

(No Model.)

2 Sheets—Sheet 1.

J. A. GREEN.
AUTOMATIC WAGON BRAKE.

No. 466,409.

Patented Jan. 5, 1892.

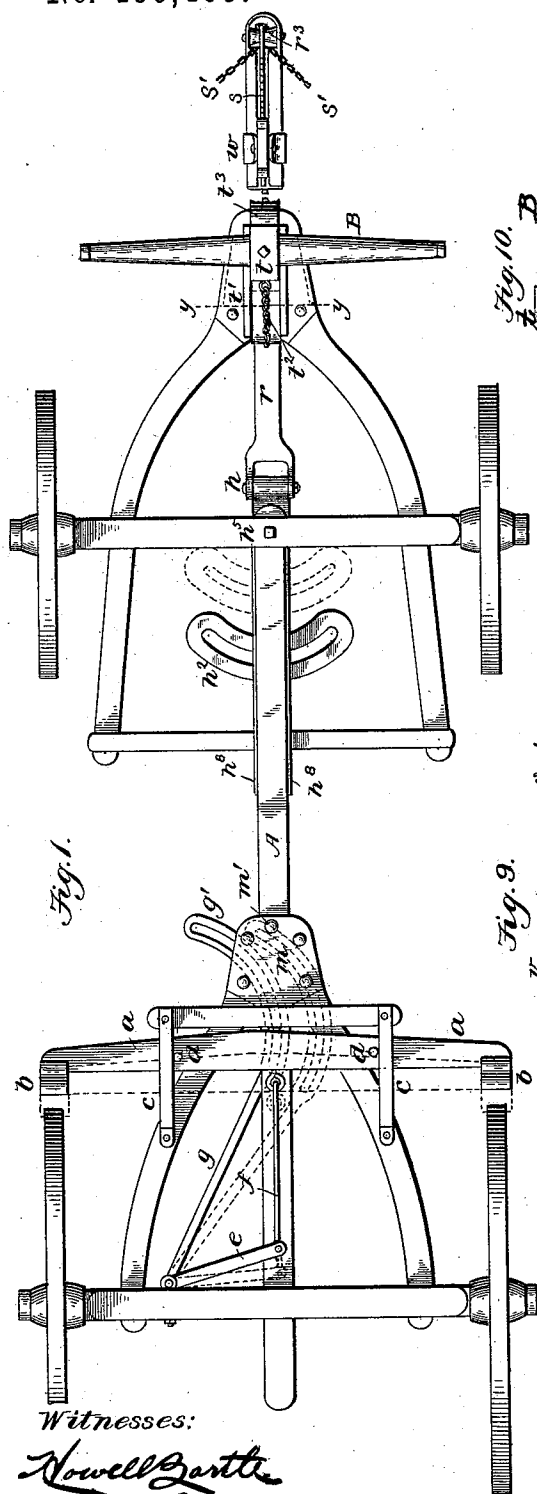


Fig. 1.

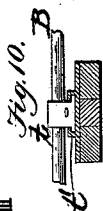


Fig. 9.

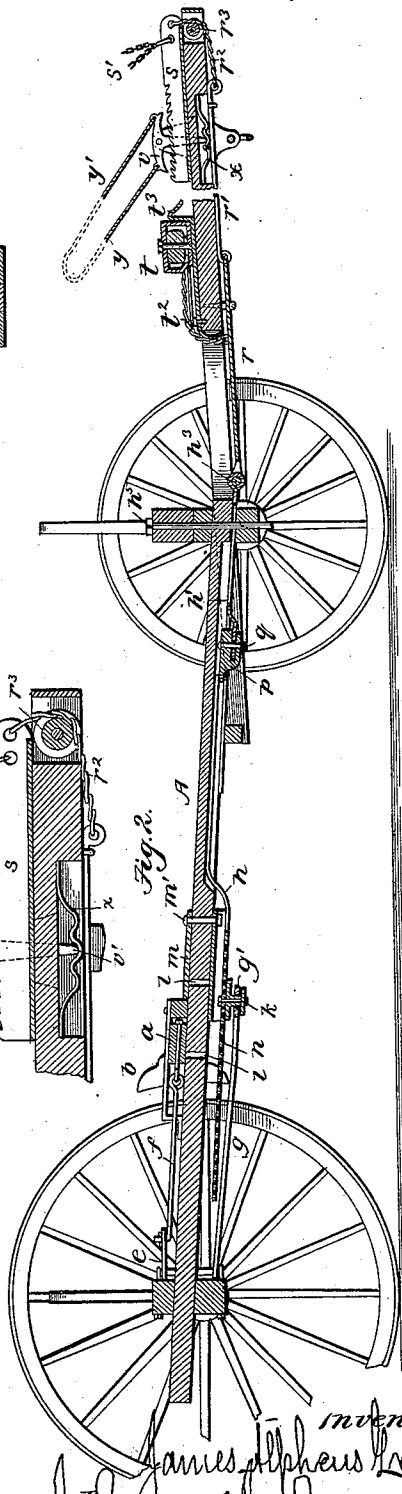
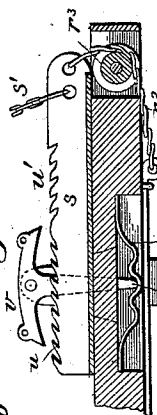


