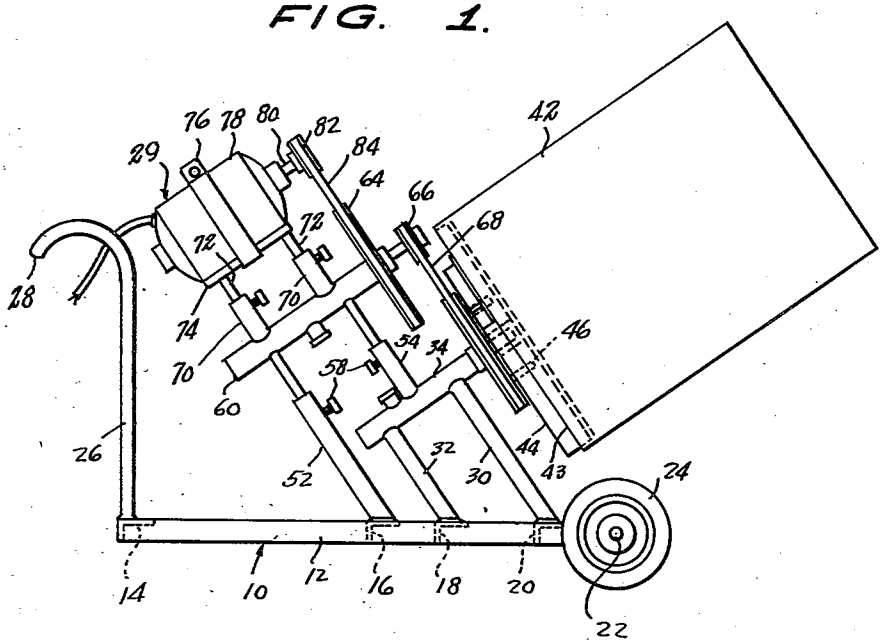
Oct. 1, 1957 R. F. BERAN, JR 2,808,241

READILY PORTABLE CEMENT MIXER

Filed July 20, 1956 2 Sheets-Sheet 1

FIG. 1.



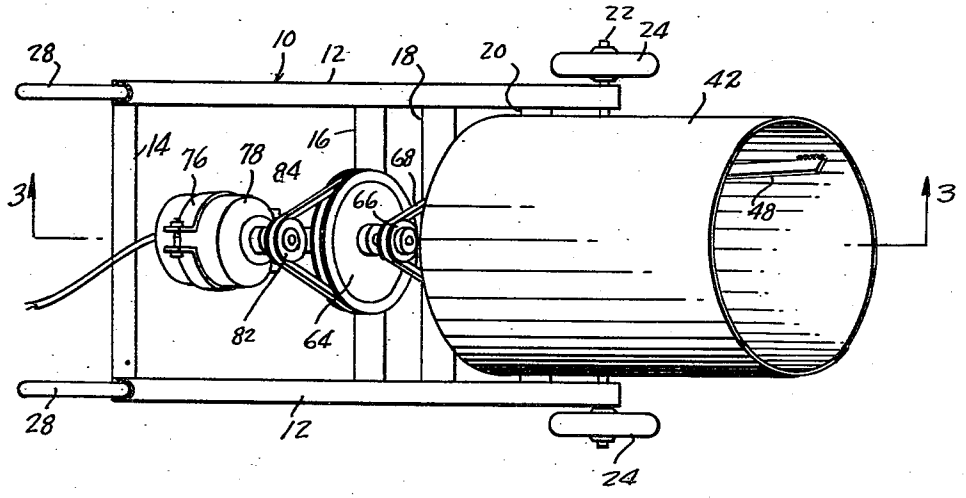


FIG. 2.

