

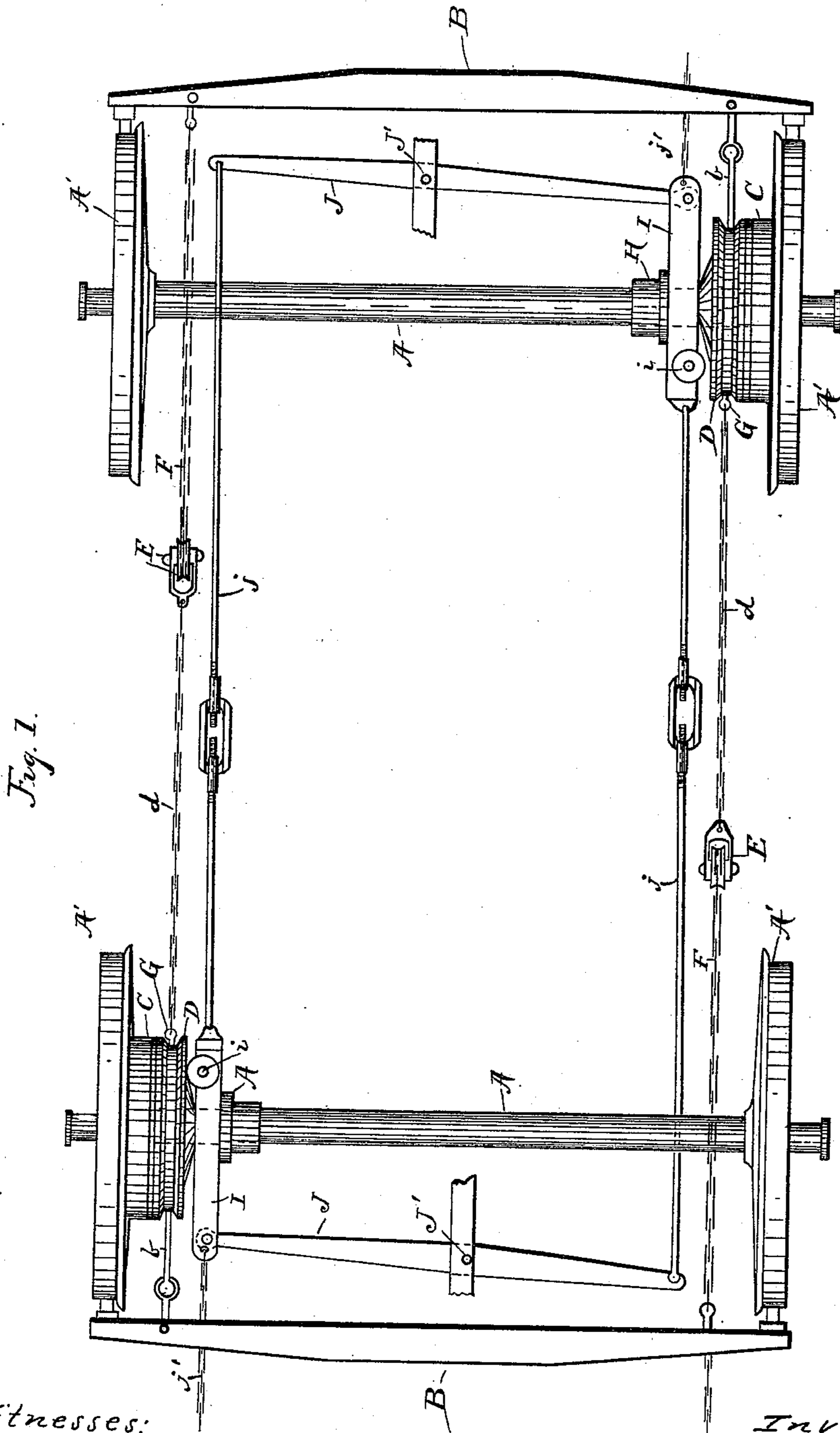
(No Model.)

2 Sheets—Sheet 1.

E. M. BARNES.
CAR BRAKE.

No. 447,272.

Patented Feb. 24, 1891.



Witnesses:

Edw. M. Barnes
Abby M. Barnes

Inventor
Edward M. Barnes
Edw. M. Barnes
Attorney

UNITED STATES PATENT OFFICE.

EDWARD M. BARNES, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO
JOHN A. DAVIES, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 447,272, dated February 24, 1891.

