

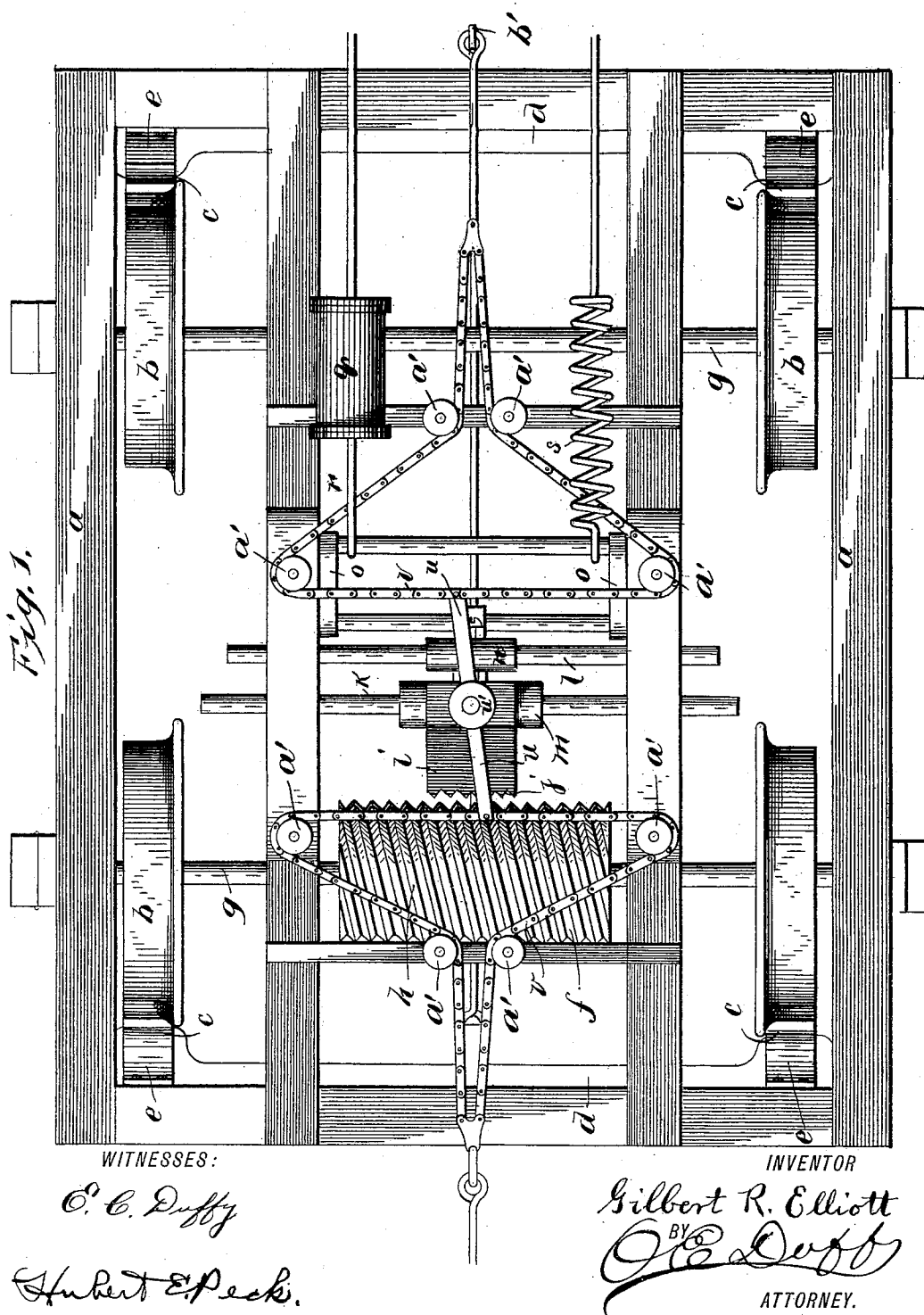
(No Model.)

2 Sheets—Sheet 1.

G. R. ELLIOTT.
CAR BRAKE.

No. 484,783.

