(No Model.) 2 Sheets—Sheet 1.

# C. L. SLEDGE.

## CAR BRAKE.

No. 322,490. Patented July 21, 1885.

Fig. 1.

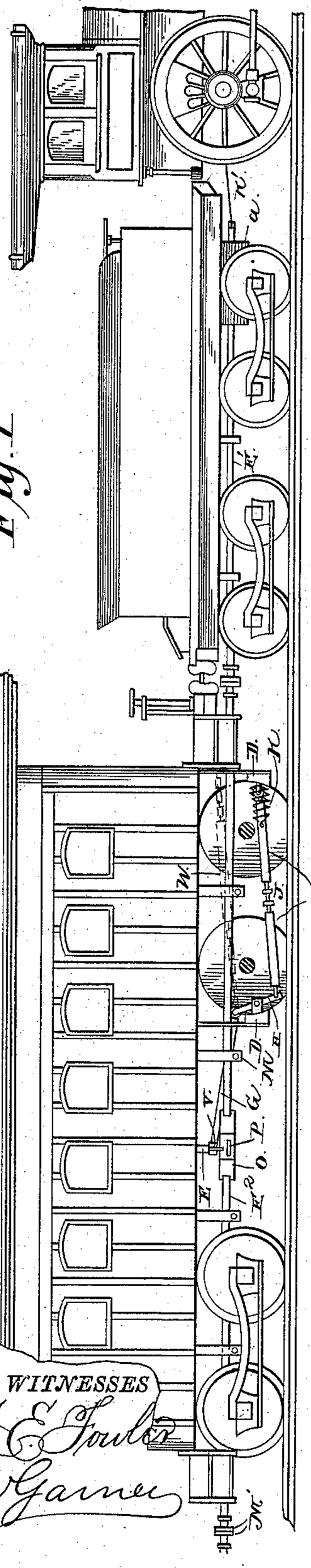
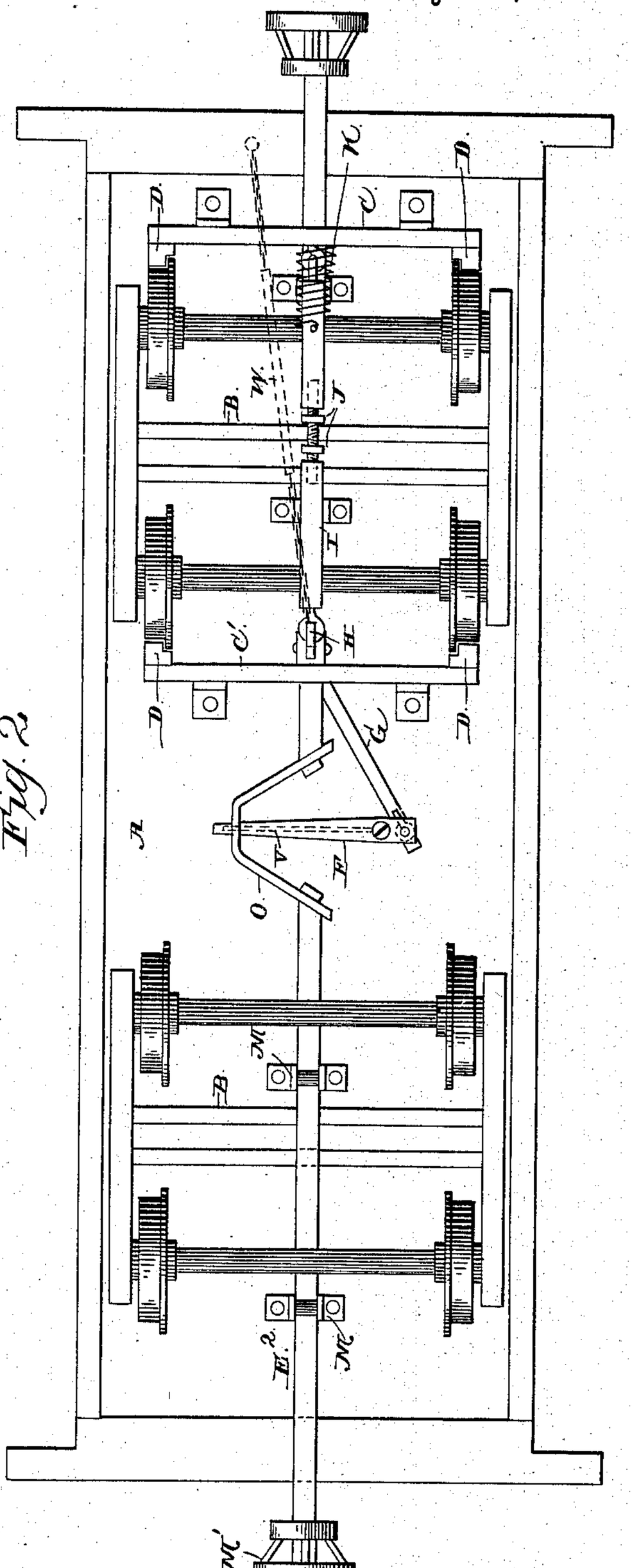


