Aug. 20, 1929. W. E. DIXON 1,725,624

UTILITY TRUCK

Filed July 2, 1928 2 Sheets-Sheet 1

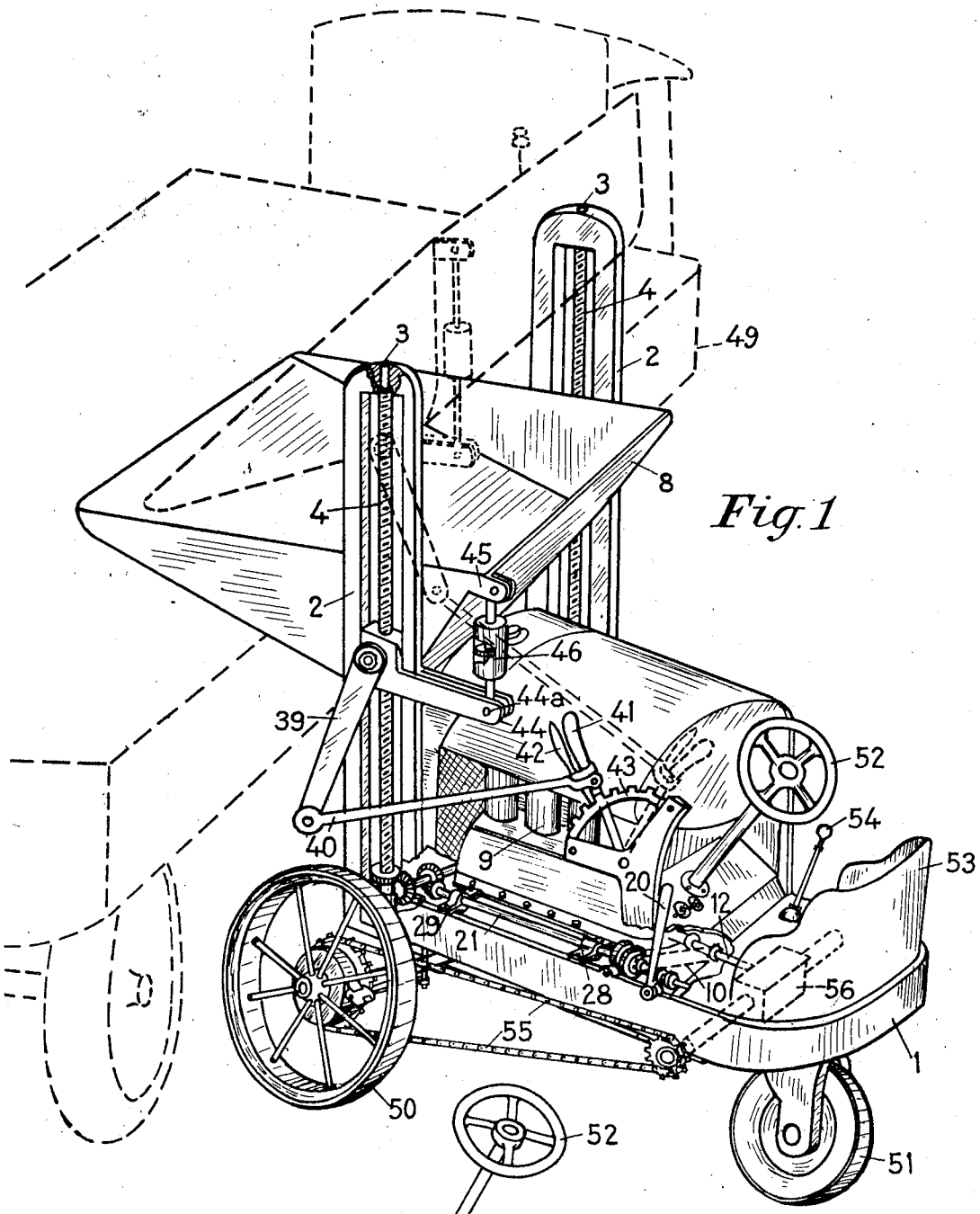


Fig. 1

Fig. 2

INVENTOR

William E. Dixon

Aug. 20, 1929. W. E. DIXON 1,725,624

UTILITY TRUCK

Filed July 2, 1928 2 Sheets-Sheet 2