Patented Oct. 25, 1892.



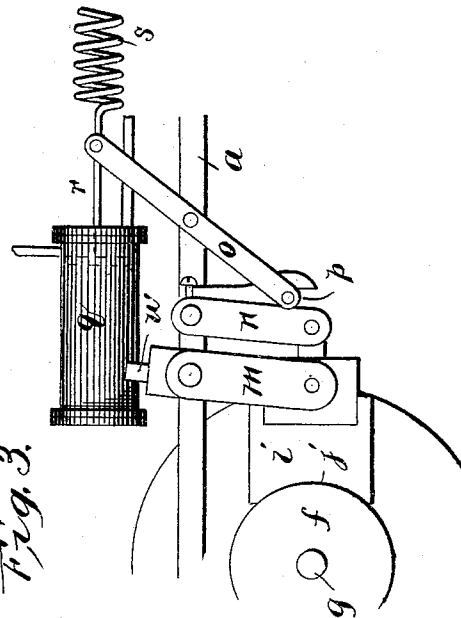
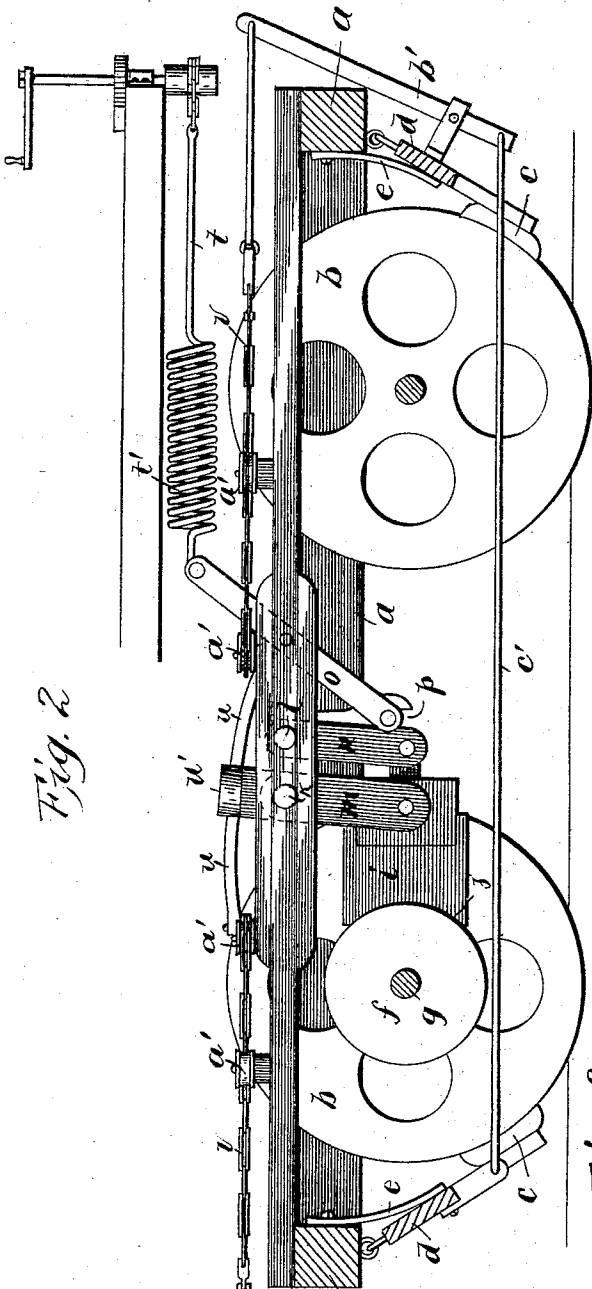
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GILBERT R. ELLIOTT, OF BOSTON, MASSACHUSETTS.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 484,783, dated October 25, 1892.

Application filed January 6, 1892. Serial No. 417,193. (No model.)

To all whom it may concern:

Beit known that I, GILBERT R. ELLIOTT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Car-Brakes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in car-brakes.

The object of the invention is to provide an improved car-brake wherein the momentum or inertia of the car will be utilized to apply the brakes.

