June 10, 1924. 1,497,327

B. F. CHILDERS

TRACTOR

Filed Feb. 5, 1923 4 Sheets-Sheet 1

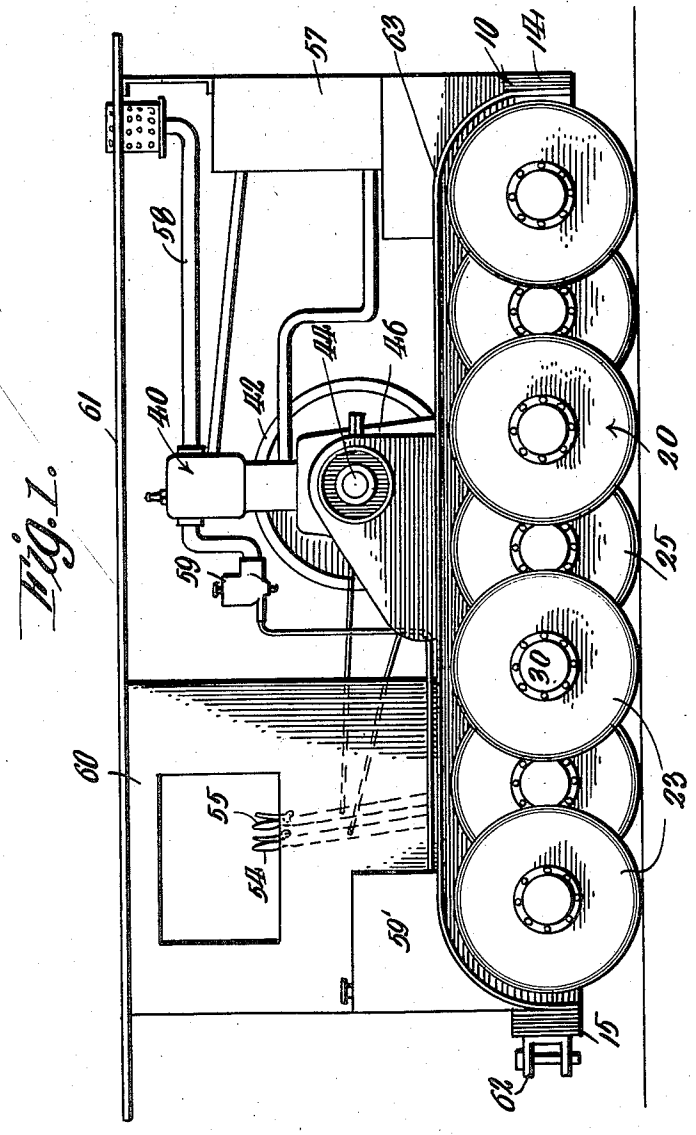


Fig. 1.

WITNESSES

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Filed Feb. 5, 1923 4 Sheets-Sheet 2

