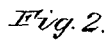
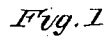


2 Sheets—Sheet 1.

TIPPING WAGON.

Patented Dec. 26, 1882.



INVENTOR:

INVENTOR:
H. C. Grapton
BY *Allen L.*

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.)

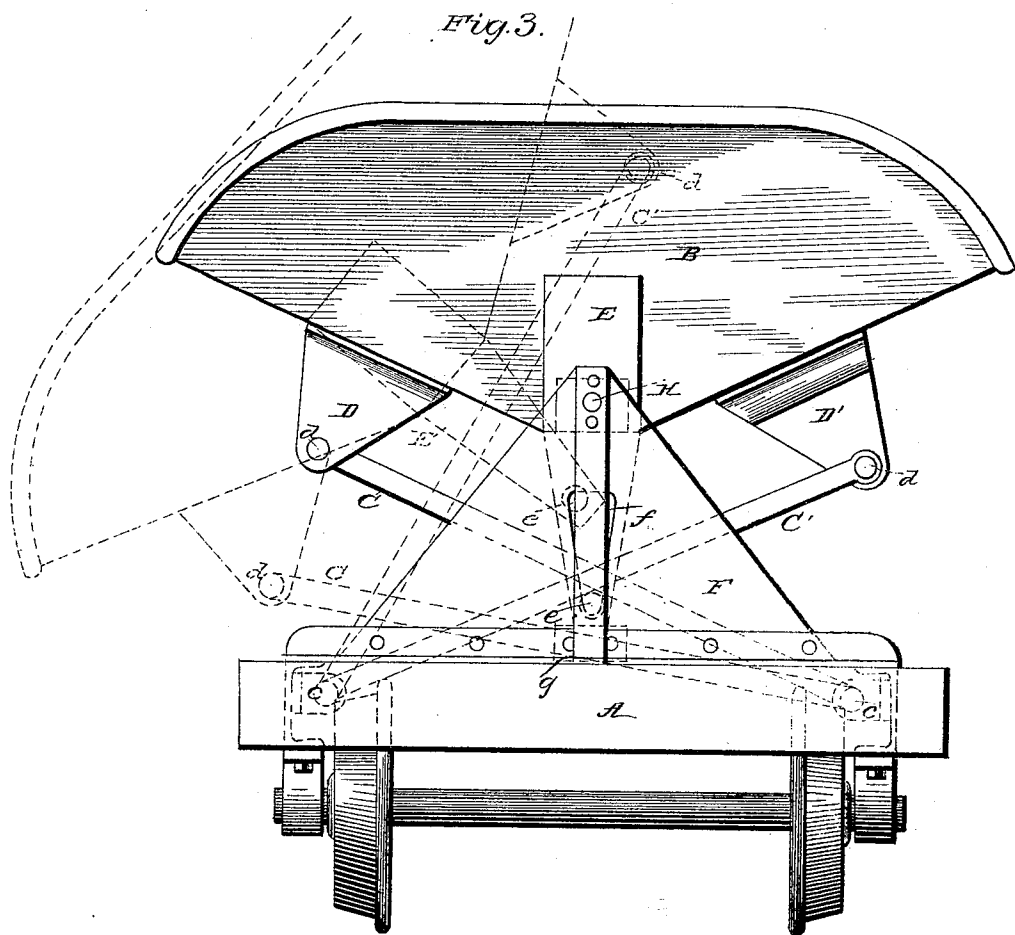
2 Sheets—Sheet 2.

H. GRAFTON.

TIPPING WAGON.

No. 269,663.

Patented Dec. 26, 1882.



WITNESSES:

Fred. G. Duerich
John A. Remon

INVENTOR:

H. Grafton
BY *Wm. L. E.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY GRAFTON, OF LONDON, COUNTY OF MIDDLESEX, ENGLAND.

TIPPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 269,663, dated December 26, 1882.

Application filed July 8, 1882. (No model.) Patented in England December 21, 1881, No. 5,582, and in Cape of Good Hope March 3, 1882, No. 11—235.

To all whom it may concern:

Be it known that I, HENRY GRAFTON, of Chancery Lane, London, in the county of Middlesex, England, have invented a new and useful Improvement in Tipping Wagons or Trucks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

10 The subject-matter of the application was patented in England on the 21st of December, 1881, No. 5,582, and subsequently at the Cape of Good Hope in March, 1882.

15 My invention relates to improvements in tipping wagons or trucks for transporting and discharging minerals and contractors' materials on railways and tramways.