INVENTOR.
RUDOLPH F. BERAN, JR.
BY
McMorrow, Berman & Davidson
ATTORNEYS

Oct. 1, 1957 R. F. BERAN, JR 2,808,241

READILY PORTABLE CEMENT MIXER

Filed July 20, 1956 2 Sheets-Sheet 2

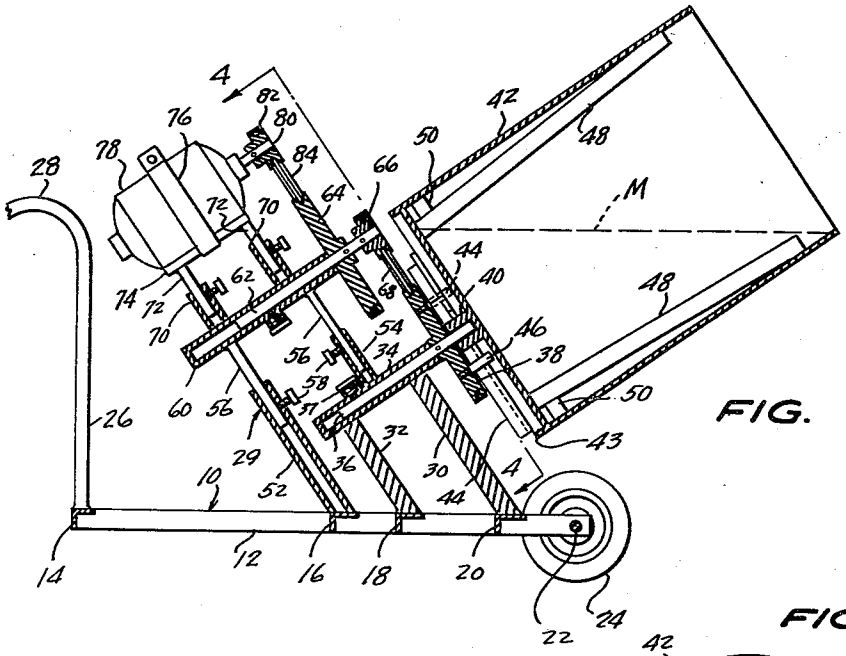


FIG. 3.

FIG. 4.

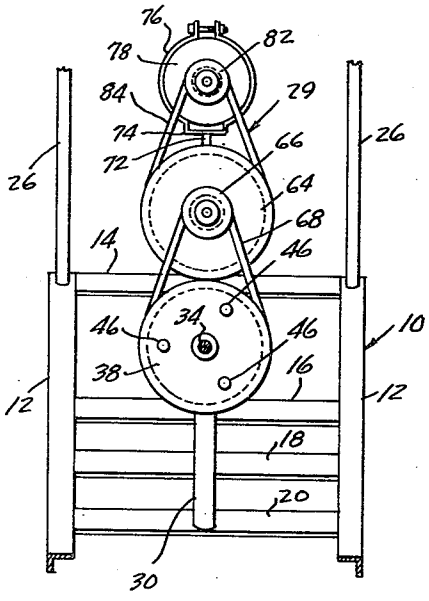


FIG. 5.

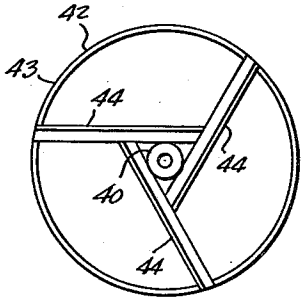
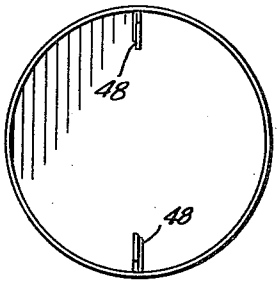


FIG. 6.



INVENTOR.
RUDOLPH F. BERAN, JR.
BY

McMorrow, Berman & Davidson
ATTORNEYS.

United States Patent Office 2,808,241 Patented Oct. 1, 1957

2,808,241

READILY PORTABLE CEMENT MIXER

Rudolph F. Beran, Jr., San Antonio, Tex.

Application July 20, 1956, Serial No. 599,170

4 Claims. (Cl. 259—177)

This invention relates to cement mixers, and more particularly has reference to a cement mixer of small size, adapted to be used to advantage by the ordinary householder, or alternatively adapted for use by an artisan whenever a small quantity of a cementitious material is to be mixed.

Summarized briefly, the invention includes a wheeled support frame, so designed as to include a pair of wheels, a base carrying the drive mechanism and bucket, and handles adapted to permit the frame to be wheeled from one to another location with a minimum amount of difficulty. Mounted upon the base is a drive mechanism including a plurality of inclined supports, so arranged as to facilitate assembly or disassembly, the drive mechanism including a plurality of belt and pulley transmission linkages, with the output being impressed upon a spindle on which a bucket is removably mounted in an inclined position. The bucket, thus, can be lifted bodily off the spindle whenever desired. Provided in the bucket are longitudinally extending ribs, so arranged as to facilitate agitation of the substance being mixed.

One object of importance is to provide a portable cement mixer which will be characterized by its lightness, its small size, and its particular adaptability to be moved from place to place.

