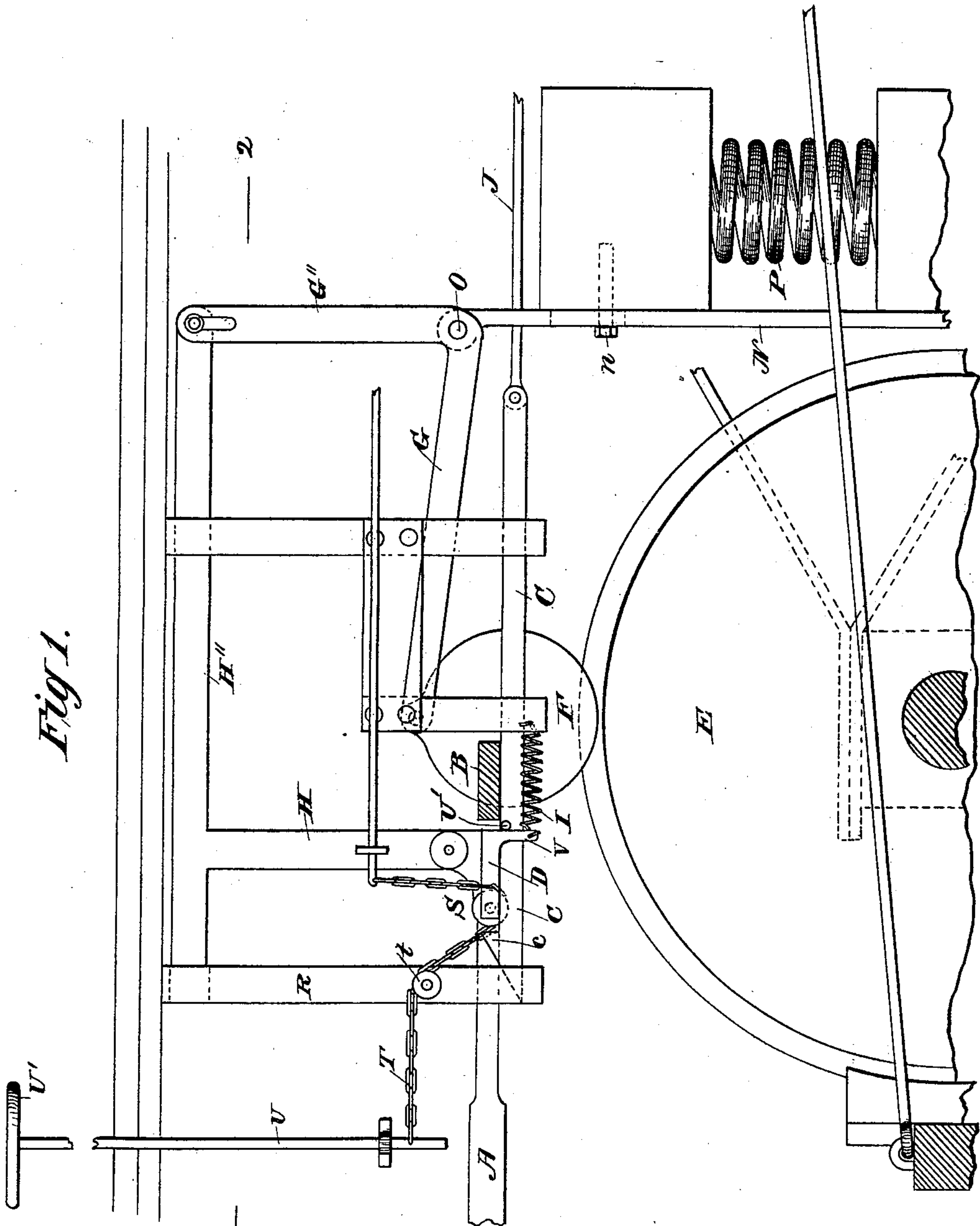
E. BEALS.

CAR BRAKE.

