(No Model.) 2 Sheets—Sheet 1.

J. W. BRUCE.

AUTOMATIC WAGON BRAKE.

No. 410,400. Patented Sept. 3, 1889.

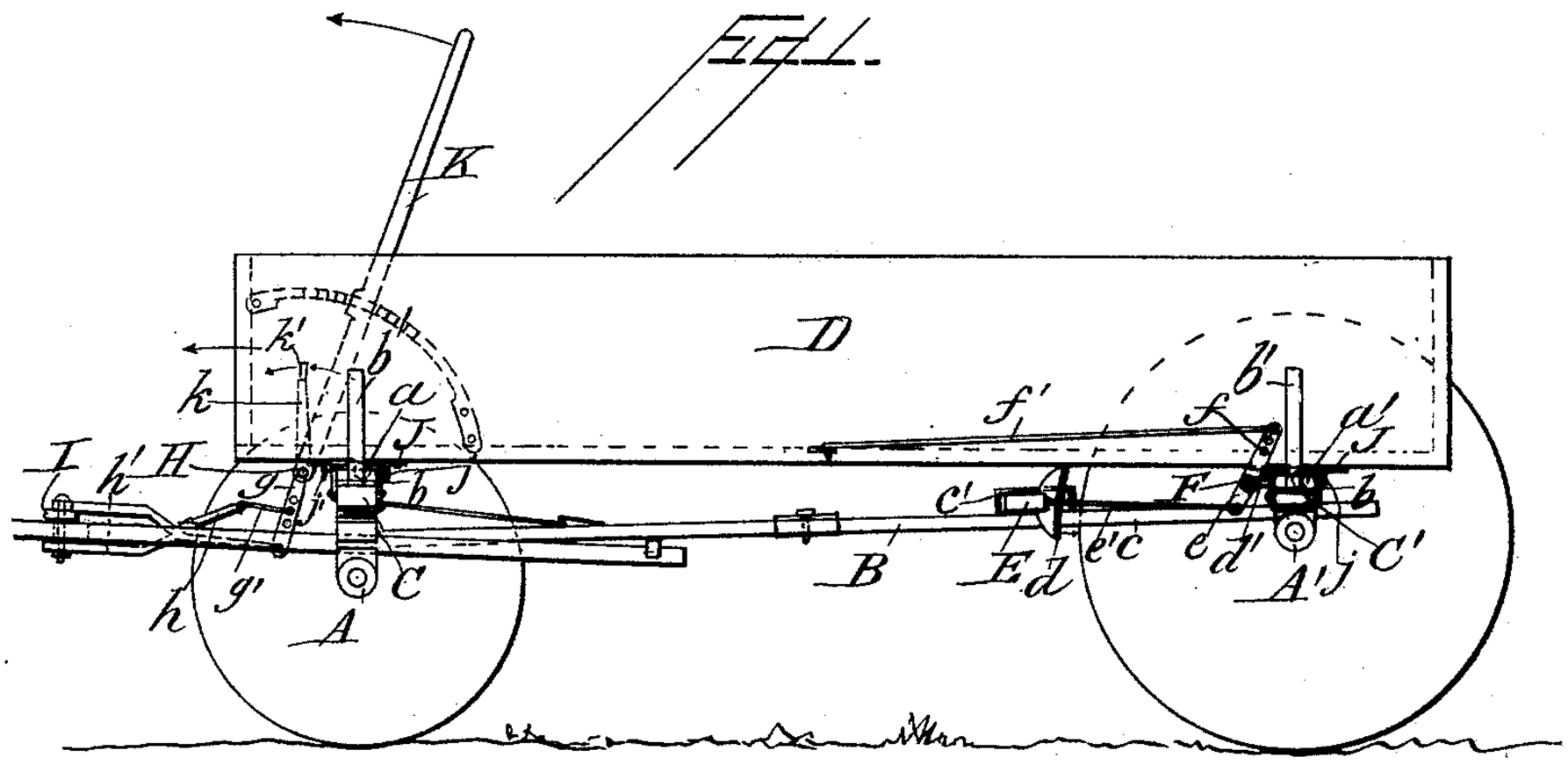

FIG. 2.