Another object is to provide a mixer of the character described in which the drive mechanism includes a plurality of units capable of being readily assembled or disassembled, thus to permit the mixer to be knocked down or disassembled whenever desired, for storage in a relatively small space.

Another object is to provide a cement mixer of the character stated wherein the bucket will be swiftly attachable to or detachable from the drive means so that after the substance is mixed therein, the bucket can be removed, and located wherever it will most conveniently serve as a receptacle from which the cement or other mixed material can be easily extracted or poured.

Still another object is to provide a mixer of the character described which will be particularly effective in uniformly and swiftly mixing the cement or other substance.

Yet another important object is to so design the mixer that it will be rugged, substantially trouble-free in operation, and arranged to obtain rotation of the bucket in an inclined position without strain upon the drive mechanism, due to a construction wherein the several shafts through which drive is transmitted to the bucket will be disposed either in alignment or in parallelism with the axis of the bucket, with the several drive pulleys and belts being located in planes normal to said axis.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a side elevational view of a cement mixer formed according to the present invention;

Figure 2 is a top plan view thereof;

Figure 3 is a longitudinal section substantially on line 3—3 of Figure 2;

Figure 4 is a transverse sectional view substantially on line 4—4 of Figure 3;

Figure 5 is a bottom plan view of the bucket; and

Figure 6 is a top plan view of the bucket.

Referring to the drawings, in detail, designated generally by the reference numeral **10** is a wheeled support frame. This includes, as shown to best advantage in Figure 2, a pair of elongated, straight side rails **12**, and fixedly connected between the side rails at the rear ends thereof is a cross brace **14**. Intermediate the ends of the side rails, cross braces **16**, **18** and **20** which, like the brace **14**, are formed of angle iron material, are also fixedly connected between the side rails.

Journalled in the front ends of the side rails, is an axle **22**, on which are mounted wheels **24**.

Rigid with and projecting upwardly from the rear ends of the side rails are elongated handles **26** terminating at their upper ends in rearwardly, downwardly curving hand grips **28**.

It will be seen from the above that the wheel support frame may be of approximately an L-shape when viewed in side elevation, with the frame including, as the lower leg of the L, a flat, rectangular base the front end of which is provided with ground wheels **24**. This facilitates movement of the entire apparatus from place to place with minimum difficulty, so that the cement can be mixed at any location found convenient to the user.

At this point, it will be noted that the particular dimensions of the various components of the apparatus will not be stated, since obviously, it is not desired to limit the protection obtained for the invention by specifying dimensions which, in a commercial embodiment could quite possibly be varied to some extent. Within the scope of the appended claims, it is desired that protection be obtained for the device by reason of the relative formation and arrangement of its parts, rather than the particular dimensions thereof, the particular materials used, the size and rating of the motor, the relative sizes of the pulleys, etc.

The drive mechanism of the device has been generally designated by the reference numeral **29** and includes a motor, a plurality of pulleys and belts, shafts associated with said pulleys, supports for the shaft, and separable conections between various components of the drive mechanism.

The drive mechanism **29** is provided, as shown in Figures 1 and 4, with a pair of inclined support bars **30**, **32**, welded at their lower ends to the cross braces **20**, **18** and lying in a common vertical plane bisecting the support frame longitudinally thereof and defined by the section line 3—3 of Figure 2. Bar **30** is longer than **32**, and welded adjacent its ends to the upper ends of the bars **30**, **32** (which may be formed of a tubular material such as pipe) is a hollow, forwardly opening shaft housing **34**, the length of which is perpendicular to the lengths of the support bars **30**, **32**. In a preferred embodiment, the shaft housing **34** will be at an angle of 35 degrees to the plane of the wheeled base of the device.

Shaft housing **34** receives a driven shaft **36**, which rotates within the shaft housing, and to provide for proper lubrication, a grease fitting **37** (see Figure 3) is provided upon the shaft housing.

Connected to the forward end portion of the driven shaft **36** for rotating the same is a large pulley **38**. The forward extremity of the shaft **36** projects beyond the plane of pulley **38**, and is received in a rearwardly opening, centrally disposed, cylindrically shaped cup **40** fixedly secured to the flat bottom of a cylindrical bucket **42** having, at said bottom thereof, a peripheral flange **43**.