No. 251,165.

Patented Dec. 20, 1881.

Fig 1.



Attest:
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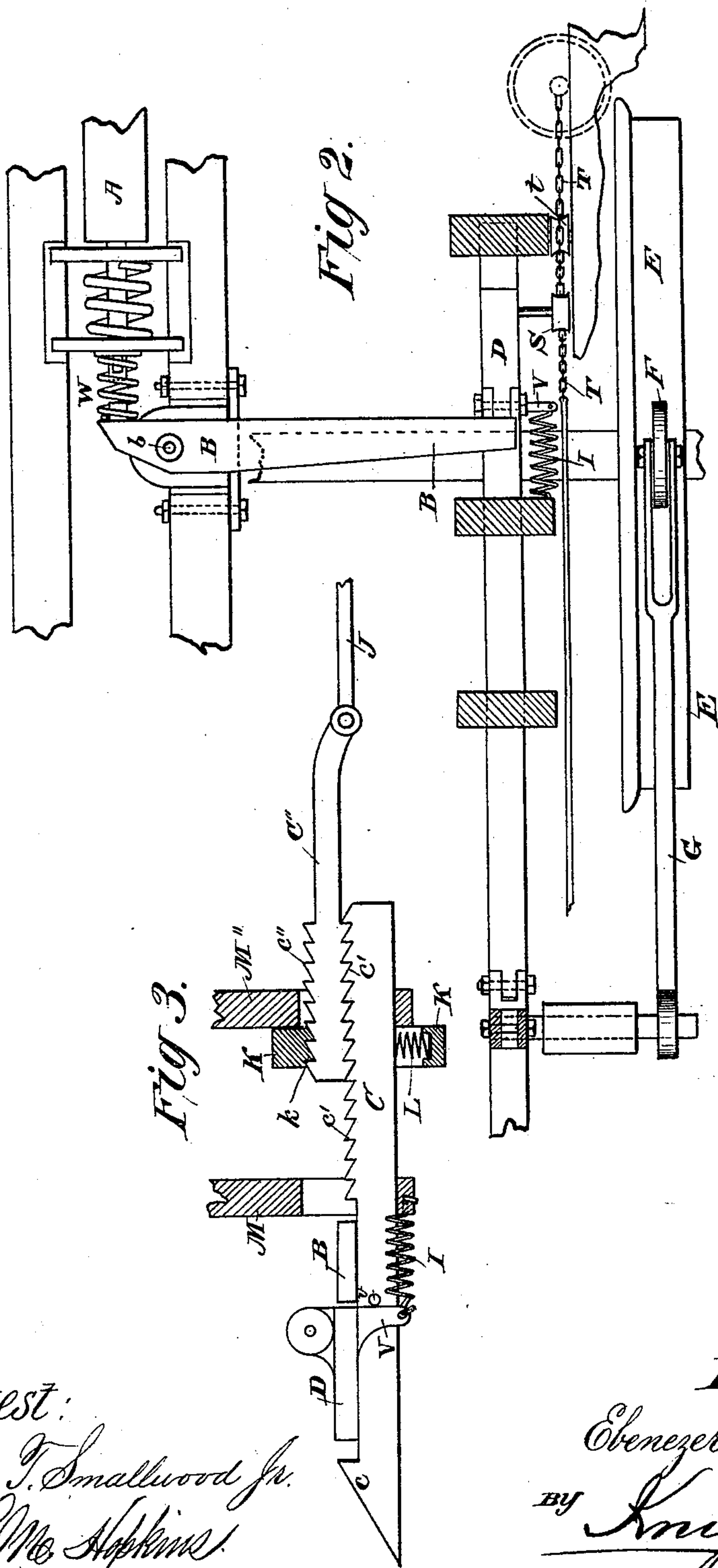
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

EBENEZER BEALS, OF NORWICH, NEW YORK.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 251,165, dated December 20, 1881.

