M. S. WOODWARD.

Wagon-Brake.

No 3,361. Patented Dec. 4, 1843.

Fig. 2

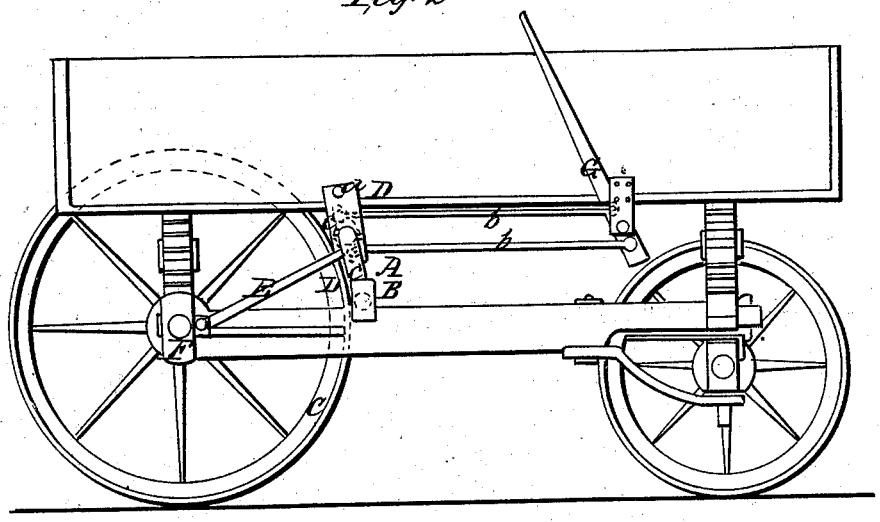
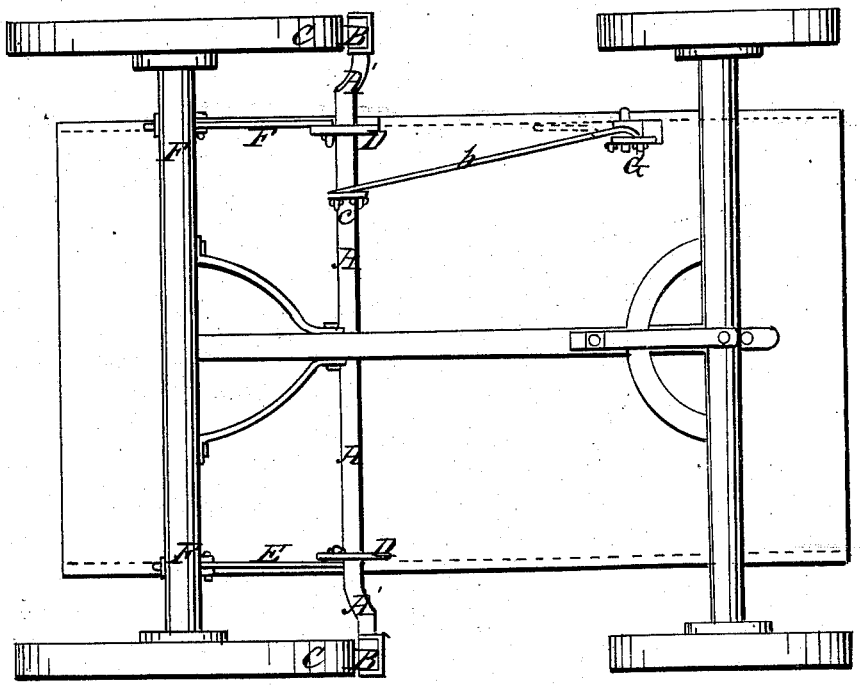


Fig. 1



UNITED STATES PATENT OFFICE.

MOSES S. WOODWARD, OF MARSHALTON, PENNSYLVANIA.

BRAKE FOR RETARDING CARRIAGES IN DESCENDING HILLS, &c.

Specification of Letters Patent No. 3,361, dated December 4, 1843.

To all whom it may concern:

Be it known that I, MOSES S. WOODWARD, of Marshalton, in the county of Chester and State of Pennsylvania, have invented a new and useful improvement in the manner of constructing brakes for the retarding of carriages of various descriptions in their descent on inclined portions of roads; and I do hereby declare that the following is a full and exact description thereof.

My improved manner of constructing the carriage brake is applicable to carriages either with or without springs, its design being to cause the lock pieces which are to bear against the wheels to press in the direction of their axes, notwithstanding any variation in the distance between the ends of the axles and the bottom of the body of the carriage, such variation being caused by the inequalities of the road; a regulation which is equally desirable in carriages upon springs, and in wagons, horse or ox carts, whenever their bodies have a vertical, vibrating, or rocking motion in their axles.

In the accompanying drawing, Figure 1, is a bottom view, and Fig. 2, a side elevation of a carriage with my apparatus attached thereto.

In the last figure, the hind wheel, and one side of the carriage, is considered as removed for the purpose of representing the operating parts the more distinctly.

A, A, is a rock shaft which is bent so as to form a crank at the parts A′, A′, and having the lock pieces B, B, on its ends, which pieces are made to bear against the wheels C C, by causing the shaft A, to revolve to the necessary distance. The rock-shaft has its bearings in two pieces of metal, D, D, which pieces are allowed some play lengthwise of the vehicle, being attached to the body of the carriage by round bolts, as at *a*.

E, E, are two radius bars which extend from the bearing pieces, D, D, of the rock-shaft, to the hind axle F, to which they are connected by hooks and staples, or in any other convenient manner. As the axle F, vibrates up and down, from the inequalities of the road, its ends will approach toward, or recede from, the body of the carriage, and the effect of the radius bars E, E, will be to preserve the distance from the rock-shaft to the axle unchanged, and the lock pieces will, therefore, in every position of the axle, be made to bear correctly upon the peripheries of the wheels. By hanging the bearing pieces D, D, upon bolts, the necessary play is given to allow the axle F, to vibrate vertically, without cramping. This arrangement, it will be seen, is applicable to all kinds of vehicles in which a vertical vibration is allowed to the axle, F, either from its resting on springs, or from its being connected with the body of the carriage by bolts, or in any other way which allows of this vertical, vibrating, or rocking motion; but such radius bars would be useless in those carriages in which the axle is permanently bolted to the body.

G, is the lever by which the rock-shaft is moved. This lever I connect with the rock-shaft by means of double connecting rods, *b*, *b*, passing into holes on the studs, or projecting pieces, *c*, *c*, on this rock shaft, and otherwise arranged as shown in the drawing.

In the foregoing description, the apparatus has been spoken of as applied to a vehicle having four wheels, but it may be employed with those having two only. It has been found to be particularly advantageous in its application to ox carts, and to other carts with axles having vertical play. In this case, the brake is made to act behind the wheels, while the construction and operation are the same in other respects with that above described.

Having thus fully made known the nature of my improvement on the carriage brake, what I claim therein as new, and desire to secure by Letters Patent, is—

The arrangement and combination with the rock-shaft and axle, of what I have denominated the radius bars, for preserving the distance unchanged between said rock-shaft and axle, notwithstanding the vertical vibration of the axle; and this I claim whether applied to vehicles with two or four wheels, and whether the respective parts be formed precisely in the manner herein set forth, or in any other in which the same result is attained by means substantially the same.

MOSES S. WOODWARD.

Witnesses:

THOS. P. JONES,

EDWIN L. BRUNDAGE.