

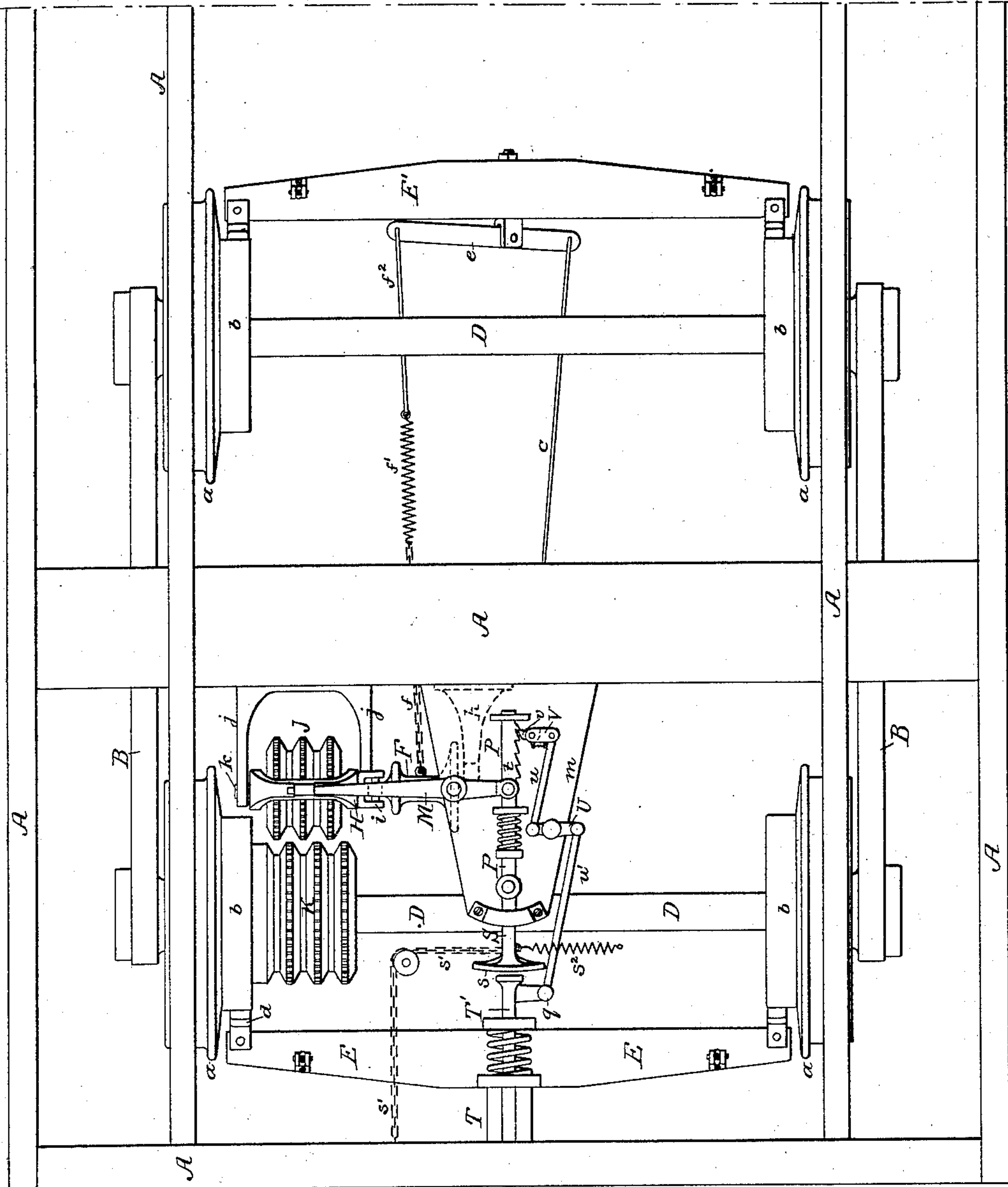
(No Model.)

3 Sheets—Sheet 1.

A. BIXBY.  
CAR BRAKE.

No. 327,430.

Patented Sept. 29, 1885.



Witnesses:

Harry Drury  
Jno. E. Parker

FIG. 1.

Inventor:  
Arthur Bixby  
by his Attorneys  
Hosmer & Lord

(No Model.)

