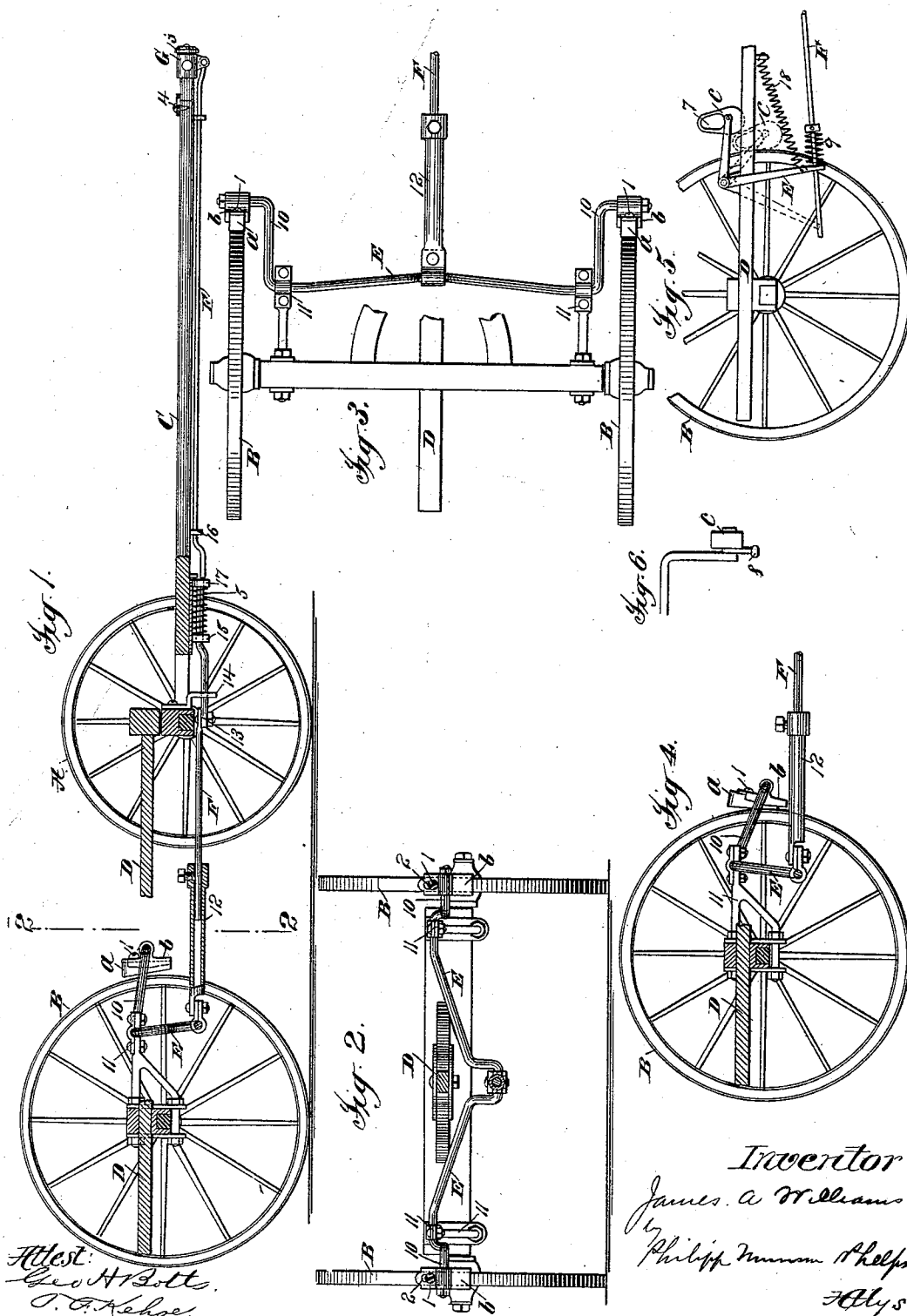


(No Model.)