Fig. 2.

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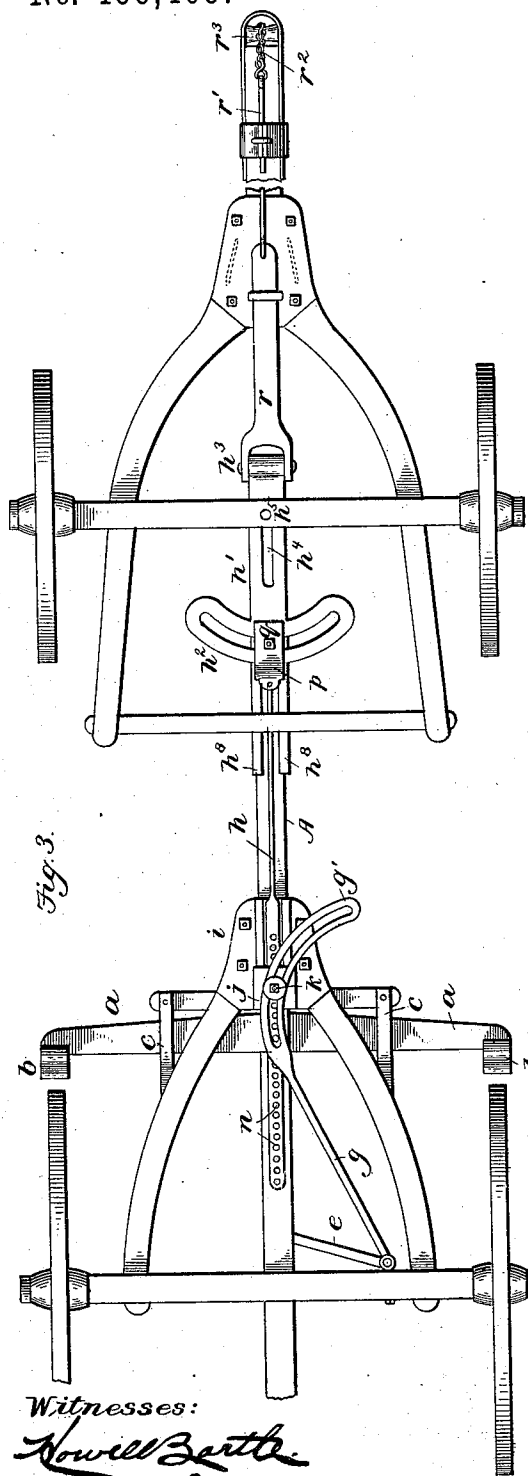
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2 Sheets—Sheet 2.

