(No Model.) 2 Sheets—Sheet 1.

P. W. REINSHAGEN.

CAR BRAKE.

No. 359,179. Patented Mar. 8, 1887.

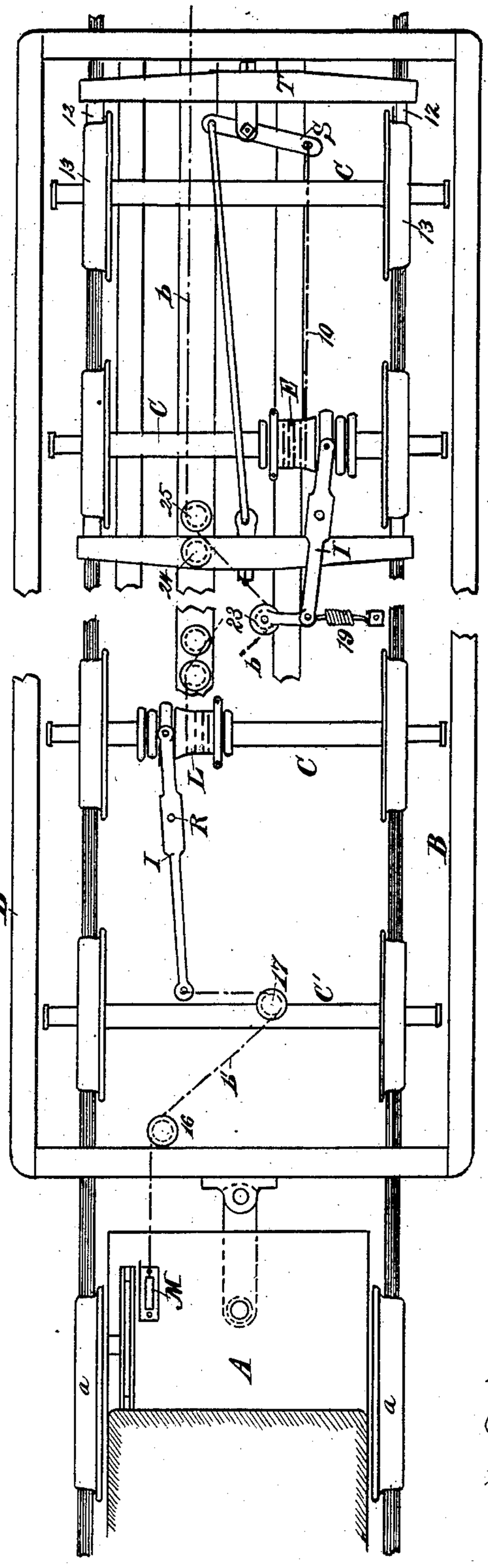

Fig. 1.

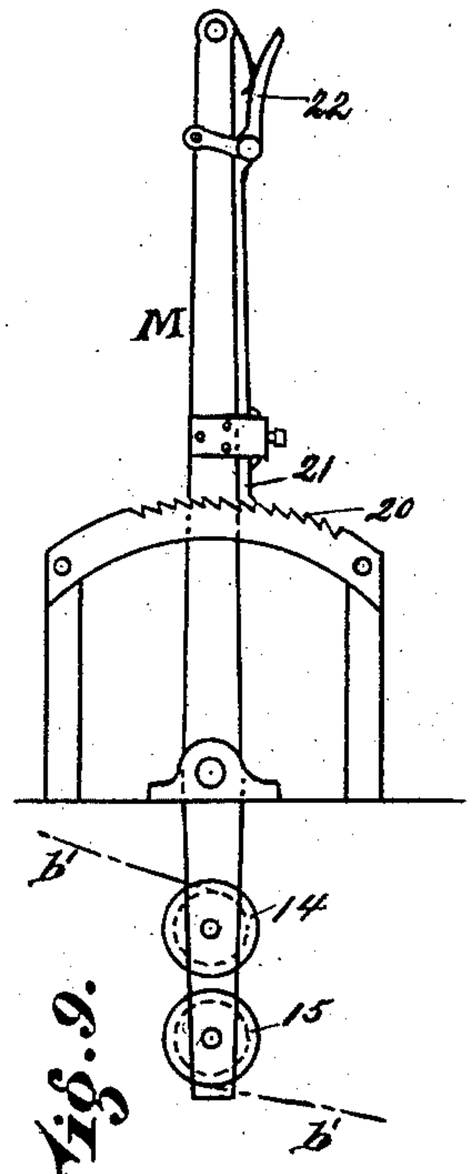

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

P. W. REINSHAGEN.

CAR BRAKE.