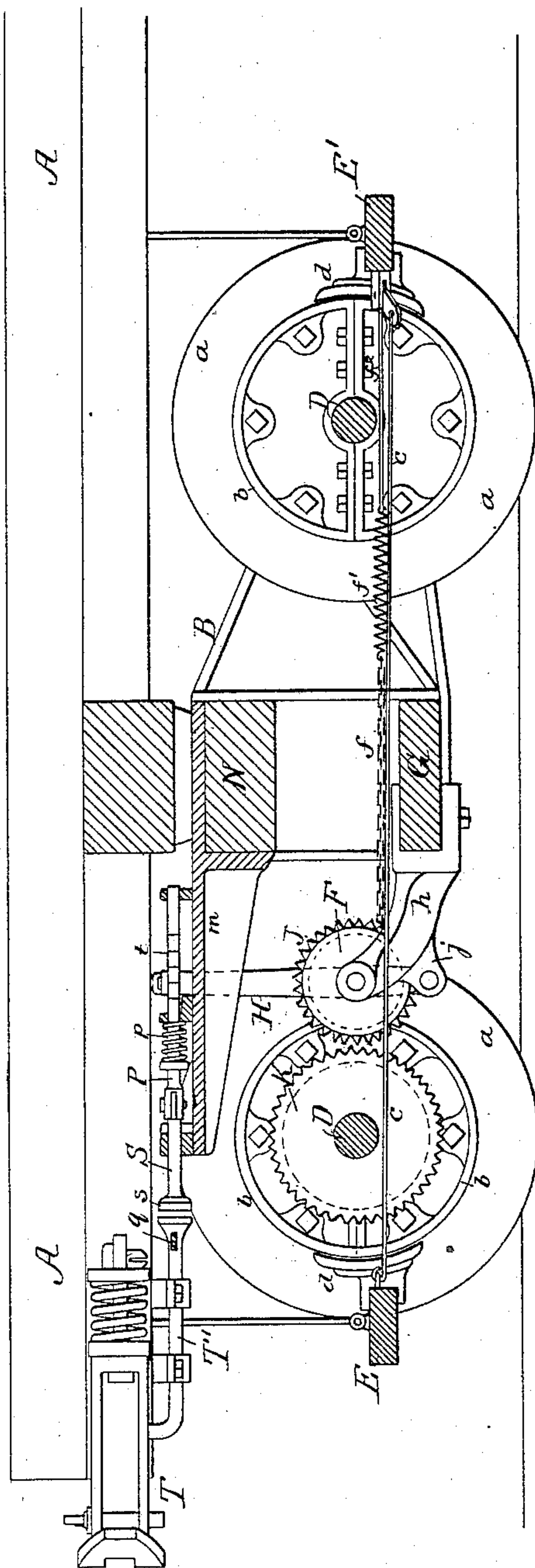
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FIG. 2.



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Horton & Sons

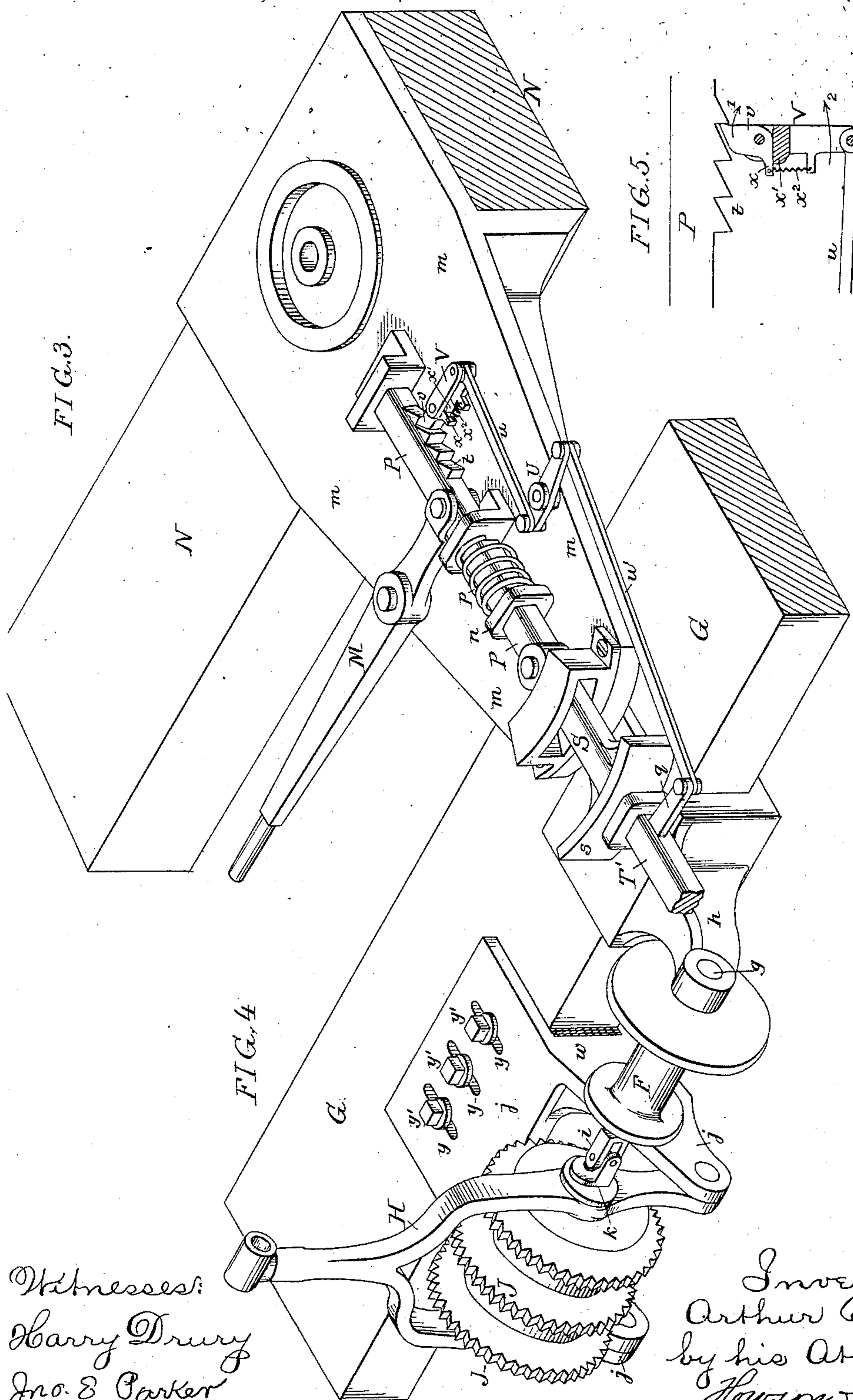
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Hosmer & Son