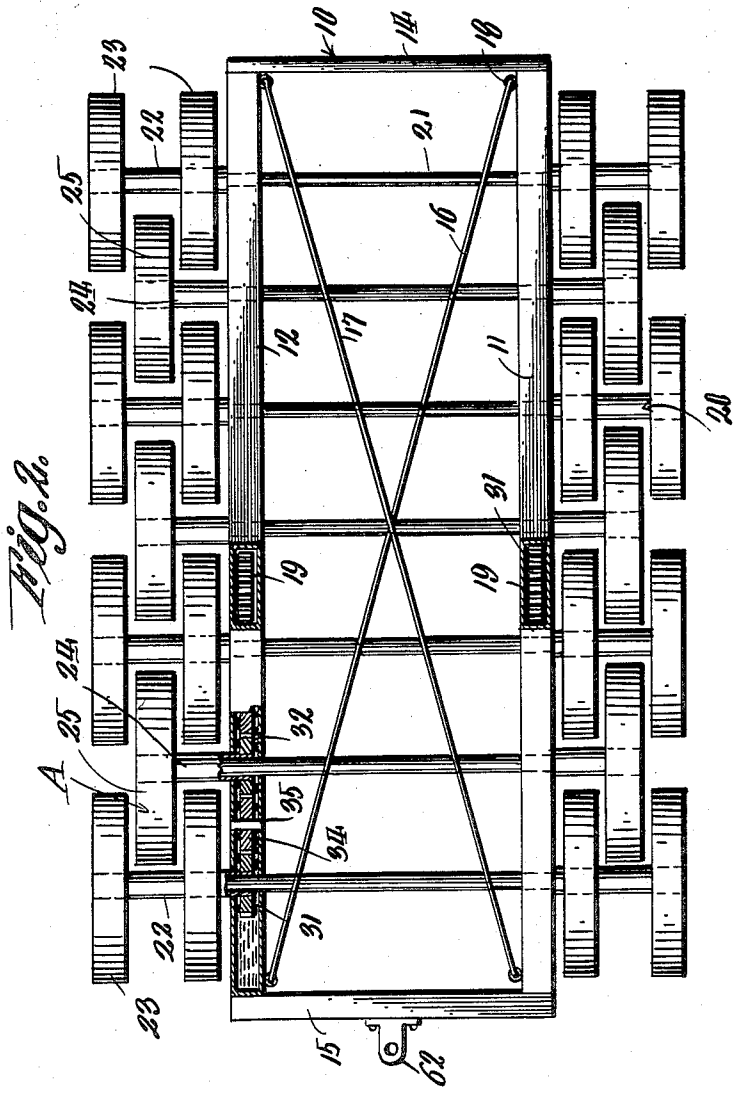


Fig. 2.

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Filed Feb. 5, 1923 4 Sheets-Sheet 3

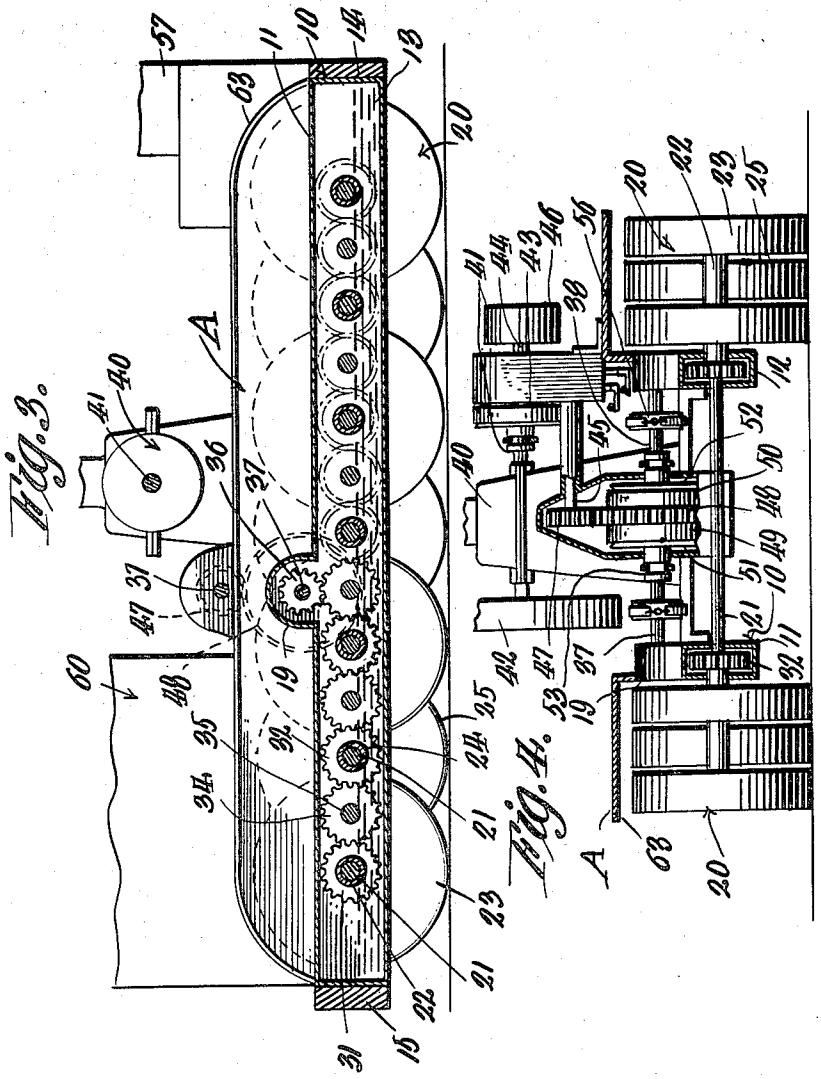


Fig. 3.

