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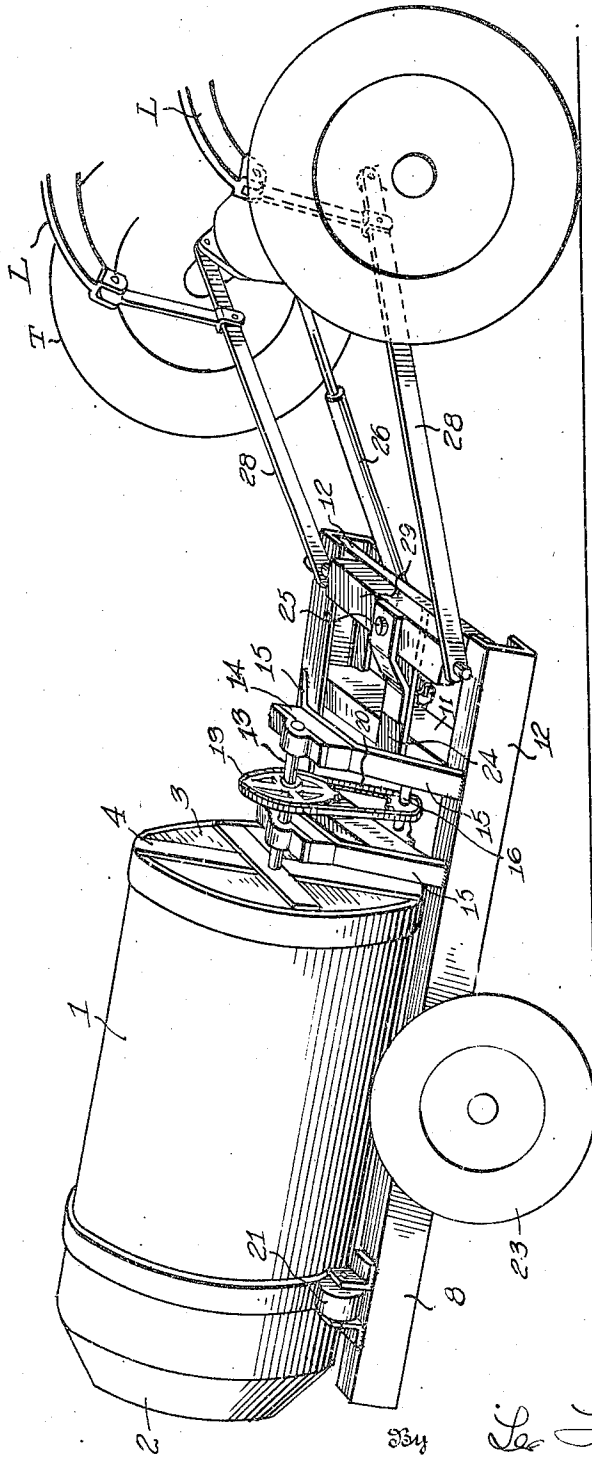
F. H. HARWOOD
PORTABLE CONCRETE MIXER

2,482,976

Filed Dec. 3, 1946

2 Sheets-Sheet 1

Fig. 1.