Application filed June 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER BEALS, a citizen of the United States, residing at Norwich, in the county of Chenango and State of New York, have invented Improvements in Automatic Car-Brakes, of which the following is a specification.

My invention relates to automatic brakes operated by the pushing in of the draw-bar on checking the speed of the engine; and it consists in devices, hereinafter described, to effect an instantaneous application of the brakes by such pushing in of the draw-bar while the wheels are in motion, and to prevent such effect from the thrust of the draw-bar while the wheels are at rest.

The invention further relates to a device by which the automatic-brake connections can be severed or thrown out of gear by a winding chain operated after the manner of the hand-brake chains in common use.

The invention further relates to devices by which the distance to which the shoes will retire from the wheels when the brakes are released is automatically limited, and any wear in the brake-shoes or in the connections is automatically compensated for, and any slack occurring in the connections is automatically taken up.

The invention also relates to certain details for carrying out my invention, which details are hereinafter more fully described.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of parts of a car-truck and the lower portion of a car-body with my automatic-brake mechanism applied. Fig. 2 is a horizontal section of the same on the line 2 2, Fig. 1. Fig. 3 is a vertical longitudinal section, illustrating the automatic take-up devices.

A represents a draw-bar or draw-head, which, on being pushed in, operates on the shorter end of a horizontal lever, B, running transversely to the car and fulcrumed on a vertical pivot, *b*. The longer end of the lever operates on a pivoted block, D, hinged to a vertical arm, H, depending rigidly from a horizontal slide, H". The pivoted block D is arranged to engage with a lug, *c*, at the forward end of the brake-bar C in such a manner that when the

connected arms H H" are permitted to slide, as hereinafter described, the said pivoted block D will communicate motion to the brake-bar C; but if the connected slide H H" be held against longitudinal motion the pivoted block D will simply turn on its axis, escaping the lug *c* and leaving the brake-bar C at rest. The motion of the slide H H" is determined by the forward movement of the wheel E by means of a governor consisting of a bell-crank lever, G G", the vertical arm G" of which is connected through a vertical slot-joint with the rear extremity of the horizontal bar H", while the horizontal beam G is provided with a stop, F, pivoted to it and hanging over the top of the wheel E, said stop F being free to swing, so that the forward movement of the wheel E will remove it from under the arm G and permit the said arm to turn down on its fulcrum O, when the slide H H" is thrown forward by the thrust of the draw-bar through the medium of the lever B and pivoted block D, as above described.

I is a spring fixed at one end to a lug or arm projecting downward from the pivoted block D, and at the other to a stationary part of the car-frame, so as to tend to hold the block D in its retracted or normal position. A vertical shaft, U, being the ordinary brake-shaft and provided with a hand-wheel, U', is connected with a chain, T, passing over pulleys *t* and around a pulley, S, in the forward end of the pivoted block D, for the purpose of turning said block up out of its normal or active position when it is desired to render the brakes inoperative by the pushing of the draw-bar, as in the case of using a pusher-engine, or for the purpose of taking off the brakes, when necessary, in order to straighten the train, or for any other reason.

To the draw-bar C is pivoted a rod, J, connected with the brake-levers in customary manner. Said levers and their connections and the shoes may be of customary form.

I prefer to introduce between the end of draw-bar A and the short arm of lever B a spring, W, through which the brake-power will be applied, said spring thus serving to modify or limit the amount of pressure which can be applied to the brake-shoes.

My invention as above described constitutes a simple, economical, and effective brake, to be operated automatically by the pushing in of the draw-bar; but I have further devised a simple and effective means whereby the slack in the brake-connections, occasioned by the wearing of the shoes or from any other cause, will be automatically taken up, and on releasing of the brakes the shoes will be removed to a determined and uniform distance from the wheels, irrespective of the wear of said shoes or their rubbers. To this end I make the brake-bar, which is acted on by the lever B through the medium of the pivoted block D, in two parts, C C', as illustrated in Fig. 3, with inclined or ratchet teeth c', adapted to lock together, so that the bar C, in its forward movement, will carry the bar C' with it, but may slide backward relatively thereto. The upper surface of the bar C' is also formed with ratchet-teeth c'', presented backward, and the two bars are embraced or encircled by the collar K, with an oblong aperture through which the bars may pass, at the upper end of which aperture are teeth k, adapted to engage with the teeth c'' on the upper surface of the bar C'.

