(No Model.)

G. H. EDWARDS.

TRACTION TRUCK.

No. 385,449. Patented July 3, 1888.

Fig. 1.

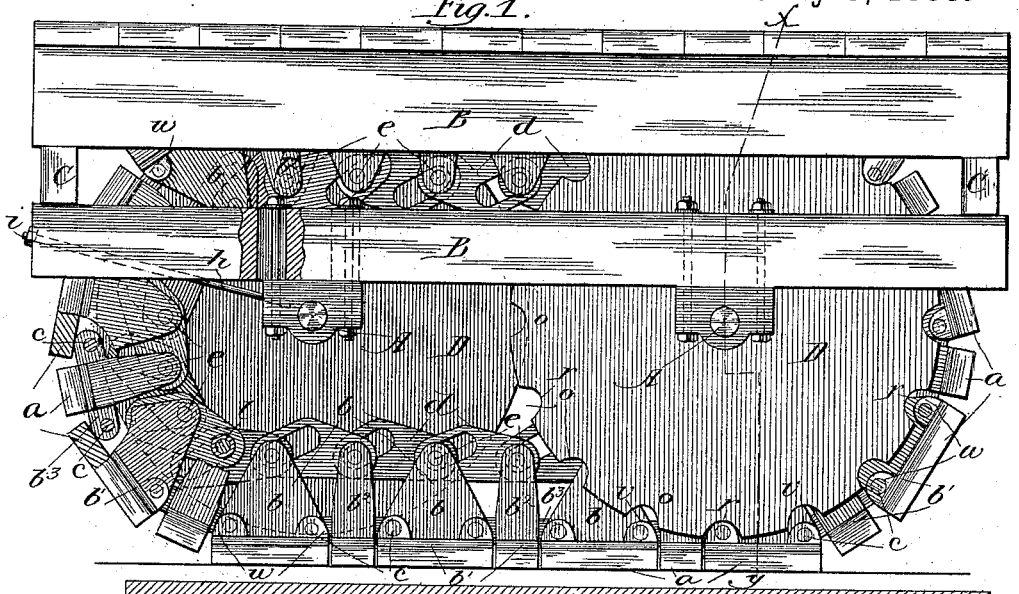

Fig. 2.

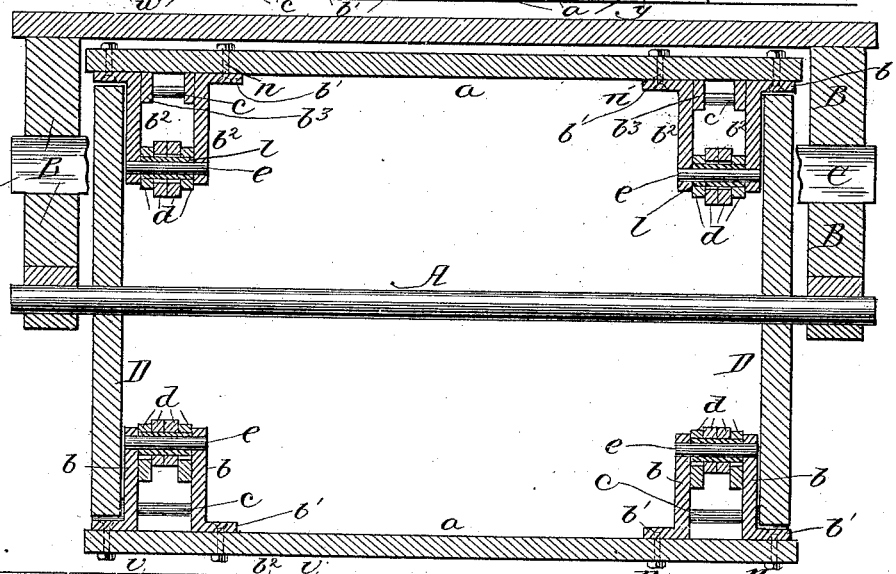

Fig. 3.

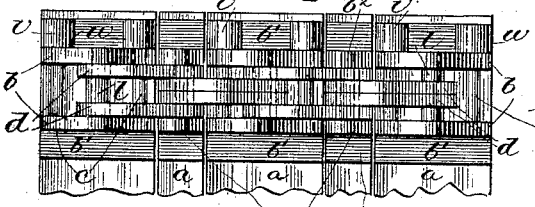

Fig. 4.

