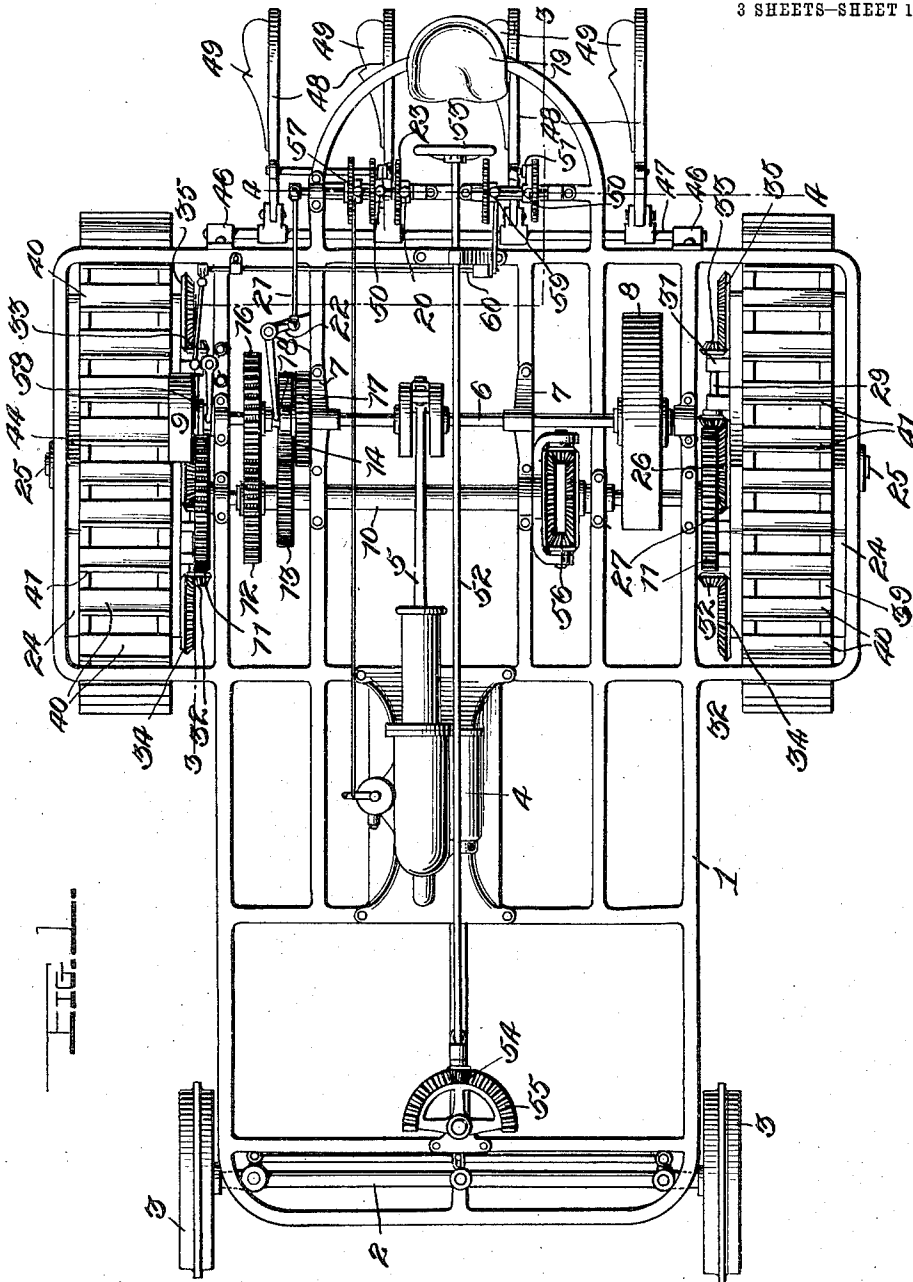


S. J. MILLION.
TRACTION FLOW.
APPLICATION FILED OCT. 16, 1911.

1,029,816.

Patented June 18, 1912.