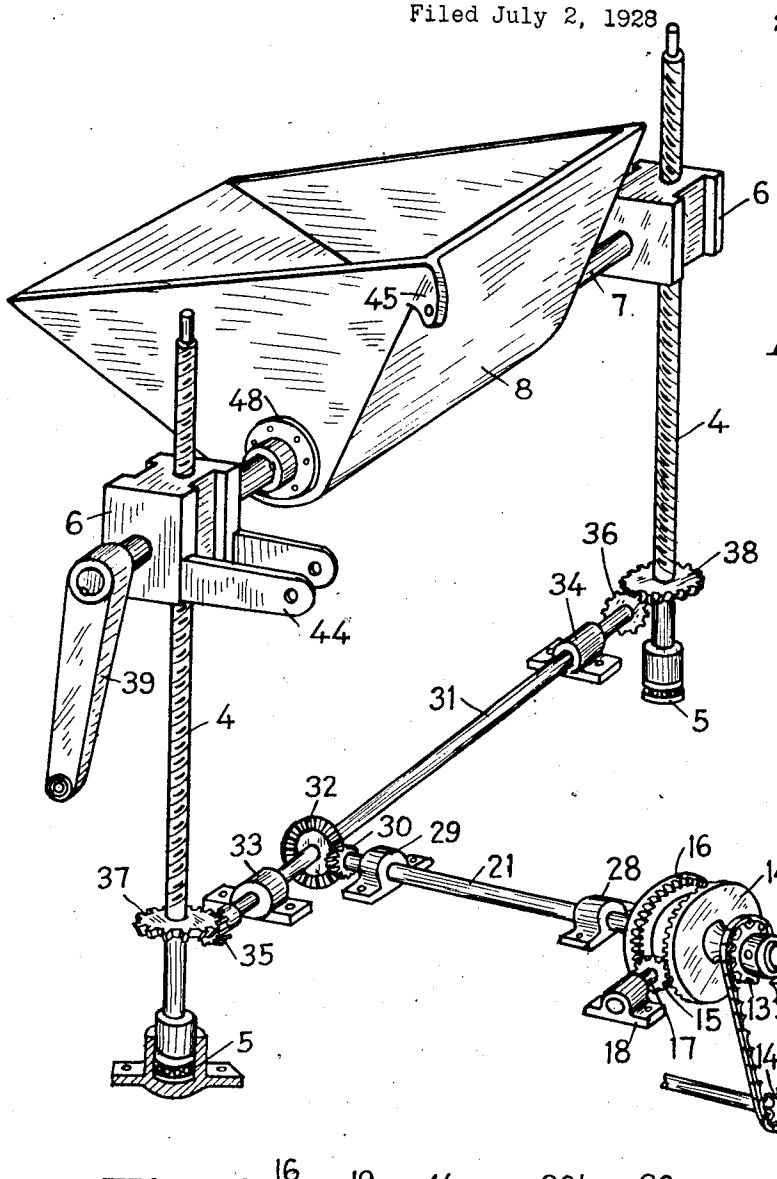
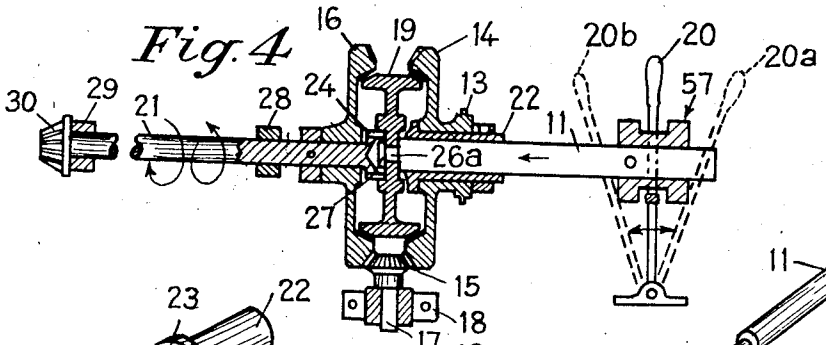


Fig. 3

Fig. 4



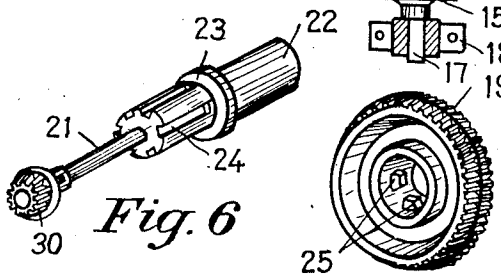


Fig. 6

Fig. 5

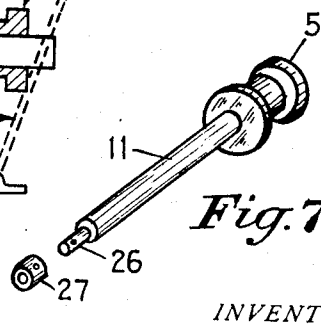


Fig. 7

INVENTOR

William E. Dixon

Patented Aug. 20, 1929. 1,725,624

UNITED STATES PATENT OFFICE.

