Sept. 16, 1958 J. F. ORDWAY 2,851,896

TRACTOR PUMP DRIVE

Filed Nov. 8, 1954 2 Sheets-Sheet 1

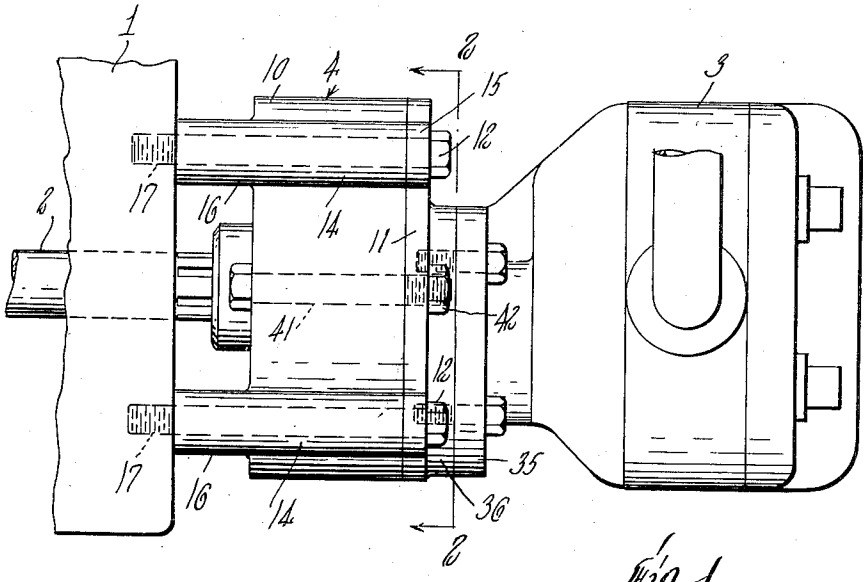


Fig. 1.

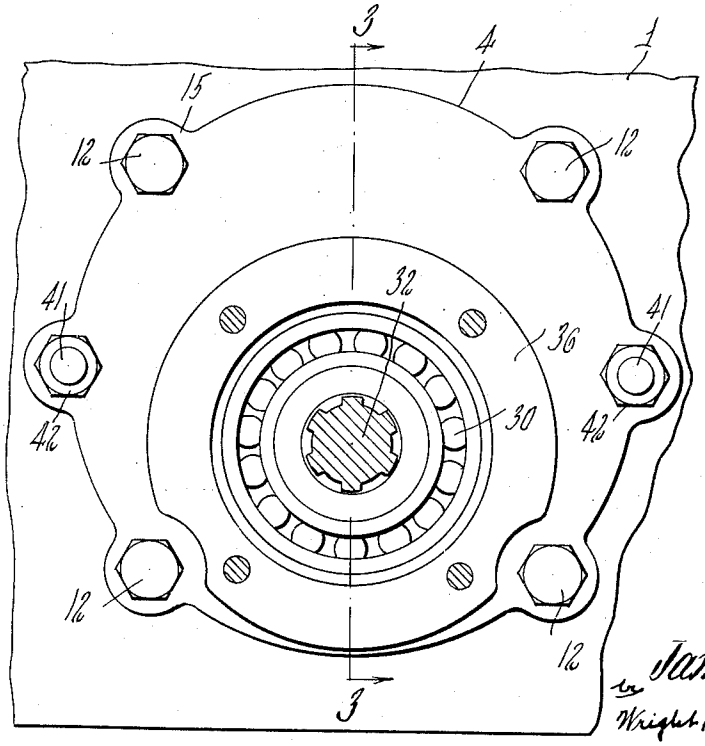


Fig. 2.