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Fig. 2.

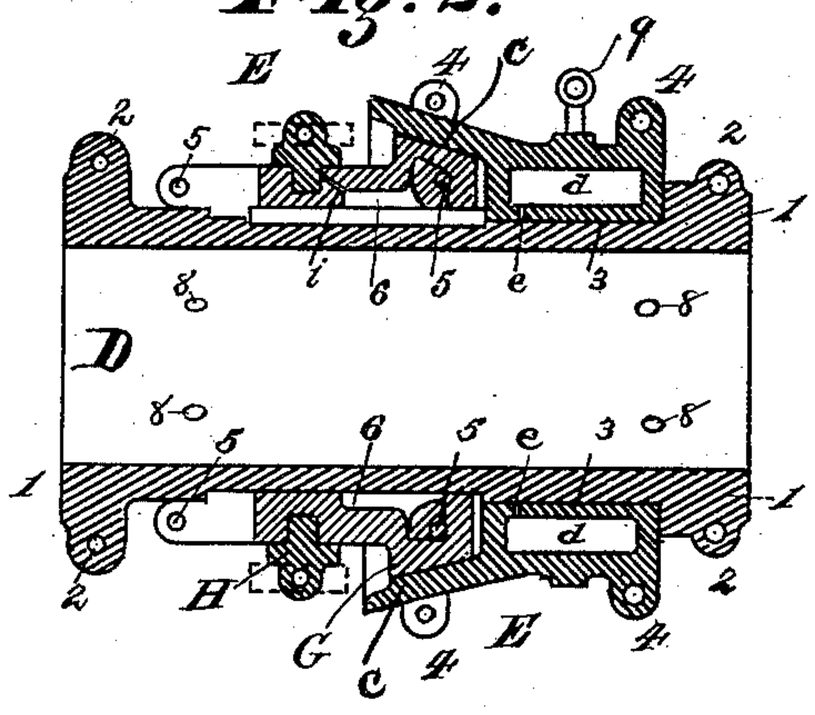


Fig. 3.

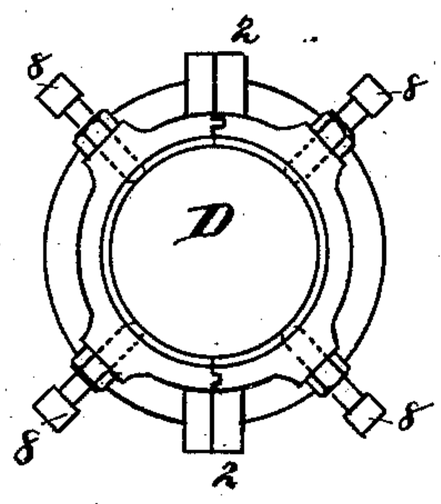


Fig. 4.