J. A. WILLIAMS.
WAGON BRAKE.

No. 540,887.

Patented June 11, 1895.



Attest:
Geo. H. Holt,
O. A. Kehoe.

Inventor
James A. Williams
By Philipp Munson Phelps
Attys

UNITED STATES PATENT OFFICE.

JAMES A. WILLIAMS, OF NEW YORK, N. Y.

WAGON-BRAKE.

SPECIFICATION forming part of Letters Patent No. 540,887, dated June 11, 1895.

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To all whom it may concern:

Be it known that I, JAMES A. WILLIAMS, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Wagon-Brakes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to provide an improved wagon brake whereby the wheel shall act as the main factor in locking.

A further object is to provide a positive and efficient automatic brake to prevent a wagon from pushing or crowding a team, and yet cause no interference in backing.

For a full understanding of the invention, a detailed description of a construction embodying the same in a preferred form and modifications thereof will now be given, reference being had to the accompanying drawings forming a part of this specification, and the features forming the invention specifically pointed out in the claims.

In the drawings, Figure 1 is a vertical longitudinal central section of a two-horse wagon equipped with an automatic brake embodying the invention in one form. Fig. 2 is a vertical cross-section on the line 2 of Fig. 1. Fig. 3 is a partial plan view. Fig. 4 is a section similar to Fig. 1, showing the brake applied. Fig. 5 is a view similar to Fig. 4, showing a modification employing an oscillating brake-shoe, the brake being shown free in full lines and applied in dotted lines. Fig. 6 is a detail showing a modification of the brake-shoe of Fig. 5.

Referring now especially to Figs. 1 to 4, A, B, are the front and rear wheels of the wagon, the brake being shown as applied to both the rear wheels, although it will be understood that it may be applied to the front wheels, if desired, or only to one wheel. C is the pole and D the reach. The brake shoes in the preferred form shown in these figures consist of blocks *a* of any suitable material carried by shoe frames *b* in which the blocks are arranged to slide in a vertical plane, being secured therein by screws or bolts 1 passing through slots 2 in the frames, and the brake shoes *a* are tapered to form cam shoes the

thicker parts of the shoes being at the top. This construction permits the backing of the wagon, as the wheel does not tighten the shoes except on their forward movement, as the rearward movement presses the shoes upward to bring their thinner parts opposite the wheel.

The shoe frames *b* are secured rigidly on crank arms 10 forming part of lever E extending across the wagon just in front of the axle and pivoted in brackets 11 on the latter, said lever being adjustably connected to an actuating rod F, preferably by an adjustable connection formed by the sleeve 12, so as to permit the reach to be lengthened or shortened. The actuating rod F in the automatic construction shown is a push rod extending forward to the pole so as to be operated by the pressure of the wagon upon the team, and is preferably formed in two parts connected at 13 so as to permit the rod to be broken for detaching the front and rear wheels, and the rod slides in supports, as 14, 15, 16, on the front axle and pole, extending to the front end of the latter, where it is connected to a sliding yoke sleeve G, the forward and rearward movements of this sleeve being limited by stops 3 and 4 on the pole. The push rod F may be broken also between the pole and front axle, as shown, so as to permit the pole to be readily removed, and the parts connected by any suitable means, or the part of the rod on the pole may simply push against a collar 17 on the rear part of the rod, or the rod may be continuous. For the purpose of returning the push rod and brake to normal position when the pressure upon the team is removed, a spring 5 is applied to the rod F, which spring may be of any suitable construction and arrangement, but is shown as a spring coiled about the rod F and pressing against the support 15 and collar 17 on the rod F. This collar may be made adjustable so as to adjust the tension of the spring as desired.

