

(No Model.)

P. Z. DAVIS.
LOCOMOTIVE DRIVE WHEEL.

No. 578,598.

Patented Mar. 9, 1897.

Fig. 1.

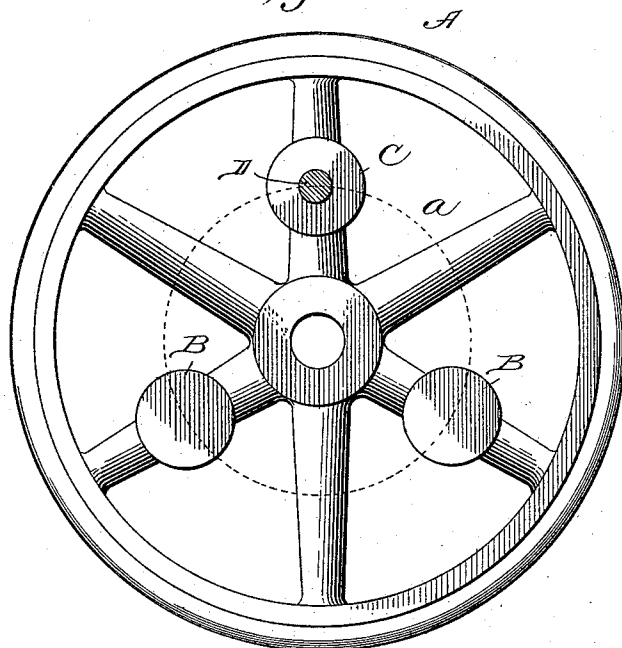
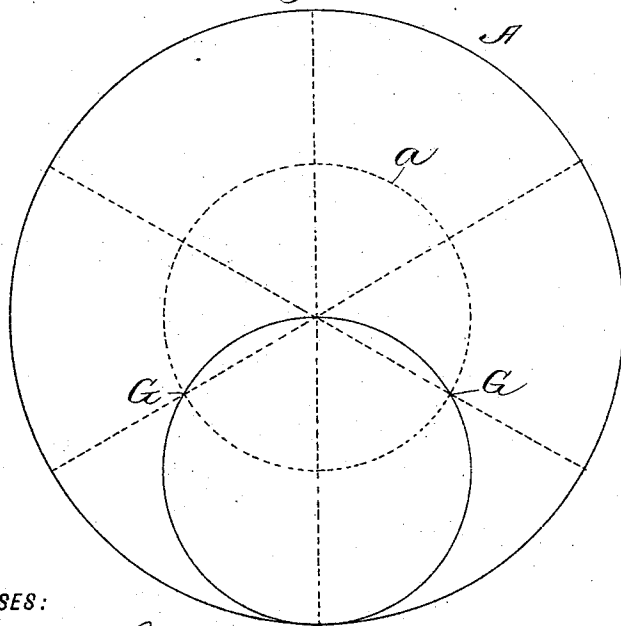


Fig. 2.



WITNESSES:

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LOCOMOTIVE DRIVE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 578,598, dated March 9, 1897.

Application filed August 21, 1896. Serial No. 603,516. (No model.)

To all whom it may concern:

Be it known that I, PHILIP Z. DAVIS, a citizen of the United States, residing at Lometa, in the county of Lampasas and State of Texas, have invented certain new and useful Improvements in Locomotive Drive-Wheels; and I do hereby 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.

This invention relates to driving-wheels for locomotives; and it has for its object to provide an approximately perfect balanced driving-wheel and thereby materially decrease the internal disturbances to the mechanism of the locomotive due to the present methods of counterbalancing in the driving-wheel the reciprocating and revolving parts thereof. This object I accomplish by equalizing the vertical effect of the normal forces exerted by the crank-pin and boss and counterweights as they move or travel through the path of a prolate or inflected cycloid, thus neutralizing their effect and reducing the hammer blow on the rail to zero.

To this end my invention, generally stated, consists in the arrangement and distribution of the weight of the crank-pin and counterweights and all other weights placed on the wheel in such manner that their vertical and horizontal forces will exactly balance each other at all times during the revolution of the wheel and thus entirely obviate the hammer blow given the rail at the point of instantaneous contact of wheel and rail, which is the center of rotation of wheel when the wheel is moving on the rail.

To accomplish the object of my invention, I arrange a series of weights within the circumference of the wheel, the weights of said series being arranged at equal angular distances apart relative to the circumference of the wheel and in a circle coincident with the center of the wheel.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a driving-wheel constructed according to my invention, and Fig. 2 a dia-

grammatic view illustrating the inflection-points in the path of movement of the weights.

Similar letters refer to similar parts throughout both the views.

Referring to the drawings, A represents a driving-wheel, and B C a series of weights arranged in the line of a circle (indicated by a dotted line and lettered *a*) around the wheel, said circle coinciding with the axis of the wheel and being formed or located in this instance midway the circumference and the axis of the wheel, and said weights being arranged at equal angular distances apart relative to the circumference of the wheel and preferably cast therewith, although they may be secured thereto in any desired or convenient manner.

In the series of weights above mentioned C represents the boss for the crank-pin D, said crank-pin and boss being equal to and forming one of the weights of the series of weights.

As an illustration of the application of my invention to a wheel of a given size take, for instance, a wheel forty-eight (48) inches in diameter, with crank-circle twelve (12) inches radius. I apply on the circle *a* two weights B of equal size, which, with the boss C and pin D, which together form another weight, are arranged at a distance of one hundred and twenty (120) degrees apart around the circle.

For wheels of other diameters or different radii for crank-circle, or when the above ratio of crank-circle and the circle or circumference of the wheel vary relative to each other the weight of the weights are varied, but are always spaced at an equal angular distance apart relative to the circumference of the wheel.

In Fig. 2 the points G represent the inflection-points on the path of the weights, said inflection-points in this instance being also one hundred and twenty (120) degrees apart, measured on the crank-circle.

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

1. A locomotive drive-wheel having a series of weights arranged on the line of a circle within the circumference of the wheel at equal

angular distances apart relative to the center of the wheel, whereby the vertical and horizontal forces generated during the revolution of the wheel are balanced, substantially as described.

5 2. A locomotive drive-wheel having three equal weights arranged on the line of a circle midway the center and circumference of the wheel and at equal angular distances apart relative to the center of the wheel, whereby the

vertical and horizontal forces generated during the revolution of the wheel are balanced, substantially as described.

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

PHILIP Z. DAVIS.

Witnesses:

HARRY S. ROHRER,
HELEN E. PARKER.