A further object is to provide certain details in construction and arrangements of parts whereby a greatly-improved and highly-efficient brake is provided, requiring a minimum amount of power to apply the brakes, and whereby the brakes will be automatically applied when desired.

The invention consists in certain novel features of construction and in combinations of parts, more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a top plan view of the car-truck provided with the present improvement. Fig. 2 is a side elevation thereof with portions broken away. Fig. 3 is a detail elevation.

In the drawings reference-letter *a* indicates a car-truck of any construction provided with wheels *b*.

c indicates the brake-shoe, carried by any suitable support—such as brake-beams *d*—and provided with the springs *e*, constantly tending to force the brake-shoes away from the car-wheels.

f indicates a cylinder or drum connected so as to be rotated by the car-axle, preferably being rigidly mounted directly on one of the axles *g*, so as to rotate therewith. This cylinder or drum has its periphery threaded or spirally ribbed, as shown by *h*, preferably from one end to the other. The periphery of the drum is preferably provided with a num-

ber of parallel threads or ribs, so that the strength of the ribs is increased and the pitch is also increased. The threads or ribs are preferably V-shaped, with angle or inclined sides, somewhat as shown.

i indicates a transversely movable or reciprocating traveler, shoe, or nut having the inner concave face *j* adjacent to and threaded to correspond with the periphery of said drum. The traveler is mounted in a suitable manner and provided with suitable connections, so that it can be reciprocated by the drum and can be thrown into and out of engagement with the drum. The preferred manner of mounting the traveler is by means of the two longitudinally-movable rock-shafts *k l*, horizontally mounted in the frame of the truck, parallel and adjacent to the axle *g*. The block *m* is rigidly mounted on shaft *k* and provided with depending arms pivoted to and upholding the traveler *i*. A hanger *n*, rigid with the shaft *l*, is also pivoted to the traveler *i*. Hence when said traveler is moved horizontally toward and from the drum *f* it rocks the shafts *k l*, and because of the two parallel hangers the traveler does not move in the arc of a circle, the principle of the parallel rulers being here utilized. When the traveler is thrown into engagement with the drum *f*, if the drum *f* is revolving, the traveler will be reciprocated or moved transversely and horizontally in either direction, the shafts *k l* sliding longitudinally in their bearings in the frame and the hangers rigidly upholding the traveler against lateral movement independent of the shafts *k l*.

o is a swinging frame fulcrumed in the beams of the truck and acting as a lever to throw the traveler toward and from the drum. The lower cross-bar of this frame *o* is fitted in a vertical slot *p* in the rear end of the traveler, so that as the frame is rocked the traveler will be thrown toward and from the drum and the lower cross-bar will rise and fall in said slot *p*. The operating and controlling connections for the traveler are connected to the upper cross-bar of the lever or frame *o*.

Various means can be connected to the upper cross-bar or lever *o* to control the traveler, depending on whether the brake is to be operated by steam or by hand or air connection.

Figures 1 and 3 show fluid connections for

operating the traveler, and Fig. 2 shows the connections when the traveler is operated by hand.

In Figs. 1 and 3, q indicates a pressure-cylinder having its piston or piston-rod r connected to the upper cross-bar or lever o , so that when pressure is in the cylinder and the cylinder and parts are in their normal position the piston-rod r will force the lever in the direction to hold the traveler away from the drum f . A spring s is also connected to the upper cross-bar of the lever o to act against cylinder 2 and constantly tend to force the lever o in the direction to bring the traveler against the drum f . Thus the pressure of the cylinder is normally sufficient to overcome the force of spring s ; but should the fluid connections be broken or the engineer desire to apply the brakes the spring s forces the traveler against the drum as soon as the pressure is reduced in the cylinder q , thereby applying the brakes through the connections from the traveler, as hereinafter described.

