3 Sheets--Sheet 1.

W. V. ROBBINS.

Automatic Car-Brakes.

No. 148,092. Patented March 3, 1874.

Fig. 1.

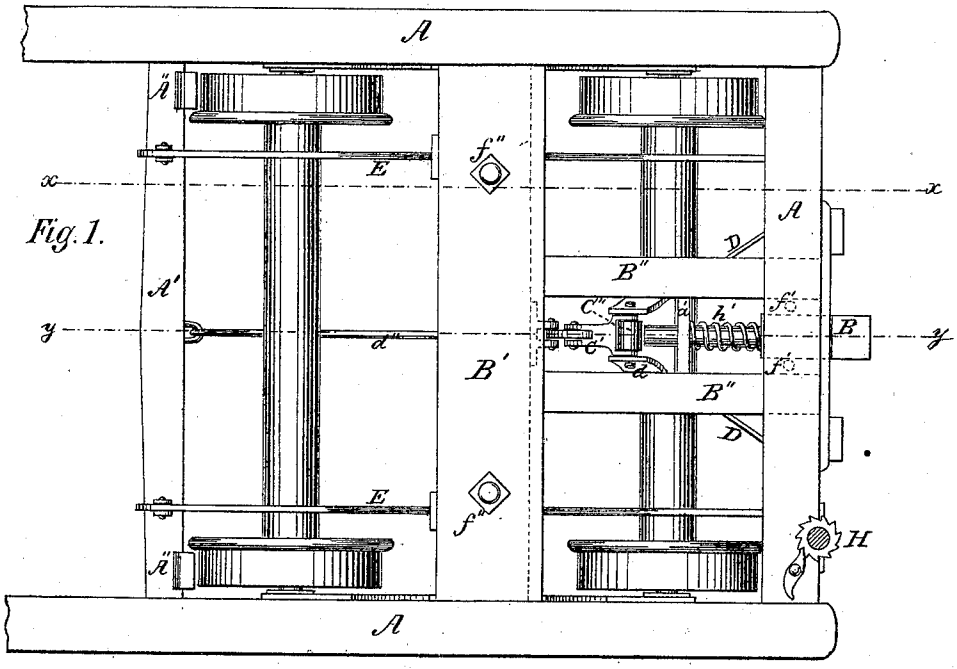
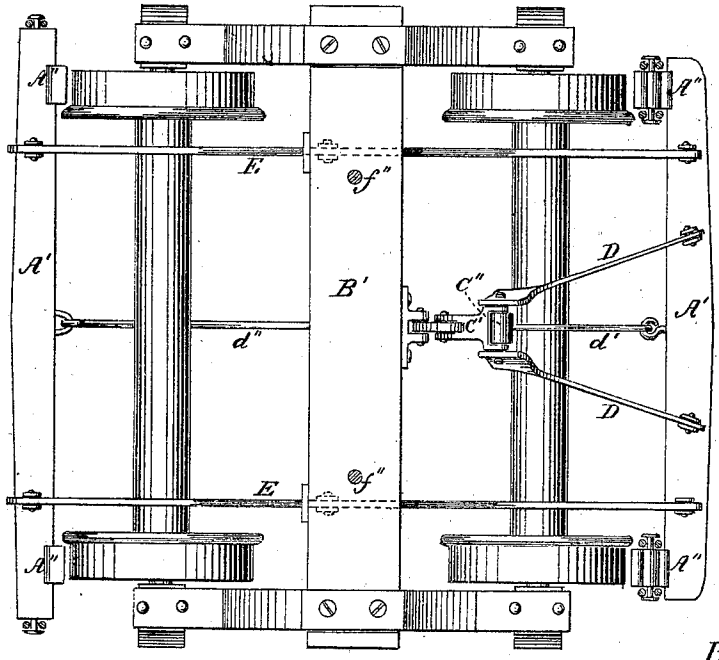


Fig. 2.



Witnesses:
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D. P. Lowe

Inventor:
William V. Robbins
by his Attorney
C. O. Burns

3 Sheets--Sheet 2.

W. V. ROBBINS.

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Fig. 3.