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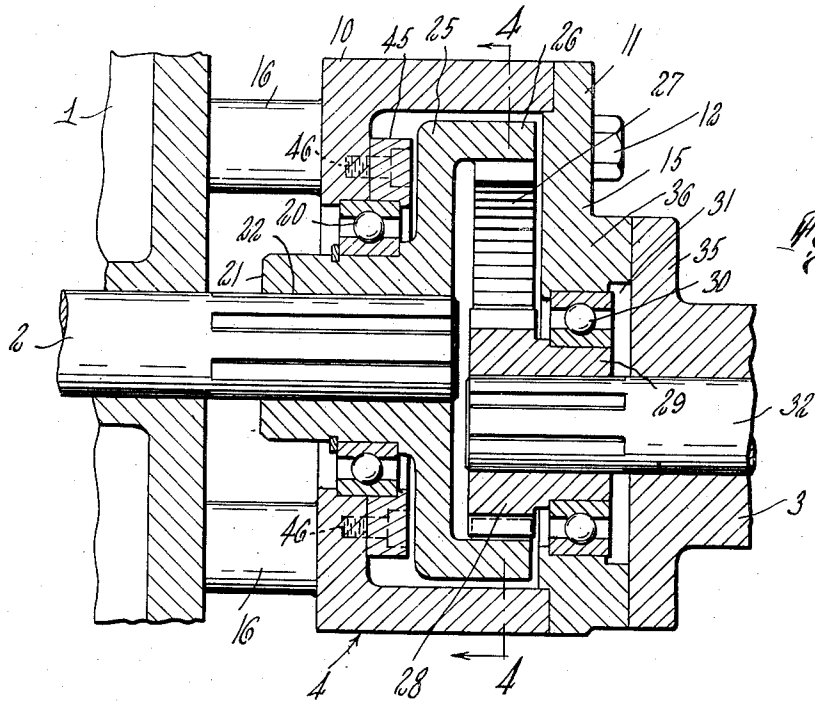


Fig. 3.

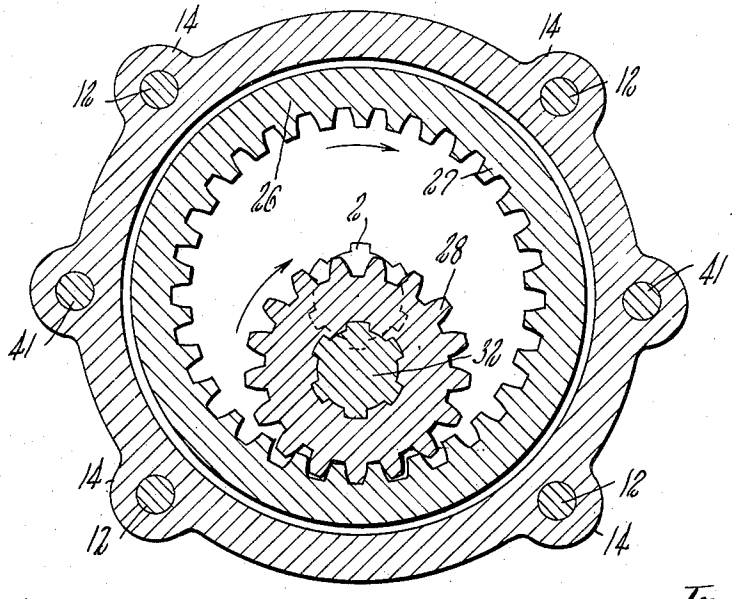


Fig. 4.

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TRACTOR PUMP DRIVE

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Application November 8, 1954, Serial No. 467,616

1 Claim. (Cl. 74—413)

The use of hydraulically actuated mechanisms carried by tractors has rapidly increased, but difficulty has heretofore been experienced due to space limitations in obtaining sufficient hydraulic power for the demands made therefor. Because of space limitations, the size of the pump cannot be much increased over those now being used.

In accordance with the present invention, increased capacity of the hydraulic system is accomplished by driving the pump more rapidly than hitherto. To this end, this invention provides a simple small size change speed mechanism which can be readily interposed between the drive shaft for the pump and the pump, and which is effective to speed up the pump to thereby increase the effective capacity of the hydraulic system.

For a complete understanding of this invention, reference may be had to the accompanying drawings in which:

Figure 1 is a side elevation of a portion of the tractor showing the speed change mechanism of the invention interposed between the tractor and the pump.