Fig. 2.



WITNESSES

M. E. Fowler

J. W. Garner

INVENTOR

C. L. Sledge

By C. A. Snow & Co

His Attorneys

(No Model.)

2 Sheets—Sheet 2.

# C. L. SLEDGE.

## CAR BRAKE.

No. 322,490. Patented July 21, 1885.

Fig. 3.

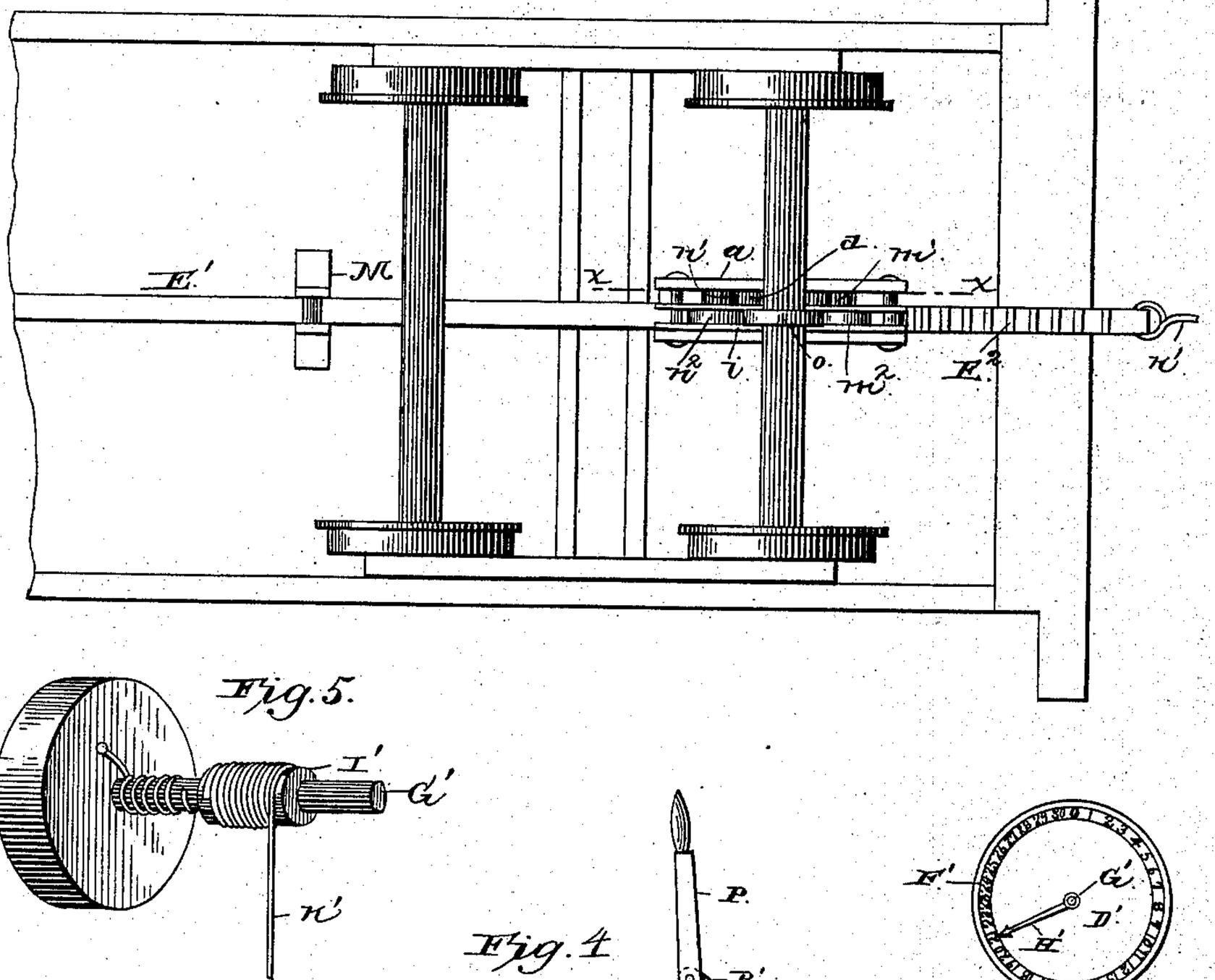



Fig. 5.




Fig. 4




WITNESSES:

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J. W. Garner

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C. L. Sledge

By his Attorneys

C. A. Snow & Co.

# UNITED STATES PATENT OFFICE.

CLARENCE LINDEN SLEDGE, OF KYLE, TEXAS.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 322,490, dated July 21, 1885.

Application filed May 29, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE L. SLEDGE, a citizen of the United States, residing at Kyle, in the county of Hays and State of Texas, have invented a new and useful Improvement in Car-Brakes, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improvement in car-braking apparatus, and the application of car-brakes that are adapted to be applied by the inertia of the train when in motion, or otherwise, by the engineer, as will be more fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of a locomotive, a tender, and a car, provided with my improved brake appliance and apparatus. Fig. 2 is a bottom plan view of a car provided with the usual braking apparatus, and my improved braking appliance, showing the connection of the one to the other. Fig. 3 is a similar view of the tender. Fig. 4 is a longitudinal sectional view of the same on the line *x x* of Fig. 3. Fig. 5 is a detail view of the dial and connections.

A represents a railroad-car.

B represents the truck-beam.

C′ and C represent the brake-beams.

D represents the brake-shoes.

H represents the brake-beam lever.

I represents a rod connecting brake-beam C with the short end of lever H.

W represents a rod having a chain at one of its ends, which rod and chain connect the upper end of lever H with the spindle at the end of the car.

K represents a coiled spring on one end of rod I, which spring bears against the outer side of beam C, and tends to give elasticity to the braking apparatus, freedom of distance to rearward movement of lever H after shoes D are applied to the wheels of car, and thus lessen the danger of breakage.

J represents a swivel coupling the pieces of rod I, and by which the stand-off limit of shoes D is adjusted to the same uniform distance from the rims of the wheels of all the cars when levers H stand vertically.