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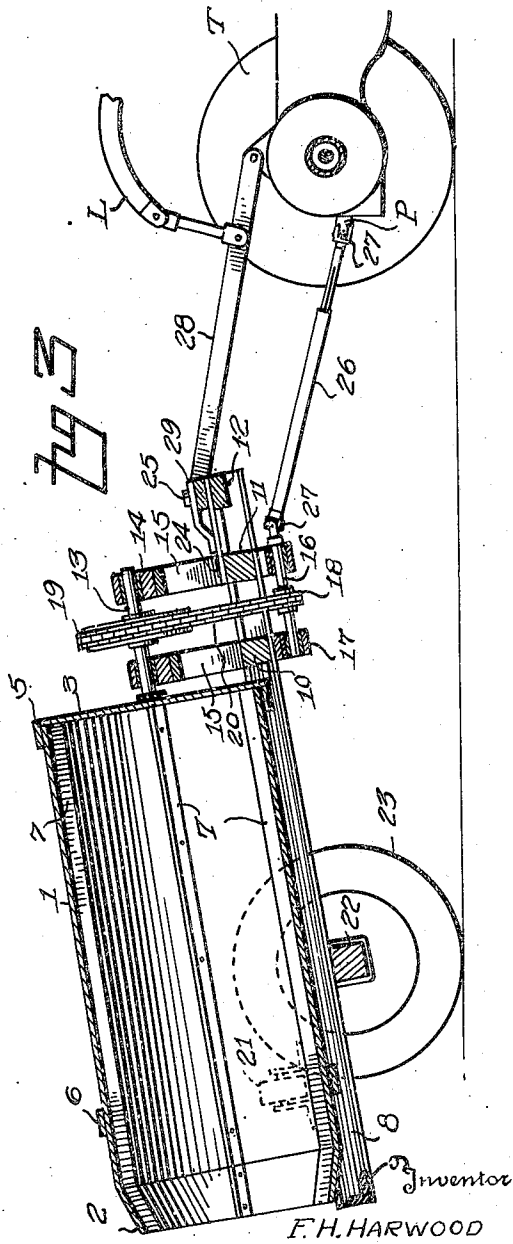
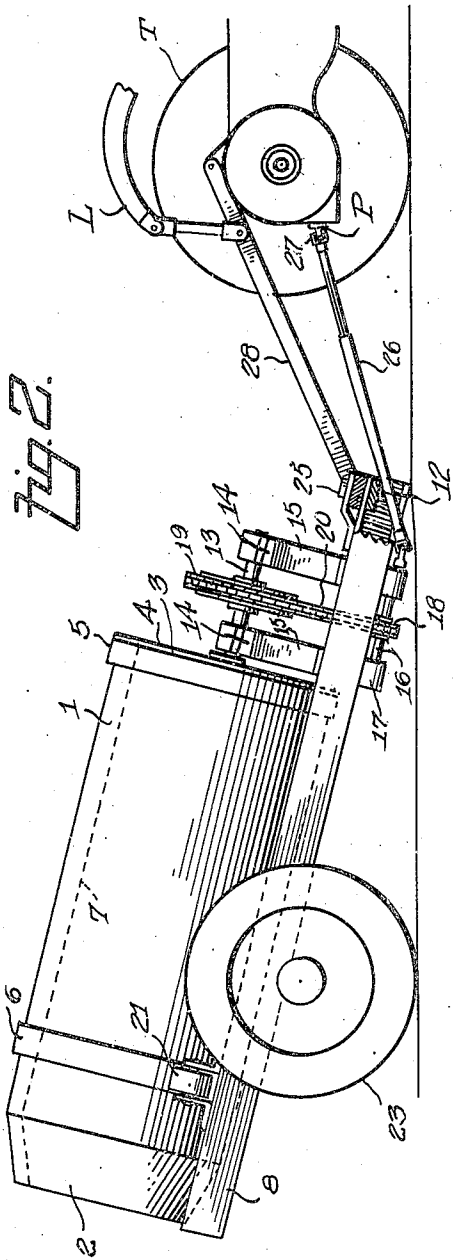
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2,482,976

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Filed Dec. 3, 1946

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,482,976

PORTABLE CONCRETE MIXER

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Application December 3, 1946, Serial No. 713,755

3 Claims. (Cl. 259—177)

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This invention relates to new and useful improvements in portable concrete mixers and the primary object of the invention is to provide a unit of this character that may be coupled with a powered vehicle for transportation and operation of the mixer.

Another object of the invention is to provide a mixer including a concrete mixing cylinder mounted on a two wheeled trailer and adapted to be cooperatively connected with a tractor having power take-off and power lift means, so that the cylinder may be positioned for charging, transporting and rotation and discharging, by power derived from the tractor.

A further object of this invention is the provision of a portable concrete mixer of the semi-trailer type having means to receive power from a tractor to tilt and transport the portable mixer.