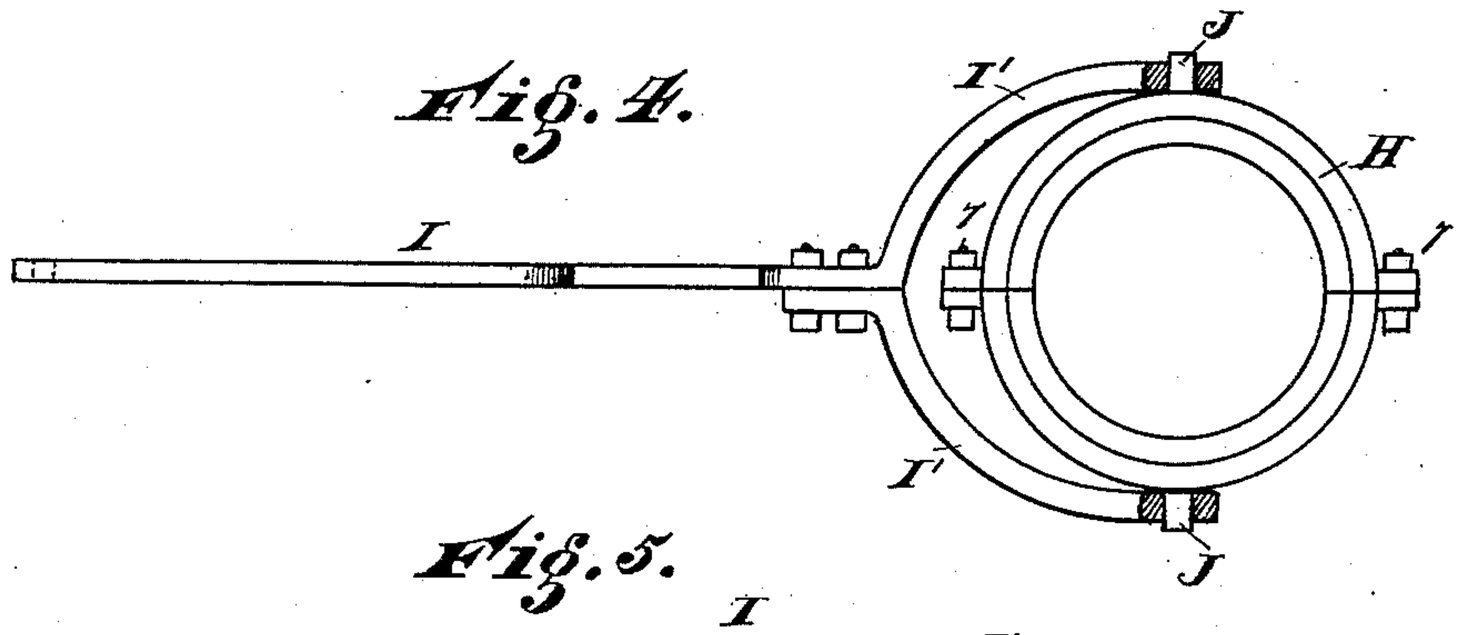


Fig. 5.

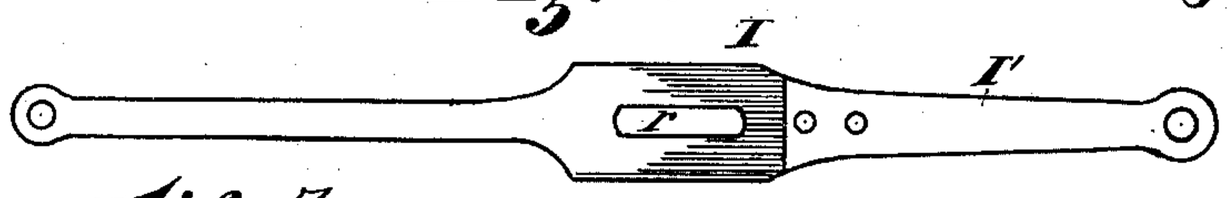


Fig. 7.

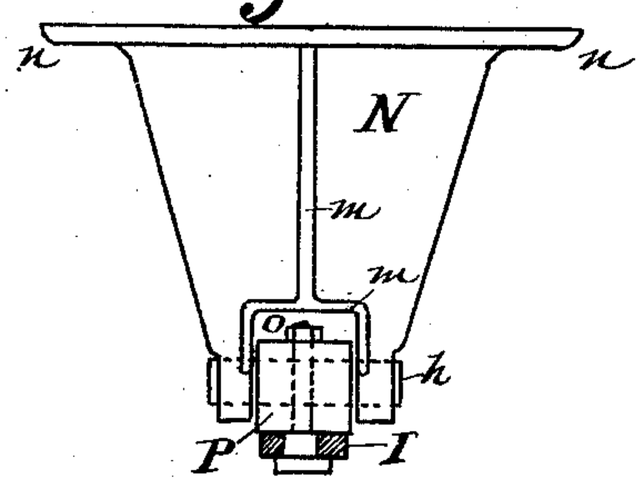


Fig. 8.