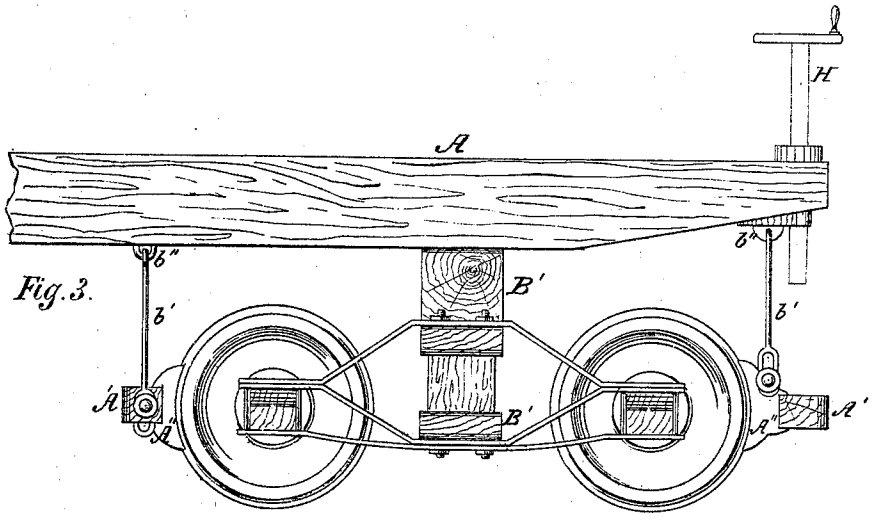


Fig. 4.

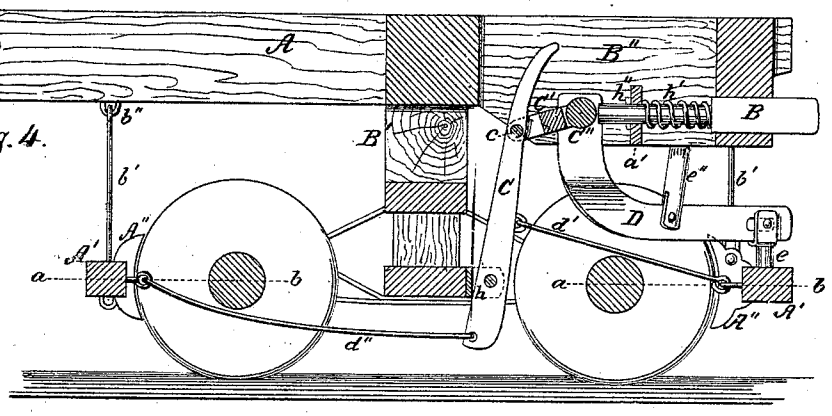


Fig. 5.

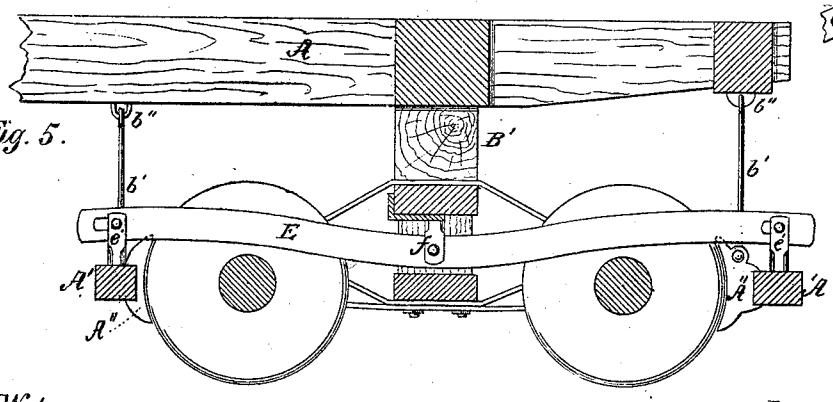


Fig. 8.

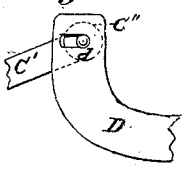
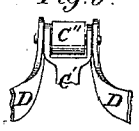


Fig. 9.



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3 Sheets--Sheet 3.

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Automatic Car-Brakes.

No. 148,092. Patented March 3, 1874.

Fig. 6.