Still another object of the invention is the provision of a simple and sturdy form of portable concrete mixer adapted to be operatively connected to a tractor for mixing and transporting and also adapted to be rocked by said tractor to charging or discharging positions.

These and other objects of the present invention will appear as the following description thereof proceeds, and in order to more clearly understand the invention, references may be had to the accompanying drawing in which an embodiment of the invention is shown.

In the drawings:

Figure 1 is a perspective view of the portable concrete mixer showing the same connected to the rear portion of a tractor in transporting and/or mixing position.

Figure 2 is a side elevation, partly in section of the parts shown in Figure 1, with the mixer in charging position.

Figure 3 is a similar view with the drum also in section, showing the mixer in discharging position.

The portable concrete mixer comprises a mixing cylinder 1 having an inwardly tapered portion 2 at its rear end terminating in an opening through which the cylinder may be charged or discharged. The front end of the cylinder has a closure plate 3 with reinforcing cross strips 4. A reinforcing ring 5 also surrounds the cylinder at this end. Adjacent the open end of the cylinder is positioned a surrounding track ring 6. The inner surface of the cylinder is provided with longitudinally extending spaced mixing baffles 7.

The cylinder is mounted on a semi-trailer comprising a frame composed of spaced side U bars 8 and cross members 9, 10, 11 and 12, suitably

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secured thereto. The cross member 9 at the rear of the frame is preferably an L-shaped bar. The members 10, 11 and 12 which are positioned in advance of the front end of the cylinder 1 are preferably solid blocks, the block 12, which is the front cross member of the frame, being of less depth than the other blocks.

To the front end of the cylinder 1, at the intersection of the bars 4 on the closure plate 3, is secured one end of a shaft 13 by welding or other desired means. This shaft is supported in bearings on a pair of spaced pillow blocks 14 mounted on cross supports 15 secured to the side bars 8. Beneath the main frame is mounted a shaft 16, parallel with the shaft 13, in bearings 17, secured to the bottoms of the cross members 10 and 11. A small sprocket 18 is secured to the shaft 16 between the bearings. A large sprocket 19 is secured to the shaft 13 in alignment with the small sprocket 18 and the sprockets are connected by a chain 20.

Rollers 21 are mounted on bars 8 of the main frame and the track ring 6 of the cylinder 1 is adapted to run thereon when the cylinder is rotated. These rollers form a support and guide for the rear portion of the mixing cylinder. The front portion of the cylinder is supported by the shaft 13 in the bearings on the pillow blocks 14. When positioned as shown the mixing cylinder 1 lies slightly within the open portion of the main frame to afford a better balance for the semi-trailer mount.

The frame is mounted on axle 22 secured to the side bars 8 at an approximate medial point with respect to the mixing cylinder. Supporting wheels 23 are mounted on the ends of the axle beyond the side bars 8. This semi-trailer mount for the mixing cylinder permits the same to be rocked longitudinally on a transverse axis for a purpose to be hereinafter more fully described.

Mounted on the top of the cross block 11 and extending forwardly to a point above the cross block 12 is a bifurcated coupling 24 provided with a coupling pin 25.

The portable cement mixer on the semi-trailer mount just described is adapted to be cooperatively connected with a tractor having power take-off and power lift means. The rear portion of a conventional tractor T is shown in the drawings. The tractor is provided with a power take-off P and power lift means, usually hydraulically operated, L.

A slidably coupling 26 provided with end universal joints 27 connects the power take-off P

with the front end of the shaft 16. Thus upon operation of the power take-off P from the tractor rotation is transmitted to the shaft 16 and through the medium of the sprockets 18 and 19 and connecting chain 20, the shaft 13 is rotated. As this shaft is fixed to the cylinder 1, the same will also be rotated on a longitudinal axis and a concrete mix positioned therein will be duly agitated and mixed with the help of the baffles 7. The slidable coupling 26 with the universal joints 27 permits the drive to be transmitted at various angles of the semi-trailer with respect to the tractor.