Reinforcing the bottom of the bucket are brace mem-

bers 44, formed of angle material. These are shown to best advantage in Figure 5, and it will be noted that the several brace members 44 have inner end portions triangularly arranged about and contacting tangentially the cup 40, the outer end portions of the several brace members terminating at the flange 43. The brace members are welded or otherwise fixedly secured to the bottom of the bucket.

Referring now to Figure 4, it will be seen that the pulley 38 has triangularly spaced pins 46, and these are adapted to bear against the respective brace members 44. As a result, when the shaft 36 is rotated, the pins 46 will come to bear against the several triangularly arranged brace members 44, and drive will be imparted to the bucket causing the same to rotate with the shaft 36 for mixing the material M confined within the bucket.

Within the bucket there are provided agitating ribs 48. These are disposed in diametrically opposite relation as shown in Figure 6. As shown in Figure 3, the ribs 48 are inclined slightly relative to the axis of rotation of the bucket, with the ribs terminating at their outer ends a short distance inwardly from the open end of the bucket, the inner ends of the ribs terminating at the bottom of the bucket. The ribs are spaced outwardly from the side wall of the bucket at their inner ends by short connecting pieces 50, which are fixedly connected between the ribs and the bucket, the ribs being fixedly connected by welding or otherwise at their outer ends to the side wall of the bucket to insure their permanent retention in the desired inclined positions thereof. The arrangement produces narrow openings between the ribs and the side wall of the bucket, extending for the greatest part of the length of the ribs, through which openings the material is adapted to move. It will be seen that as the bucket rotates, said ribs move through the material, continuously agitating the same so as to provide for a uniform mixing of the substance, whether it be cement or some other, related material.

Welded or otherwise fixedly connected to the brace 16 (see Figure 3) is a tubular support 52, disposed in parallel relation to the support bars or pipes 30, 32. The tubular support 52 is also parallel to a shorter, tubular support 54, and removably engageable in the supports 52, 54 are depending support rods 56, which are equal in length, and are adapted to be telescoped within tubular supports to a selected extent, after which the support rods are fixedly engaged in selected positions of adjustment by means of set screws 58 threaded in the tubular supports. The support rods 56, at their outer ends, are welded to a tubular shaft housing 60, in which is journalled a jack shaft 62 the forward end portion of which projects beyond the open end of the housing 60 and is connected to a pulley 64 to rotate therewith.

To the forward extremity of the jack shaft 62 there is connected, for rotation therewith, a small pulley 66, and a belt 68 is trained about the pulleys 66, 38.

Welded to and projecting upwardly from the jack shaft housing 60 are short, tubular supports 70, perpendicular to the length of the jack shaft housing 60, which as noted from Figure 3 is parallel to the housing 34. Telescopically adjustable within the supports 70 are support rods 72, which are secured in selected positions of adjustment by set screws threaded in the supports 70. Rods 72 at their upper ends are fixedly connected to a base 74 for a motor, and carried by the base 74 (see Figure 2) is a split ring clamp 76 for an electric motor 78. The shaft 80 of the motor is parallel to the jack shaft and the bucket drive shaft 36, and secured to the motor shaft 80 is a small pulley 82 about which is trained a belt 84, trained also about the pulley 64.

It will be seen that the motor, clamp 76, base 74, pulley 82, and rods 72 constitute a first unit, which can be removed bodily from a second unit composed of the jack shaft housing, jack shaft, tubular support 70, pulley 64, and pulley 66. The second unit can in turn be removed bodily from the lowermost unit, composed of the tubular supports 52, 54, shaft housing 34, and support bars 30, 32. The lower unit may further be appropriately considered as including the bucket drive shaft 36 and the pulley 38. Then, the bucket itself is bodily removable from the shaft 36, merely by being lifted off the spindle defined by the projecting end of shaft 36. Further, the bucket can be readily returned to place, without the necessity of screws or other connecting means requiring the use of tools. Whenever the bucket is returned to position with its cup 40 receiving the forward end of the shaft 36, it is automatically drivingly related to the shaft 36, to permit the mixing of an additional quantity of material M.

The device, as will be seen, is readily portable, and can be swiftly wheeled from place to place. Further, the bucket, after the material is mixed, can be easily lifted off, and so placed as to permit ready access to the material thereof or alternatively, to permit pouring of the material into a form or the like, not shown.

Also of importance is the fact that the construction permits ready removal or detachment of the bucket, with the driving connection between the bucket and the drive mechanism being effected whenever the bucket is positioned upon the spindle defined by the shaft 36. Still further, the particular construction of the bucket, facilitating uniform and rapid mixing of the material, is of importance.

