4 Sheets—Sheet 1.

R. WINANS.

Locomotive.

No. 4,812.

Patented Oct. 14, 1846.

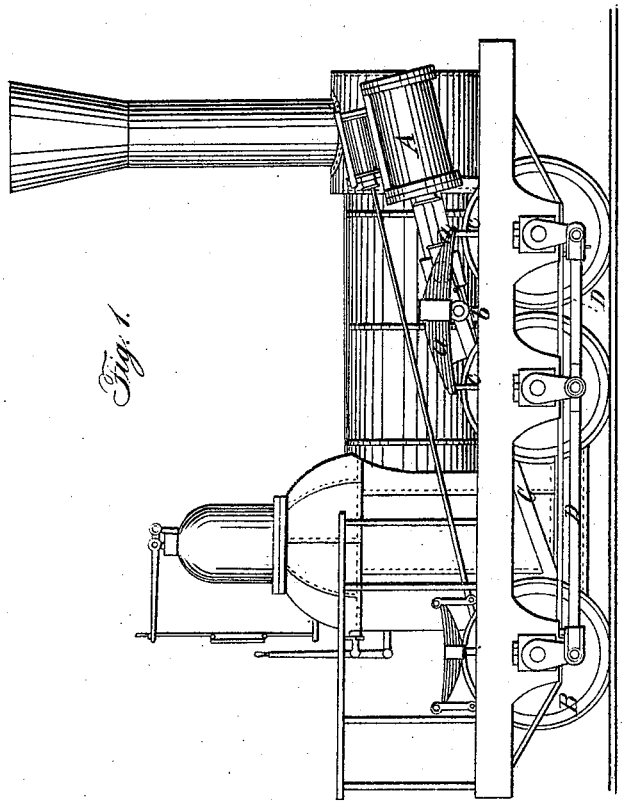

Fig. 1.

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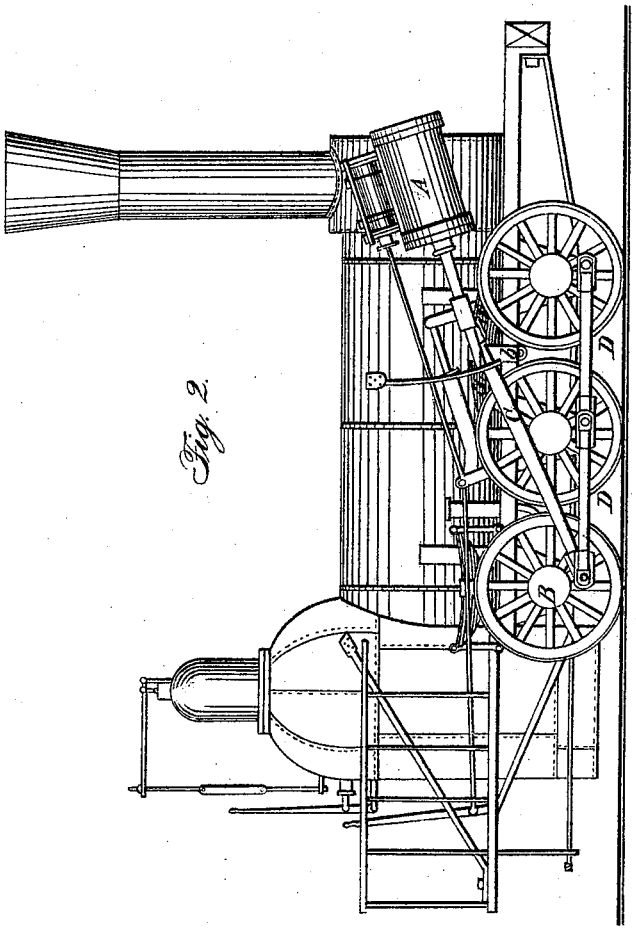

Fig. 2.

4 Sheets—Sheet 3.

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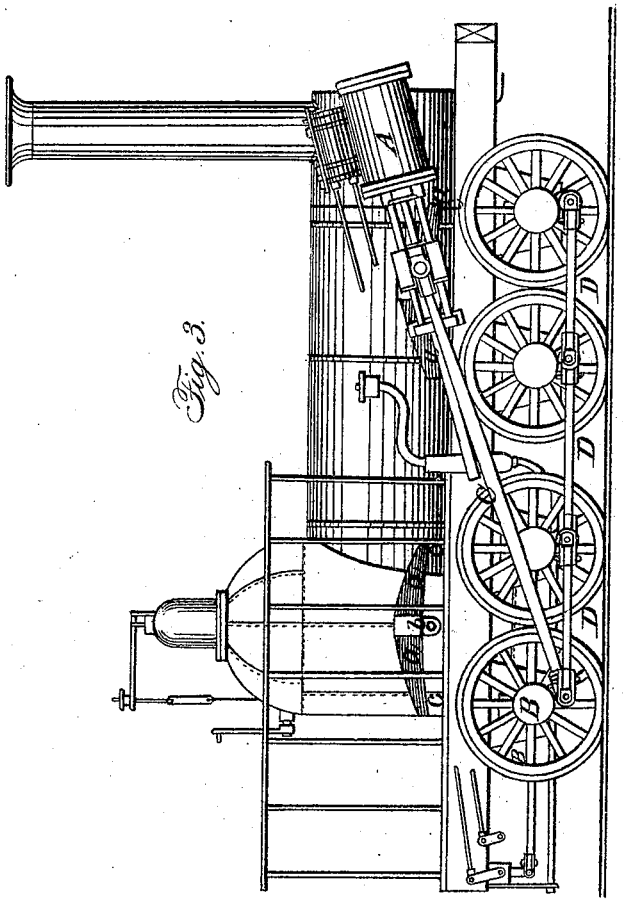