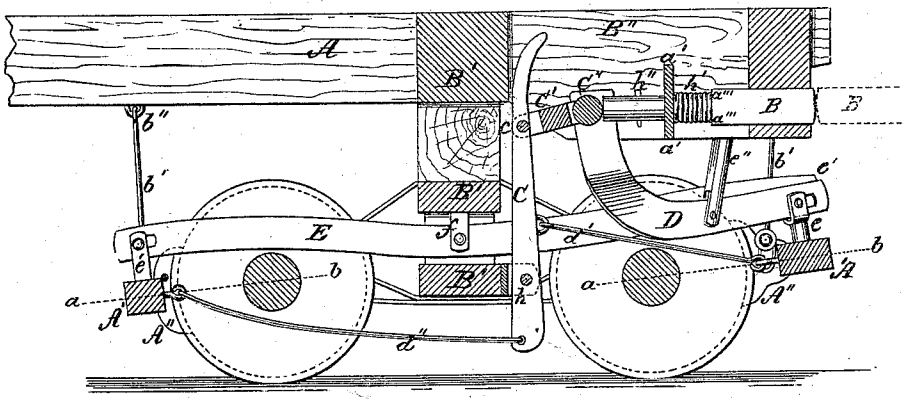
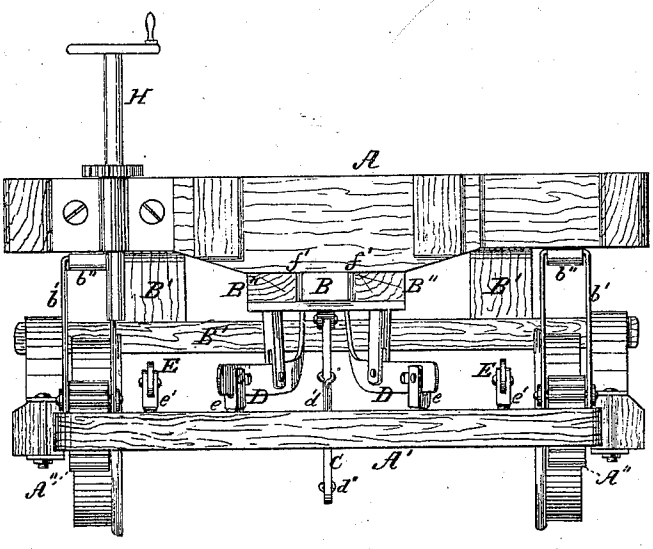


Fig. 7.



Witnesses:

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D. P. Lowe

Inventor:

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UNITED STATES PATENT OFFICE.

WILLIAM V. ROBBINS, OF BLOOMSBURG, PENNSYLVANIA.

IMPROVEMENT IN AUTOMATIC CAR-BRAKES.

Specification forming part of Letters Patent No. **148,092**, dated March 3, 1874; application filed October 18, 1873.

To all whom it may concern:

Be it known that I, WILLIAM V. ROBBINS, of Bloomsburg, Columbia county, State of Pennsylvania, have invented certain Improvements in Steam-Car Brakes, of which the following is a specification:

The first part of my invention consists in so constructing and adapting brakes to steam and other car wheels that they shall be self-operating—that is, the brakes shall be opened and shut by the action of one car against the other. The second part consists in an arrangement of levers, whereby the brake is instantly thrown out of gear, and the wheels as instantly relieved when motion is required. The third part consists in so adapting the brake-shoe to the wheel that the center of motion in the former shall always be perpendicular to the surface of the latter, making its action invariably uniform, and thereby of the greatest efficiency, as will more fully appear from the accompanying drawings.

Figure 1 is a top view of the frame A A, or substructure of the car, of the brake-beam A′, of the cross-beams B′ B′, firmly bound together by the king-bolts *f″ f″*, the brake-head B, and the roller C″, with its attachments, more particularly described below. Fig. 2 is a top view, the frame being removed, showing the two brake-beams A′ A′, the brake-shoes A″ A″, the lower cross-beam B′, the roller C″, the crooked levers D D, and other minor details, hereafter described. Fig. 3 is a side view of the front or rear of the car, showing the frame A, a vertical section of the cross-beams B′ B′, brake-shoes A″ A″, the extremities of the brake-beams A′ A′, and the looped or slotted rods *b′ b′*. Fig. 4 is a side vertical view on the section line *y y*, Fig. 1, showing the brake-head B, jointed lever C C′, the crooked lever D, and their several attachments, and the brake-shoes A″ A″, in an unlocked position; Fig. 5, same view as Fig. 4, on section line *x x*, Fig. 1, showing the balance-bar E and its fulcrum *f*, or attachment to the cross-beam B′, and the brake adjustment; Fig. 6, same view as Fig. 4, showing the brake-shoes A″ A″ in locked position, and the line of motion of said brake-shoes and of the wheels to be identical, as shown by the dotted lines *a b*. Fig. 7 is a front elevation, showing the brake-head B, the friction-rods *f′ f′*, crooked levers D D, brake beams and shoes A′ and A″. Figs. 8 and 9 are details of Fig. 4, showing the roller C″, crooked levers D D, and their several attachments.