Fig. 5.

Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE H. EDWARDS, OF CHICAGO, ILLINOIS.

TRACTION-TRUCK.

SPECIFICATION forming part of Letters Patent No. 385,449, dated July 3, 1888.

Application filed May 31, 1887. Serial No. 239,821. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. EDWARDS, of the city of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Traction-Trucks, of which the following is a specification, reference being had to the accompanying drawings.

My invention pertains to the use of a folding self-supporting endless trussed chain belt, or endless apron of planks, in combination with any suitably-constructed wagon or truck, and is an improvement upon the invention described in Letters Patent of the United States, No. 232,395, granted to me September 21, 1880.

The object of my invention is to provide a truck or wagon adapted to carry heavy burdens, and be propelled by a steam-engine or other suitable motor over cultivated fields, swamp lands, or the common highways, for plowing, hauling, and various kinds of work usually performed by animal-power.

The nature of my invention consists, in part, in the means provided to prevent the driving-wheels of the truck from slipping on the track within the plank-apron.

It consists, further, in the means provided to allow each plank of the endless plank-apron to lie flat upon the ground before the wheels roll onto it, and until all the wheels of the truck have rolled over and off of it.

It consists, further, in the means provided to enable the chord-links of the braced chains and the pins within them to be made of larger dimensions than is practicable in the form of construction shown in my former patent.

It consists, further, in the means provided to facilitate the repair of the endless braced chains when they are badly worn and to lessen the friction and wear of some of their parts.

In the drawings, Figure 1 is a side view of my traction-truck. Fig. 2 is a sectional transverse view on the line *x y* of Fig. 1. Fig. 3 is a view of one of the braced chains secured to the planks, as seen from a point directly above it. Fig. 4 is a view of one of the chord-links, and Figs. 5 and 6 show variations in the construction of the chord-links.

A strong heavy frame of timbers, B B C, is mounted on the axles A A and the wheels D D.

a a are the planks of the endless plank-apron.

b b^2 are the brace-links of the braced chains.

c c are the outside pins of the braced chains.

d d are the chord-links of the braced chains.

e e are the inside pins of the braced chains, and *l l* are loose rollers on the inside pins.

The triangular brace-links *b* b^2 may be formed of cast or wrought metal, and should have the wing or flange *b'* formed upon the base side or the outer edge at an angle of about ninety degrees, as shown in Fig. 2. Holes are formed through the links *b* b^2 near their corners to receive the pins *c e*, and other holes are formed through the flanges *b'* to receive the bolts *n*, by which they are secured to the planks *a*. The brace-links are arranged in pairs, as shown, and two adjacent pairs are hinged together by one of the outside joint-pins *c*.

The chord-links *d* may be made of cast or wrought metal, and a hole, *d'*, is formed at one end, and the slot d^2 is formed near the other end, as shown in Fig. 4. The chord-links *d* are placed between the brace-links *b* b^2, as shown in Figs. 2 and 3, and one of the inside joint-pins, *e*, is inserted through the holes in the inside corners of a pair of brace-links, and, together with one of the loose rollers *l*, placed upon it and between the brace-links, is inserted through the holes *d'* of a pair of chord-links and the slots d^2 of an adjacent pair of chord-links, as shown, thus connecting the inside corners of the brace-links and forming a regular truss, and any force pushing from one of the joint-pins *c* toward the nearest chord-link will be resisted by the tensile strength of the chord-links and the stiffness of the three sides of the triangular strut-links *b*.

When power is applied to the driving-wheels of the traction-truck, so as to cause them to roll, the planks are laid upon the ground, the wheels roll forward on the planks, and the planks are picked up behind the wheels and carried up over and laid down in front of the wheels again in continuous succession. When the links are drawn out straight, the planks upon the ground and the braced chains form a regular truss-bridge under the wheels, and the ground vertically under the wheels will not receive any greater pressure than the ground under either of the planks between the wheels. The slots in the links *d* allow the folding trussed chain to fold together, so as to bend around the wheels, and the flanges

b' of the brace-links form a hard smooth track for the wheels to roll on.

