O. EDQUIST.

PROPELLING MECHANISM.

APPLICATION FILED OCT. 26, 1915.

1,245,208. Patented Nov. 6, 1917.

2 SHEETS—SHEET 1.

FIG. 1.

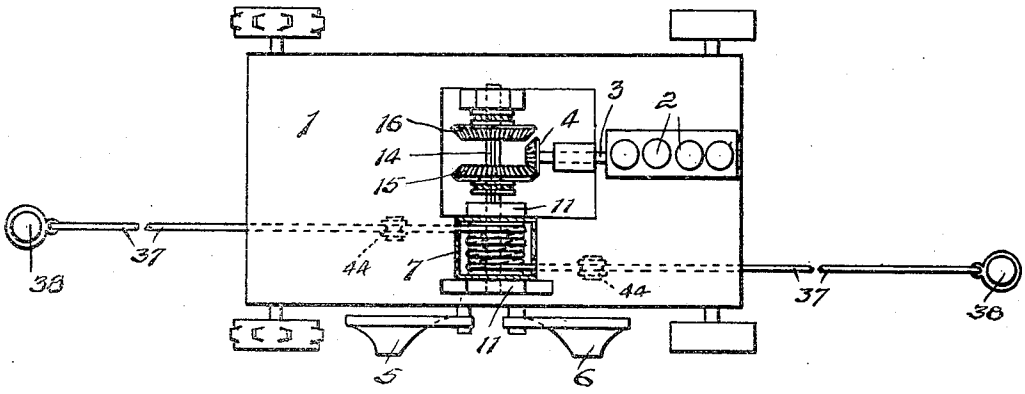
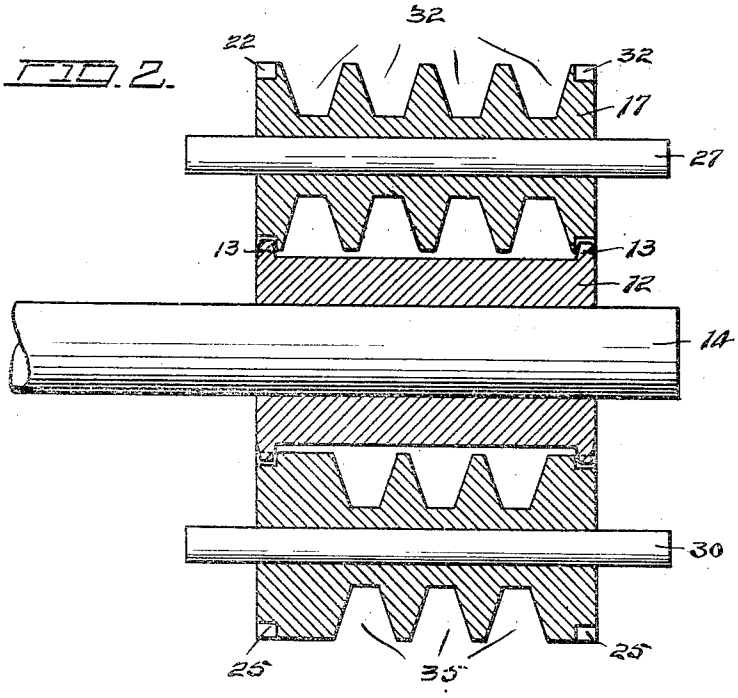


FIG. 2.