Fig. 3.

4 Sheets—Sheet 4.

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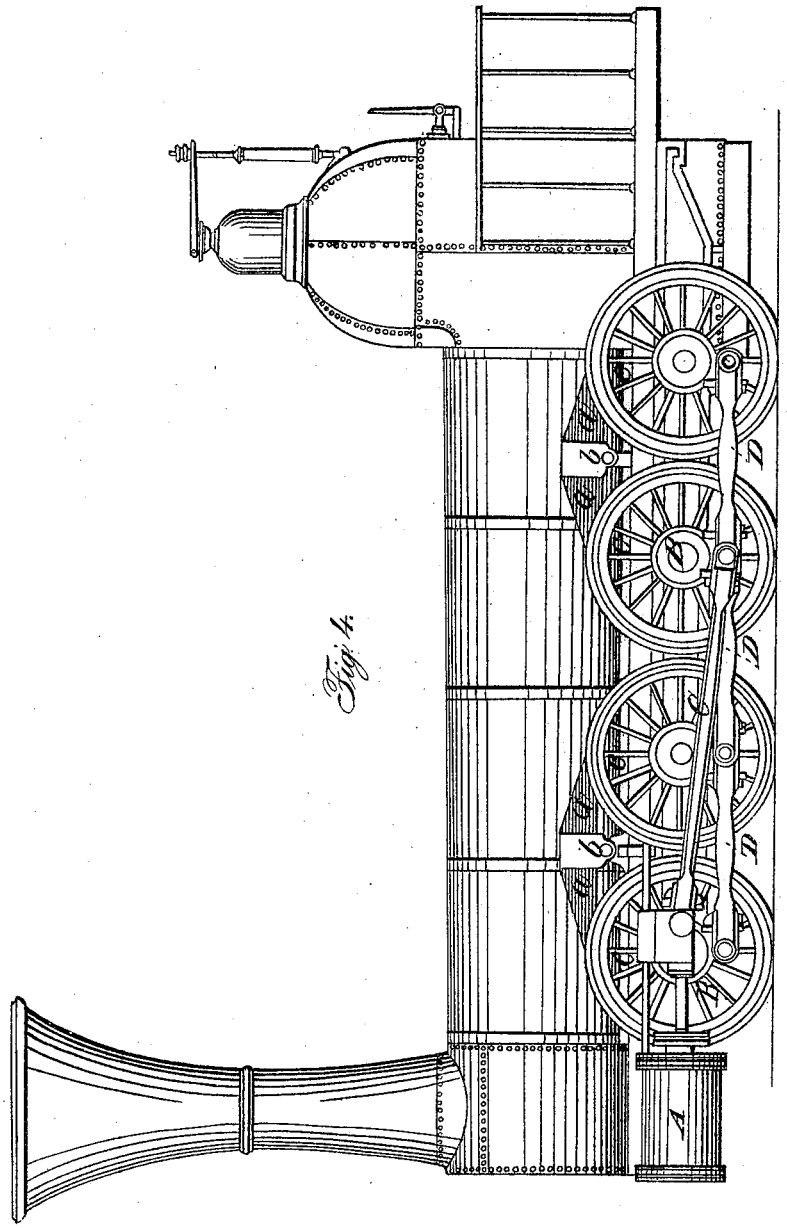

Fig. 4.

UNITED STATES PATENT OFFICE.

ROSS WINANS, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN LOCOMOTIVE-CARRIAGES.

Specification forming part of Letters Patent No. 4,812, dated Octob r 11, 1843.

To all whom it may concern:

Be it known that I, ROSS WINANS, of the city of Baltimore, in the State of Maryland, civil engineer, have made an improvement in the manner of constructing locomotive steam-engines to be used on railroads with six or eight driving-wheels; and I do hereby declare that the following is a full and exact description thereof.

In the combination and arrangement of some of its parts my improved locomotive steam-engine resembles one that was built by Mr. Hopkins Thomas with the six driving-wheels, and which was used on the Beaver Meadow Railroad; but his engine was found to be objectionable on account of its too great tendency to run off the road, to obviate which and to increase the number of driving-wheels and points of bearing on the rail from four to six or eight are among the objects of my improvement.