In Fig. 2, t indicates connections from the hand devices to the upper cross-bar lever o , so that when it is desired to apply the brakes said hand devices are operated to tighten connection t to swing the lever o . A spring t' is interposed in the connection t , so that the traveler i will be yieldingly held against the periphery of the drum. The traveler is connected in any suitable and desirable manner with the brake-shoe to operate the same, and I do not desire to limit myself to any particular mode of connections. The connections here shown comprise the horizontal swinging lever u , pivoted between its ends u' , on the top of the block or hanger n . Opposite ends of this lever are connected to the flexible connections or chains v , extending, respectively, to opposite ends of the car, and, if desired, to adjoining cars. The connections v are endless or looped, as shown, and pass around pulleys a' , arranged substantially as shown, and are connected to the upper ends of levers b' , secured to the brake-beams. The lower end of the lever b' on one brake-beam, being preferably connected by connection c' to the brake-beam, acts on the opposite wheels of the truck, as clearly shown in Fig. 2. Thus when connection v operates one brake-beam through lever b' the other brake-beam will also be operated, as is clearly evident. The normal position of the traveler is about opposite the center of the drum, and when in this position the parts are so arranged that the connections between the traveler and the brake-shoes will be slack, permitting the brake-shoes to rest in their normal position out of contact with the car-wheels. When the parts are in this position, if the operator applies his brake by hand or the fluid connection is broken, so that pressure is reduced in the cylinder q , the lever o will be operated to throw the traveler into engagement with the threaded drum and the traveler will be held yieldingly in engagement with the drum by spring s' , t' , and the mo-

mentum of the car rotating the wheels and drum f will cause the traveler to move transversely in either direction, according to the direction in which the car is traveling, and will thereby move the lever u laterally and horizontally and will tighten the connections v in the direction to apply the brakes, so that the brakes will be set against the wheels with great force and pressure, stopping the car by its own momentum. The pressure with which the brakes will be applied can be regulated by the pitch of the threads or ribs on the drum f . The lever u acts as an equalizer between the two sides of connections v , so that if one side becomes threaded or works hard the strain on both will be still equal.

One of the most important features of this invention is the means whereby the traveler is yieldingly held against the drum. Hence all danger of stopping the threads of the traveler or drum is avoided, for if the traveler moves to such an extent as to strike the sides of the running-gear of the truck the yielding pressure will allow the traveler to slip out of the thread of the drum without stopping the same. It is for this reason that the threads of the traveler or drum are formed V-shaped or with inclined sides. It will thus be seen that whenever the traveler is stopped for any reason and the drum continues to revolve with the traveler in engagement thereof it will be clearly understood that the traveler will merely slip from one of the threads to the next without injuring the threads.

In practice the traveler usually has its concave threaded or grooved face formed of soft metal which can be detached or renewed. If desired, the drum-edge can work through oil or other lubricating material.

The many and great advantages of this invention are obvious, and a minimum amount of initial force is required to apply the brakes. The brakeman or the engineer, where the fluid connections are employed, merely places the traveler in position, and then the momentum or inertia of the car does the actual work of applying the brakes. When the brakes have been applied by the traveler and the traveler has been released from the drum, thereby restoring pressure in the cylinder, or by means of the hand device, the springs e of the brake-shoes return the traveler to its normal central position through the medium of the connections between the traveler and the brake-shoes.

The various constructions and arrangements here shown have been specifically described and set forth; but I do not wish to limit myself by such description, as it is evident that various changes and modifications might be made in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to exactly what is herein shown and described.

Having thus fully described my invention,

what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a brake, the combination, with the rotary drum having a continuous thread in one direction throughout its length, of the transverse movable traveler movable toward or from the drum and operated by the drum, substantially as set forth, and connections from the traveler to the braking mechanism, substantially as and for the purposes set forth.

2. A car-brake comprising a drum connected with a car-axle and threaded throughout its length, a single traveler adapted to engage and be moved by said drum, brake-shoes connected with said traveler, and means, substantially as described, for moving the traveler into engagement with the drum.

3. A car-brake comprising a drum threaded throughout its length and connected with a car-axle, a transversely-movable traveler constructed to intermesh with said drum and move the length thereof, and means to move said traveler to the drum, substantially as described.