J. A. GREEN.
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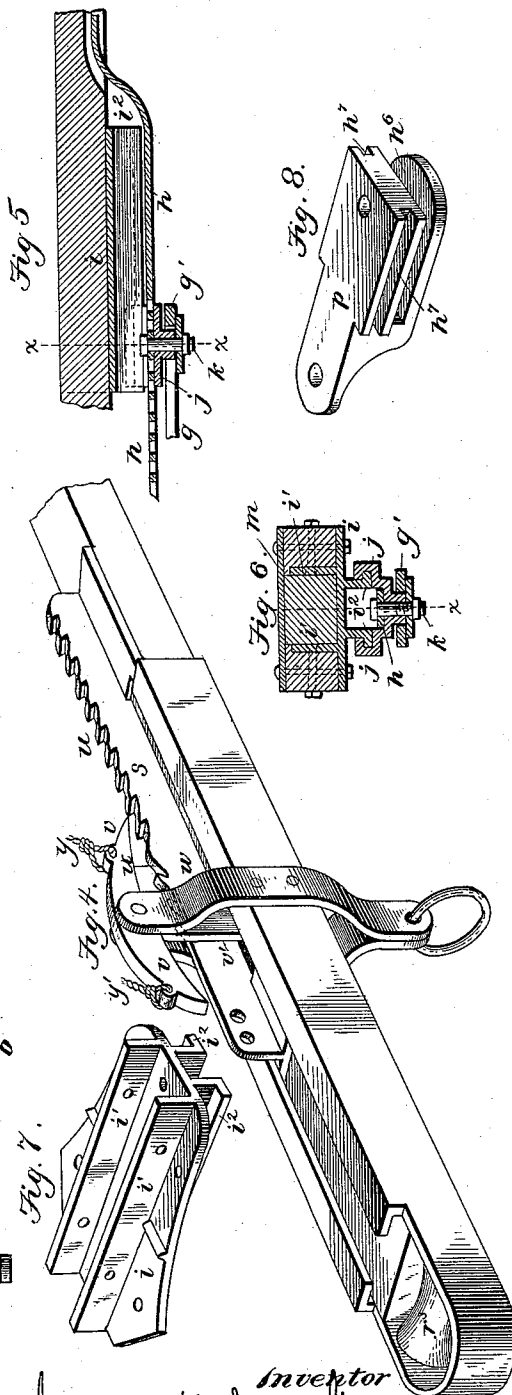
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UNITED STATES PATENT OFFICE.

JAMES A. GREEN, OF MILDDALE, ASSIGNOR OF TWO-THIRDS TO JOHN DEMENT CHAPIN, OF STONE BRIDGE, AND SAMUEL SKINNER THOMAS, OF BERRYVILLE, VIRGINIA.

AUTOMATIC WAGON-BRAKE.

SPECIFICATION forming part of Letters Patent No. 466,409, dated January 5, 1892.

Application filed March 30, 1891. Serial No. 386,963. (No model.)

To all whom it may concern:

Be it known that I, JAMES ALPHEUS GREEN, a citizen of the United States, residing at Milldale, in the county of Warren and State of Virginia, have invented certain new and useful Improvements in Automatic Wagon-Brakes; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to brakes particularly adapted for farm-wagons, and is constructed for automatically applying and releasing the brakes by the action of the tongue-horses; and my said invention consists of certain novel parts and combination of parts, which are particularly pointed out and designated in the claims concluding this specification, in connection with the accompanying drawings, in which—

Figure 1 shows in top view so much of the running-gear of a wagon as illustrates my improved automatic brake applied thereto, the brake parts being shown in the positions they occupy when the brake is off. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a bottom view, the brake parts being in the positions seen in Fig. 1. Fig. 4 shows in perspective the front portion of the tongue and a double reversible-acting brake-controlling device fitted thereon. Fig. 5 is a detail section showing the connection of the brake-operating rod with the fixed-socket casting for the reach and the sliding bearing connection for the brake-beam-controlling device connected with the rear axle. Fig. 6 is a sectional detail taken on the line *x x* of Fig. 5. Fig. 7 shows the reach-socket casting fastened to the hands, as seen in Figs. 5 and 6. Fig. 8 shows the casting for the segmental slotted joint of the brake-operating rod to permit the turning of the front axle. Fig. 9 shows an enlarged sectional detail of the sliding reversible brake-controlling device and its spring-detent on the front portion of the tongue. Fig. 10 is a detail sectional view of

the guide-casting for the doubletree on the line *y y* of Fig. 1.

The brake-bar *a* is of the ordinary construction, has the usual brake-shoes *b b*, and is supported crosswise upon the rear hounds for operating upon the rear wheels. It is held in place upon the hounds and equalized in its sliding movement by the housing-guides *c c* and pins *d d*. It is connected to a double-crank controlling device mounted upon the rear axle and is automatically operated through such cranked device by means of connections with the doubletree and with the breast-chains of the team in a way which I will now describe.