It will be seen that when the wagon pushes forward on going down hill, the yoke sleeve G moves backward upon the pole and thus the push rod F is forced rearward and the lever E rocked backward so as to carry the crank arms 10 and brake shoes *a* from the position shown in Fig. 1 to that shown in Fig. 4, thus causing the shoes to be brought into contact with the wheels. As the crank arms are drawn

downward carrying the shoes *a*, the pressure of the wheels in contact with the shoes tends to force the shoes downward thus drawing upon and tightening the brake shoes upon the wheel automatically so as to lock the wheels. This tightening of the brake shoes upon the wheels continues as long as the wagon pushes upon the team, but as soon as the wagon ceases to push on the team, the spring 5 returns the sleeve G, rod F, lever E and the crank arms 10 to their normal position as shown in Fig. 1, carrying the shoes away from the wheels and releasing the brake. When the team backs, the brake shoes are thrown in contact with the wheels, but the backward rotation of the wheels acting upon the shoes in the direction of their thicker portions causes the shoes to slide upward in the holders *b* and lets the sleeves come back to a stop 4 to back the wagon thus relieving the pressure upon the wheels. The stop 4 is preferably made adjustable, as by a slot and screw connection, as shown, so that it may be adjusted to secure the proper action of the brake.

For a one horse wagon or cart no change in the construction shown is necessary, except at the points of attachment of the harness to the wagon shafts, which must be made movable in the same manner as the sleeve G on the pole C.

It will be seen from Fig. 4 that the crank arms carrying the brake shoes are pivoted inside the circumference of the wheel and so as to draw in the line of the chord of an arc of about one hundred and twenty degrees or one third of the wheel. It will be understood that this angle may be varied somewhat, and the invention is not to be limited to exactly the line stated. By this construction a brake is provided that tightens by the drawing of the wheel upon the shoes and a little pressure is all that is required to lock a wagon.

In Fig. 5 is shown a modification employing a rotating cam shoe *c*, the cam shoe having a thin and a thick side and being inclined in the same manner as the shoe *a* previously described. In order to retain this cam shoe normally in the proper position and return it thereto, it is weighted at the shorter end, which result may be secured by making the casting hollow at 7 on the longer end, or otherwise, as by a weight 8 on the shorter end as shown in Fig. 6. In this construction the rod F is shown as sliding through lever E and having a yielding connection therewith by spring 9 so that the brake shoes are yieldingly applied to the wheel, a weaker spring 18 connected to the lever and rod being used for returning the brake shoes. In this construction, when the lever E is rocked by the pressure of the wagon upon the team, the brake shoes *c* are carried from the position shown in full lines in Fig. 5 to that shown in dotted lines, and the wheels draw upon the brake shoes and tighten the brake automatically as in the previous construction. When the wagon is backed, however, the pressure of the

wheels throws the shoes *c* over to the right from the position shown in dotted lines in Fig. 5, thus bringing the thinner part of the cam next the wheel and releasing the brake, the stop 4 stopping the sleeve G on the rod F in such a position that the shoes cannot be forced back to lock the wheels.

The construction shown in Figs. 1, 2, 3, 4, 5, and 6 provides a wagon brake which is wholly automatic in action, the action of the wagon and team applying and releasing the brake as required, so as to lock the wheel when the wagon presses upon the team and release the brake when this pressure ceases or the wagon is backed.

It will be understood that the requisite leverage upon the crank arms for applying the brake may be secured by any suitable construction. The construction shown in Figs. 1, 2, 3, and 4, in which the lever E is bent to form the part to which the push rod is attached, is simple and convenient, especially for use with the automatic arrangement there illustrated, but the same result may obviously be attained by other constructions provided with a lever and arm to which the actuating rod is connected.

It will be understood that in all modifications of my brake apparatus the length of the arms carrying the brake blocks and the point at which they are journaled will be varied in accordance with the size of the wheel. If the brake locks too easily or not easily enough, the journals should be changed so as to vary the point at which the blocks catch on the wheel, as will be obvious to one skilled in the art.

It will be obvious to those skilled in the art that many other modifications may be made in the construction and arrangement of brake shoes shown and the devices for bringing them into position for the application of the brake automatically by the wheels and for returning them to normal position, while employing the principle of the invention, and such modifications are within the invention.