A A, Fig. 1, is the frame or substructure of the car, constructed in the usual form and style, into which are framed the cross-beams B′ B′, which are themselves strongly bound together by iron king-bolts *f″ f″*, and to which is attached the running-gear. A′ A′, Fig. 2, are two wooden brake-beams, located before and behind each set of wheels, to the ends of which, on the inside, are attached the brake-shoes A″ A″. Said beams are sustained in their places by the looped or slotted rods *b′ b′*, Figs. 3 and 4, the upper ends of said rods being fastened to the frame by the staples *b″ b″*, same figures. The method of working said beams is hereafter described. The brake-shoes A″ A″, Figs. 3 and 4, are made of firm, durable wood, securely bolted to the extremities of the brake-beams on their insides, and form a part of the same circle as the surface of the wheels upon which they act. *f′ f′* are two iron friction-rods, located on either side of the brake-head B, just within and near the front of the cavity in which the said brake-head works, and are designed to protect the front of the frame from the influence of heavy blows, and the too great friction, or, better, to lessen the friction, of the brake-head running along a wooden surface. B″ B″, Fig. 1, are two short beams, forming part of the substructure, running in the direction of the superior length of the car, about two feet apart, strongly framed into the cross-beams B′ B′ and the front beam A of the frame, to which the brake-head B, next described, and its attachments are more directly connected. B, Figs. 4 and 6, is a brake-head, of the usual length, of solid iron, or other suitable metal, the front end a parallelogram about eight inches by three and one-half or four, retaining those dimensions about one-fourth to one-third of its length, when from the shoulders *a‴ a‴* it becomes a round shaft, slightly tapered rearward. About three-fourths of its length, measured from the front end, said shaft passes through the metal bar *a′*, same figures as above, of sufficient strength to sustain the draft of a train of cars, said bar