# UNITED STATES PATENT OFFICE.

ARTHUR BIXBY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF THREE-  
FOURTHS TO WILLIAM E. JACKSON AND CHARLES HARTSHORNE, BOTH  
OF SAME PLACE.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 327,430, dated September 29, 1885.

Application filed December 10, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR BIXBY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Car-Brakes, of which the following is a specification.

My invention relates to that class of automatic brakes in which the brakes are applied when the bumpers of the car are subjected to  
10 pressure, the objects of my invention being to construct a powerful brake of this character, to provide for readily throwing the same into or out of action, and to prevent the premature release of the brakes.

15 In the accompanying drawings, Figure 1 is a plan view of part of a car-frame and one of its trucks with my improved braking mechanism; Fig. 2, a longitudinal section of the same; Figs. 3 and 4, detached perspective  
20 views, on an enlarged scale, of the braking mechanism; and Fig. 5, a sectional view, on a still larger scale, of part of the same.

A represents part of the frame-work of one end of the car, having the usual swinging  
25 truck, B, with boxes for the journals of the axles D, the latter having the usual wheels, *a*, and being also provided with braking-drums *b*.

There are the ordinary opposite brake-beams, E E', the shoes *d* of which are adapted  
30 to the drums *b*, and hung to the beam E' is the usual lever, *e*, one arm of which is connected by a rod, *c*, to the opposite brake-beam, E, the other arm of the lever being connected, by means of a chain, *f*, spring *f'*, and rod *f*<sup>2</sup>,  
35 to a drum, F, which is secured to a shaft, *g*, adapted at one end to a bearing in a bracket, *h*, on the spring-rail G of the truck, and connected at the opposite end by means of a gimbal-joint, *i*, to a shaft, *k*, adapted to bearings  
40 in a forked lever, H, hung at the lower end to the opposite arms of a bracket, *j*, also secured to the spring-rail G of the truck.

The shaft *k* carries a grooved pulley, J, and on one of the axles of the car is a similar pulley, K, the grooves of which are adapted for  
45 the reception of the ribs of the pulley J.

The upper end of the lever H has an opening for the reception of the end of the long arm

of the lever M, which is hung to a bracket, *m*, on the bolster-rail N of the truck, the short  
50 arm of said lever being forked for adaptation to a bar, P, guided in suitable studs on the bracket *m*.

A collar, *n*, on the bar P is acted upon by a spring, *p*, interposed between said collar and  
55 one of the guide-studs, and to the front end of the bar P is pivoted the inner end of a bar, S, having at the outer end a curved buffer, *s*, adjacent to the inner end of an arm, T', on the bumper-bar T of the car. 60

Under ordinary circumstances, or when the train is in motion and the couplings are under tension, the end of the arm T' is free from contact with buffer *s*, the bar P being projected  
65 by the spring *p*, the drum J free from frictional contact with the drum K, and the brake-shoes *d* free from contact with the drums *b*.