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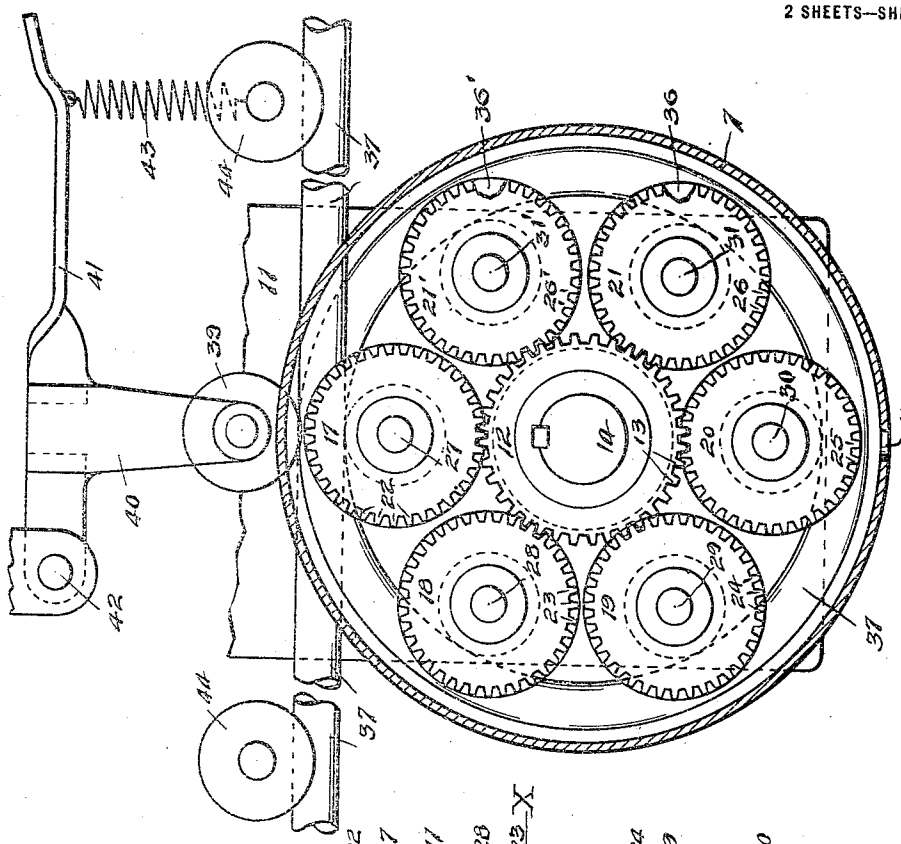


FIG. 4.

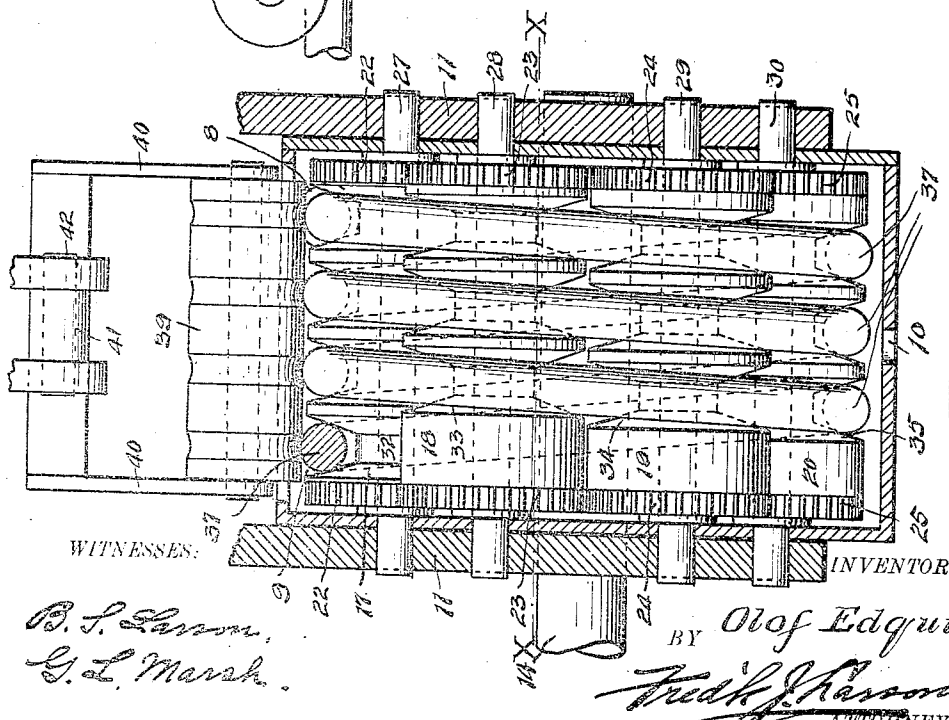


FIG. 3.

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PROPELLING MECHANISM.

1,245,208. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed October 26, 1915. Serial No. 57,924.

To all whom it may concern:

Be it known that I, OLOF EDQUIST, a subject of the King of Sweden, residing at Denver, in the county of Denver and State of Colorado, have invented a new and useful Propelling Mechanism, of which the following is a specification.

My invention relates to improvements in propelling mechanism more particularly adapted for drawing or propelling farm implements, such as plows and similar implements to and fro, between two fixed points.

The objects of my invention are, first, to provide mechanism consisting of a central drive-roller and a plurality of radially disposed continuously driven-rollers, the former roller to be driven by means of a suitable motor; second, to provide each of the radially disposed driven-rollers with a plurality of suitably spaced peripheral grooves for the reception of a pulling cable, the grooves in each advancing roller to the left having a slight lead to the left, to form a substantial screw-threaded path for the cable to work in, to prevent the cable from climbing; third, to make the grooves substantially V-shaped in cross-section so as to cause a wedging effect upon the cable thereby causing a greater frictional grip for pulling purposes; fourth, to provide yielding means to bear against the cable coils adjacent one of the grooved-rollers; and fifth, to provide removable means to which the extremities of the cable may be attached.