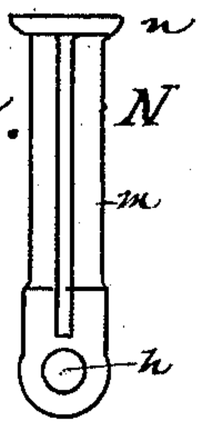
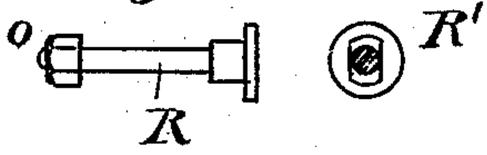


Fig. 6.



Attest

J. Watson Sims

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UNITED STATES PATENT OFFICE.

PETER W. REINSHAGEN, OF CINCINNATI, OHIO.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 359,179, dated March 8, 1887.

Application filed July 16, 1885. Serial No. 171,782. (No model.)

To all whom it may concern:

Be it known that I, PETER W. REINSHAGEN, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Car-Brakes, of which the following is a specification.

My invention relates to that class of car-brakes which are operated by the engineer or fireman to brake the entire train of cars.

The invention consists in the features of construction and combination of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a top plan view of my improvement applied to a locomotive-tender and cars. Fig. 2 is a longitudinal section of the clutch, sleeve, and windlass. Fig. 3 is an end view of the axle-sleeve. Fig. 4 is a side elevation of the clutch and lever. Fig. 5 is a top view of the lever. Fig. 6 is a detail view of the bolt on which the lever hinges. Fig. 7 is a front elevation of the hanger-bracket. Fig. 8 is a side view of the same. Fig. 9 is a side elevation of the setting-lever.

A represents the foot-board of any ordinary locomotive-cab; *a a*, two of the driving-wheels of the same.

B represents the frame of a tender; C C, axles of the tender and cars.

The drum of the windlass is operated on any one of the axles of a car. It obtains its power from the axle to which it is attached.

I prefer to have the drum journal on an intermediate sleeve, D, made in two sections, one of which is shown in Fig. 2. 1 represents the flanges of the section, and 2 ears pierced with bolt-holes for coupling the two sections of the sleeve together around the car-axle. On this sleeve D drum E journals.

3 represents the inner periphery or hub of the drum which journals on sleeve D. By the use of the sleeve the wearing friction is taken away from the axle. The drum E is also preferably made in two sections, so that it can be readily attached after the wheels are pressed on the axles.

4 4 represent the flange through which the coupling-bolts pass.

c represents a conical cylinder forming the female part of the clutch, being an extension of drum E.

G represents a conical cylinder fitting within the cylinder *c*. It is preferably made in two sections and coupled around the sleeve D by bolts passing through holes 5. Cylinder G is feathered to revolve with sleeve D and slide laterally thereon, so as to engage with cone-cylinder *c* of the drum D.

6 represents an oil-chamber cut or cored in the cylinder G; *e*, an oil-passage leading to the journal-bearing.

H represents a ring journaling in an annular groove or recess cut in the extended end of cylinder G. To this ring H is connected the clutch-lever I, by means of forks I′ I′, which journal on centers J J. As clutch-ring H does not revolve, while cylinder G revolves when the clutch is set, it is necessary to keep the parts lubricated. Chamber 6 is filled with proper lubricant, and a small hole, *i*, leads from chamber 6 to the groove in which clutch-ring H journals. The revolution of cylinder G discharges the oil into the journal of the clutch-ring and keeps the parts from heating and wearing. This clutch-ring is also preferably bisected and connected by coupling-bolts 7.

8 8 represent set-bolts for centering sleeve D on the car-axle and for rigidly connecting it thereto.

9 represents an eyebolt tapping into drum E, to which is connected chain 10, (see Fig. 1,) which chain is wound around said drum when the latter is set in motion to operate the brake-lever T and set the brake 12 against the wheels 13.