The representation A B C′ C D H I W K are constructed in the usual manner, and are known as the ordinary wheel-and-spindle hand-brake, and which, *per se*, I do not claim as a part of my invention.

To one side of the center of the bottom of the car is secured a depending bracket, E, to which is fulcrumed a lever, F. The short end of this lever from the under side is connected by rod G with the upper end of lever H, said rod being slotted at its end, which is connected with lever F, so as to allow the brakes to be applied by means of the wheel-and-spindle apparatus, without moving lever F, thus holding its independence without interference of my apparatus in combination when the brakes are wanted to be applied by hand, as will be readily understood.

Rod G can be attached to lever F on either side of fulcrum E to suit the application of the brakes, through my apparatus, to the power to apply them, same coming from the direction of the engine, and so that rod G will always, under the influence of such power, push and not pull against lever H. In case of brakes at both ends of the car, rods G can be interchanged at their slotted ends from one to the other side of fulcrum E, causing the same pushing adaptation of rods G.

$E^2$ represents brake-rods that pass through the jaws of brackets M, which depend from the under side of the car. Through the jaws of brackets M pass transverse pins or shafts, on which rods $E^2$ rest, and which pins or shafts revolve when rods $E^2$ are worked back and forth. These rods are provided at their outer extremities with heads M′, the faces of which, when at rest, are under and in vertical line with the faces of the bumpers of the car to which they are attached or belong, said heads being arranged on all the cars at the same uniform distance from the center of the railroad-track measured from a level with the tops of the rails. These rods are connected at their inner ends by a U-shaped yoke, *o*, having a slot, P, at its center, through which passes the end of long arm of lever F. Rods $E^2$ may be straight, passing through the truck-beam or pass over the truck-beam and bent at half the distance from truck-beam to their heads, so that the latter will rest under the bumpers, as stated. They may be bent at other places also to avoid obstructions under the car.