When the engine is reversed, or the brakes are applied to the driving-wheels, the speed of the engine is slackened and the cars of the  
70 train crowd upon each other, so that the bumper-bars T are thrust inward. This causes a like movement of the bar P; hence, through the medium of the levers M and H, the drum J is brought into contact with and is rotated  
75 by the drum K, this rotating movement being imparted to the shaft *g* and drum F, so as to cause the winding up of the chain *f* and the application of the brakes.

In order to prevent the brakes from being  
80 loosened too soon, I provide for the maintenance of the parts in operative position until the bumper-bar T is subjected to draft in starting the train. The devices for this purpose are shown in Figs. 1, 3, and 5. 85

The bar P has on one side a rack, *t*, and to this rack is adapted a tooth, *v*, hung to an arm, V, the latter being pivoted to the bracket  
90 *m*, and being connected by a rod, *u*, to one arm of a lever, U, the other arm of which is connected by a rod, *u'*, to a stud, *q*, on the arm T' of the bumper-bar T. The tooth *v* has a lug, *x*, bearing against a shoulder, *x'*, on the arm V, and acted upon by a spring, *x*<sup>2</sup>. (See Fig. 5.) The tooth *v* is at liberty to yield in  
95 the direction of the arrow 1 when the bar P



is forced inward, but cannot move in the opposite direction, owing to the contact of the lug  $x$  and shoulder  $x'$ , so that the bar P is retained in the depressed position until the bumper-bar T is drawn outward to such an extent as to vibrate the arm V in the direction of the arrow 2, Fig. 5, and permit the release of the bar P from the control of the tooth  $v$ .

In backing, or at other times when it is not desired to apply the brakes when the bumpers are pressed inward, the pivoted bar S is drawn to one side by a chain,  $s'$ , so that the buffer  $s$  is out of the way of the arm T' of the bumper-bar, a spring,  $s^2$ , serving to restore the bar S to operative position when the chain is relieved from tension. (See Fig. 1.)

In order to prevent the parts from being strained in the event of the drum J being pressed with excessive force against the drum K; or when the ribs of the drum J do not squarely enter the grooves of the drum K, the bracket  $j$ , which carries the lever H of the drum J, is at liberty to yield to a limited extent on the spring-rail G, the openings  $y$ , for the reception of the confining-bolts  $y'$ , being elongated, and an elastic pad or plate,  $w$ , being interposed between the bracket and the edge of the rail G.

If desired, the ribs of the drum J, or the ribs of both drums, may be toothed or nicked, so as to cut through any obstruction which may be interposed between the drums.

The spring  $f'$ , interposed between the chain  $f$  and the brake-rod  $f^2$ , serves to prevent excessive straining of the parts in the event of the winding up of the chain to an undue extent.

On account of the wear to which the braking-drums  $b$  are subjected, it is advisable to chill the surfaces of the same, and as this cannot be effectually done if the drums are cast on the wheels, I make the drums separate from the wheels and bolt the same thereto, the drums being also, for convenience of application, made in sections bolted together so as to clamp the axle.

I claim as my invention—

1. The combination, in an automatic brake, of the brake beams and chain, a friction-drum on one of the axles, a drum, J, engaging therewith, a winding-drum driven from the shaft of said drum J and connected to the brake-chain, a push-bar, P, a lever, H, carrying the shaft of the drum J, and a lever, M, whereby the movement of the bar P is transmitted directly to the lever H, as set forth.

2. The combination of the drum on the axle, the drum J, the lever H, carrying the same, the push-bar P, the lever M, connecting said push-bar and lever H, the winding-drum F, the shaft of which has at one end a bearing in a fixed bracket, and is connected at the opposite end to the shaft of the drum J by a gimbal-joint, and brake-beams, the chain of which is connected to the drum F, as set forth.

3. The combination of the axle-drum and drum J, having serrated ribs, with the push-bar P and mechanism whereby the movement of said bar is transmitted to the drum J, as set forth.

4. The combination of the brake-operating mechanism, a guided bar, P, connected thereto and having a rack,  $f$ , a bumper-bar, a tooth or catch engaging with the rack  $f$ , and serving to retain the latter when pushed inward, and means whereby said catch is tripped so as to release the bar P on the outward movement of the bumper-bar, as set forth.

5. The combination of the axle having a drum, K, the drum J, the lever H, carrying the same, means for vibrating the lever, the rail G, and the supporting-bracket  $j$ , having a yielding connection with the said rail, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR BIXBY.

Witnesses:

JOHN M. CLAYTON,  
HARRY SMITH.