Fig. 4.

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TRACTOR

Filed Feb. 5, 1923 4 Sheets-Sheet 4

Fig. 5.

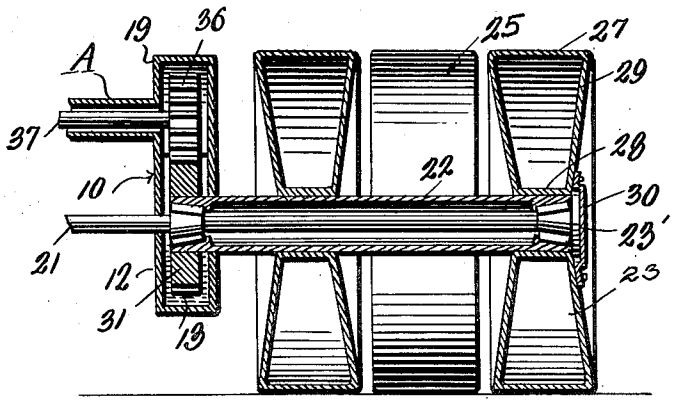


Fig. 6.

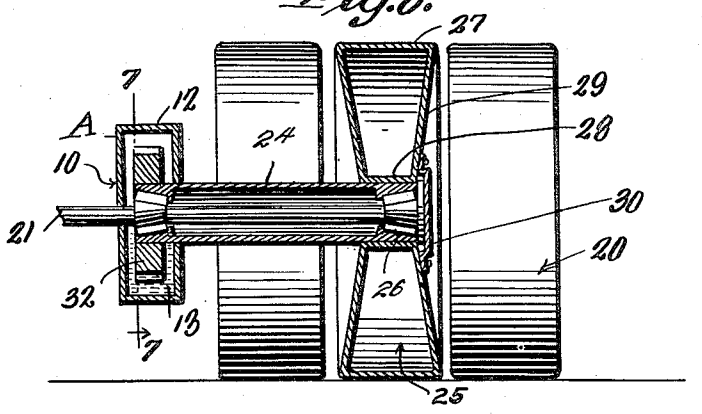
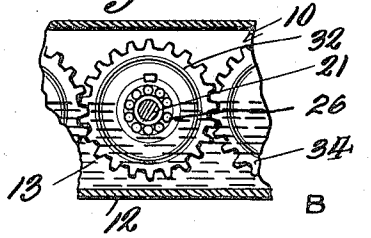


Fig. 7.



WITNESSES

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Patented June 10, 1924. 1,497,327

UNITED STATES PATENT OFFICE.

BERY F. CHILDERS, OF EDGEMONT, SOUTH DAKOTA.

TRACTOR.

Application filed February 5, 1923. Serial No. 617,124.

To all whom it may concern:

Be it known that I, BERY F. CHILDERS, a citizen of the United States, residing at Edgemont, in the county of Fall River and State of South Dakota, have invented certain new useful Improvements in Tractors, of which the following is a specification.

This invention relates to tractors of the crawler type, and the primary object of the invention is to provide an improved tractor embodying a plurality of staggeredly arranged drive wheels disposed throughout the entire length of the tractor, thereby giving the tractor a great amount of stability and tractive surface.

Another object of the invention is to provide an improved tractor embodying a frame, a plurality of transversely extending dead axles carried by the frame, a plurality of drive wheels carried by the axles disposed in novel arrangement in relation to each other, and novel means for driving said wheels.

A further object of the invention is to provide novel means for mounting the drive gears for the drive wheels on the tractors, said means embodying longitudinally extending oil receiving housings in which the gears are adapted to be placed, the housings forming a part of the tractor frame.

A further object of the invention is to provide novel means for permitting the sets of drive wheels on each side of the tractor frame to be driven independently of each other, when so desired, in order to facilitate the turning and steering of the tractor.

A still further object of the invention is to provide an improved tractor of the crawler type, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings.

Figure 1 is a side elevation of the improved tractor constructed in accordance with this invention.

Figure 2 is a plan view of the chassis of my improved tractor, parts thereof being shown in section.

Figure 3 is a longitudinal section through the improved tractor, showing the novel means for mounting the drive gears for one set of the drive wheels in the oil housings.

Figure 4 is a transverse section through the improved tractor.

Figure 5 is an enlarged fragmentary transverse section through a portion of the tractor illustrating the mounting of one of the axles with a pair of drive wheels and illustrating the means for driving the wheels.