Application filed December 11, 1890. Serial No. 374,291. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BARNES, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and
5 useful Improvements in Car-Brakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

10 My invention relates to improvements in brake mechanism designed more especially for street-cars; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out
15 in the claims.

In the accompanying drawings, Figure 1 is a plan taken below the car-body. Fig. 2 is an elevation in longitudinal central section. Fig. 3 is an enlarged elevation, partly in section,
20 in detail, hereinafter more fully described. Figs. 4 and 5 are side elevations in detail of the hand-lever mechanism, showing, respectively, different working positions thereof.

A represents the car-axles, and A' the car-
25 wheels.

B are the brake-beams, these being of ordinary construction and supported in the usual manner by links B' from the body of the car, and having springs B² for backing
30 the brakes from the wheels. Each axle is provided with a friction-disk C, rigidly secured to the axle next inside the adjacent car-wheels, the disks of the two axles being located, as shown, on opposite sides of the car.

35 (See Fig. 1.) Next inside of these friction-disks C are the friction-drums D, mounted loosely on the respective car-axles, the respective drums having attached chains *d* for winding on the drums. These chains lead in op-
40 posite directions and connect with the housings of sheaves E, so that in winding chains *d* on the respective drums the sheaves are respectively drawn toward the opposite drums.

Chains F pass around the respective sheaves
45 E, the one or shorter end of a chain F connecting with the long arm of lever G, and the other or longer end of chains F leading, for instance, to the next car for operating the brakes thereon; or, if not wanted for such
50 purpose, the long end of chain F is attached by means of a hook or other suitable appli-

ance to the body of the car. Levers G are pivoted at *g* to some attachment of the car, not shown for the reason that such attachment may be the one thing or another, ac- 55 cording to the construction of the car. For instance, such attachment might be a bracket depending from the body of the car, or, in case of side bars, motor-frame, or what not, some of these members might furnish suit- 60 able means of attaching the lever; but whatever the construction of the car, an ordinary mechanic will find no difficulty in providing some suitable device to which to pivot levers G. To a lever G and on opposite 65 sides of and usually equidistant from the fulcrum of the lever—for instance, at *g' g'*—are attached, for instance, rods *b b*, these rods leading in opposite directions and connecting with the opposing brake-beams B B, said rods 70 having a turn-buckle to adjust the same to the length required.

It will be observed that there are two levers G and connected mechanism, one on each side of the car, the rods whereof con- 75 nect with the respective end sections of the brake-beams. It is evident, therefore, that when chains *d d* of a car are wound upon drums D D the draft of these chains will ap- 80 ply the brakes of the car, and at the same time if the longer end of chains F be attached to levers G of another car or cars the brakes of such car or cars will in like man- 85 ner be applied, the brakes of the different cars being applied simultaneously and being operated with equal force.

For rotating drum D with the car-axle for winding chain *d* thereon I provide as follows: The inner ends of drum D are conical, as shown at D', and just inside of each drum is 90 located a collar H, these collars being usually of the flange variety shown and being rigidly attached to the axle with their flanged faces presenting toward the drum.

I is a sliding block having a central slot 95 adapted to straddle and fit easily on the car-axles, and thereby adapted to guide the block in its reciprocations endwise, a block I being adapted to operate between a drum D and the opposing collar H, the latter engaging the 100 side of the block, whereby the block is held in place opposite the drum in the direction

lengthwise of the axle. Each block I has mounted thereon conical rollers i , adapted to engage the conical end of the opposing drum. With such construction it is evident
 5 that if a block I be thrust endwise, so as to cause rollers i thereof to engage the conical end of the drum, the latter will be crowded endwise against opposing friction-disk C, and by means of the friction as between these
 10 members the drum will rotate with the disk. I will here remark that the opposing ends of the drum and friction-disk may be flat with intervening washers of leather or other suitable material to increase the friction, or these
 15 members may be conical, male and female, for mutual engagement, whichever construction may be preferred, such friction mechanism being well understood by mechanics.