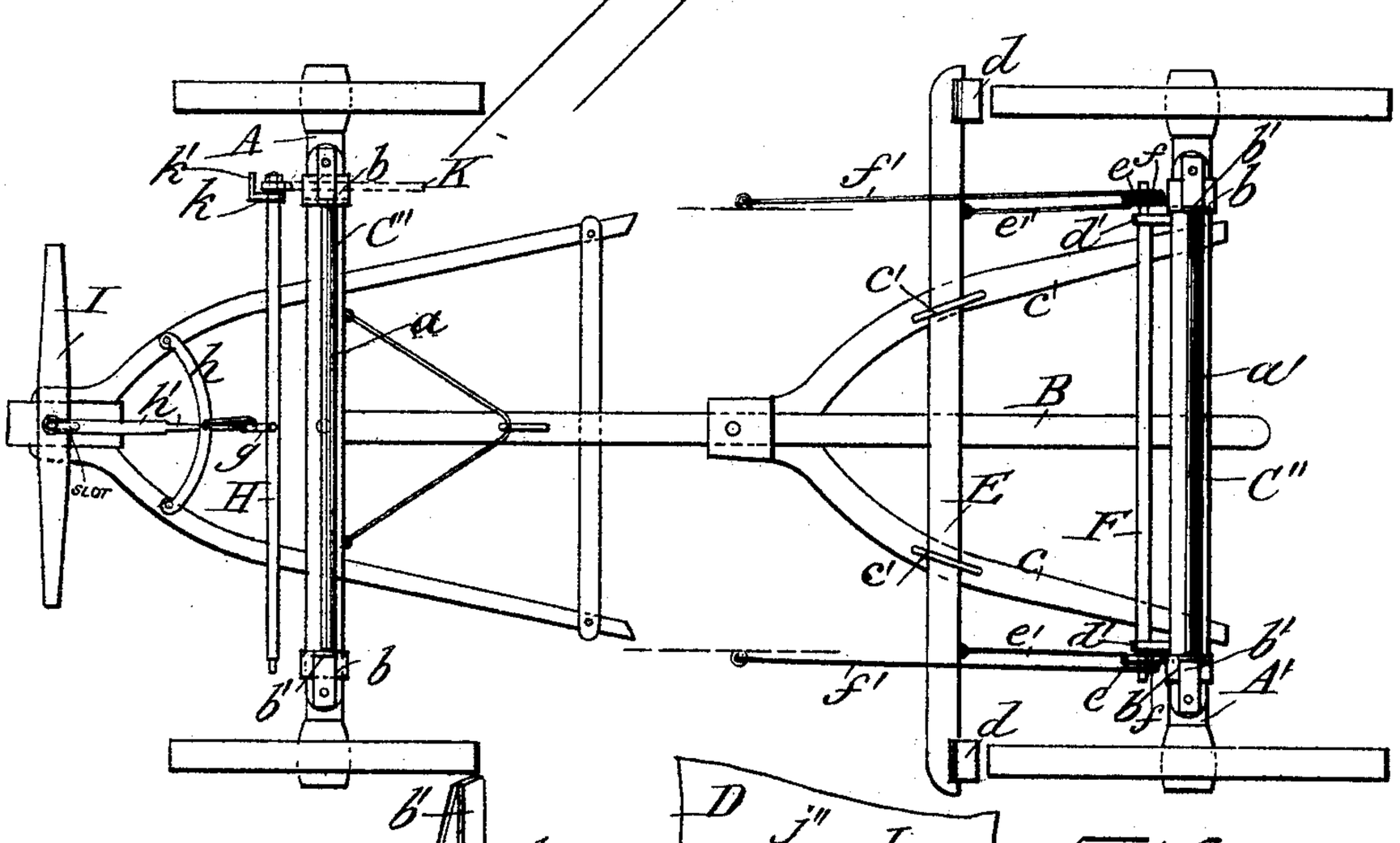

FIG. 3.