L represents a similar drum on the axle of the tender, around which is wound cable *b*, which cable operates the series of clutch-levers I for all of the cars in the train. Drum L on the tender is operated by a cone-clutch similar to that of drum E. Its clutch-lever I is connected by a similar cable, *b′*, to a lever, M, which is pivoted onto the floor of the foot-board in the locomotive-cab. Cable *b′* is fastened at one end to the floor under the cab and passes over sheaves 14 and 15, which are journaled in a slot in the lower end of lever M, thence over sheaves 16 and 17, and is connected to the end of clutch-lever I. When lever M is moved in the direction to draw cable *b′* taut, it pulls clutch-lever I, and operating the clutch of drum L sets it in motion

and winds cable *b'* around drum L, which operates all of the clutch-levers of the other cars and sets their brakes simultaneously.

One difficulty in operating the brakes of a train by a cable under the control of the engineer is the large amount of slack in the cable on long trains.

By employing lever M, with the sheaves 14 and 15, it readily takes up all the slack of the short cable *b'*, and by employing drum L to operate the main cable *b*, to set the clutch-lever of the drum E, which in turn sets, respectively, the brakes for each car, the slack of the main cable is taken up quickly before any of the brake-levers are operated.

Suitable sheave-blocks, 23, 24, and 25, are provided on each car for sustaining the cable *b* under each of the cars and connecting it to the clutch-levers I.

Another serious difficulty in operating the brake-levers of a train by a windlass and cable operating the brake-levers, and the use of clutch mechanism to set the drum in motion, is the suddenness of setting the brakes, which is liable to stop the car-wheels from revolving, causing them to slide and wear the wheels too rapidly. By the employment of my cone-clutch this difficulty is avoided, by making the angle of the periphery of the cone to its axis a little greater than the angle of friction or repose; and by keeping the bearing-surfaces of the cone-clutch lubricated it will slip under undue strain and allow the wheels of the car to revolve slowly. I prefer to have the angle of the periphery of the cone to its axis about ten degrees. This gives a graduated slowing motion for setting the brake.

In order to keep the drum lubricated on its sleeve-journal I provide an oil-chamber, *d*, cored within the drum, and oil-holes *e*, leading from chamber *d* to the journal. It is necessary to have clutch-levers I journaled so as to move on their pivots freely, and yet accommodate themselves to the different motions of the cars to which they are attached. I accomplish this as follows:

N represents a hanger-bracket, which is attached to the sill of the cars by bolts passing through flanges *n*. This bracket is vertically over the axis of clutch-lever I.

m represents strengthening-ribs.

o represents a mortise in the lower end of bracket N.

P represents a swivel-block, journaled in the mortise *o* on the axle-pin *h*.

R represents the axis of clutch-lever I. It passes through and journals in said block P. The lower end of this bolt is enlarged on top end, as shown at R', Fig. 6, which is a cross-section. The flat sides of this bolt fit in slot *r*, pierced through lever I, allowing it to move longitudinally on its axial pin as clutch G is moved laterally on its bearing. The forked ends of lever I being fast to clutch-ring H, which moves freely in its seat or journal, the lower end of lever I swivels on clutch G and allows the lever to move freely to accommodate itself to vertical motion of the car to which the hanger is attached. Thus lever I has practically the same motion as if its axis were a universal joint, and still a positive motion for its fulcrum to move the clutch-cone is maintained at all times.

S represents the ordinary hand brake-lever.

It will be observed that my improvement is adapted to operate the ordinary hand brake-lever without interfering with the use of an ordinary hand-brake, if desired.

The engineer can set the brakes very slowly by varying the strain on lever M, allowing the clutch of drum L to slip. He may set lever M in a position to partially brake the train by means of rock 20 and pawl 21. Pawl 21 is released by hand-latch 22. This stop also compensates for lost motion due to the sudden driving of the car-wheels in pushing over switches and bad places in the track. It also prevents strain on the axial bolt by reason of a shock or jar, to which cars are subjected in ordinary use.

19 represents a spring applied to clutch-lever I, to assist in releasing the clutch when the cable *b* is slackened.