V represents a spring-slab fixed to lie above

lever F, one end being stationed in fulcrum-pin E, and the other end working loose in a hole in yoke *o* directly over slot P, and tends normally to hold lever F in direct line across the car. The tender of the locomotive is provided with a similar apparatus.

Rod E′ is provided on its upper side, at its forward end, with a series of ratchet-teeth, $E^4$, and on its under side with a series of rack-teeth, $E^3$. It is bent near its head, so that same will rest as described for rod $E^2$. It has no yoke *o*, slot P and hole over same, respectively, for lever F and spring-slab V, being cut in rod E′.

*a* represents a case, which is secured to the under side of the tender, and in which, near the center thereof, is journaled a shaft, *b*. This shaft is provided with a pinion, *c*, that meshes with the rack-teeth on the bar E′, which bar passes through case *a*. Shaft *b* also has a spur-wheel, *d*. In the lower side of case *a* are cut slots *g* and *h*. On the inner side of case *a* is a frame, *i*, made of two pieces that are put together by transverse pins $K^2$. The ends of these pins extend through both sides of frame *i* and work in slots *g* and *h* in case *a*, and thus support frame *i* in case *a*. Pins K hold the sides of case *a* together, or rather connect them, and also serve to guide rod E′, said rod being slotted, and the pins K passing through the slot.

On one of the sides of frame *i* is pivoted an idler, $n^3$, having spur-teeth to mesh and engage with spur-wheel *d*. In the frame *i* are journaled a shaft, *m*, and a shaft, *n*, each having a pinion, *m′* and *n′*, which have spur-teeth adapted to mesh with wheel *d* and idler $n^3$, respectively. On the shafts *m* and *n* are also fixed, respectively, friction-pulleys $m^2$ and $n^2$. On one of the axles of the wheels of the tender is fixed, also, a friction-pulley, *o*.

*p* represents a lever that extends through a hole cut in the floor of the locomotive cab on the side of the engineer's seat, or the opposite side. This lever has its fulcrum in the floor of the cab, and is connected by bent rod *r* to front pin $K^2$ in the frame *i*. By moving lever *p* rearwardly, idler $n^3$ (with which pinion *n′* is permanently geared) is thrown into gear with spur-wheel *d*, and simultaneously friction-pulley $n^2$ is thrown into engagement with friction-pulley *o* on the axle of the tender. The reverse movement of lever *p* to a vertical position throws the wheels and pulleys out of gear. The forwardly movement of lever *p* from its vertical position causes pinion *n′* to be thrown into gear with wheel *d*, and pulley $m^2$ to engage with pulley *o*, neither set being in gear when lever *p* stands in a vertical position.

S represents a pawl that is pivoted in between the sides of case *a*, near the rear end thereof, and engages by its own gravity with the ratchet-teeth on the upper side of brake-rod E′. Arm S′ extends forwardly from pawl S.

$S^2$ represents a lever that is pivoted in between the sides of case *a* by one of pins K. It is provided at its upper end with a hook-pin, that rests on the top of arm S, near the end of the latter. Its lower end rests against the outer side of rear pin $K^2$, in frame *i*, and is thus adapted to force pawl S out of the ratchet-teeth of brake-rod E′ when frame *i* is moved rearwardly, and allowing rod E′ to be forced forwardly or withdrawn when the brakes are wanted to be released.

To the upper end of lever *p* is fixed a spring-actuated pawl, B′, that engages with the teeth of a stationary circular piece, *c′*. In the cab, near and convenient to lever *p*, is fixed a dial-plate, D′, which is provided with a scale, F′, that is graduated from 1 to 30. In the center of the dial is a shaft, G′, which has a hand or pointer, H′, that sweeps around the face of the dial-plate, and a drum, I′, around which is wrapped one end of a cord, K′, that connects said drum to the front end of the brake-rod E′. In its passage from the drum to the rod the cord passes over a sheave, L′, journaled in the bottom of the locomotive-cab. Drum I′ is provided with a winding-spring, which tends normally to hold pointer H′ at the figure 1 on the dial plate. The limit of the rearward movement of brake-rod E′, and hence of all the brake-rods $E^2$, is assumed to be thirty inches.