FIG. 4.

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Fig. 1.

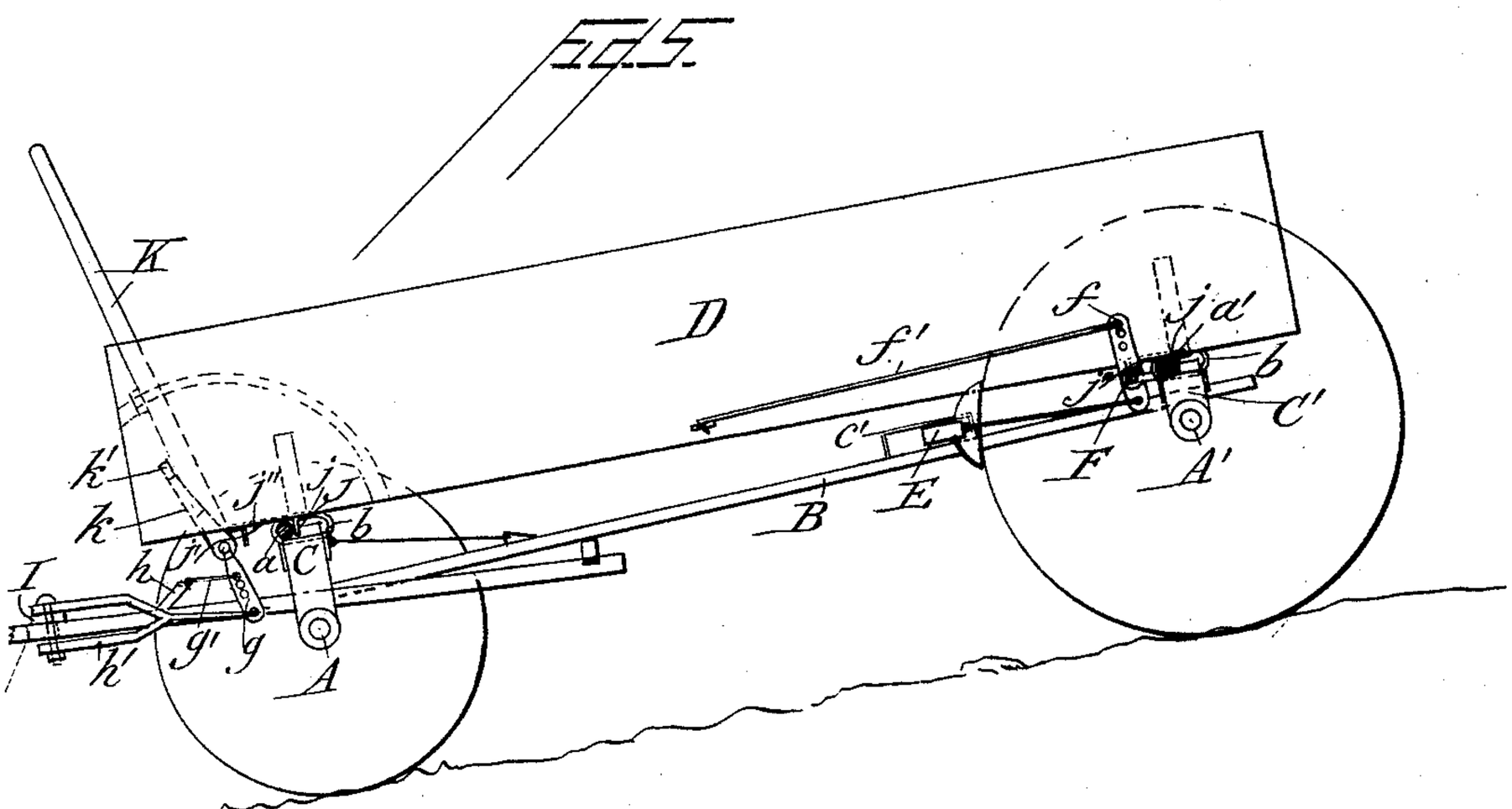
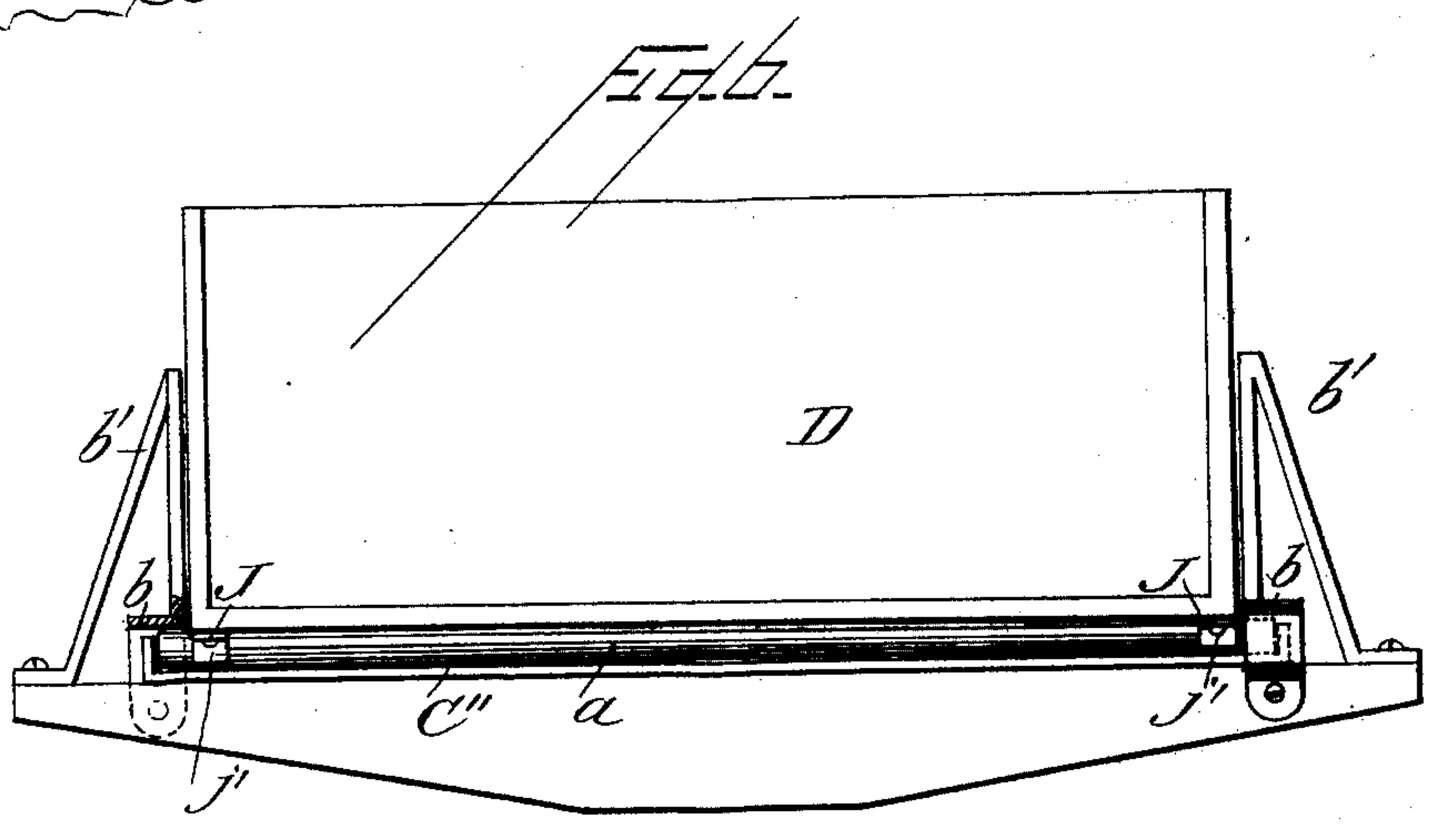