Figure 6 is a similar section showing the means for mounting one of the axles which carries a single wheel.

Figure 7 is an enlarged fragmentary longitudinal section taken on the line 7—7 of Figure 6 illustrating the means for connecting all of the drive wheels together.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved tractor, which includes the frame 10, the running gear 20, the prime mover and associate parts 40, and the driver's cab 60.

The frame 10 includes especially a pair of spaced parallel disposed longitudinally extending housings 11 and 12, formed of suitable material and strength, so as to form the side beams for the frame. These housings 11 and 12 are adapted to receive a suitable lubricating oil 13, for a purpose, which will be hereinafter more fully described. As shown the terminals of the housings 11 and 12 are connected by front and rear transversely extending beams 14 and 15 and if so desired the housings 11 and 12 can be braced at different points throughout their length by suitable brace bars or beams.

Diagonally extending truss rods 16 and 17 are provided, for the frame and as shown these truss rods 16 and 17 are connected to suitable eyes 18 secured to the inner faces of the housings 11 and 12 adjacent to the terminals thereof. The housings 11 and 12 at a suitable point intermediate their ends are provided with upwardly projecting relatively small gear housings 19, for a purpose, which will also be hereinafter more fully described.

The running gear 20 comprises a plurality of transversely extending dead axles 21 and these axles 21 extend through the housings 11 and 12 as clearly shown in Figures 4, 5 and 6. As clearly shown in Figure 2 of the

drawings some of the dead axles 21 are formed relatively longer than other of the axles and the relatively short dead axles are disposed intermediate the relatively long dead axles.

The relatively long dead axles 21 have mounted on their terminals elongated bearing sleeves or hubs 22 and suitable roller bearings 23′ are disposed intermediate the axles 21 and the elongated sleeves or hubs 22. These elongated sleeves or hubs 22 have mounted thereon in spaced relation drive wheels 23 and it is obvious that when the sleeves are turned, that the drive wheels 23 will be rotated therewith.

The relatively short dead axles 21 have mounted on their terminals relatively short drive sleeves or hubs 24 and these hubs or sleeves 24 have secured thereto in any preferred manner wheels 25 which are disposed directly between the wheels 23 carried by the elongated sleeves or hubs 22. These relatively short sleeves or hubs 24 are also mounted upon suitable roller bearings 26.

The wheels 23 and 25 are all of the same construction and it is preferred that the same be made of metal; although it is obvious that the wheels can be made of other material if so desired. Each of the wheels include an annular rim 27, a hub 28 and concavo-convex shaped connecting disk flanges 29. The outer wheels 23 and 25 can carry suitable hub caps 30 if so desired.

The inner terminals of all of the sleeves or hubs 22 and 24 extend into the housings 11 and 12 and the housings can be provided with suitable bearings for supporting the sleeves if so desired. The relatively long sleeves or hubs 22 have secured to their inner ends drive pinions 31 while the relatively short sleeves or hubs 24 have secured to their inner ends drive pinions or gears 32, which are substantially the same size as the gears 31. These gears 31 and 32 are disposed in spaced relation to each other and are connected by idle pinions or gears 34 which can be mounted upon suitable stub axles or shafts 35 mounted in the housings 11 and 12. The upwardly projecting housings 19 have mounted therein drive gears 36 which mesh with either the drive gears 31 or 32 and in this instance, the drive gears 36 are shown meshing with the drive gears 31 carried by certain of the elongated sleeves or hubs 22. These drive pinions 36 are keyed or otherwise secured to inwardly extending shafts 37 and 38, which are driven, by the prime mover 40, which will now be described.

The prime mover 40 is mounted on the frame 10 in any preferred way and can be of any desired type. By way of example, the prime mover 40 has been shown to be of the internal combustion type and is provided with a main drive or crank shaft 41 which can have mounted thereon a suitable fly wheel or the like 42. This shaft can be connected by means of a suitable clutch 43 with a counter shaft 44, which is in turn connected in any preferred way with a second counter shaft 45. The counter shaft 44 has keyed thereto a pulley 46, whereby extraneous mechanisms can be driven by the prime mover 40 when so desired. The second counter shaft 45 has keyed or otherwise secured thereto a relatively small drive pinion 47 which meshes with a relatively large drive gear 48. The opposite sides of this drive gear 48 has connected thereto suitable oppositely disposed clutch sections 49 and 50, which are adapted to be engaged by sliding clutch sections 51 and 52 respectively which are splined or otherwise secured to the shafts 37 and 38. These clutch sections 51 and 52 are provided with suitable shifters 53, which can be operated in any preferred manner from the driver's cab 60 and if desired these shifters 53 can be operated levers 54 and the clutch section 43 can be operated by a suitable lever 55.