The operation of my invention is as follows: When the train is in motion, and lever *p* is in a vertical position, and the indicator-hand H′ points to figure 1 on the dial, which shows that rod E′ is as far forward as it can go, the brakes are all off. In order to apply the brakes, lever *p* is moved rearwardly, first releasing spring-pawl B′ from piece *c′*. Lever *p*, being connected to rod *r*, and rod *r* being connected to front pin $K^2$ in frame *i*, the latter is moved forwardly, so as to throw idler $n^3$ (which is permanently geared with pinion *n′*) into gear with spur-wheel *d*, and simultaneously cause friction-pulley $n^2$ to engage with friction-pulley *o* on the axle of the tender. The motion of the wheels of the tender is thus communicated to pulley $n^2$, pinion *n′*, and hence idler $n^3$, and to wheel *d* and pinion *c*, which pinion *c*, as it engages with the rack-teeth of the brake-rod E′, moves said brake-rod rearwardly, which carries with it lever F, which, by its connection to brake-beam lever H through rod G, forces lever H rearwardly, applying the ordinary braking apparatus, and hence the brakes to the wheels of the tender, as will be readily understood. As the brakes are applied to the wheels of the tender, and the speed thereby checked, the car in the rear thereof closes up, causing the head M′ of its brake-rod $E^2$ to strike against the head of brake-rod E′, the latter being already forced rearwardly. The brake-rod $E^2$ is forced back in the same proportion, applying the brakes of the car in manner as described for the tender. A similar action is performed on every car in the train, and the brakes are thereby applied throughout the entire train almost simultaneously, and

bear against the wheels with a force proportionate to the inertia of the train and the distance rod E′ may have been forced rearwardly; or should the cars be closely coupled, as in case of a passenger-train, or otherwise closed so that head of rod E′ already touches the head of rod $E^2$ of first car, and thus forming a communication of rods $E^2$ throughout the train, the brakes are applied by forcing rod E′ rearwardly, as described, and bear against the wheels with a force proportionate only to the distance rod E′ may have been forced and held rearwardly, coiled spring K, by its connection to rods E′ and $E^2$ through rods I, levers H, rods G, levers F, and yoke *o*, allowing liberty to the various parts after shoes D have been pressed against the rims of the wheels or the brakes applied, thus affording elasticity and tending to prevent breakage.

The pawl S does not interfere with the rearward movement of brake-rod E′, but constantly engages with it while it is moving rearwardly, and locks the same where it is left when lever *p* is moved to its vertical position, thereby holding all of rods $E^2$ in a similar position, by which means the brakes are all held to the car-wheels until the movement of lever *p* is made forwardly from its vertical position, which, when done, pawl S is first lifted out of engagement with rod E′, as has been described, and at the same time pinion *m′* is thrown into gear with wheel *d*, while friction-pulley $m^2$ simultaneously engages with the friction-pulley *o* on the axle of the tender, with similar communication of power as required and described to apply the brakes, except the revolving motion of pinion C is reversed and brake-rod E′ is forced forwardly or withdrawn, which allows the spring-slab V to throw the lever F, and consequently rods E′ and $E^2$, to their normal position, the brake-beams C′ and C, which have the shoes D, falling off of their own gravity and thus releasing the brakes from the car-wheels. The actuated spring-drum D′ winds up the cord when rod E′ is withdrawn, carrying with it the indicator H′ back to the figure proportionate to the withdrawal of rod E′, and thus showing at all times the position of the brakes.

I claim—

1. The combination of the endwise-moving brake-rods $E^2$ with heads M′, as adjusted and adapted, brackets M, with pins or shafts through their jaws adapted to revolve, fulcrum E, yoke *o*, having slot P, fulcrumed lever F, rod G, slotted at one of its ends to prevent interference with the application of the brakes by hand apparatus, the connection of levers F and H by rod G, the spring-actuated slab V, working over lever F, adapted and tending to hold lever F in direct line across the car, the adaptation of the endwise-moving brake-rods $E^2$ to strike against each other at heads M′ when the cars come together and push each other, and thus apply the brakes from one car to another by the inertia of the train or otherwise, and release them by the spring-actuated slab V when the applying and applied power is withdrawn, substantially as described.