Referring to Figs. 1, 2, and 3, *e* is a crank-arm which is connected by a link *f* to the brake-bar at its middle and on the upper side of the wagon-reach, and *g* is a crank-arm having a curved or angular slotted end *g'*, which is connected to a brake-operating rod *h*, arranged on the under side of the reach. This double-crank device is pivotally mounted on the rear axle, and its crank-arms are vibrated to apply and to hold the brake-beam in and out of action by the sliding movement of the brake-operating rod, caused by the pulling and the backing action of the team. The connection of the slotted crank-arm *g'* and the brake-rod *h* is shown in detail in Figs. 5 and 6, and is made by a casting *i*, (shown in detail in Fig. 7,) which is bolted to the under side of the front ends of the rear hounds and has flanges *i' i'* on its upper side, which form a guide-socket for the reach, Fig. 6. This casting *i* also has bottom flanges *i² i²*, which form guides for a corresponding flanged slide-bearing *j*, on which the brake-rod *h* rests, and by which it is connected by a bolt *k* to the crank-arm *g*, through the slot of which said bolt passes, whereby the said rod and arm are pivotally connected and a sliding supporting-bearing formed at and by such connection.

I prefer to connect the slotted crank-arm to the sliding bearing *j* by a boss on its under side and a washer through which the bolt passes, as seen in Fig. 6. I make this sliding connection by a slot in the crank-arm *g'*, because it is adapted to allow said arm to have

the required extent of movement or throw to give full movement to its brake-bar connecting crank-arm e from a comparatively short movement of the brake-operating rod h and its tongue-operating connections. This slotted crank-arm g also gives a sliding connection for the brake-rod h , which is easier and more free than could be obtained from a pivotal connection and is well suited to apply the full backing force of the team to the double-crank device and its connected brake-beam. This slotted sliding crank connection also gives the advantage of a quick movement both in applying and in releasing the brake-beam.

The guide-socket casting shown in Fig. 7 is important in providing a means for adjustably connecting the reach A to the rear hounds to make the running-gear longer or shorter between the axles for use with long or short bodies, as may be desired. This I do by making holes l , Fig. 7, in the reach and providing the hounds with a cap-plate m , lying over the reach, and securing the latter to said cap-plate by a bolt m' , which passes through the holes in the reach and also through the flange-casting i , the under side of which is open for access to the bolt-nut when such reach adjustment is to be made, Fig. 2.

To compensate for the wear of the brake-shoes and to provide for the proper close adjustment of the brake-operating parts, and also to provide for the adjustment of the bolt k , which connects the brake-rod h and the double-cranked device to suit the adjustment of the reach, I make holes n quite close together in the brake-rod to permit of the proper adjustment of its connecting-bolt.

The flanged casting i is bolted to the hounds by vertical and by horizontal bolts, but not to the reach, except by the adjusting-bolt m' , as stated.

To permit of the turning of the front axle and the raising and lowering of the front ends of the tongue, I construct the brake-operating rod h with an intermediate jointed section h' , which crosses the front axle, as seen in Fig. 2, the joint at the rear of the axle being formed by a segmental slotted part h^2 on one section of the rod and a sliding coupling p , pivoted to the other section of said rod, and which contains the joint-bolt q , which passes through said segmental slot and couples the two sections of the brake-operating rod, so that the front axle and its wheels can be turned in either direction with the tongue without moving the brake connections of the rear axle. For this purpose the slotted part h^2 stands transversely to the reach, and the sliding coupling makes the joint rigid in the line of the brake-rod. As seen in Figs. 1 and 3, the forward joint h^3 of the rod-section h' is made by a horizontal pivot-bolt, so that the rod at this joint is also practically rigid in the pushing action of the rod. This rod-section h' also has a longitudinal slot h^4 , through which the axle king-bolt h^5 passes to permit of the slid-

ing movement of the brake-operating rod. The sliding coupling p is bifurcated at h^6 to receive the segmental slotted part h^2 and is formed with grooves h' , by which it is fitted to guideways h^3 on the underside of the reach, whereby the said rod-coupling p is supported and guided upon the reach and gives the rod a firm connection with the reach, which is important in thrusting the rod back in releasing the brakes. The section r of the brake-operating rod, which is jointed in front of the front axle, is a plate extending under the hounds to give the required lateral stiffness, while the section r' , which extends under the tongue, may be a comparatively light rod and connects with a sliding device on the top of the tongue for applying the brake by its chain connections with the hames of the team. This connection of the rod is made by a short chain r^2 , which passes over a roll r^3 , fitted in the nose-strap of the tongue, and is connected to the front end of such sliding device. This sliding device is better seen in Figs. 4 and 9, and consists of a flanged plate s , fitted in ways formed by the tongue nose-strap, so as to be free to slide upon the tongue, and is connected to the hames of the team by the chains s' . (Seen in Fig. 2.) The doubletree B is pivoted in a cast socket t , which has base-flanges, by which it is fitted in the guideways of a plate-casting t' , bolted to the upper side of the hounds, and this cast socket t is connected by a short chain t^2 to the section r of the brake-rod and passes between the hounds and over the rear end of the cast-socket base, so as to provide a bearing for the chain on the hounds to cause the forward movement of the doubletree to pull and force the brake-operating rod back in releasing the brakes. A stop t^3 on the cast-socket base limits the forward movement of the doubletree.