I attain these and other objects which will appear hereinafter, by the mechanism illustrated in the accompanying drawing, in which:

Figure 1, is a plan view, partly in section, of my improved propelling mechanism applied to a wheel-supported apparatus.

Fig. 2, is a vertical section taken on line X—X of Fig. 3.

Fig. 3, is a detail in end elevation of the roller mechanism and cable, and;

Fig. 4, is a side elevation thereof, showing the casing in section.

Similar characters of reference denote similar parts throughout the several views.

Referring to the accompanying drawing, the reference character 1 designates a suitable wheel-supported apparatus. 2 a suitable motor supported by the apparatus. 3 the drive shaft. 4 a pinion mounted upon the end thereof. 5 a suitable right hand plow and 6 a suitable left hand plow.

In carrying out the aim of my present invention, I employ a suitable casing 7 having a cable entrance opening 8, a cable exit opening 9, and a dirt or foreign substance drain opening 10.

Suitable supporting hangers 11 secured to some appropriate portion of the apparatus 1 are adapted to support the casing 7.

A centrally disposed drive-roller 12 is carried within the casing 7. This roller is provided with suitable gear-teeth 13. The central drive-roller is suitably fixed to the power shaft 14. The power shaft 14 is provided at one end with a pair of bevel-gears 15 and 16, left and right drive, respectively. These gears 15 and 16 are adapted to mesh with the pinion 4, one at a time as is manifest. Gears 15 and 16 are slidably mounted upon the power shaft 14 so they may be quickly and positively thrown into and out of mesh with the pinion 5.

A plurality of rollers 17, 18, 19, 20, 21, and 21′ are radially disposed within the casing 7 with relation to the central drive-roller 12. The former rollers are provided with the gear-teeth 22, 23, 24, 25, 26 and 26′, respectively. The rollers 17, 18, 19, 20, 21, and 21′ are preferably loosely mounted upon the shafts or spindles 27, 28, 29, 30, 31, and 31′, respectively, and the gear-teeth of each roller are adapted to mesh with the gear-teeth of the central-drive-roller 12. Thus it will be seen that when the central drive-roller is driven that it in turn drives all of the radially disposed rollers in unison. The rollers, it will be understood may be driven in either direction, by merely shifting the bevel-gears 15 and 16.

Each of the radially disposed driven-rollers 17, 18, 19, 20, 21 and 21′, are provided with a plurality of suitably spaced peripheral substantially V-shaped grooves 32, 33, 34, 35, 36 and 36′, respectively. Each preceding radially disposed roller beginning with 17, to the left, has its grooves slightly out of alinement to the left, so as to provide a substantially screw-threaded path for the reception of the windings of the pulling cable 37, as is manifest.

The cable-grooves of each roller are arranged at a right-angle with the axis of the rollers, but owing to the fact that the cable

37 touches only a small surface of each roller at a time in passing over them and the grooves of each preceding radially disposed roller is in a slight lead to the left to the other, the screw-threaded cable-path is made possible by means of the peripheral grooves. This arrangement obviates any tendency of the cable to climb, as with a single-drum or roller and provides substantial pulling power.

It will be seen from Figs. 3 and 4 of the drawing, that the cable 37 enters the opening 8, passes over the radially disposed rollers 17, 18, 19, 20, 21, and 21′ several times to insure a non-slipping pulling capacity and the cable finally leaves the roller 17 through the opening 9.

The cable 37 is suitably and removably connected or attached at each end to a suitable anchor-post 38 which is temporarily fixed in the ground, as shown in Fig. 1.

To assist in holding the cable-coils tightly in engagement with the radially disposed rollers, I employ a suitable roller 39 adapted to have engagement with cable-coils, as clearly shown in Fig. 3. This roller 39 is suitably and rotatably mounted between the forked ends 40 of the lever 41 which is fulcrumed at 42. The opposite end of the lever 41 has connection with a suitable spring 43 for normally holding the roller 39 in contact with the coils of the cable 37.

To prevent the cable from jumping up prior to entering and just after leaving the radially disposed rollers, I employ a pair of idlers 44 adapted to have engagement with the cable 37.

