Aug. 9, 1949. H. A. LIGHTBURN 2,478,408

COMBINED PORTABLE MIXER AND BARROW

Filed June 11, 1946 2 Sheets-Sheet 1

FIG. 1

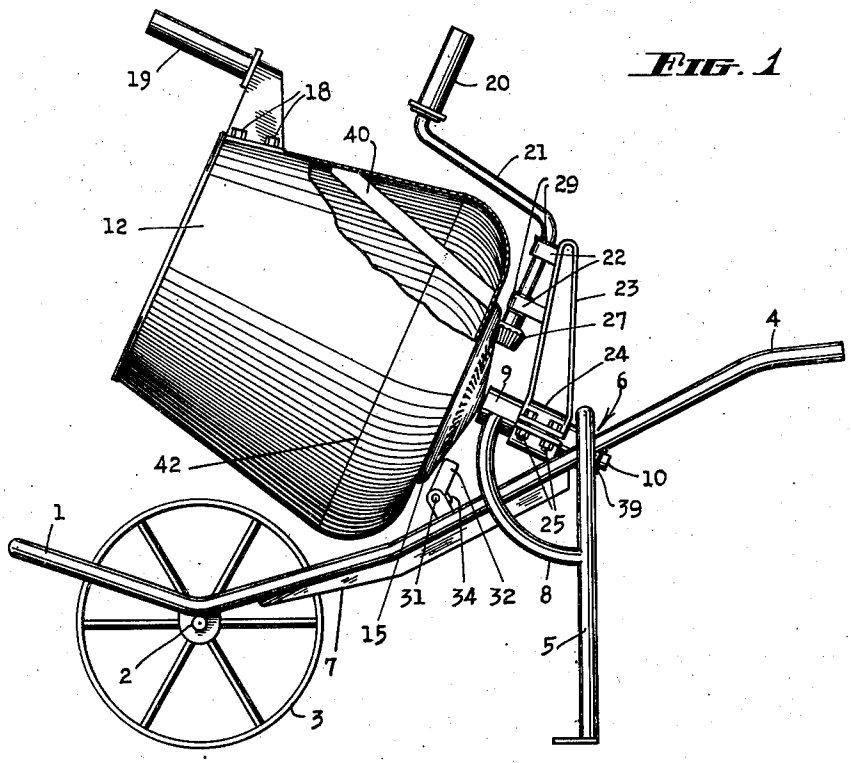
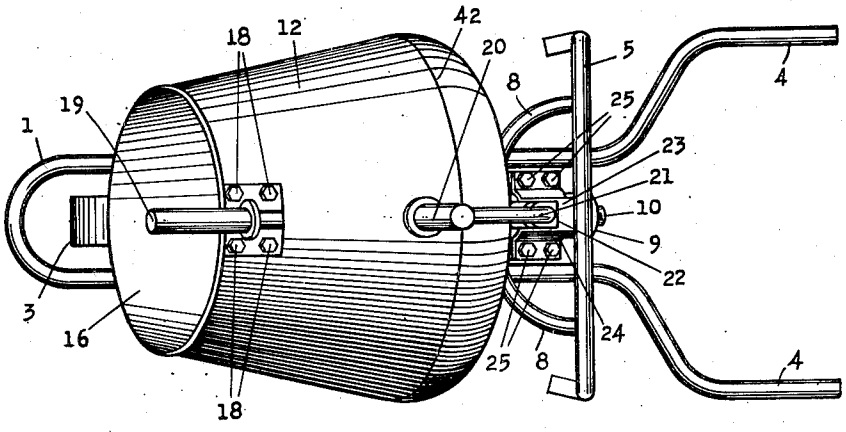