As a means of giving the driver control of the brake to render it non-active when it is desired to back the wagon or to lock or secure the brake when it is applied to hold the wagon when standing, I utilize the sliding device s , which connects with the breast-chains s' , as I will now state. I make this sliding device with ratchet-teeth $u u'$ on its upper edge, standing in opposite directions, and I provide a double-acting reversible dog u , mounted on the tongue in position to engage either of the said ratchet-teeth of the sliding device to hold the latter in fixed relation to the tongue, and thereby lock the brake in or out of brake action.

The double-acting dog has the form of the letter T , and is pivoted at its head to a strap-bracket w , which is fixed to and rises above the tongue, so that the vertical arm v' of the dog stands down through a slot in the tongue and engages a corrugated spring-detent x on the under side of the tongue to hold the dog in any one of the three positions, as may be desired. The dog is centrally pivoted to the upper end of the bracket w , so as to have a rocking movement to engage the ratchet-slide,

and the bracket is preferably secured to tongue nose-strap, as seen in Fig. 4. A cord *y* connects the ends of the double-acting reversible dog and is suitably fastened, so as to be within reach and control of the driver whether in the saddle or on the wagon. In the drawings this dog is shown in position out of action with the ratchet-teeth, and in such position the dog is out of action and connection with the brake and does not interfere with its automatic operation. When, however, it is desired to lock the brake when applied by the action of the team, the driver pulls that part *y'* of the cord which connects with the front end of the dog, which rocks it back and engages its rear end with the slide-ratchet teeth *u'*, standing to the front, and in this position the ratchet-slide will be moved fully back on the tongue to put on the brake and the ratchet-dog will hold the slide in fixed relation to the tongue to hold the brake on. When it is desired to hold the brake off, the driver pulls the other part of the dog-connecting cord, which rocks the dog forward and engages its front end with the slide-ratchet teeth *u'* standing backward, and in this position the ratchet-slide will be moved fully forward on the tongue to release the brake and the ratchet-dog will hold the slide in fixed relation to the tongue to hold the brake off. In either position of the dog it is held secure by its engagement with the corrugations or notches in the spring, and in either position of the dog the spring-detent serves to hold it secure and allow it to be readily shifted by the pulling of the cord, thus placing this reversible dog under the sole control of the driver. The action of the spring upon the engaging end of the dog is such as to insure the catching of the dog in the teeth of the slide, and this is especially important in the locked position of the brake and in tightening such lock by the action of the dog in taking hold of the teeth, as the brake may be tightened by the holding-back action of the team.

The backing of the team by the breast-chain connections *s'* with the ratchet-sliding device *s* on the front end of the tongue causes said device to be forced backward and by its chain connection *r*² with the brake-operating rod pulls the latter forward and by its slotted-arm connection *g'* forces the crank-arm *e* back and the brake-shoes hard upon the wheels. In this action the doubletree *B* is also moved backward on the hounds.

The pulling of the team draws the ratchet-sliding device *s* forward by the doubletree connections *t*², which also draws the brake-operating rod backward, and thereby releases the brake, as seen in Figs. 1 and 2.

The arrangement of the brake-operating connections for reciprocal sliding movements of the doubletree and the ratchet device upon the tongue allows the latter to be turned and controlled by the team, while at the same time the breast-chains *s'* and the brake-operating chain connections *t*² and *r* are kept under ten-

sion, whether the brakes be on or off, and still the team has proper control of the tongue, because the reciprocal movements of the brake applying and releasing devices *B* and *s* are such that the control of the tongue by the team is not interfered with by any change in the tension of the tongue and doubletree chain connections.