From the foregoing description, it will be seen that whenever the central drive-roller 12 is driven, that it will impart a rotary movement to the radially disposed grooved rollers 17, 18, 19, 20, 21, and 21′, thus causing the cable 37 to be wound in one direction or the other around the radially disposed rollers, which in turn imparts a propelling movement to the wheel-supported apparatus 1.

The mechanism described, it will be understood imparts a to and fro movement to the apparatus, for the reason that when the apparatus 1 has reached the extremity of one end of the cable 37, the mechanism is reversed and the apparatus is moved in the opposite direction to the other end of the cable 37. Thus it will be seen, for an illustration, that if the plows 6 and 7 are employed with the apparatus 1, that plow 6 will perform work when the apparatus 1 is moving to the right and that plow 7 will perform the work when the apparatus 1 is moving to the left.

The mechanism for raising and lowering the plows, the mechanism for regulating and steering the wheels, etc., are not described in this application, as I deem this matter subject to separate protection, so I have excluded explanation thereof. The propelling mechanism proper is the subject of this application, hence I have avoided lengthy explanation as to other parts of my complete machine.

The many advantages of the herein mechanism will readily suggest themselves to those skilled in the art to which it appertains.

What I claim is:—

1. In combination with a wheel supported apparatus, of means comprising a plurality of assembled rollers to constitute a single cable gripping drum for moving said apparatus in either direction between two fixed anchors without the necessity of turning the apparatus around at the end of its path of travel for the return movement of the apparatus.

2. In combination with a wheel-supported apparatus, of a propelling mechanism comprising a plurality of radially disposed driven rollers constituting a single cable gripping drum, means for driving said rollers in unison and a cable wound about said rollers, the extremities of the cable being removably anchored at predetermined points on diametrically opposed sides of said cable gripping drum.

3. In combination with a wheel-supported apparatus, of propelling means comprising a central drive roller, means of driving said roller, a plurality of radially disposed rollers adapted to be driven in unison by means of said central roller, and a cable adapted to be anchored at each end and wound about said radially disposed rollers for drawing said apparatus to and fro.

4. In combination with a wheel-supported apparatus, of propelling mechanism comprising a central driving means, a plurality of radially disposed driven means having engagement with said central driving means, a cable adapted to have engagement with said radially disposed driven means, said cable being anchored at each end to cause said apparatus to be moved when rotary movement is imparted to said radially disposed driven means.

5. In combination with a wheel-supported apparatus, of propelling means comprising a central drive-roller, means for driving said roller, a plurality of radially disposed rollers each having a plurality of peripheral grooves, the grooves of one roller being in a slight lead to the preceding roller to form a substantial cable-path around the radially disposed rollers, said radially disposed rollers adapted to be driven in unison by means of said central drive-roller, and a cable anchored at each end, wound about said radially disposed rollers in the cable-path for drawing said apparatus to and fro.

6. In combination with a wheel-supported

apparatus; a source of power; of a propelling means comprising a central driving element, means for revolving said element in either direction, cable gripping rollers constituting a single cable gripping drum radially disposed around said driving element, two rows of anchored posts adapted to be spaced apart in a field in diametrically opposed relation, and a cable wound about said radially disposed rollers and connected at each end to said anchored posts.

7. In combination with a wheel-supported apparatus, a source of power, of a propelling mechanism comprising a plurality of driven rollers constituting a single cable gripping drum, a line of cable wound about said drum, anchored posts spaced in opposed relation on opposite sides of said propelling mechanism to which the ends of said cable are adapted to be attached, said cable extending from each side of said propelling mechanism in a substantially straight line.

8. In combination with a wheel-supported apparatus, a source of power, of a propelling mechanism comprising a plurality of driven rollers arranged to constitute a single cable gripping drum, a line of cable, said cable being so arranged about said cable gripping drum and anchored at its extremities as to permit a substantially straight pull between the cable gripping drum and the anchored extremities of the cable when moving the apparatus in either direction.

9. In combination with a wheel-supported apparatus, a source of power, of a propelling mechanism comprising a plurality of driven rollers constituting a cable gripping drum, means for driving said rollers in unison, anchored posts spaced in opposed relation upon opposite sides of said drum, a cable wound about said drum and connected at each extremity to said anchored posts, said cable extending from each side of said drum to said anchored posts in a substantially straight line.

10. In combination with a wheel-supported apparatus, a source of power, a propelling mechanism mounted upon said apparatus comprising a plurality of radially disposed driven rollers constituting a cable gripping drum and means for driving said rollers in unison.

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

OLOF EDQUIST.

Witnesses:
F. R. CLINE,
FRED'K J. LARSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."