FIG. 2



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Fig. 3

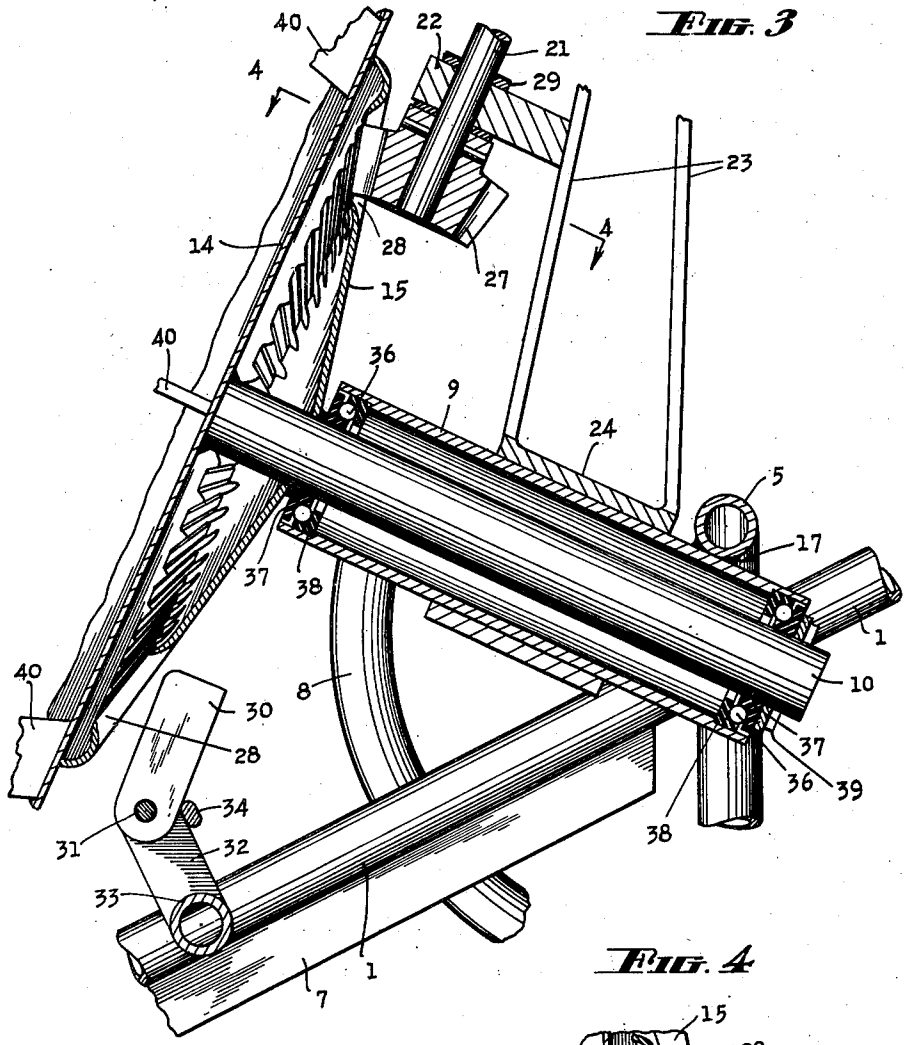


Fig. 4

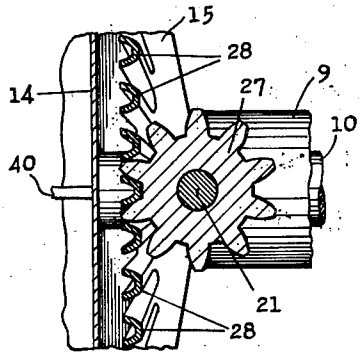
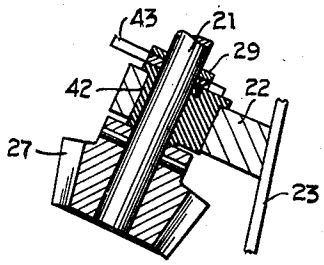


Fig. 5



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UNITED STATES PATENT OFFICE

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COMBINED PORTABLE MIXER AND BARROW

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In Australia June 19, 1945

4 Claims. (Cl. 259—177)

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This invention relates to a combined portable mixer and barrow.

It is often desirable to convey materials from one locality to another particularly prior to the mixing of concrete. For instance the aggregate to be mixed with cement may be picked up from one locality and the cement from another, after which the water may be added and the final mixture transported to the locality at which it is to be discharged. Materials other than concrete may be picked up, mixed and transported to new localities, or materials may simply be conveyed without mixing.

The objects of this invention are to provide a simple and effective mechanism whereby both the conveying and the mixing can be carried out when and where required.

In brief the invention comprises a frame supported on a suitable wheel or wheels, which frame revolvably supports upon it a barrel, the means whereby the barrel is revolved being mounted directly on the barrel or being geared thereto according to the power required, features of the invention including a particular construction and bracing of the barrel combined with gearing means whereby it is revolved, and means for locking the barrel against rotation when discharging its content.