WILLIAM EARL DIXON, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO PAUL E. SHOWALTER, OF LOS ANGELES, CALIFORNIA.

UTILITY TRUCK.

Application filed July 2, 1928. Serial No. 289,908.

My invention relates to improvements in transporting and dump trucks and particularly to that type of truck wherein the load conveying element is arranged to be mechanically raised and lowered.

An important object of the invention is to provide a truck which is adapted for use in cemeteries; one built of light construction, which is capable of transporting the excess earth from the graves, over the sod to auxiliary trucks which may be loaded to capacity in the roadways.

In performing a burial in a grave yard there is always excess earth to be removed on account of the space occupied by the burial vault. It is desirable that this excess earth be transported from the grave in a vehicle that will not mar the sod and which can be conveniently propelled and guided among the tombstones or between obstructions and within restricted open areas. A part of the purpose of this invention is to provide a device which will meet these requirements.

A further object is to provide means to avoid unnecessary handling of the earth and at the same time so to construct the dumping mechanism as to tilt the hopper into a position for more convenient manual dumping.

A still further object is to provide a machine which in conjunction with the object just recited, will afford means for mechanically producing a gradual dumping of the contents of the hopper during the propulsion of the truck thus spreading upon a roadway cement or other construction material.

Further general objects of my invention are to provide for easily handling of cement and concrete in the construction of bridges and buildings, it being still further adapted for paving and road work.

Other specific objects may hereinafter appear in the following description, when considered in connection with the accompanying drawings, wherein is illustrated a preferred form of the invention, the distinctive features being defined in the appended claims.

In the drawings I have illustrated only one form, depicting a physical preferred embodiment of my invention; yet I do not limit myself to the forms disclosed, since various changes and adaptations may be made therein without departing from the essence of my invention as hereinafter claimed; and objects and advantages, other than those specifically mentioned, are included within its scope.

Figure 1 is a perspective view showing my novel truck with its elevating and discharging hopper.

Figure 2 is a perspective view showing the steering means.

Figure 3 is a perspective view separately illustrating the load receptacle and mechanism for operating the same.

Figure 4 is a cross-sectional view showing in neutral position the drive clutch which operates the elevating and lowering mechanism shown in Figure 3.

Figure 5 is a perspective view of the male element of the clutch.

Figure 6 is a perspective view of the driven shaft and sleeve upon which the male element of the clutch is mounted.

Figure 7 is a perspective view of the auxiliary shaft and collar to shift the male clutch into engagement with the female clutches.

In the preferred form of the invention illustrated in the drawings the utility truck comprises a horizontal U-base frame 1, from which rises at the extremity of the U-portion thereof, a pair of upstanding eye bars 2, 2 into the upper ends 3, 3 of which are socketed worm shafts 4, 4.

The lower base portions of said eye bars 2, 2 are rigidly mounted to the horizontal U-base frame or chassis 1. The lower ends of said worm shafts are rotatively supported on ball thrust bearings 5, 5. Said worm shafts 4, 4 support a pair of lifting jack blocks 6, 6 which carry a rockable shaft 7 positioned athwart the frame, whereupon is supported the discharging receptacle or hopper 8. The worm shafts 4, 4 also operate in unison and are continuous throughout the length of the eye in the eye bars as shown in Figure 1.

The U-base frame further carries an engine 9 of any well known or preferred make which in addition to furnishing the motive power to propel the truck, also operates a driven shaft 21 from which is operated the mechanism which raises and lowers the hopper 8.

In order to adapt the invention for convenient locomotion within the restricted open spaces in graveyards wherein it will often be operated, the chassis is provided with three ground wheels, the driving wheels 50 and a rearwardly located caster wheel 51.

Said caster wheel is steered by means of steering wheel 52 through the well known construction shown in Figure 2. The seat 53 is fitted into the U-bend at the rear end of the chassis. The usual gear shift lever 54 is provided.

The front wheels 50 are driven by means of a sprocket chain 55 driven from a reduction gearing 56.

The driven shaft 21 and operating mechanism consists essentially of an auxiliary drive sprocket chain 10 connecting the driven shaft 21 with the engine drive shaft 12. Said sprocket chain is mounted over sprockets 13 and 14 secured respectively to shafts 21 and 12.