4. A car-brake comprising the combination of a rotary drum continuously threaded and of the same diameter throughout, connected with a car-axle, with a rocking traveler arranged to be moved to intermesh with the drum and be moved transversely the length of the drum, substantially as described.

5. The combination, in a brake, with a threaded drum connected with a car-axle, of a traveler having a threaded or grooved face conforming to the drum, said traveler being connected to the braking apparatus, and means, substantially as described, to move the traveler to the drum and yieldingly hold the same into engagement therewith, substantially as described.

6. In a car-brake, the combination of the threaded drum on a car-axle, the transversely-movable traveler having a concave threaded or grooved face formed to mesh with the drum, said traveler being supported to move transversely, hangers supporting the traveler to allow movement toward and from the drum, connections from the traveler to the braking apparatus, and means, substantially as described, to move the traveler to the drum and yieldingly hold the same in engagement therewith.

7. In combination, a threaded drum on a car-axle, a traveler having a threaded or grooved face conforming to the drum, supports in the car-truck for said traveler, allowing movement parallel with the drum and to and from the drum, means, substantially as described, to move the traveler to the drum and hold the same yieldingly in engagement therewith, braking devices, and connections from the traveler to said devices to operate the same, substantially as set forth.

8. In a car-brake, the combination of the drum on the car-axle, having exterior V-shaped spiral threads, the traveler having a concave face correspondingly threaded to intermesh

with said drum, and means, including a spring, to move said traveler to the drum and to yieldingly hold the traveler in engagement with the drum, so that the traveler will slip from thread to thread when it is stopped and the drum continues to revolve.

9. In combination, in a car-brake, the threaded drum on the car-axle, the traveler having a face to conform therewith, the parallel hangers supporting said hangers to permit horizontal movement toward and from the drum, supports from the traveler, whereby longitudinal movement of the drum is permitted, means to move the traveler to the drum, and connections from the traveler to the brake-shoes.

10. In a car-brake, the combination of the threaded drum, the traveler formed to intermesh therewith, means to move the traveler to the drum, and an equalizer carried by the traveler, consisting of a swinging bar or lever, and connections from opposite ends of said bar or lever extending to brake-shoes at opposite ends of the car or in opposite directions, substantially as described.

11. In a car-brake, the combination of the threaded drum, the traveler adapted to be moved transversely thereby, connections extending in opposite directions to the brake-shoes, and an equalizer interposed between said connections and secured to the traveler, substantially as set forth.

12. In a car-brake, the combination of the threaded drum on a car-axle, the traveler constructed to intermesh therewith and supported to swing into and out of engagement therewith, connections from the traveler to the brake-shoe, a swinging lever arranged to move the traveler into engagement with the drum, and means, comprising a spring connected to said lever, to move the traveler to the drum.

13. In a car-brake, the combination of the drum connected with the car-axle, a traveler adapted to intermesh with said drum and connected with the braking apparatus, means to move the traveler to the drum, and a pressure-cylinder and its piston connected with said traveler to hold the same from the drum when there is pressure in the cylinder, whereby the brakes will be applied when the pressure in the cylinder is relieved.

14. In a car-brake, the combination of a continuously-threaded drum connected to an axle, a single traveler having a threaded or ribbed face to intermesh with said drum and thereby move the traveler longitudinally of the drum, braking mechanism connected with and operated by the movement of said traveler toward either end of the drum, and means, substantially as described, to throw the traveler toward or from the drum, substantially as described.

15. In a brake, the combination of a drum continuously threaded in one direction throughout its length and connected with a shaft, a traveler formed to intermesh with said

drum and move toward either end thereof, a spring connected with said traveler to yieldingly hold the same to the drum, and operating connections, substantially as described.

5 16. In a brake, the combination of a threaded drum on an axle, a traveler consisting of a block having a concave ribbed face to engage and mesh with said drum, a sliding support carrying said traveler, means, substantially as described, controlling the movement

of the traveler toward or from the drum, and connections from the traveler to a braking mechanism, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of 15 two witnesses.

GILBERT R. ELLIOTT.

Witnesses:

E. C. DUFFY,
C M. WERLE.