being firmly set into the beams B″ B″. At the point where the shaft passes through, and just within said bar, a strong iron bolt, *h″*, passes through and at right angles to said shaft, which is the method of draft. *h′* is a metal spiral spring, of moderate strength, loosely coiled about the shaft of the brake-head, and attached to the outside of bar *a′*, and to the brake-head at the shoulders *a‴ a‴*, whereby the bolt *h″* is kept snug up to the bar *a′* when the car is in a state of rest, or the brake-head is not being acted upon, which prevents jarring or pounding when the cars are first put in motion. Immediately in the rear, on the same line and in contact with said brake-head, is the jointed lever C C′, Figs. 4 and 6, jointed at C, the front horizontal arm being designated by C′, the rear perpendicular arm by C. The front end of the front arm C′ is made in the form of a stirrup, C′, Fig. 9, with square shoulders, the sides or legs of said stirrup being about three inches long, pierced near their extremities *c″ c″*, Fig. 8, to admit the passage of the gudgeons *d d*, hereafter described. Carefully adjusted in stirrup *c′*, by means of the gudgeons *d d*, Figs. 1 and 8, as above, secured by common nuts, is a solid iron roller, C″, Figs. 1 and 9, two and a half inches in diameter, six inches in length, more or less, as strength requires, sufficient to sustain a blow incident to the backward motion of a train of cars, said roller being in exact line, and forming a part of the front arm C′ of the jointed lever C C′. The front arm C′ is comparatively short, only long enough to form said stirrup *c′*, and the long mortise or joint *c*, which receives the arm C. Said perpendicular arm C is about three feet in length, and at about one-fourth the distance from its lower extremity to the joint *c*. By means of a metal portable mortise, *h*, Figs. 4 and 6, and bolt as a fulcrum, it is firmly fastened to the cross-beam B′. On either side, equidistant above and below said fulcrum, extending in opposite directions, hooked or looped into said arm C, are rods *d′ d″*, connecting the arm with the brake-beams A′ A′ at their centers on the inside. The lower rod *d″* attaches to said arm at its extremity, and reaches backward. The jointed lever C C′ is iron. The arm C′ is about two and one-half inches by one and one-half, the arm C about three inches by three-fourths of an inch. D D, Figs. 4 and 8, are two crooked levers, made of iron, two to three inches wide, three-fourths of an inch thick, fastened to the front end of the jointed lever C C′ by passing the gudgeons *d d* through their upper rear extremities, and secured by the nuts referred to above. For about one-third their length said levers curve downward and forward, when they continue in a straight line to the front brake-beam A′, to which, at points about half-way between their centers and extremities, they are fastened to the upper side of said beams by the portable mortises *e e*, Figs. 4 and 8, and bolts. Very near and just in advance of the point where the curve in said levers changes to a straight line, by means of the portable mortises *e e*, same figures, and bolts as fulcrums, these levers are fastened to the under sides of the short beams B″ B″, same figures. E E, Figs. 5 and 6, are two iron balance-bars, about three inches wide, three-fourths of an inch thick, from either end gently curving upward, then downward to the centers, located just inside the wheels, and just outside the crooked levers D D, firmly attached at their centers by the portable mortises *f f*, as fulcrums, to the lower cross-beam B′, and, by a similar device, *e′ e′*, to the top of the front and rear brake-beams A′ A′. The orifices through the ends of the balance-bars E E and crooked levers D D are slotted, giving them free, and a somewhat enlarged, motion. The tendency of the action of the jointed lever C C′, and its peculiar office, is to draw the brake-shoes A″ A″ down upon the surface of the wheels, without regard to the line of motion. The tendency of the action of the crooked levers D D is by the same amount or gage of motion as given by the said jointed lever, and its peculiar office is to give to the said brake-shoes a segmental motion, whereby the center of motion in the brakes and wheels is made identical, as illustrated by the dotted lines *a b*. The office of the balance-bars E E is to communicate to the rear brakes precisely the same motion and changes as are given to the front brakes by the instrumentalities above set forth. H, Fig. 3, is a common hand-brake, having the usual location and attachments, for use as occasion may require.

It may here be remarked that, the great weight of a car, or more especially of a train of cars, being the force to work the brake-power, the time and space required to change the most rapid speed to complete rest are only limited by the strength of the machinery and the safety of the freight borne by the cars.

N. B. When the term "jointed lever" is used in the last of the following claims, it is to be understood that all parts of the structure are included, namely, the arms C and C′, roller C″, stirrup *c′*, and gudgeons *d d*, Figs. 4, 8, and 9. Also, when the term "brake-head" is used in the same claim, it is understood to include the main shaft B, the spiral spring *h′*, the guide-bar *a′*, the draft-bolt *h″*, and friction-rods *f′ f′*, Figs. 1 and 6.

I claim—

1. The arms C and C′, constituting the jointed lever C C′, in combination with the crooked levers D D, as and for the purpose specified.

2. The brake-beams A′ A′, in combination with the brake-shoes A″ A″, bars E, provided with links *e′ e′*, crooked levers D D, fulcrums *e″ e″*, and connected with arm C by rods *d′ d″*, and with the frame A by rods *b′ b′*, as and for the purpose specified.

3. Roller C″, with stirrup *c′* on arm C, supported by crooked levers D D by means of gudgeons *d d*, and secured by common nuts, as and for the purpose specified.

4. The balance-bars E E, in combination with the brake-beams A′ A′ and brake-shoes A″ A″, to which they are connected by links e' e', and to the cross-beams B B′ by the link f, as and for the purpose specified.

5. The combination of the jointed lever C C′, brake-head B, crooked levers D D, fulcrum parts e'' e'', brake-beams A′ A′, carrying the brake-shoes A″, the balance-bars E E, provided with mortises e e, to receive the links e' e', the brake-beams being hung to the frame A by rods b, and connected with arm C by rods or chains d'', and the balance-bar E being connected to the truck by the yoke f, all as and for the purpose specified.

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R. B. ANGELL.