Feb. 2, 1943. J. SEDORE ET AL 2,309,793

PROPELLING ATTACHMENT

Filed Nov. 1, 1940 2 Sheets-Sheet 1

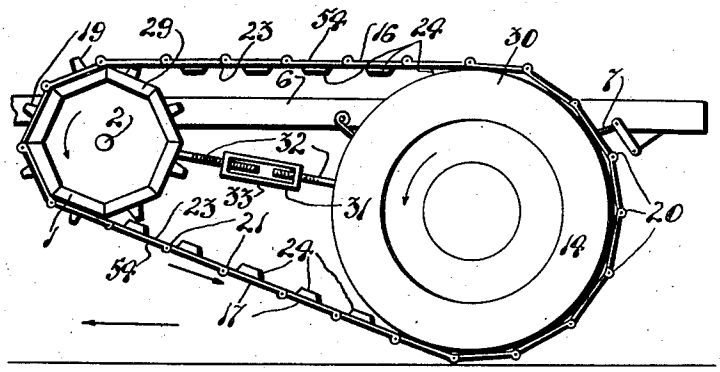

Fig. 1.

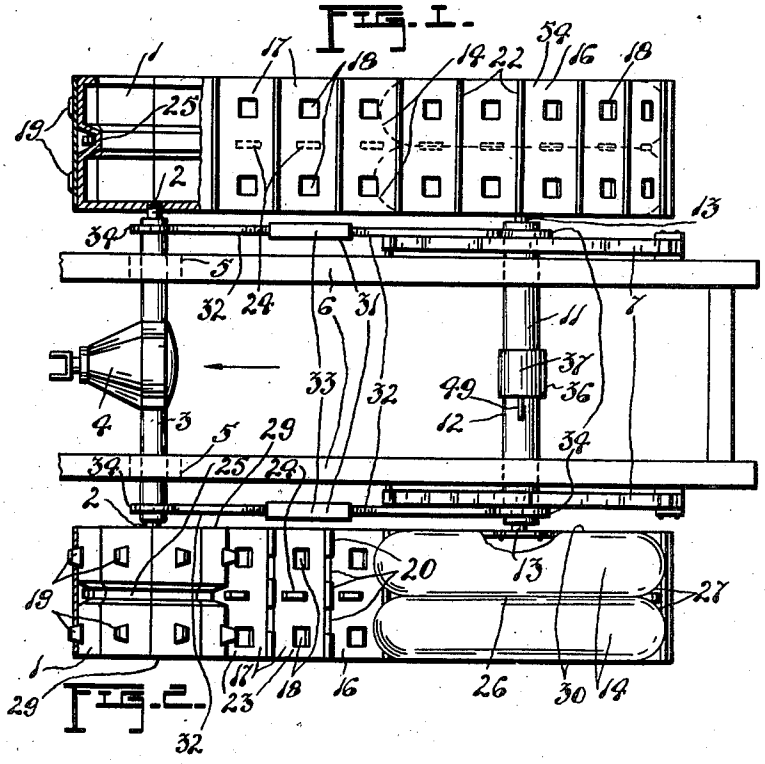

Fig. 2.

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Filed Nov. 1, 1940 2 Sheets-Sheet 2

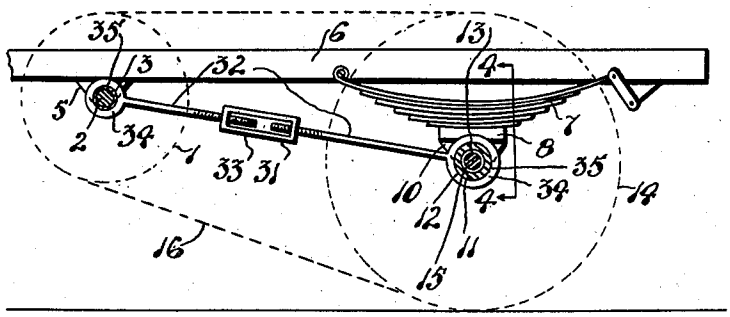

Fig. 3.

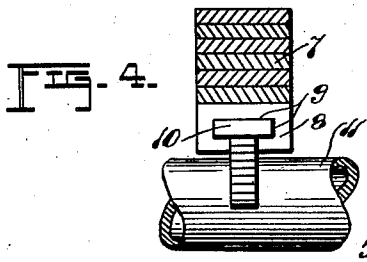

Fig. 4.

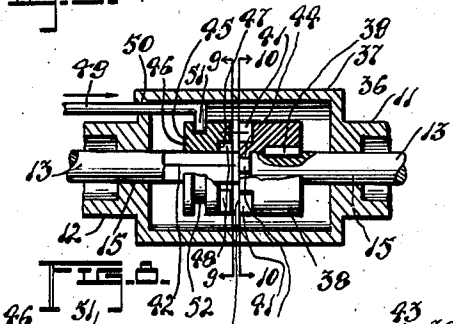

Fig. 8.