This construction is shown in Figure 1 but is more clearly defined in Figure 2 and hence Figure 2 will be referred to for a more explicit understanding of this arrangement.

The sprocket 13 and female cone clutch 14 are made integral and will continuously rotate in a clockwise direction in an idling fashion as long as the motor 9 is running and the raising and lowering mechanism may be placed in operation any time through the medium of the auxiliary shaft 11 at the option of the driver by engaging male and female clutches, which operation will be described later.

A pinion 15 is provided to establish a counter-clockwise motion for the female cone clutch 16.

Said pinion 15 is mounted upon a shaft 17 and the shaft 17 is journaled in a bearing block 18 fastened to the U-base frame 1.

The female cone clutches 14 and 16 are made to transmit power when engaged by a male cone clutch 19. Said male cone clutch 19 normally occupies a neutral position (see Figure 4) with the female clutches aforementioned until its engagement is made with either through the medium of the manually operable handle 20 thus bringing their respective gear teeth in mesh.

The driven shaft 21 in Figures 4 and 6 is provided with a hollow end extension 22, a shoulder 23 and a plurality of slots 24.

Slidably mounted upon the slotted portion 24 of said shaft 21 is aforesaid male cone clutch 19 having a plurality of fingers 25 (see Figure 5) which project into said slots 24 at all times.

The fingers 25 in fact really drive the shaft 21 by their contact with the slots 24, and the fingers 25 at the same time serve for the axial motion of the male cone clutch 19.

The male cone clutch 19 as before stated is slidable on the slotted portion 24 of the shaft 21. Its normal position is neutral with respect to either of the female cone clutches which are both also mounted on the shaft 21.

The female cone clutch 14 is mounted upon the hollow end extension 22 of said shaft 21 while the female cone clutch 16 is mounted upon the diametrically contracted portion 21 thereof the male cone clutch 19 occupying the space therebetween.

Into the hollow extension portion 22 is projected one end of the auxiliary shaft 11. Said end has a reduced portion 26 adapted to project through the fingers 25 to the end of which reduced portion is fastened a collar 27 providing an annular space 26^a; the fingers 25 occupying said space between the collar 27 and the hub adjacent said reduced portion, whereby through the manual shifting of said handle 20 the male cone clutch 19 is caused to mesh with either of the female cone clutches as desired.

The driven shaft 21 is supported by pillow blocks 28 and 29 and upon the extremity of said shaft 21 is mounted a bevel gear 30.

The driven shaft 21 is geared to a counter shaft 31 by means of said bevel gear 30 and a bevel gear 32.

The counter shaft 31 like the rockable shaft 7 extends athwart the front end of the truck frame and is mounted thereon by pillow blocks 33 and 34. At the extremities of the counter shaft 31 are bevel gears 35 and 36 and said last mentioned gears mesh with bevel gears 37 and 38 mounted upon the vertical worms 4, 4.

Thus it will readily be seen that when the vertical worms 4, 4 are rotated in unison through the system of gearing just described, the hopper 8 will be lifted or lowered, depending upon the direction of the rotation of the driven shaft 21.

Through the rotation of the worm shafts 4, 4 the jack blocks 6, 6 supporting the hopper 8 are raised and lowered, the slotted eye bars 2 serving as guides for said jack blocks. Said hopper 8 is mounted upon a rock shaft 7 as hereinbefore stated and comprises a sheet metal receptacle the sides of which are triangularly shaped making it easily tiltable, said sides being fastened to flanges of collars 48 keyed to aforesaid rock shaft.

In actual use the hopper 8 is adapted to protrude at times when dumping over the sides of a truck body 49 indicated in dotted lines in Figure 1.

To provide a means for tilting and dumping said hopper I employ a radial arm 39 keyed to said rock shaft 7. Pivoted to said arm 39 is a connecting rod or link 40 attached

to an operating handle 41. Said operating handle has as a part thereof a pawl 42 engageable with the teeth of a quadrant 43 whereby manual shifting of the hopper from the full line position of Figure 1 to the dotted line position in said view is effected.

In order to provide for a slow release of the load at all times in dumping, I furnish one of said jack blocks with a pair of arms 44 and attach an ear 45 to the adjacent corner of the hopper and interpose between said pair of arms a dash-pot 46. Said dash-pot is pivotally connected with the bifurcated arm 44 by means of a pin 44^a.