L is a spring, bearing upward against the bottom of the bar C and downward against the collar K, so as to draw the bars C C' together and cause them to lock.

M M' represent stationary abutments, which limit the movement of the collar K. The forward end of the bar C is supported in the fixed hanger R.

U' is a small pin in the bar C, behind the arm V of the block D, for the purpose of causing the spring I, in pulling back the block D, to pull the bar C back with it. Said spring must be of sufficient strength to shove the toothed bar C through the collar K whenever there is slack enough to take up one tooth of the rack.

N is a standard rigidly fastened to the lower transom of the car-truck and connected to the upper transom by a bolt, n, passing through a vertical slot in said standard. The upper end of the vertical standard N carries the fulcrum-pin of the L-shaped lever G G', and the upper end, G'', of said lever also has a vertical slot, within which the forward end of the slide H'' is pivoted, so as to permit the vertical motion (due to the compression of the car-springs P) of the slide H H'', which is carried by the car-body relatively to the lever-arm G'', which is carried by the truck.

The operation of my invention in its complete form is as follows: The draw-head A, on being pressed in, moves the lever B, which communicates its motion to the toothed bar C, through the intervention of the pivoted block D, which is carried with it, if the wheel E of the car is in motion, so as to throw the swinging stop F out from under the lever-arm G, to which it is pivoted, and allow said arm G to drop when the arm G'' is pulled forward by the slide H H'', to which the block D is pivoted;

but should the wheels of the car be at rest the stop F will stand straight up under the lever G and prevent the movement of the slide H H'', in which case the lever B simply swings the block D on its pivot out from behind the lug c on the end of the toothed bar C, without moving the said bar C or applying the brakes.

The action of the divided toothed bars C C' and the connecting-collar K in taking up lost motion and compensating for wear of shoes or other parts is as follows: When the draw-bar is drawn forward the collar K moves with it until it comes in contact with the fixed hanger M, which stops the collar K and allows the bars C C' to draw through the said collar by sliding up the incline of the teeth—a movement which is permitted by the compression of the spring L at the bottom of said collar. Now when the draw-head pulls out and releases the lever B the brakes can only fall off to a distance represented by that between the collar K and the fixed hanger M'', which hanger arrests the backward motion of the collar K, and consequently of the bars C C'. Hence it is immaterial to the effectiveness of the brake how much the shoes may be worn, as they can in any case only fall off to a determined and uniform distance from the face of the wheels. On each release of the brakes the spring I draws the pivoted block D back into its place, and if there is slack amounting to the length of one tooth of the bars C C' the bar C will be slid back past the bar C', so as to take up such slack.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with the draw-bar A, of lever B, pivoted block D, and toothed bar C, for communicating power to the brakes from the movement of the draw-bar.
2. The combination of the elbow-lever G G' and swinging stop F with the slide H H'', substantially as and for the purpose set forth.
3. The combination, with the slide H H'', of the pivoted block D and spiral spring I, as and for the purposes set forth.
4. The combination of the toothed bars C and C', toothed collar K, and abutments M M'', for automatically regulating the distance to which the brake-shoes will move from the wheels when released.
5. The combination, with the toothed bars C C', abutments M M'', and toothed collar K, of the spring I, for automatically taking up the slack of the brake-connections when released.
6. The combination of the standard N, lever G G', and slide H H'', with slot-connections, substantially as and for the purpose set forth.
7. The combination of the slide H, lever G G', pivoted block D, and stop F, substantially as and for the purposes set forth.

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Witnesses:

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