It is obvious that lever M and a cable, *b'*, may be connected in each car to clutch-lever I, to operate the drum E and set the brake, and thus used as a substitute for the ordinary hand wheel-brake. This allows hand freight-car brakes to be operated by hand with a much less expenditure of power, and the desired graduated slowing motion obtained from one of the axles of the car to the wheels of which the brake is applied.

I do not claim in this application "a sleeve formed in two parts to embrace and be secured to a car-axle and forming the bearing for a rope-drum and a friction-clutch," the same not being of my own invention.

Having now described my invention, what I desire to secure by Letters Patent is—

1. The combination of the axle, the sleeve D, composed of sections located on the axle, the set-bolts 8, tapped through the sleeve and binding against the axle, the drum E, journaled to rotate upon the sleeve and formed with a conical female cylinder-extension, *c*, the conical cylinder G, fitting within said extension and feathered to revolve with the sleeve and slide therealong, a ring, H, journaled in the female cylinder-extension, the clutch-lever I, connected with the ring, a pivoted lever, M, a chain, 10, connected with the brake-lever and winding on the drum, the cable *b'*, secured at one end and connecting with the clutch-lever I and the pivoted lever M, a drum, L, and a clutch therefor, on which the said cable is wound, substantially as described.

2. The combination, in a car-brake mechanism, of the axle C, the sectional sleeve D, surrounding the same, a series of set-bolts, 8, tapped through the sleeve and binding against the axle to rigidly center the sleeve thereupon, the drum E, journaled to rotate on the sleeve

and having a conical female cylinder-extension, *c*, and a cone-cylinder, G, feathered to revolve with the sleeve and move therealong, the clutch-levers I, and cable-connections between the said drum, the brakes, and the clutch-levers, substantially as described.

3. In combination with a car-axle, the sleeve B, connected thereto, and the drum E, provided with oil-chamber 6 and oil-passages *e*, substantially as herein specified.

4. In combination with a car-axle, the drum E, cone *c*, cylindrical clutch G, and clutch-ring H, journaling in a groove cut in the extended end of the cylinder G, substantially as herein specified.

5. The combination of the drums L, sub-cable *b*, setting-lever M, clutch-levers I, main cable *b'*, drums E, and cone-clutches *c* and G, for operating the brakes of a series of cars, substantially as described.

6. The combination of the drums L, sub-cable *b*, setting-lever M, pivoted clutch-levers I, main cable *b'*, the sleeves D on the car-axles, the drums E, and the cone-clutches *c* and G, operating the clutch-levers and drums of a series of cars, substantially as described.

7. In combination with the windlass G, journaled upon a car-axle and having the female cone and the main cone-clutch of about the angle of friction or repose, the means for lubricating the surfaces of the friction-cones, whereby they slip under excessive strain, substantially as specified.

8. The setting-lever M, pivoted to the floor of a car, provided with sheaves 14 and 15, and the cable *b'*, passing over said sheaves and connected to the lever of a frictional cone-clutch, for setting in motion a drum journaled directly on a car-axle, substantially as herein specified.

9. In combination with the lever M, carrying the tightening-sheaves 14 and 15, for operating the cable *b'*, the ratchet-and-pawl mechanism attached to said lever for setting it in any desired position, substantially as herein specified.

10. In combination with the clutch-ring H, the cone-clutch G and the clutch-lever I, provided with a slot, *r*, for journaling the lever to the frame of the car above the axle, substantially as herein specified.

11. In combination with the lever I, connected to the cone by clutch G at one end, the hanger N, provided with the swivel-block P and king-bolt R, for journaling said lever I to the swivel-block, substantially as herein specified.

12. In combination with the friction-clutch journaled upon the car-axle and a rope or chain winding around the drum of one member of said friction-clutch and connected to the brake-lever, the lever I, connected to the friction-clutch by a ring journaling thereon and operated by a lever loosely pivoted to the car, so as to have longitudinal and lateral motion on its axis, whereby the swinging of the car would not affect the axial movement of the lever, substantially as described.

In testimony whereof I have hereunto set my hand.

PETER W. REINSHAGEN.

Witnesses:

ROBERT ZAHNER,

JNO. S. ROEBUCK, Jr.