In the accompanying drawings I have represented my improved engine under two different modifications or modes of construction.

Figure 1 is an engine with six wheels, all of which are driving-wheels, two pairs of driving-wheels being in front of and one pair behind the fire-box. Fig. 2 is a similar engine with all the driving-wheels before the fire-box. Fig. 3 is an engine with eight wheels, all of which are driving-wheels, with the cylinders in an inclined position. Fig. 4 is a similar engine drawn to a larger scale, with the cylinders in a horizontal position, which position is preferred.

The motive power from the steam-cylinder A (in the accompanying drawings) is communicated directly to the pair of driving-wheels B by means of connecting-rods C operating on crank-pins on one pair of the said driving-wheels or cranks on their axles, the connecting-rods D D operating upon cranks on the other axles in a manner well understood, so as to make all six or eight wheels driving-wheels. The axles of the respective pairs of wheels are placed permanently parallel to each other, and to enable the wheels to arrange themselves in a position to pass readily around curves on the road or through switches a lateral or end play is allowed the axles when all the wheels are furnished with flanges. This lateral play of the axles and wheels may be obtained in various ways; but the mode which I prefer is to make the journals of the axles longer than the boxes in which they run, so as to allow of the requisite end-play; or the boxes may be allowed to play laterally for this purpose. To enable an engine with six or eight wheels and all the axles parallel to each other to run with facility upon curves of short radius and through switches, one of the two following devices may be allowed: First, a lateral play of about an inch to each axle may be allowed, or double that play on the middle axle or axles if the end ones have only the usual play; or, secondly, this lateral or end play may be dispensed with and the capacity of adaptation be still retained by forming the middle pair or pairs of wheels without flanges. To equalize the pressure on the respective driving-wheels, and consequently to distribute the weight or bearing of the locomotive on the rails on six or eight points, and the better to preserve the proper distribution of the weight on each of the wheels when passing over the uneven parts of the road, a vibrating spring such as is shown at *a a* in the respective drawings may be used. This vibrating spring turns on a fulcrum, *b*, below its center, and the rods *c c* bear on its ends and upon the upper boxes of the two contiguous driving-wheels. A device analogous to this, consisting of a vibrating lever and spring, has been used by Messrs. Eastwick and Harrison on a locomotive-engine for which they obtained Letters Patent. A similar device was also used by Mr. Hopkins Thomas. The axles of the respective pairs of wheels of Mr. Thomas's engine were also arranged permanently to each other, and lateral play was allowed to the axles and wheels, as herein described, for the purpose of promoting the easy passage through curves and turn-outs, and the steam-power was transmitted from the cylinder to the respective driving-wheels by means of cranks and connecting-rods, as herein described.

The above devices mentioned as having been used by Mr. Hopkins Thomas I do not consider as new, either taken individually or in their combination with each other, they having been used and combined with each other, as above remarked, by that gentleman in the construction of an engine with six propelling-wheels, but without producing thereby a machine possessing the advantages obtained by my improvement or capable of passing through

the curves and turn-outs of the road with the requisite ease, facility, and safety. By combining with the said devices the use of wheels with flanges of chilled cast-iron, a new and original combination is obtained, and the difficulty of using six or eight driving-wheels with their axles parallel to each other will be obviated without danger from running off the track and with the requisite facility of passing through curves and turn-outs, as I have experimentally ascertained. With the ordinary driving-wheels with wrought-iron flanges this would not be the case.

I do not intend to claim the use of driving-wheels for engines with flanges of chilled cast-iron as new when taken alone; but wheels with chilled cast-iron flanges are an element which, when combined with the other devices enumerated or with devices substantially the same and with six or eight driving-wheels, forms a new combination, which is a new and useful improvement. Chilled cast-iron flanges to the wheels which guide an engine on the track promote a more easy and safe transit through curves and turn-outs and along the entire road than would be the case were wheels with wrought-iron flanges used—an advantage which is valuable and important in proportion as the distance between the front and hind axles of an engine having its axles parallel is increased. The extreme hardness of the chilled cast-iron flange causes it to preserve its original and proper shape much better than a wrought-iron flange. This better preservation of the form, together with the extreme hardness and the smoothness of the chilled cast-iron flanges, insure their gliding off the rails instead of mounting them, and the engine is thereby guided along the track with greater safety and with less resistance to the moving power than could be done by wheels having wrought-iron flanges, all other things being equal.

Having thus fully set forth the nature of my improvement, what I claim, and desire to be secured by Letters Patent, is—

The employment of wheels with chilled cast-iron flanges, in combination with an engine having six or eight driving-wheels with axles parallel to each other, and accommodating itself to curves and turn-outs by any of the devices or modes herein described for that purpose, and having the power applied to all the axles by connecting-rods and cranks.

ROSS WINANS.

Witnesses:

JNO. H. B. LATROBE,

EDWIN L. BRUNDAGE.