For simultaneously actuating the two slides
 20 of a car from either end of the car I provide as follows: J J are opposing levers, respectively pivoted at J' to some attachment of the car. The opposing ends of these levers are connected, for instance, by rods or chains j ,
 25 each rod or chain j having attached in the line thereof a block I, whereby in operating these levers they oscillate in unison and simultaneously actuate the two blocks I endwise, but in opposite directions, whereby these blocks
 30 are simultaneously applied or withdrawn in shifting or releasing drums D D. Each lever J has attached a chain j' , as shown more clearly in Fig. 1, chains j' leading in opposite directions and connecting, respectively,
 35 with the hand-lever mechanism, the latter being located on the respective platforms of the car and constructed as follows:

L L are rock-arms located, respectively, on the different platforms of the car, these rock-
 40 arms being pivoted at L' L', these rock-arms extending downward through slots in the car-floor, and to the lower extremes of these arms are respectively attached the chains j' afore-
 45 said. These rock-arms are supposed to be alike and to have sockets in their upper ends for receiving a hand-lever proper M. Such hand-lever being interchangeable in the two
 50 sockets, but one lever is required, and this is carried from the one end of the car to the other whenever the travel of the car is to be reversed, and when lever M is withdrawn
 the mechanism at that end of the car supposed to be the rear end becomes inoperative,
 so that, for instance, passengers or that conventional embodiment of cussedness—the city
 55 small boy—cannot, inadvertently or otherwise, set the brakes at this end of the car. For locking the hand-lever mechanism in position setting the brakes, the one hub of arm L, or
 60 some portion thereof, is toothed, as at l , thus constituting a toothed sector adapted to engage rack N. The rack is held to its engagement with the sector by means of pin or abutment
 65 N', the normal position of the rack when the brakes are off being about vertical, as shown in Fig. 4. To the lower end of the rack is attached a spring n , the other end of the spring

being fastened at n' , the tension of this spring tending to draw the lower end of the rack toward the right hand or in the direction
 70 away from the sector. When the brakes are off, the parts are supposed to be approximately in the position shown in Fig. 4, in which the spring, by reason of the short leverage it has
 75 on the rack below the abutment, tends to draw the rack mainly against the abutment and does not materially affect the working of the lever; but when the parts are in the position
 80 shown in Fig. 5 for setting the brakes, the rack being in the main below the abutment, the recoil of the spring draws the rack to the position shown, whereby the cramping
 85 of the rack between the abutment and sector so far locks the latter that but little, if any, power at the hand of the operator is necessary to hold the lever in position braking the car.

What I claim is—

1. In brake mechanism for street-cars, the combination, with car-axle and a friction-drum
 90 mounted thereon, such friction-drum having a conical end, of wedging device for actuating the drum endwise, such wedging device comprising a sliding block in position cross-
 wise the axle and bearing rollers adapted to
 95 engage the conical ends of the drum, and an abutment for holding such wedging device to its work, substantially as set forth.

2. In combination, a car-axle having mounted thereon a conical-ended friction-drum, and
 100 a wedging device for actuating the drum endwise toward its co-operating friction member, such wedging device comprising a block adapted to slide in the direction crosswise the
 105 axle, such block bearing rollers adapted to engage the conical end of the drum, the axle bearing a collar serving as an abutment for holding the wedging device to its work, substantially as set forth.

3. In combination, a car-axle bearing a
 110 friction-drum, the drum having a conical end, a slotted block mounted astride the axle, such block bearing rollers adapted to engage the conical end of the drum, and a collar mounted
 115 on the axle and adapted to engage such block for holding the latter to its work in wedging the drum endwise toward its co-operating friction member, substantially as set forth.

4. The combination, with opposing levers connected so as to oscillate in unison, such
 120 lever system being connected with a hand-lever mechanism at the respective ends of the car, of car-axles bearing friction-drums and wedging devices for each drum, substantially as indicated, such wedging devices
 125 being operatively connected with such oscillating-lever system, substantially as set forth.

5. In brake mechanism for street-cars having hand-lever devices for operating the same, locking devices for such hand-lever, a hand-
 130 lever having a toothed sector, a rack adapted to engage such sector, and an abutment for holding the rack to its engagement with the sector, a spring combined with the rack and

arranged, substantially as indicated, to cramp the rack and thereby lock the lever in position braking the car, substantially as set forth.

5 6. The combination, with the car-axle, a friction-drum mounted thereon, and chain adapted to bear on the drum in setting the brake, such drum having a conical end, of a
10 gage the conical end of the drum, and an abut-

ment for holding the sliding block in position for acting on the drum, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 15
9th day of October, 1890.

EDWARD M. BARNES.

Witnesses:

C. H. DORER,
WARD HOOVER.