Lift arms 28 of the power lift means L extend rearwardly from the tractor in parallel spaced relation in the usual manner. Between the rear ends of said arms is pivotally mounted a perforated draw bar 29. As shown this draw bar is adapted to lie between the bifurcated end of the coupling 24 and is coupled thereto by the pin 25 passing through one of the perforations. When positioned as shown in the drawings the semi-trailer mount for the mixer is coupled to the tractor T for towing the same. The pivotal mount of the draw bar 29 in the arms 28 permits the semi-trailer to be rocked with the axle 22 upon vertical movement of the arms 28 of the power lift means L of the tractor.

In Figure 2 of the drawing the portable mixer is shown connected to the tractor in charging or loading position. The arms 28 of the power lift L are lowered and the front of the frame of the semi-trailer rests upon the ground, the narrowed front cross block 12 providing a clearance for the coupling 26. The cylinder 1 is tilted forwardly in this position with the rear open end elevated so the proper amount of cement mix may be placed therein.

For transporting and mixing, the arms 28 are slightly lifted through operation of the power lift L by the tractor to approximately the position shown in Figure 1 of the drawings. This clears the front end of the frame from the ground and permits the mixer to be towed by the tractor T. At the same time the power take-off P of the tractor can be operated which, through the drive previously described, rotates the cylinder 1 to mix the concrete during transportation when desired.

For discharging the mixed cement the arms 28 of the power lift means P are elevated to a position shown in Figure 3 of the drawings. This tilts the cylinder 1 rearwardly sufficiently past center so that the mixed concrete is discharged through the open end by gravity. The cylinder may continue to rotate from the power take-off to assist the discharge if desired. Upon completion of the discharge of the mixed concrete the semi-trailer may be transported in any desired position of the cylinder provided the ends of the frame clear the ground.

This type of portable cement mixer is particularly adapted for farm use where tractors are available and increases the utility of the same. It may be advantageously used on relatively small cement jobs and provides an easily available

source of ready mixed cement. The semi-trailer mount of the mixer permits a rocking of the mixing cylinder for the purpose described and the arrangement disclosed readily adapts the device to use with the power and lift facilities of a conventional tractor.

I claim:

1. A portable cement mixer including a frame, a single axle therefore at an approximate medial point, wheels for said axle, a rotatable mixing cylinder open at its rear end, a shaft projecting from the closed end of said cylinder, elevated bearings adjacent the front end of said frame for said shaft, rollers on said frame for engaging the rear portion of the rotatable mixing cylinder, a second shaft mounted in bearings beneath the frame, means for drivingly connecting said shafts, a slidable universal coupling adapted to connect the lower shaft with the power take-off of a tractor, and a pivotal draw bar connection at the front of the frame adapted to be connected to the power lift means of the tractor.

2. A portable cement mixer including a single axis wheeled frame with the axis extending transversely at an approximate medial point thereof, a rotatable mixing cylinder longitudinally mounted on said frame open at its rear end, a shaft projecting from the front end of the cylinder, a second shaft mounted in bearings beneath the frame, means for drivingly connecting said shafts, a slidable universal coupling adapted to connect the lower shaft with the power take-off of a tractor to rotate the cylinder and permit rocking when the frame is rocked on its medial axis, and means at the front end of the frame adapted to be connected with the power lift means of the tractor to rock said frame.

3. A portable cement mixer including a single axis wheeled frame with the axis extending transversely at an approximate medial point thereof, a rotatable mixing cylinder longitudinally mounted on said frame open at its rear end, a shaft projecting from the front end of the cylinder, a second shaft mounted in bearings beneath the frame, means for drivingly connecting said shafts, a slidable universal coupling adapted to connect the lower shaft with the power take-off of a tractor to rotate the cylinder and permit rocking when the frame is rocked on its medial axis, and a pivotal draw bar connection at the front end of the frame adapted to be connected to the power lift means of the tractor to rock said frame.

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