3 SHEETS-SHEET 1.



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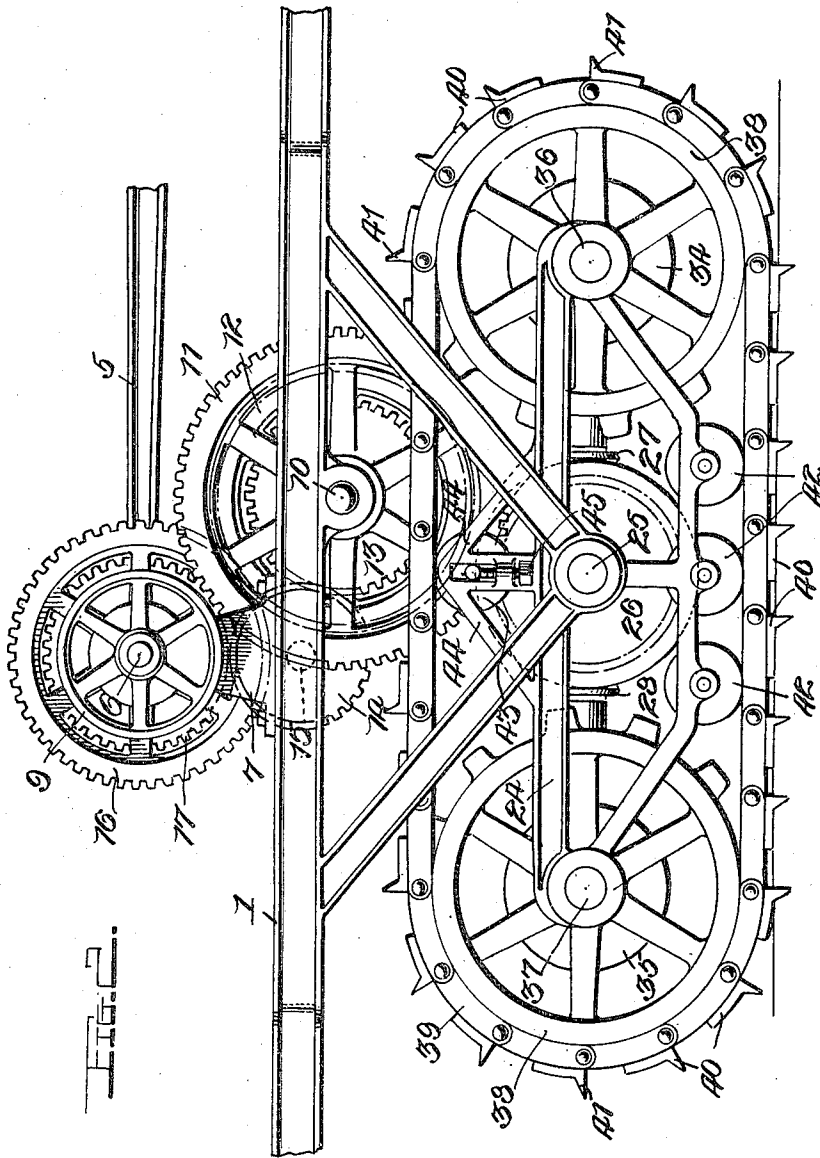


FIG. 2.