Another characteristic of importance is found in the particular formation of the driving mechanism, composed as it is from a plurality of units capable of being lifted one off the other, for swift disassembly of the device.

Still further, the driving mechanism is so designed that the several shafts are disposed in parallel relation to one another and to the axis of rotation of the bucket, with the several pulleys disposed in planes normal to the length of said shafts. The drive is thus transmitted to the bucket without strain upon the driving parts, with the bucket nevertheless being disposed in a position in which it is inclined at approximately 35 degrees from the horizontal defined by the horizontal plane of the base.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A cement mixer comprising a wheeled frame; a drive mechanism on the frame including inclined supports projecting upwardly from the frame, a bucket drive shaft housing carried by said supports in a position inclined from the horizontal, a bucket drive shaft journaled in said housing, tubular supports projecting one from the housing and one from the frame in positions inclined corresponding to the first named supports, support rods telescopically adjustable within the tubular supports, a jack shaft housing carried by the support rods in parallel relation to the first named housing, a jack shaft journaled in the jack shaft housing, drive means carried by said jack shaft housing, means operatively connecting said jack shaft and bucket drive shaft to said drive means, and a mixing bucket drivingly and removably connectible to the bucket drive shaft.

2. A cement mixer comprising a wheeled frame; a drive mechanism on the frame including inclined supports projecting upwardly from the frame, a bucket drive shaft housing carried by said supports in a position inclined from the horizontal, a bucket drive shaft journaled in said housing, tubular supports projecting one from the

housing and one from the frame in positions inclined correspondingly to the first named supports, support rods telescopically adjustable within the tubular supports, a jack shaft housing carried by the support rods in parallel relation to the first named housing, a jack shaft journaled in the jack shaft housing, drive means carried by said jack shaft housing, means operatively connecting said jack shaft and bucket drive shaft to said drive means, and a mixing bucket drivingly and removably connectible to the bucket drive shaft, said mixing bucket including longitudinally extending internal ribs angularly spaced about the circumference of the bucket for agitating material confined within the bucket.

3. A cement mixer comprising a wheeled frame; a drive mechanism on the frame including inclined supports projecting upwardly from the frame, a bucket drive shaft housing carried by said supports in a position inclined from the horizontal, a bucket drive shaft journalled in said housing, tubular supports projecting one from the housing and one from the frame in positions inclined correspondingly to the first named supports, support rods telescopically adjustable within the tubular supports, a jack shaft housing carried by the support rods in parallel relation to the first named housing, a jack shaft journalled in the jack shaft housing, tubular supports projecting from the jack shaft housing in inclined positions corresponding to those of the first and second named supports, motor support rods telescopically adjustable within the last named tubular supports, motor support means carried by said last named rods, a motor carried by the motor support means, and belt and pulley connections between the motor and jack shaft and between the jack shaft and the bucket drive shaft; and a bucket having a separable driving connection to the bucket drive shaft.

4. A cement mixer comprising a wheeled frame; a drive mechanism on the frame including inclined supports projecting upwardly from the frame, a bucket drive shaft housing carried by said supports in a position inclined from the horizontal, a bucket drive shaft journalled in said housing, tubular supports projecting one from the housing and one from the frame in positions inclined correspondingly to the first named supports, support rods telescopically adjustable within the tubular supports, a jack shaft housing carried by the support rods in parallel relation to the first named housing, a jack shaft journalled in the jack shaft housing, tubular supports projecting from the jack shaft housing in inclined positions corresponding to those of the first and second named supports, motor support rods telescopically adjustable within the last named tubular supports, motor support means carried by said last named rods, a motor carried by the motor support means, and belt and pulley connections between the motor and jack shaft and between the jack shaft and the bucket drive shaft; and a bucket having a separable driving connection to the bucket drive shaft, said separable driving connection comprising a cup carried by the bucket and receiving the bucket drive shaft, a plurality of angularly spaced ribs on the bucket extending in tangential relation to said cup, and angularly spaced pins carried by the drive mechanism about the bucket drive shaft and adapted to engage the respective ribs for imparting rotation to the bucket responsive to rotation of the bucket drive shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

2,452,896	Bonney et al.	Nov. 2, 1948
2,478,408	Lightburn	Aug. 9, 1949
2,573,296	Arant	Oct. 30, 1951

FOREIGN PATENTS

284,365	Germany	May 22, 1915