What is claimed is—

1. The combination with brake shoes carried by crank arms pivoted at fixed points to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of means independent of the draft of the team for holding the brake shoes normally out of engagement with the wheels, means actuated by the pressure of the wagon upon the team for rocking the crank arms to throw the shoes into contact with the wheels, and means for limiting the movement of the brake shoes under the pressure of the wagon upon the team, whereby the pressing of the brake shoes upon the wheels in backing is avoided, substantially as described.

2. The combination with brake shoes carried by crank arms pivoted at fixed points to draw on the wheels in a line to secure the

5 tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of means independent of the draft of the team for holding the brake shoes normally out of engagement with the wheels, a push rod connected to said crank arms for rocking the crank arms to throw said shoes into contact with the wheels, connections for actuating said push rod by the pressure of the wagon on the team, and means for limiting the movement of the brake shoes under the pressure of the wagon upon the team, whereby the pressing of the brake shoes upon the wheels in backing is avoided, substantially as described.

3. The combination with brake shoes carried by crank arms pivoted at fixed points to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of means independent of the draft of the team for holding the brake shoes normally out of engagement with the wheels, a lever carrying said crank arms, a sliding actuating rod attached to said lever for rocking the lever to throw the shoes into contact with the wheels, connections for actuating said rod by the pressure of the wagon on the team, and means for limiting the movement of the brake shoes under the pressure of the wagon upon the team, whereby the pressing of the brake shoes upon the wheels in backing is avoided, substantially as described.

4. The combination with brake shoes carried by crank arms pivoted at fixed points to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of means independent of the draft of the team for holding the brake shoes normally out of engagement with the wheels, a sliding push rod connected to said crank arms for rocking the crank arms to throw said shoes into contact with the wheels, a member connected to said push rod and forced rearward by pressure of the wagon on the team, and a stop limiting the rearward movement of said member, whereby the pressing of the brake shoes upon the wheels in backing is avoided, substantially as described.

5. The combination with brake shoes carried by crank arms pivoted at fixed points to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of means independent of the draft of the team for holding the brake shoes normally out of engagement with the

wheels, a sliding push rod connected to said crank arms for rocking the crank arms to throw said shoes into contact with the wheels, a yoke sleeve mounted to slide on the pole, connections between said sleeve and the push rod, and a stop limiting the rearward movement of the yoke sleeve, whereby the pressing of the brake shoes upon the wheels in backing is avoided, substantially as described.

6. The combination with brake shoes carried by crank arms pivoted to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of crank arms 10 carrying said shoes, lever E extending downward from the axes of said arms, push rod F connected to said lever, a member actuated by the pressure of the wagon on the team connected to said push rod, a stop limiting the movement of said member under the pressure of the wagon on the team, whereby the pressing of the shoes against the wheels in backing is prevented, and a spring for returning the parts to normal position, substantially as described.

7. The combination with brake shoes carried by crank arms pivoted to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, and constructed and arranged to be released on the backward movement of the wheels, of arms 10 carrying said shoes, lever E extending downward from the axes of said arms, push rod F connected to said lever, yoke sleeve G on the pole connected to said push rod, stop 4 limiting the rearward movement of the sleeve G whereby the pressing of the shoes against the wheels in backing is prevented, and a spring for returning the parts to normal position, substantially as described.

8. The combination with carriers *b* and cam shoes *a* mounted to slide therein, of pivoted arms 10 carrying said shoe carriers, and arranged to draw on the wheels in a line to secure the tightening of the shoes by the forward movement of the wheels, push rod F connected to said arms, a member actuated by the pressure of the wagon on the team and connected to said push rod, a stop for limiting the rearward movement of said member under the pressure of the wagon on the team, whereby the pressing of the shoes against the wheels in backing is prevented, and a spring for returning the parts to normal position, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES A. WILLIAMS.

Witnesses:

J. A. PARK,

D. B. DENTON.