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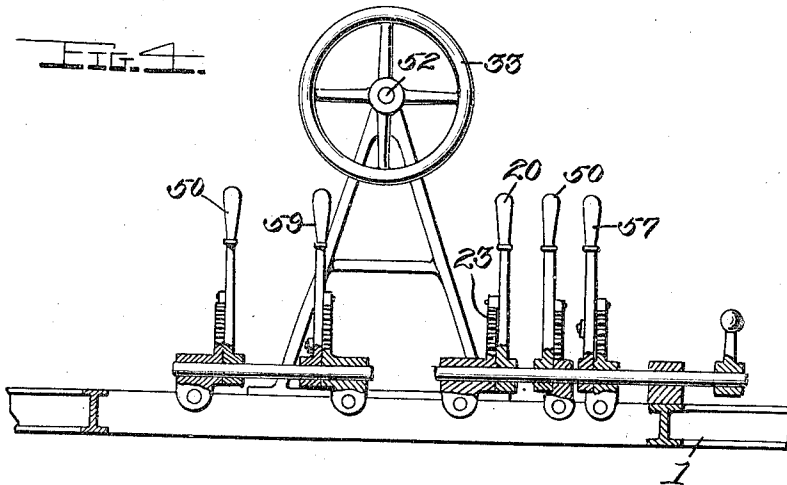
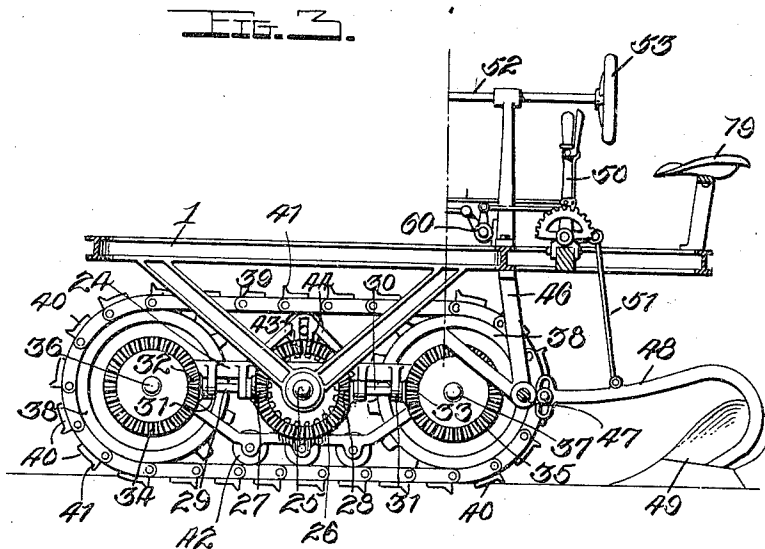
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UNITED STATES PATENT OFFICE.

SILAS J. MILLION, OF ROGERS, NEBRASKA.

TRACTION-PLOW.

1,029,816.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed October 16, 1911. Serial No. 654,936.

To all whom it may concern:

Be it known that I, SILAS J. MILLION, a citizen of the United States, residing at Rogers, in the county of Colfax and State of Nebraska, have invented certain new and useful Improvements in Traction-Plows, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to new and useful improvements in plows and more particularly to a traction plow, and my object is to provide a device of this character with an improved means for applying power by a traction belt, whereby a greater surface for traction power upon the ground may be obtained than is possible through the ordinary wheel.

A still further object of the invention resides in the provision of auxiliary frames carrying traction means, and a still further object resides in providing a traction belt with means for tightening the same when desired.

Still another object of the invention resides in providing a device which is extremely simple in construction, thereby readily and cheaply manufactured, and one which is very effective and useful in operation, in connection with any desired ground-treating device.

With these and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application, Figure 1 is a top plan view of the machine. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal section as seen on line 3—3, Fig. 1, and, Fig. 4 is a vertical transverse section as seen on line 4—4, Fig. 1.

In carrying out my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which—

1 indicates a frame of any desired size and shape used in plows of this character, upon which is mounted the front axle 2 which is non-rotatable and indirectly supports a pair of front wheels 3, and mounted on the rear of the frame, is a traction arrangement, which will be hereinafter and

more particularly described. Also mounted on the frame 1 about centrally thereof, is a motor 4 of any desired character which has connection through a piston rod 5 to the crank shaft 6 which extends transversely the full width of the frame 1 and is rotatably mounted thereon in the bearings 7, said crank shaft having mounted on one end thereof, a fly wheel 8, while the opposite end carries a belt pulley 9 which may be used to transmit power to any desired means for any desired purpose, whatsoever.

A shaft 10 extending transversely of the frame 1 adjacent the crank shaft, is rotatably mounted on said frame and extends a short distance beyond the sides thereof, the extreme ends of said shaft being each provided with an enlarged gear 11, the purpose of which will be hereinafter and more particularly described, and also carried on said shaft adjacent one side of the frame 1, are the two gears 12 and 13, the gear 13 being normally in mesh with an additional and smaller gear 14 mounted on a stub shaft 15 on the frame 1. Slidably arranged on the crank shaft 6, is a pair of spaced gears 16 and 17, the former being adapted to engage the gear 12, while the latter is adapted to be brought into mesh with the gear 14, it being understood that the engagement of these gears 16 and 17 with their respective gears, is made at different times, and said gears are connected to one another by means of the arm 18, whereby when one is moved into effective position, the other will be disposed in its ineffective position. From this construction described, it will be seen that the gears 16 and 17, meshing with their respective gears, will rotate the shaft 10 in opposite directions, so that it is through this medium that the device may be propelled forwardly or reversely, as desired, and in order to provide means for the operation of these gears 16 and 17 from a seat 19 on the rear of the frame 1, a pivoted lever 20 is provided immediately adjacent said seat. This lever has connected therewith one end of a rod or the like 21, the opposite end of which rod is connected with one arm of a bell crank lever 22 pivoted on said frame 1 adjacent the gears 16 and 17 and the opposite arm of said bell crank lever is engaged with the arm 18, whereby it will be seen that as said lever 20 is moved in one direction, the bell crank lever 22 will be swung on its pivot to cause the gear 16 to mesh with its