From the preceding description it can be seen that all of the drive wheels 23 and 25 can be driven in the same direction and owing to the clutches 51 and 52 the sets of drive wheels disposed on opposite sides of the frame can be driven independently of the other, so as to facilitate the turning and steering of the tractor. Suitable brake drums and bands 56 can be disposed upon each of the shafts 37 and 38 in order to bring about the stopping of the vehicle if so desired. The prime mover 40 is provided with the usual radiator 57, and this radiator is connected with the prime mover in the ordinary or preferred way. The engine or prime mover is also provided with suitable type of exhaust 58, and carburetor 59 and supply fuel tank 59′.

The driver's cab 60 can be of course of any desired construction and is arranged on the frame 10 in any preferred way and the entire top of the tractor can be provided with suitable deck or top 61, so as to act as a sun shade.

The rear transverse beam 15 of the frame 10 can be provided with any conventional form of draw bar 62, as shown in Figures 1 and 2 of the drawings.

Referring back to the wheels 23 and 25, it is to be understood that the rims can be provided with any preferred type of cleats if so desired, so that the tractor can obtain a firm grip upon the ground over which the same is traveling.

If so desired fenders 63 can be provided for the ground and drive wheels 23 and 25 and by referring to Figures 1 and 3 of the drawings it can be seen that these fenders are carried by the frame of the tractor and extend the entire length thereof.

From the foregoing description it can be seen that an improved tractor has been provided of exceptionally simple and durable construction, which will effectively operate over all kinds of surfaces, and efficiently perform the various kinds of work for which it is intended.

Changes in details may be made without departing from the spirit or the scope of the invention.

Having thus described my invention what I claim as new is:—

1. In a tractor, a frame, a plurality of equi-distantly spaced dead axles carried by the frame and disposed throughout the entire length thereof, certain of the axles being longer than the others, relatively long sleeves rotatably mounted upon the terminals of the relatively long axles, a pair of spaced drive and ground wheels secured to each sleeve, a relatively short sleeve rotatably mounted upon each terminal of the relatively short dead axles, a single wheel mounted upon each relatively short sleeve and disposed intermediate the pair of wheels carried by the relatively long sleeves, and means for synchronously operating all of the sleeves in the same direction.

2. In a tractor, a frame including hollow longitudinally extending side members, diagonally extending cross truss rods connected to the side members, a plurality of equi-distantly spaced dead axles carried by and extending through the side members, staggeredly arranged drive and ground wheels carried by the terminals of the dead axles, a prime mover, and means for driving the drive and ground wheels from the prime mover.

3. In a tractor, a frame including a pair of spaced longitudinally extending side housings, end beams secured to the terminals of the housings, a plurality of equi-distantly spaced dead axles carried by the frame and extending through the side housings, rotatable sleeves mounted upon the terminals of the dead axles, the inner terminals of the sleeves extending into said housings, intermeshing gears disposed in said housings for driving the sleeves in the same direction, ground and drive wheels carried by the sleeves, and a single power plant for actuating said gears.

4. In a tractor, a frame including a pair of longitudinally extending side housings for the reception of oil, end members carried by the terminals of the side housings a plurality of equi-distantly spaced transversely extending dead axles carried by the housings, sleeves rotatably mounted upon the terminals of the dead axles and extending into said housings, pinions secured to the inner ends of the sleeves and disposed in said housings, idle pinions rotatably mounted in said housings and meshing with the gears carried by said sleeves, a pair of drive shafts, drive pinions carried by the terminals of the drive shafts for engaging certain of the drive gears carried by the sleeves, a prime mover, a main drive gear operated by the prime mover, and independent clutches for connecting the drive shafts with the main drive gear.

In testimony whereof I affix my signature in presence of two witnesses.

BERY F. CHILDERS.

Witnesses:
O. L. MAGERE,
J. B. WICKSTROM.