20 The object of my present invention is the same as that of another invention described in a previous application for Letters Patent in the United States, filed on the 29th of May, 1882—viz., to enable the truck to be tipped at either side, (or end, as the case may be,) and to give to the truck-body a combined movement of translation and oscillation, whereby
25 to enable the load to be discharged quite clear of the rails, and even to a distance therefrom greater than is possible with an ordinary pivoted truck of the same height and form of body, the tipping and righting of the body being an
30 easy operation, requiring no gear liable to be fouled by dirt or to get out of order with rough usage.

35 My improved truck is simple in construction and capable of supporting the wear and tear to which this class of vehicle is ordinarily subjected.

40 My invention consists in a tipping wagon or truck, of which the body is supported upon sets (two or more in number) of radius rods or links, one set at or near each end of the body, each rod being pivoted by its opposite ends to opposite sides of the body and main frame, respectively, and the rods composing each set
45 being pivoted to contrary sides of the body and main frame, so as to cross one another. In tipping, the rods work upon the lower pivots as centers, the body being carried upon the upper pivots. To relieve the radius-rods when
50 traveling, I provide a downwardly-extending tail-piece at each end, which rests upon a suit-

able support on the main frame and takes a portion of the weight of the body, this tail-piece serving also to limit the tipping motion of the body, for which purpose it has a stud which can work up and down in a slotted standard fixed to the main frame, the dimensions of the slot limiting the motion of the stud, and consequently that of the body.

Figure 1 is a side elevation, Fig. 2 a plan with the body removed, and Fig. 3 an end elevation, of my tipping-truck, showing the radius-rods upon which the body is supported.

A is the main frame, and B is the body.

60 C C' are sets of crossed radius-rods, pivoted at their lower ends, *c*, in shoes fixed to the sides of the main frame, and at their upper ends, *d*, in brackets D D', secured to the bottom of the truck-body near the sides, each rod being pivoted to one side of the main frame and to the opposite side of the body. The angle at which
70 these rods cross one another may be varied by shifting the position of the pivots according to the motion it is desired to give the body, and I do not therefore confine myself to any particular angle, or to the precise arrangement or
75 relative position of the pivots shown in the drawings. Each set is preferably composed of a pair of rods, C' C', working together as one, both being pivoted to the same sides, and of a single rod, C, working between them and pivoted to the contrary sides to those to which
80 rods C' are pivoted. The rods C' are splayed apart to steady the body endwise, and are pivoted to contrary sides in the two sets, so as to steady both sides of the body equally, but
85 these double rods are not obligatory, as single rods might be used. Instead of the radius-rods being located directly beneath the body, as shown, they may be placed outside the ends of the body. A' are stays, tying together the
90 sides of the main frame to counteract the thrust of the radius-rods. I have shown the body as supported on two sets only of radius-rods, but an intermediate set or sets may be used, if necessary, to support the body at the middle, these
95 sets being identical with those described.

E are downwardly-extending arms, preferably one at or near each end of the body, in the center line thereof. Each arm has a stud, *e*, near its lower end, working in a slot, *f*, in a plate-standard, F, fixed transversely upon the

main frame, by which the tipping motion of the body is limited. The action will be clearly understood from the dotted lines, which show the extreme tipped position. This may, however, be varied by altering the length of the slot or the position of the stud on the arm. Other forms of stops—such as chains—might however be used to limit the tipping motion. When the body is in the horizontal position the lower end of arm E rests upon a spring-bracket or other support, *g*, fixed to the standards F, or to the main frame, to relieve the radius-rods of part of the weight of the loaded body. The standards F are suitably strutted to take end strains, and a pin, H, is passed through a hole in each standard F, into the end of the body to lock it in the horizontal position.

I have described only side-tipping trucks, from which the construction of end-tipping trucks will be readily understood, the only material alteration involved being the relative position of the main frame to the superimposed parts.

What I claim is—

1. In a tipping wagon or truck having its body supported on sets of crossed radial rods pivoted to the body and main frame, the combination, in each such set, of a single rod working between a pair of rods splayed apart and

acting together as one, for the purpose specified.

2. In a tipping wagon or truck having its body supported on sets of crossed radial rods pivoted to the body and main frame, the combination, with the body and main frame, of two sets of crossed radial rods, each set composed of a single rod working between a pair of rods splayed apart and acting together as one, the said double rods being situated at opposite sides of the truck, as and for the purpose specified.

3. The combination, with a wagon or truck body capable of receiving a combined movement of oscillation and translation, as described, of downward extensions or tail-pieces, each having a stud upon it, and slotted standards fixed on the main frame, in which the studs work, for the purpose of limiting the motion of the body, substantially as described.

The foregoing specification of my improvement in tipping trucks or wagons signed by me.

HENRY GRAFTON.

Witnesses:

JOHN DEAN,

THOMAS LAKE,

Both of 17 Gracechurch Street, E. C.