respective gear, while the gear 17 is thrown into its inoperative position, and vice versa, when the lever 20 is moved in the opposite direction. In order that the lever 20 may be retained in any adjusted position, the rack 23 is provided, the teeth of which are adapted to be engaged with a detent or the like carried on said lever 20, and thus, the gears may be held in mesh with one another without possible chance of disengagement.

As stated above, the ends of the additional shaft 10 have mounted thereon, the gears 11 which are adapted to indirectly operate the traction means, and to this extent, in order to provide for this traction means, an auxiliary frame 24 is formed on each side of the frame 1. Extending transversely through the central portion of each of said frames 24, is a nonrotatable shaft 25 which has loosely mounted thereon adjacent the inner end thereof, a combined spur and bevel gear 26, the spur gear portion of each of said combination gears being meshed with the gears 11 on the ends of the shaft 10, and engaged with the beveled portion of each of said gears from the sides thereof, are the beveled pinions 27 and 28. These beveled pinions are, respectively, carried on the ends of the driving shafts 29 and 30 which are rotatably supported in the bearings 31 on the inner side of the frame 24, and the opposite ends of said shafts are, respectively, provided with similar beveled pinions 32 and 33 which mesh with the bevel gears 34 and 35 carried on the inner ends, respectively, of the rotatable shafts 36 and 37. These shafts 36 and 37 are rotatably mounted, respectively, in the forward and rear ends of the frame 24, and each is provided with a pair of enlarged and alining sprockets 38 over which extends a pair of endless chains 39, the pairs of chains being connected by the transverse slats or bars 40 which have laterally extending flanges 41 thereon adapted to engage the surface of the ground as the chains are rotated. These endless chains with the transverse slats 40 thereon form substantial traction belts, one of which is disposed on each side of the machine, and in order to retain these traction belts in engagement with the ground as the same are rotated, the frames 24 have rotatably mounted in the lower portion thereof, a plurality of alining rollers 42, which engage the inner faces of the transverse slats or bars 40 and cause the laterally extending flanges 41 thereof to securely engage the ground to propel the machine. In order to tighten these traction belts so that the same may more readily and more effectively engage the ground as the same is rotated, an additional roller 43 is provided in the upper portion of the frame 24, said roller being adjustable vertically with respect to the frame 24 by being mounted between a pair

of arms 44 which are carried on the side arms of the frame 24. Set or adjusting screws 45 on the arms 44 are adapted to retain the roller 43 in any adjusted position, and it will be appreciated that when it is desired to tighten the traction belt, the roller 43 is raised, and when it is desired to allow a slack therein, said roller is lowered.

Supported by means of the dependent brace rods 46 between the frame 1, is a transverse bar 47 disposed adjacent the rear of said frame 1 upon which is pivotally mounted a plurality of arms 48, the outer ends of which arms are curved and provided with plows or any other desired ground-treating implements 49. In order to raise and lower these ground-treating implements, the levers 50 are provided adjacent the seat 19 and have connected therewith, the one end of the rods 51, the opposite ends of said rods being connected in any desired manner with the arms 48. Thus, when it is desired to raise the ground-treating implements 49 out of engagement with the ground, the levers 50 are moved in one direction, and vice versa, when it is desired to engage the ground with said implements.

