J. S. LAKE.

TRACTION ENGINE.

No. 186,582. Patented Jan. 23, 1877.

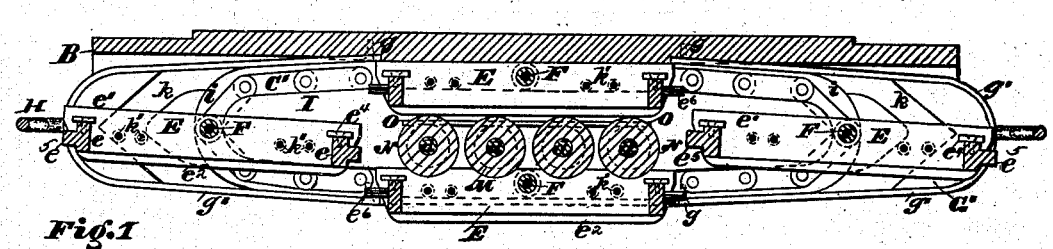

Fig. 1

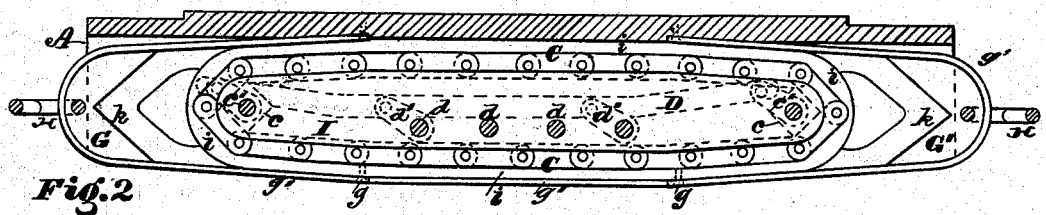

Fig. 2

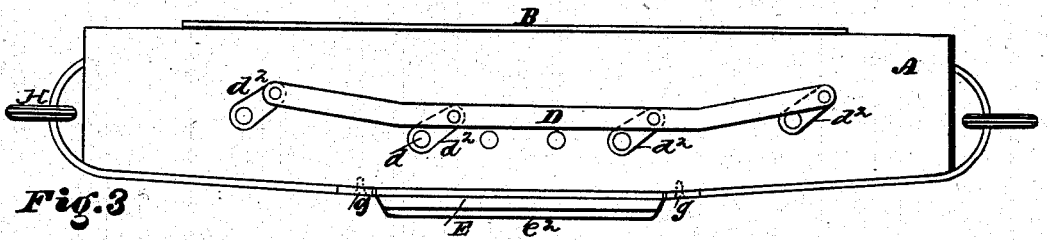

Fig. 3

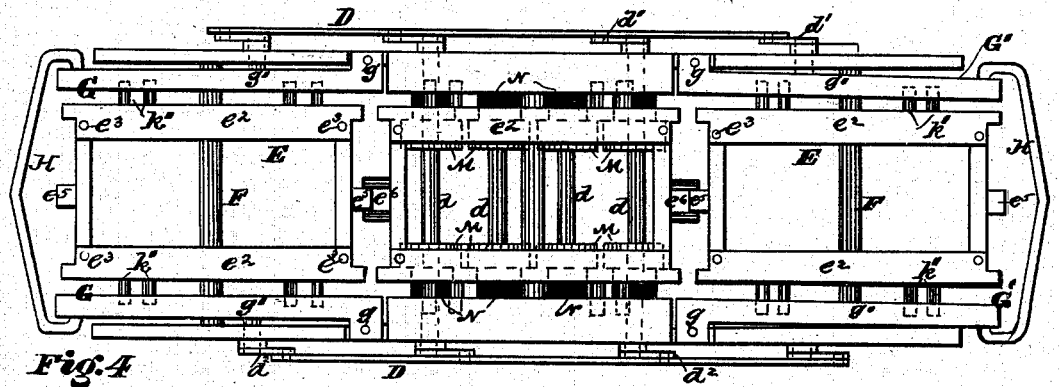

Fig. 4

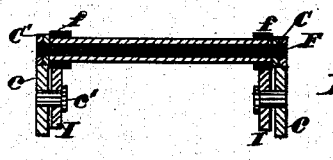

Fig. 5

Witnesses

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JESSE S. LAKE, OF SMITH'S LANDING, NEW JERSEY.

IMPROVEMENT IN TRACTION-ENGINES.

Specification forming part of Letters Patent No. **186,582**, dated January 23, 1877; application filed May 22, 1876.

To all whom it may concern:

Be it known that I, JESSE S. LAKE, of Smith's Landing, in the county of Atlantic and State of New Jersey, have invented a certain new and useful Improved Automatic Car; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical longitudinal section taken through the center of the machine. Fig. 2 is a vertical longitudinal section taken one side of the center of the machine. Fig. 3 is a side view. Fig. 4 is an under-side plan view, and Fig. 5 is a vertical cross-section of part of the machine.

My improvements have for their object to provide a machine or apparatus which will automatically lay down and take up its own tracks, so as to facilitate its passage over soft or newly plowed ground.

My improvements consist in the peculiar construction and combination of parts, as hereinafter more fully described.