I claim as my invention—

1. The combination, in a wagon-brake, with the running-gear, of the sliding brake-beam, the cranked device pivotally mounted on the rear axle, having a short arm *e*, pivotally and centrally connected with the brake-beam, and a long arm *g*, terminating in a curved or angular slotted end *g'*, and sliding rod *h*, carried by the reach, engaging with the slot of said long arm for operating the brake-beam, substantially as described.

2. The combination, in a wagon-brake, with the running-gear, of the sliding brake-beam, the crank device pivotally mounted on the rear axle, having a short arm *e*, pivotally and centrally connected with the brake-beam, and a long arm *g*, terminating in a curved or angular slotted end *g'*, a slide-bearing *j*, mounted on the rear hounds, engaging said slotted arm, and a sliding brake-operating rod carried by the reach, engaging with said slide-bearing, substantially as described.

3. The combination, in a wagon-brake, with the running-gear, of the sliding brake-beam, the double-cranked device pivotally mounted on the rear axle and connected by one of its arms *e* to said beam, a sliding brake-operating rod *h*, carried by the reach, a slide-bearing *j*, fitted on the rear hounds, engaging the other arm *g'* of said cranked device and the said brake-operating rod *h*, a sliding coupling *p*, fitted on the reach, pivotally connected to said rod *h*, a rod-section *h'*, having a transverse segmental slotted end *h*², engaging a pin of said coupling *p*, a tongue-rod section *r*, connecting said coupling and rod-section *h'*, a sliding doubletree, and means for connecting said rod-sections to the doubletree and to the breast-chains of the team, substantially as described.

4. In a wagon-brake, the combination, with a sliding brake-beam, a brake-operating rod, and a sliding doubletree connected to said rod, of a slide *s*, fitted upon the front end of the tongue and connected to said rod and to the breast-chains of the team, and a locking device for said slide under the control of the driver, whereby the said slide and the said doubletree have conjoint reciprocal automatic movements upon the tongue to operate the brake-rod to apply and to release the brakes, substantially as described.

5. In a wagon-brake, the combination, with a sliding brake-beam, a brake-operating rod, and a sliding doubletree connected to said rod, of a slide fitted upon the front end of the tongue and having ratchet-teeth standing in opposite directions and connected to said rod and to the breast-chains of the team, and a

reversibly-acting dog pivotally mounted upon the tongue and adapted for engagement with the ratchet-slide and having a cord connected at each end under the control of the driver, substantially as described.

6. In a wagon-brake, the combination, with a sliding brake-beam, a brake-operating rod, and a sliding doubletree having a flexible connection with said rod, of a slide fitted upon the front end of the tongue and having ratchet-teeth standing in opposite directions and having a flexible connection with said rod and with the breast-chains of the team, a reversibly-acting dog pivotally mounted upon the tongue and adapted for engagement with the ratchet-slide, a cord under the control of the driver attached to each end of the dog, and a spring-detent for holding the dog when adjusted or turned to the desired position, substantially as described, for the purpose stated.

7. In a wagon-brake, the combination, with the tongue, of a slide fitted in guideways on the upper side thereof, formed with ratchet-teeth standing in opposite directions and connected to the breast-chains, a brake-operating rod fitted on the under side of the tongue, connected to said slide, a T-shaped reversible dog pivotally mounted upon said tongue, adapted for engagement with said teeth and controlled by cords leading to the driver, a

spring-detent engaging the vertical arm of said dog, and a sliding doubletree having a flexible connection with said brake-operating rod, substantially as described, for the purpose set forth.

8. In a wagon-brake, the combination, with the running-gear, of a socket-casting *i* for the reach, secured to the hounds of the rear wheels, a sliding brake-beam, a brake-operating rod, a slide-bearing *j* for said rod, fitted on guideways of said socket-casting, and suitable mechanism connecting the brake-operating rod with the brake-beam, substantially as described.

9. In a wagon-brake, the combination, with the running-gear and a sliding brake-beam, of a brake-operating rod *h*, the slide-bearing *j*, the sliding coupling *p*, the rod-section *h'*, having a transverse segmental slotted end *h''*, the cranked device *e g'*, connecting the rod *h* with the brake-bar, and the sliding doubletree and the sliding plate *s*, connecting the said brake-operating rod, substantially as described.

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

JAMES A. GREEN.

Witnesses:

A. E. H. JOHNSON,
PHILIP F. LARNER.