Fig. 2.



Attest:
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By M. C. Langan Atty.

UNITED STATES PATENT OFFICE.

JAMES WESLEY BRUCE, OF AITCH, OHIO.

AUTOMATIC WAGON-BRAKE.

SPECIFICATION forming part of Letters Patent No. 410,400, dated September 3, 1889.

Application filed May 25, 1889. Serial No. 312,030. (No model.)

To all whom it may concern:

Be it known that I, JAMES WESLEY BRUCE, of Aitch, in the county of Monroe, State of Ohio, have invented certain new and useful Improvements in Automatic Wagon-Brakes; and I hereby declare that the following is a full, clear, and exact description of the invention, such as 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 letters and figures of reference marked thereon, which form a part of this specification.

My invention relates especially to the arrangement of the rollers upon which the body is carried, and to the connection of said body with the brakes in such a manner that a forward movement of the body upon the bolsters will apply the brakes and a reverse movement withdraw them from their contact with the periphery of the wheels, all as will be hereinafter described in connection with the accompanying drawings, which illustrate the invention, and in which—

Figure 1 is a side elevation of a wagon provided with a body, said figure showing the connections of said body with the brake mechanism and running-gear. Fig. 2 is a plan view of the running-gear and brake mechanism, the body having been removed. Fig. 3 is a perspective view of one of the bolsters. Fig. 4 is a cross-section of the same. Fig. 5 is a side elevation opposite that shown in Fig. 1. Fig. 6 is a rear end view.

In these several figures like reference-marks indicating corresponding parts in all the views.

A represents the front, and A′ the rear axle, of a wagon. B is the reach by which they are connected.

C and C′ are the front and rear bolsters.

D represents the wagon-body carried upon the bolsters, and having interposed between them the rollers *a* and *a′*. It will be observed that these rollers rest for their whole length upon the bolsters, the upper surfaces of which present a broad and even surface for their support, the flange-plate C″ being interposed between the top of said bolster and said roller, and in the construction shown the ends of said plate being bent upwardly, as shown, forming flanges against which the ends of the rollers bear, thereby preventing any undue lateral play of said rollers. These said upwardly-projecting flanges may be made integrally with the plate C″ or not, as desired, but the construction shown is preferable inasmuch as it presents advantages in strength and simplicity of attachment. The journals of the rollers are guided by elongated metallic loops *b b*, which extend across the top of the bolsters at each end, preferably attached to which or made integral therewith are the standards *b′*, and are so arranged that the rollers are allowed to travel freely over the upper surfaces of the bolsters. The body resting upon these rollers is thereby supported by them not only at the sides but throughout its whole width, thus equalizing the weight of the load over the whole length of the bolsters, and at the same time allowing a longitudinal movement to said body equal to the travel of the rollers on the bolsters.

The brake-beam F crosses the vehicle just forward of the rear wheels, being carried by the rail-hounds *c c* and guided in its movement by the strips *c′ c′*, which pass over said beam and are attached at each end to the hounds. To each end of the brake-beam is attached a brake block or shoe *d*, which, when the beam moves toward the rear, comes in contact with the periphery of the rear wheels and by their friction thereon retard the forward movement of the wagon.

To accomplish the movements of the brake-beam automatically, it is connected with the body in the following manner: A rock-shaft F crosses the vehicle just in front of the rear bolster, being supported in journal-bearings at *d′* near each end. Arms *e e* extend downward from the rock-shaft and are connected by rods *e′ e′* with the brake-beam. Other arms *f f* extend upward from each end of the rock-shaft. Said arms *e e* and *f f* are preferably constructed in the following manner: For security of attachment the shaft F is preferably made rectangular at the point at which said levers are attached, and both of said levers *e* and *f* are made integrally with the hub, said hub having a square hole in its center to form a bearing on said shaft F. This form of levers besides being simple of construction obviates all danger of the torsonial strain on the two levers in operation, twisting the shaft F between their points of attachment and thus rendering the device inoperative until repaired; but it will