Referring to the accompanying drawings, A A represent the two sides or runners of the machine, surmounted by a bed or platform, B. C C′ are endless chains, sustained in recesses or grooves formed in the inner sides of the runners A A, said chains passing over angular or spur wheels *c c* on shafts *c′*, by which said chains are driven when power is applied, as hereinafter more fully set forth. *d d* are other shafts extending between and passing through said runners. All of said shafts are furnished with cranks d^1 d^2, those on one side of the machine being set a different angle from those on the other, so as to avoid dead-centers, the cranks on each side, respectively, being connected by a rod or pitman, D. E E E are shoes attached to the chains C C′, and moved thereby so as, in succession, to be laid upon the ground, forming a track for the machine, and then be lifted up and carried over again for the same purpose. The said shoes are each secured to the chains C C′ by shafts F F, which pass through suitable openings in their sides, in such manner that the shoes will freely turn on said shafts. The shoes E are each composed of two end rails, *e e*, and two side rails, e^1 e^1, the latter having lateral extensions or bars e^2, which form tracks, the several parts being loosely jointed by pivots e^3 and lugs e^4. The end rails are provided, respectively, as shown, with blocks e^5 and grooved pieces e^6, forming guides, and serving to keep the shoes in line. G G′ are supplemental runners at each end of the machine, jointed to the sides A A′ by means of pivots *g*, which pass through the iron plates *g′*, with which they are shod, into said sides. H H are draft-rods, attached to the outer extremity of each pair of the runners G G′. The inner sides of these runners are cut away in concave form, so as to form circular grooves *i* between them and the adjacent ends of the plates I, between which plates and the sides A A′ the chains C C′ rest and travel. Said grooves *i* are continued, as shown, to form each an endless way coincident with the chains C C′, in which the ends of the shafts F F travel. *k k* are other grooves, shaped somewhat like the letter **V**, formed in the runners G, said grooves being for the guidance of the shoes E by means of friction-rollers *k′*, sustained on short shafts projecting laterally from the side rails of said shoes.

M and N are rollers on the shafts *d d* d^3, the rollers M being outside of the rollers N on the same shafts. The rollers M are those against which the side rails e^1 move when the shoes E are on the ground, while the rollers N are those on which the said shoes ride in passing along above the ground, the bars e^2 then resting on said rollers N. These rollers are of different diameters, M being the smaller, so as to allow a mud-shield, O, consisting of a metallic plate projecting from the plate I on each side, to project over and cover said roller M below the periphery of the rollers N. These rollers M and N being of different diameters, their surfaces will travel at different rates of speed under contact with the shoes E, and hence they are formed and turn separately on the shafts on which they are mounted.

The operation is substantially as follows: When the apparatus is worked by steam, power will be applied to one of the shafts *c*, producing a traveling motion of the chains C C′. The

shoes E E are carried along with said chain, moving forwardly above the rollers M, and backwardly below or when in contact with the ground beneath, thus propelling the apparatus forwardly over the soil beneath. The ends of the shafts F, which are provided with anti-friction rollers *f*, travel in the grooves *i*, while the short shafts on which the rollers *k'* are sustained pass out of said grooves on reaching the curved portion thereof, passing into the groove *k*, the effect being that when the shoes E reach the forward limit of their movement they are lifted vertically from the ground without being inverted, and are then passed to the back of the machine, where they are again dropped vertically without inversion. *l l* are shoulders or cleats, forming guides for the rollers *k*, on the rear of the shoes E, the forward and rear ends of said shoes being determined by the direction in which the machine is moving, it being adapted to travel in either direction, backwardly or forwardly.

The object of forming the shoes E of loosely-jointed parts, and of pivoting the supplemental runners G G' to the sides A A', is to facilitate turning either of said supplemental runners, swinging slightly out of a straight line, when its draft-rod or bail H is duly drawn upon, and the shoes E being correspondingly guided.

When horse or other animal power is to be used, the attachment will be made to one of the draft-rods H. By pulling on this the chains C C' will be caused to move, on account of the traction between the shoes E and the ground beneath the runners A A' and bed B, thus being drawn over an endless track which is automatically laid down and taken up as the machine progresses.

What I claim as my invention is—

1. In combination with the sides or runners having grooves *i*, the endless chains C C', located in said grooves, substantially as shown and set forth.

2. In combination with the endless chains C C', arranged and operated substantially as shown and described, the shoes E, connected to said chains by shafts F, and carried above and below the shafts *c* without being inverted in their passage, as set forth.

3. The supplemental runners G G', pivoted to the sides A A', substantially as described, to facilitate turning.

4. In combination with the chains C C' and shoes E, the latter having anti-friction rollers *k'*, the grooves *i* and *k*, and cleats or grooves *l*, for guiding said shoes, as set forth.

5. The shoes E, formed of end rails *e*, side rails e^1, and bars e^2, loosely jointed together, substantially as and for the purpose set forth.

6. In combination with the shoes E, the anti-friction rollers M N, of different diameters, mounted on the same shaft, substantially as shown and set forth.

7. In combination with the shoes E, the guide-blocks e^5 e^6, for keeping said shoes in line, substantially as shown and set forth.

8. In combination with the shoes E and rollers M N, the mud-guards O, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of April, 1876.

JESSE S. LAKE.

Witnesses:

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