In order to manually control the mechanism which raises and lowers the hopper, to the body portion of auxiliary shaft 11 is fastened a clutch 57 comprising a collar 58 and a fork 59 controlled by lever 20 which may be operated to cause the male cone clutch 19 to shift into position for clock-wise rotation as indicated in the dotted portion 20^a of Figure 4, and into position for counter clockwise rotation when the shifting lever 20 is shifted to the dotted line position 20^b in the same view.

In operation, assuming the hopper to be loaded and in the lowered position shown in Figure 1, the operator will shift the clutch lever 20 from the intermediate neutral position into the proper lateral position for rotating the driven shaft 21 in a direction to rotate the train of gearing which intervenes between it and the upright worm shafts, 4, 4, in a direction to elevate the hopper 8. As said hopper approaches the upper limit of its travel, the arm 39 and connecting rod 40 will assume a more extended position with relation to each other and at the same time said arm 39 will be swung in an anti-clockwise direction to cause an initial tilting of the hopper 8 toward the dumping position on account of one end of rod 40 being pivotally anchored to the handle 41, and the fact that aforesaid arm 39 is keyed to the rock shaft 7. When said hopper has reached the fully elevated position, handle 41 will be operated to swing arm 39 farther in the same direction a sufficient distance to tilt the hopper far enough to insure complete discharge of its contents.

After the contents of the hopper have thus been discharged into the large truck 49, or into other desired receptacles for dumping, the handle 41, is operated in the reverse direction to restore the hopper to its slightly tilted position, whereupon the clutch arm 20 is moved to the opposite limit of its travel to mechanically lower the hopper to its original position, thereby also automatically fully restoring it to an upright load receiving position.

I claim:—

1. In a device of the class described, a vehicle frame, upright guiding means mounted on said vehicle frame, a tiltable hopper mounted for raising and lowering along said upright guiding means, mechanical means for elevating said hopper and cooperating means in conjunction with said mechanical means for simultaneously tilting it toward a dumping position, and manually operable means to further tilt said hopper when it fully arrives at a dumping position.

2. In a device of the class described, a vehicle frame, upright guides mounted thereon, a tiltable hopper mounted between said guides, a hand operable rod and arm connection pivotally anchored at one end and operatively connected with said hopper at its other end to tilt and dump the latter, means for mechanically elevating and lowering said hopper, said rod and arm connection causing an initial tilting of said hopper toward dumping position during the mechanical elevation of said hopper and being adapted for further manual operation to complete its dumping movement.

3. In a device of the class described, a vehicle frame, upright slotted guides mounted on said vehicle frame, jack-blocks vertically movable in the slots of said guides, a hopper rockingly mounted on said jack-blocks, an arm extending from one of said jack-blocks in fixed relation thereto, a dash-pot interposed between said arm and happer, means to mechanically elevate said hopper in a loaded condition, and manually operable means to dump said hopper when in the elevated position against the retarding action of said dash-pot.

4. The substance of claim 3 and, the arm of said jack-block being bifurcated and passing astride the portion of said guide at one side of its slot, there being a pin which unties the bifurcations of said arm at its outer end, said dash-pot being pivotally connected with said pin.

5. In a device of the class described, a vehicle frame, a pair of upright longitudinally slotted guides mounted thereon, jack-blocks fitted within the slots of said guides to travel therealong, a substantially horizontal rock shaft journaled in said jack-blocks, a hopper fixed to said shaft to be thereby rocked to and from dumping position, a radial arm secured to said rock shaft, a connecting rod pivotally secured to the free end of said arm, and manually movable means to which the free end of said connecting rod is pivotally anchored.

6. In a device of the character described, a vehicle frame, a pair of upright longitudinally slotted guides mounted thereon, each of said guides having a bearing in its upper end opposite the end of its slot, vertical worm shafts within the slotted portions of said guides and having their upper ends journaled

in said bearings, bearings for the lower ends of said worm shafts, jack-blocks adapted to travel in the slots of said guides, said jack-blocks having screw-threaded connections with said worm-shafts, a horizontal rock shaft having its end portions journaled in said jack-blocks, a hopper fixed to the intermediate portion of said horizontal shaft, means to mechanically rotate said worm shafts to raise and lower said hopper, and means to manually tilt said hopper to dump the same.

7. The substance of claim 6 and, said means to mechanically raise and lower said hopper having co-operating means in conjunction therewith whereby said hopper is automatically tilted toward the dumping position while it is being elevated.

WILLIAM EARL DIXON.