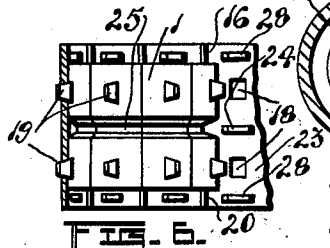

Fig. 6.

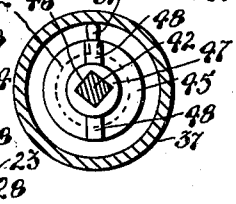

Fig. 9.

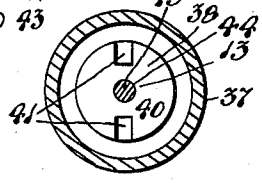

Fig. 10.

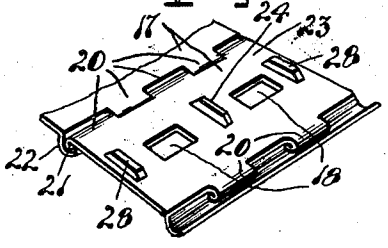

Fig. 5.

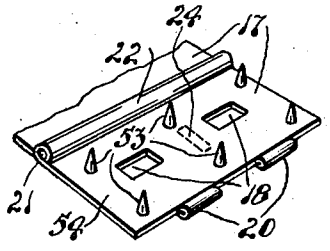

Fig. 7.

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Patented Feb. 2, 1943

2,309,793

UNITED STATES PATENT OFFICE

2,309,793

PROPELLING ATTACHMENT

James Sedore and Alexander A. Smith,
Grande Prairie, Alberta, Canada

Application November 1, 1940, Serial No. 363,948
In Canada July 2, 1940

5 Claims. (Cl. 180—9.1)

Our invention relates to improvements in propelling attachments for trucks and the principal object of our invention is to provide a device of the character herewithin described whereby such vehicles are enabled to travel over soft mud, deep snow and other various adverse conditions where the tractive effort afforded by the conventional means of propulsion is inadequate.

A further object of our invention is to provide a device of the character herewithin described in which an additional provision is made for travelling over slippery or icy ground.

A further object of our invention is to provide a device of the character herewithin described which does not interfere with the operation of the vehicle under normal circumstances.

A further object of our invention is to provide a device of the character herewithin described which is simple in structure and operation, and will not easily become damaged.

With the above more important objects in view and such other minor objects as may appear as the specification proceeds, our invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings, in which:

Figure 1 is a side elevation of our invention.

Figure 2 is a plan view thereof.

Figure 3 is a side elevation illustrating the structure of our wheel suspension mechanism and the adjustable equalizer rods used in connection therewith.

Figure 4 is a vertical cross-sectional elevation taken along the line 4—4 of Figure 3.

Figure 5 is a perspective view showing the underside of one of our traction plates.

Figure 6 is a plan view partially broken away, and illustrating a modified constructional arrangement of one of our traction plates.

Figure 7 is a perspective view of one of our traction plates showing a further modification thereof.

Figure 8 is a longitudinal cross-sectional elevation illustrating the detail of a clutch assembly shown in Figure 2.

Figure 9 is a vertical cross-sectional elevation taken along the line 9—9 of Figure 8.

Figure 10 is a vertical cross-sectional elevation taken along the line 10—10 of Figure 8.

In the drawings like characters of reference indicate corresponding parts in the different figures.

Our invention consists of a pair of polygonic sprockets 1 secured to the ends of the drive shafts 2 journalled in a suitable housing 3 and driven through the medium of a conventional differential assembly 4 from the engine of the vehicle. This housing is secured by means of a pair of mounting blocks 5 to the vehicle chassis 6 and it will be observed in this connection that its position has been shifted forwardly along the chassis to a certain extent and the associated propeller shaft (not illustrated) correspondingly shortened in order to accommodate the various remaining components of our invention hereinafter to be described.

Attached to the chassis 6 by means of the suspension springs 7 we provide a pair of recessed channels 8 in the longitudinally extending recesses 9 of which a pair of guide blocks 10 are freely slidable. The latter are secured to the housing 11 of a sub-axle assembly 12 and a pair of longitudinally aligned shafts 13 each carrying on its outer extremity a dual wheel 14 are journalled in suitable bearings 15 and freely rotatable therein.

A pair of endless tracks 16 designed to pass over the sprockets 1 and the wheels 14, each comprising a plurality of hingedly connected traction plates 17, each of the latter being in turn provided with a pair of spaced apertures 18 engageable with the outwardly projecting teeth 19 of the sprockets. The interconnection of the plates will clearly be apparent from the accompanying drawings and consists of a plurality of elongated eye-pieces 20 attached alternatively to and formed integrally with the adjacent edges of the plates, a suitable hinge pin 21 extending in turn, through each aligned row of eye-pieces and an arcuate protecting plate 22 secured along one edge thereof to the outside of each plate overlapping the connection thus made.

Our means for retaining the tracks 16 in position is provided upon the underside 23 of each of our plates 17, and comprises an inwardly extending lug 24 designed to engage a perimetrical groove 25 formed medially the width of the sprockets 1 and receivable in a further groove 26 of a V-shaped cross-sectional configuration existing between the abutting edges 27 of the wheels 14.