be seen that other constructions might be used without a departure from the spirit of the invention. These said arms *f f* are connected by the rods *f' f'* with the said sills of the body, one end of each rod engaging with one of a series of holes formed in the arms *f* and the other pivotally attached to the body. It will therefore be apparent that any longitudinal movement of the body with relation to the running-gear of the vehicle will be communicated through the rock-shaft and its connections to the brake-beam, the movement of said beam being, however, in reverse direction, as when the body moves forward the beam moves to the rear, thus bringing the brake-shoes in contact with the rear wheels and applying the brakes. This forward movement of the body will be caused by the force of gravity in descending a hill and the effective pressure of brakes upon the wheels would be in proportion to and regulated by the weight of the load and steepness of the declivity down which the wagon was passing. Under each edge of the wagon-body, where it bears on the rollers, is placed the bracket J, which has the stops or flanges *j j'* at its ends. These flanges *j j'* come in contact with rollers at each extreme limit of the movement of the body relatively to the running-gear and form stops to said movement.

It will be observed upon reference to the drawings that the rear stop *j* is a simple stop, while the forward one *j'* has an inclined plane *j''*, along which the roller must pass in approaching the said stop *j'*. This utilizes the gravity of the wagon-body in providing a buffer to soften any jar in the backward motion of the body on the rollers, said elasticity being furnished by the resilience of the parts under strain in operation, the stop *j* being essentially a precautionary measure, and for that reason is preferably supplied.

Journaled in suitable bearings attached to the side sills of the body in front of the forward bolster is a rock-shaft H, which is provided with a downwardly-projecting arm *g*. This arm *g* forms the lever, the fulcrum of which is the bar *g'*, pivoted at one end to the arm, within a short distance of the lower end, the opposite end of the bar being attached to the cross-piece *h*, extending transversely from one to the other of the hounds which support the tongue. The lower end of the lever-arm *g* is connected with the doubletree I by the bifurcated rod *h'*. The bolt upon which the doubletree swings passes through the bifurcated portion of the rod *h'*, the doubletree, and the slot in the tongue, so that said doubletree has a limited longitudinal movement thereon.

The construction hereinbefore described is automatic in its action. The following addition to the said construction makes it capable of easy operation by hand. Attached to the shaft H is a lever K, which turns loosely thereon and which extends upwardly and has means for engagement with a quadrant-rack secured to the side of the wagon-body. Fastened to the said shaft H, near the lever K, is a short lever *k*, which has the lug *k'* on its end for engagement with the lever K on its forward movement, which allows the throwing forward of said lever K to partially revolve the shaft H, throwing the body forward and applying the brakes, as described. When so thrown forward, said lever may be securely held in that position by causing the engagement of the lever K and the quadrant-rack.

From the herein-described method of construction it will be apparent that when the draft from the doubletree ceases and the wagon begins to descend a declivity the body will move forward upon the bolsters, applying the brake, and at the same time, through the agency of the rock-shaft H and its connections, draw back the doubletree, in which position it will remain until the foot of the declivity is reached or the need of the brake ceases, when upon starting up the team the doubletree moves forward, forcing back the body upon the bolsters and withdrawing the brake-shoes from their contact against the peripheries of the rear wheels.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic braking mechanism for wagons, the combination of the body mounted upon rollers extending nearly the whole length of and traveling upon the upper surfaces of both front and rear bolsters, the rock-shaft carried by the body and its connections with the brake-shoes and doubletree, all the parts being constructed and arranged as shown and described, so that a forward movement of the body applies the brakes and a light movement of the doubletree forces back the body and releases them.

2. In an automatic braking mechanism for wagons, the shaft H, levers K and *k*, the arms *g*, the bar *g'*, and the cross-piece *h*, in combination with the body of a wagon sliding longitudinally on its running-gear, all arranged and operating substantially as shown and described, and for the purpose specified.

3. In an automatic brake for vehicles, the combination of the bolster, the wear-plates C'', turned up at each end and secured to the top of said bolsters, the roll *a*, its ends bearing against the turned-up part of said plates, and the bifurcated standards *b*, secured to the bolster and forming a stop to prevent the roll from leaving the wearing-plate, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES WESLEY BRUCE.

Witnesses:

CHAS. W. STEWART,

LOYD ELROD.