2. The combination of the endwise-moving brake-rod E′, having its head adjusted and adapted to strike against the head of rod $E^2$ of car in the rear of the tender, its fulcrum-lever F, with the end of its long arm working in a slot through rod E′, rod G, having one of its ends slotted to prevent interference of the application of the brakes of the tender by the hand-working apparatus, the connections of levers F and H by rod G under the tender, friction-pulley *o* on one of the axles of the tender, the case *a*, secured to the bottom of the tender and having the slots *g h*, shaft *b*, journaled in the case *a*, having the pinion *c*, meshing with the rack-teeth of the brake-rod E′, and the gear-wheel *d*, the frame *i*, arranged in the case *a*, the shaft *m*, journaled in frame *i*, having the pinion *m′*, adapted to gear with wheel *d*, and the pulley $m^2$, adapted to engage with pulley *o*, the shaft *n*, journaled in the frame *i*, having the pinion *n′* permanently geared into idler $n^3$, which idler $n^3$ is adapted to gear with wheel *d*, and the friction-pulley $n^2$, adapted to engage with pulley *o*, pins K, passing through the frame *i*, supporting the same in case *a* at slots *g h*, the transverse pins *k*, connecting sides of case *a* and guiding rod E′ in its movement, lever *p*, connected to front pin $K^2$ in frame *i* by crooked rod *r*, pivoted pawl S, engaging with the ratchet-teeth of rod E′, and having the arm S′ and pivoted lever $S^2$, adapted to trip pawl S, the dial-plate having the shaft G′, provided with pointer H′, and a spring-actuated drum and cord connecting the drum with the rod E′, together with the working and adaptation and operation of all the parts in connection and combination to apply and release the said ordinary braking apparatus, whereby all the brakes may be applied and taken off, substantially as described.

3. The combination, with a railway-car brake, of the endwise-moving rod, the fulcrumed lever F, engaging said rod, and the rod G, connecting the lever F with the brake mechanism, said rod being slotted at its connection with the lever F to permit free movement of the latter in one direction, for the purpose set forth, substantially as described.

4. The combination, with a railway-car brake, of the endwise-moving rod having the rack-teeth and connected to the brake mechanism, a friction or gear wheel on one of the axles of the car or tender, a pinion engaging with the racked brake-rod, gearing for rotating said pinion, and means for moving said gearing in or out of engagement with the friction or gear wheel on the axle, substantially as described.

5. The combination, with a railway-car brake, of the endwise-moving brake-rod connected thereto, a friction or gear wheel on one of the axles, the wheel *c*, for moving the brake-rod, and the sliding frame *i*, having

gear or friction wheels adapted to alternately engage with the wheel on the axle, and gearing adapted to connect one of said wheels with the wheel *c* when the frame is moved in one direction and the other of said wheels with the wheel *c* when the frame is moved in the reverse direction, and thereby apply or release the brake, substantially as described.

6. The combination, with a railway-car brake, of the endwise-moving brake-rods connected thereto, having the rack-teeth and the ratchet-teeth, a friction or gear wheel on one of the axles of the car or tender, a pinion engaging with the rack-teeth of the brake-rod, gearing for rotating said pinion, a lever for moving said gearing in or out of engagement with the friction or gear wheel on the axle, a pawl engaging with the ratchet-teeth of the brake-rod, and means for tripping the pawl when the lever is operated, substantially as described.

7. The combination of the endwise-moving brake-rod having the ratchet-teeth and rack-teeth, the brake beams and shoes, levers connecting the brake-rods thereto, a friction or gear wheel on one of the axles of the car or tender, the case *a*, secured to the car or tender, shaft *b*, journaled in the case, having the pinion *c*, meshing with the rack-teeth of the brake-rod and the gear-wheel *d*, the sliding frame *i* in the case, idler $n^3$, pinion $m'$, engaging said idler, and friction or gear wheel $m^2$ on same shaft with pinion $m'$ and pinion $n^2$, and friction or gear wheel $n'$ on same shaft, lever *p*, connected to frame *i*, pivoted pawl S, engaging with the ratchet-teeth of the brake-rod, and fulcrumed arm S′, connected to pawl S for tripping the pawl when the frame *i* is moved, substantially as described.

8. The combination, with a railway-car brake, of the endwise-moving brake-rod connected thereto, means for moving the rod and applying the brake, and the dial-plate having the indicating hand or pointer, connected with the endwise-moving brake-rod, for the purpose set forth, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

CLARENCE LINDEN SLEDGE.

Witnesses:
M. G. KEYLICH,
T. H. EGERTON.