If desired, a plurality of further lugs 28 may be secured to the underside 23 of the plates as illustrated in the accompanying Figures 5 and 6, which are engageable with the sides 29 and 30 of our sprockets 1 and the wheels 14 respectively, whereby any misalignment tending to occur between the tracks 16 and such sprockets or wheels will of course, be greatly reduced.

The tension of our tracks may be adjusted by means of a pair of equalizer rods 31, each consisting of two longitudinally aligned shafts 32 connected together by a conventional turnbuckle 33 and extending between the housings 3 and 11, the free ends of the rods being of course enlarged as at 34 to accommodate a circular aperture 35 through which the aforementioned housings may freely pass.

Referring now to the accompanying Figures 8 to 10 inclusive, our means for manually controlling the independent or simultaneous rotation of the shafts 13 consists of a clutch assembly 36 housed within a cylindrical casing 37 provided upon the sub-axle 12, and comprises a rotatable disc 38 secured by means of the key 39 to one of the shafts and provided on the face 40 thereof with a pair of inwardly extending, diametrically opposed, rectangular recesses 41. The remaining of the shafts is equipped at the inner end thereof with a squared portion 42 terminated by a cylindrical boss 43, the latter being receivable in a circular recess 44 formed concentrically in the disc 38 to facilitate proper alignment of the two shafts.

A circular plate 45 provided with a square aperture 46 is freely slidable upon the shaft portion 42 and carries upon the face 47 thereof a pair of outwardly projecting, diametrically opposed dogs 48 engageable with the recesses 41 upon the manipulation of a slidable control rod 49. The latter is journalled in suitable bearings 50 formed in the housing 37 and carries at the inner end thereof a dog portion 51 projecting into an annular groove 52 extending around the circumference of the plate 45.

Referring now to the embodiment of our invention shown in the accompanying Figure 7, our plates 17 may if desired, be equipped with a plurality of outwardly projecting spikes 53 secured to the upper surfaces 54 thereof to increase the tractive effort of the vehicle when travelling over slippery or icy roads.

When our invention is in operation the vehicle may be said to provide its own roadbed by placing the tracks 16 in the path of travel of the wheels 14. Accordingly, the tractive effort thus obtained at the greatly enlarged point of contact of the vehicle with the road will facilitate travelling over mud, snow or ice, and the drive ratio from the engine to the wheels may of course be raised considerably by decreasing the diameter of the sprockets 1.

Furthermore, the fact that the tracks are driven from the sprockets eliminates any possibility of slippage such as may occur between such tracks and the wheels 14 if the latter were driven and we also wish to point out that the clutch assembly 36 should normally be disengaged to permit independent rotation of the shafts 13 when the vehicle is negotiating a curved path.

When, however, extremely adverse road conditions are encountered, this clutch may be engaged and both the tracks 16 driven at an equal rate of speed from the differential 4 in the same manner as though the wheels 14 were connected by a solid shaft.

Since many modifications can be made in the invention herein described and since the accompanying drawings have been prepared only to illustrate the relative arrangement and interaction of parts and not with regard to accuracy of dimensions for manufacturing purposes which in view of this disclosure we consider to entail merely mechanical skill together with the skill of the mechanical draftsman, and since many apparently widely different embodiments of this invention may be made within the scope of the accompanying claims without departing from the spirit and scope of the same, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense and we desire only such limitations placed thereon as justice dictates.

What we claim as our invention is:

1. A propelling attachment for trucks and like vehicles comprising in combination a pair of sprockets secured to the drive shafts of said vehicle, a sub-axle and a pair of dual wheels thereon, a pair of endless tracks each comprising a plurality of hingedly connected traction plates having a plurality of apertures formed therein, designed to engage the teeth of said sprockets, a plurality of inwardly projecting lugs secured to the underside of said plates, said lugs engaging a perimetrical groove formed medially the width of said sprockets and a further V-shaped groove existing between the abutting perimetrical edges of said dual wheels.

2. The device as defined in claim 1 in which said sprockets are of a polygonic configuration, said plates being designed to contact progressively the several sides thereof.

3. A propelling attachment for trucks and like vehicles comprising in combination a pair of sprockets secured to the drive shafts of said vehicle, a sub-axle and a pair of dual wheels thereon, a pair of endless tracks each comprising a plurality of hingedly connected traction plates having a plurality of apertures formed therein designed to engage the teeth of said sprockets, a plurality of inwardly projecting lugs secured medially to the underside of said plates, said lugs engaging a perimetrical groove formed medially the width of said sprockets and a further V-shaped groove existing between the abutting perimetrical edges of said dual wheels, a plurality of further inwardly projecting lugs secured to the underside of said plates and near the edges thereof, said last mentioned lugs being designed to contact the sides of said sprockets and said wheels.

4. In association with the device defined in claim 1, means for increasing the tractive effort of said plates comprising a plurality of outwardly projecting spikes secured to the upper surface thereof.

5. In association with the device defined in claim 3, means for increasing the tractive effort of said plates comprising a plurality of outwardly projecting spikes secured to the upper surface thereof.

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