Thus, from the foregoing description, it will be seen that upon the operation of the motor 4 to rotate the crank shaft 6, the traction arrangement may be caused to rotate in either direction, as desired, to correspondingly propel the machine forwardly or reversely, as the case may be, and in order to properly steer the machine from the seat 19 in the rear of the frame 1, a rod 52 is extended longitudinally the full length of the frame, the rear end of which is provided with a hand or steering wheel 53, while the forward end of the same is provided with a bevel gear 54 which meshes with a segmental gear 55 rotatably mounted on the forward end of the frame 1. This segmental gear 55 is connected through the medium of a plurality of arms and rods, or any other desired means, to the forward wheels 3, so that when the steering wheel 53 at the opposite end of the rod 52 is turned, in either one direction or the other, said forward wheels will be correspondingly turned therewith, and in order to provide for the proper turning of the machine, the shaft 10 is provided with the usual or any preferred form of differential gearing 56.

As before stated, the various operating levers and steering gears are disposed immediately adjacent the seat 19, whereby the driver may have complete control of the various elements of the machine, and in this connection, it must be also stated that a spark and throttle control 57 is also provided adjacent said seat, so that the operator may also control the speed with which the motor 4 may be operated. It has also been stated that the shaft 6 is provided on

the one end thereof with a drive pulley 9 which may be connected with any desired means, and in order to provide means whereby the motor may be operated without rotating the pulley 9, so that any means connected therewith will not be operated, a clutch mechanism 58 is provided in connection therewith which is operated by means of the lever 59. This lever is also disposed adjacent the seat and is connected to one end of a rod 60, the opposite end of which rod is provided with a crank arm 61, said arm having direct connection with the clutch 58, whereby the latter may be thrown into its effective or ineffective position at any time desired.

While I have particularly described the features of the preferred form of my invention, I do not wish to be entirely restricted thereto, and it will be understood that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

From the foregoing, it will be seen that I have provided an improved traction plow wherein an improved traction arrangement has been provided for obtaining a greater surface for traction power upon the ground than may be obtained from the ordinary wheel. It will still further be seen that auxiliary frames are provided for the traction belts, which frames are provided with means for the tightening of the belts. Furthermore, it will be seen that I have provided means whereby the driver of the machine may have direct control of every operating element of the device. It will still further be seen that the device is comparatively simple and extremely durable in construction, and one which is very effective and useful in operation.

What I claim is:—

1. A traction plow, comprising a main frame, a shaft rotatably mounted thereon and provided at its ends with enlarged gears, means for the rotation of said shaft in both directions, auxiliary frames carried on the sides of said main frame, a non-rotatable shaft mounted on each of the auxiliary frames, a combined spur and bevel gear rotatably mounted on the last referred to shaft, a portion of which engages a gear on the end of the first referred to shaft, ad-

ditional shafts rotatably mounted in the ends of each of said auxiliary frames, said latter shafts being provided on their inner ends with bevel gears, connecting means between the last referred to bevel gears and a portion of said combined spur and bevel gear, and traction belts supported over the shafts at the ends of said auxiliary frames.

2. A traction plow, comprising a main frame, auxiliary frames carried on the sides thereof, traction belts rotatably mounted on said auxiliary frames, rollers supported in the lower portions of said auxiliary frames over which said belts extend, said rollers being adapted to retain the belts in position to engage the surface of the ground, and additional rollers adjustably mounted in the upper portions of said auxiliary frames for tightening said belts.

3. A traction plow comprising a main frame, auxiliary frames carried thereon, traction belts operatively carried on said auxiliary frames, a plurality of rollers carried on the lower portions of said auxiliary frames and adapted to engage the traction belts to retain the same in effective engagement with the ground, additional rollers carried on the upper portions of said frames and adapted for vertical movement with respect thereto for engagement with the upper reaches of said traction belts, and means for the adjustment of said last mentioned rollers on the auxiliary frames.

4. A traction plow comprising a main frame, auxiliary frames carried thereon, shafts extending transversely of the central portions of said frames, traction belts operatively mounted on said auxiliary frames, a combined bevel gear and pinion rotatably carried on each of said shafts, means in connection with the bevel gear portions of said last mentioned members and extending in opposite directions therefrom for the rotation of said traction belts therefrom, means in connection with the pinion portions of said combined gears and pinions for the rotation of the latter on said shafts, supporting wheels carried on said frame, and steering means for the same.

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

SILAS J. MILLION.

Witnesses:

GEO. W. WERTZ,
A. C. WITTERA.