Figure 2 is a detail sectional view to a larger scale on line 2—2 of Figure 1.

Figure 3 is a detail sectional view on line 3—3 of Figure 2.

Figure 4 is a detail sectional view on line 4—4 of Figure 3.

Referring to the drawings, at 1 is indicated a portion of a tractor frame through which extends the usual pump drive shaft 2. Ordinarily a pump such as 3 is arranged to be secured to the frame 1 in driven relation to the shaft 2. In accordance with the present invention, however, a gear box 4 is interposed between the pump 3 and the tractor frame 1, the gear box being secured directly to the tractor frame, and the pump 3 being secured directly to the gear box 4.

As shown, this gear box comprises a casing having a hollow base member 10 and a cover 11 therefor which may be secured together and to the frame 1, as by the long screws 12 arranged symmetrically about the central axis of the gear box 4 comprising the base member and cover which extend through a flange 15 on the cover through lugs 14 along the sides of the base member 10 and through cylindrical bosses 16 and into threaded openings 17 in the tractor frame.

Within the base member 10 and journaled in its bottom wall, as in the ball bearing 20, is a sleeve 21 having its central bore 22 arranged to fit over the outer end of the drive shaft 2 in driven relation thereto. As shown, for example, the outer end of the drive shaft 2 is formed splined to slidably engage mating fins on the inside of the

sleeve 21. Within the casing base 10 the sleeve 21 is provided with an outwardly extending flange 25 terminating in an anular portion 26, internally toothed as at 27.

Meshing with the teeth of this internal gear, as best shown in Figure 4, is a pinion 28 which forms a portion of a second sleeve 29 journaled as on the ball bearing 30 mounted in an opening 31 through the cover member 11. This second sleeve 29 is eccentric to the sleeve 21, and as shown in Figure 4, the relative diameters of the pinion and internal gear are such as to step up the speed of rotation of the sleeve 29 to substantially double the speed of the shaft 2. This second sleeve 29 is arranged to receive and drive a driven shaft 32 which is that of the pump 3. The pump 3 is provided with an attaching flange 35 which may be secured as by screws 40 (see Figure 2) arranged symmetrically about the axis of the shaft 32 to a tubular extension 36 concentric with the second sleeve 29.

Besides the screws 12 which secure the speed change mechanism to the tractor frame, bolts and nuts 41 and 42, respectively, may be employed to secure the cover 11 to the base member 10, these bolts and nuts being free from attachment to the tractor frame member 1. By means of the bolts and nuts 41 and 42 the gear box parts may be assembled and secured together, after which the box as a unit may be secured to the tractor frame as by the screws 12, and the pump may be secured to the gear box as by the screws 40.

The outer raceway of the ball bearing 20 may be secured in its seat in the base member 10, as by a ring 45 secured to the bottom wall of the base member 10 as by screws 46.

It will thus be seen that the gear mechanism is exceedingly compact, but is capable of substantially doubling the speed imparted to the pump from the drive shaft 2.

From the foregoing description of an embodiment of this invention it should be evident to those skilled in the art that various changes and modifications may be made without departing from its spirit or scope.

I claim:

In combination, a casing having a hollow base member and a cover for said base member, said base member having means arranged symmetrically about the axis of said casing for securing it and said cover thereto to a frame through which extends a drive shaft, a sleeve journaled in said base member and having means for driven engagement by said drive shaft, said sleeve having an outwardly extending flange terminating at its outer end in an internal gear concentric with said sleeve, a second sleeve journaled through said cover and out of axial alinement with said first mentioned sleeve and having a pinion portion engaging said internal gear to be driven thereby, said cover having means for attachment thereto of a device to be driven having a driven shaft in driven engagement with said second sleeve, the last named attachment means being symmetrically arranged about said driven shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

1,192,376	Fitz-Tarr Bingham	July 25, 1916
2,605,645	Thorpe et al.	Aug. 5, 1952
2,703,987	Mueller	Mar. 15, 1955