The drawings show the plank-apron as containing two of the endless braced chains, and in each section of chain two of the brace-links b or b^2, and two of the chord-links d, but the number of links of either kind in a section may be varied as desired, and also the number of braced chains in the plank-apron may be varied. To prevent the driving-wheels from slipping on their tracks, the notches o are formed in their peripheries, and the pins c are made long enough to extend outward from one side of the braced chains, as shown in Fig. 3, and the loose cogs w (or they may be forged solid upon the pins) are secured to the pins and mesh into the notches o as the driving-wheels roll upon the flanges b'. This "rack-and-pinion" action between the driving-wheels and the plank-apron would cause the planks and wheels to act as a polygon as they revolve together over the ground, and to prevent this effect and cause each plank to lie flat upon the ground at all times when the wheels bear upon it the pins c are located above or inside the surface of the flanges b', which form the tracks for the wheels to roll upon, and the notches o are made so that the inner surface, r, of the notch shall bear upon the top surface, v, of the cog w, and the wheel will roll upon the top of the cog and lift the periphery of the wheel clear of the track while passing over the pins.

The third-mentioned purpose of the invention is secured by forming the slot d^2 of the chord-links at an angle to the longitudinal center $x\ x$ of the link, so that as the chord-links slide together their slotted ends will be carried farther away from the axle, so as to pass clear of the chord-links next in front of them in the same plane.

The strains and wear upon the chord-links tend to increase the distance between the extreme sides of the hole d' and the slot d^2, and that increase will allow the plank-apron to bend upward between the wheels above a straight line. To enable this wear and defect to be readily remedied, the loose rollers l, made of cast-iron or any suitable material, are placed on the pins e within the chord-links and between the brace links, as shown, and these rollers may be removed and other rollers having a larger radius upon one side or upon all sides may be substituted in place of them, so as take up that increase in length within the chord-links.

A larger number of axles or wheels may be used in the truck, and one wheel or each of the wheels may be fitted with notches and caused to operate as a driving-wheel.

The driving-wheels are shown as having their peripheries and the series of bearing-surfaces r located in the same plane; but the construction of the wheels may be varied in this respect, and the track and cogs upon the plank-apron may be adapted to the wheel accordingly, so that they will mesh with the two series of bearing-surfaces of the wheel respectively.

The truck may be inverted and secured in a stationary position, and power being applied to the axle or shaft A, any material placed on the upper surface of the plank-apron will be carried to the end and discharged.

To transform the truck into an endless conveyer, no change in the construction would be necessary except to vary the dimensions of the several parts.

The improvements herein described may be used when each of the brace-link triangles is composed of three stiff bars of metal joined together by the pins $c\ c\ c$, so as to form a triangle, as shown in Letters Patent of the United States, No. 124,042, granted to me February 27, 1872.

I have made the brace-links b of a single piece of metal about three-fourths of an inch thick, and the brace-links b^2 of a similar piece of metal riveted onto a strong bar of steel, b^3, of greater thickness, placed behind it, as shown in Figs. 1 and 2, b^3. The journals of one axle are made adjustable and provided with bolts h to draw the axles apart by turning the nuts i and vary the slackness of the plank-apron.

I claim as my invention—

1. In a traction-truck traveling on an endless track supported by a braced chain, the combination of a frame, B B C, two or more axles, A, wheels D, and a braced chain having curved or angled slotted links d on the inner chord and cogs W on the outer chord of said brace-chain.

2. In a truck or wagon, the combination of a frame, B B C, two or more axles, A, wheels D, brace-links secured to the planks a and jointed together by the pins c, and chord-links secured to the brace-links by the pins e, one or more of the driving-wheels being provided with notches in its periphery, and the pins c having the cogs w, of such shape and so located that they will mesh with the notches of the driving wheel or wheels.

3. In a traction-truck traveling on an endless track supported by a braced chain, the combination of the wheels D, the curved or angled slotted links d, the diagonal braces b, and the planks a.

4. The combination of a frame, axles, or shafts, wheels, longitudinal and diagonal brace-links joined together at one end by the pins c, and chord-links joined to the brace-links at their other ends by the pins e, the chord-links having the diagonal or curved slots d^2, as described.

5. The combination of longitudinal and diagonal brace-links joined together by the pins c, slotted chord-links joined to the brace-links by the pins e, and the loose rollers l.

GEORGE H. EDWARDS.

Witnesses:
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