In order, however, that the invention may be more clearly understood, an embodiment of same will now be described with reference to the accompanying drawings in which:

Fig. 1 is a side elevation with portion of the barrel broken away to show one of the mixing blades,

Fig. 2 is a plan of the invention,

Fig. 3 is an enlarged fragmentary section of the supporting means, portion of the geared driving means and the automatic locking detent,

Fig. 4 is a section of the gearing on line 4—4 of Fig. 3, the section taking the curvature of the pitch line of the crown wheel, and

Fig. 5 is a fragmentary section showing a modification.

The main frame 1 is constructed of a length of tube and is shaped to carry an axle 2 on which is a wheel 3, the frame having its two rearwardly projecting ends 4 disposed to form handles whereby the device can be moved from place to place.

Some distance back from the wheel 3 is a transverse inverted U-shaped member 5 which is shaped to form legs, this member being welded to the main frame 1 at the points designated 6.

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The frame 1 is stiffened by webs 7 welded to the underside of the frame.

Secured to the frame 1 are a pair of brackets 8 which in turn, together with the member 5, support a tubular bearing member 9 through which is disposed the shaft 10 by means of which the barrel 12 is supported, the stem projecting co-axially from the base 14' of the barrel and being connected thereto by welding, a conical reinforcing member 15 being provided on the base 14' of the barrel 12 which at the same time forms the crown wheel whereby the barrel may be rotated.

When the device is at rest, the axis of the barrel 12 is upwardly inclined and the opening 16 in same is disposed approximately over the wheel 3 so that the barrel can be filled from the front of the unit. The tubular bearing member is welded at 17 to the frame member 5.

Secured to the barrel 12 by screws 18 is a handle 19 whereby the barrel may be revolved, this handle being used where direct rotation of the barrel is required.

The mixer however also includes a second handle 20 which is disposed near the back of the barrel 12 and the crank shaft 21 of which is carried in bearings 22 upon a bracket 23, the bracket having at its lower end a split clamp 24 arranged to encircle the aforesaid tubular bearing member 9 but being removable therefrom. The two parts of the clamps 24 are held together by bolts 25.

The shaft 21 of the handle has upon it a bevel pinion 27 which is adapted to mesh with the teeth 28 of the crown wheel formed in the conical member 15 at the bottom of the barrel, washers 29 preventing downward movement of the shaft 21, the upper washer being welded to the shaft.

As the bracket 23, which supports the bearings 22, projects outwardly from the split clamp 24, the position of the handle about the tubular bearing member 9 can be selected, that is to say the handle can be disposed to have its axis approximately vertical so that the plane of rotation of same is in an approximately horizontal plane, or the handle can be swung around towards one side in which case it revolves through a vertical or approximately vertical plane.

The teeth 28 are formed in the conical reinforcing member 15 by stamping sections rearwardly, the teeth being thus formed from the sheet metal of the member itself, and taking the form shown more particularly in Fig. 4.

To prevent the barrel 12 from revolving when the frame 1 is tipped up to discharge the con-

crete or the like from the barrel, a detent **30** is provided which is carried by a hinge pin **31** on a bracket **32** projecting upwardly from a frame member **33** secured between the two sides of the frame **1**, the position of this detent **30** being such that when the barrow is normally positioned, such as when filling or mixing the concrete, the detent will swing back out of the path of the teeth **28** as shown in the drawings, but when the frame is tilted to discharge the content of the barrel, the detent **30** will swing forward due to its own weight and will then engage the teeth, thereby locking same against rotation. A stop **34** limits the rearward movement of the detent **30**.

It will be appreciated that either one or other of the handles **19** or **20** may be used, both handles being detachable from their mountings, and the pinion **27** being also disengageable from the member **15** by loosening the bolts **25** and sliding the clamp **24** back. Alternatively the shaft **21** carrying the pinion **27** may be adjustable on eccentric bushes or it may be slidable axially to disengage the pinion **27** from the member **15**, the selection being made according to the leverage which is desired and also to suit the convenience of the operator, the gearing between the rear handle **20** and the barrel **12** forming a substantial reduction so that the barrel can be revolved by the application of a lighter force to the handle **20**.

The shaft **10** on the barrel **12** is provided with anti-friction means between it and the tubular bearing member **9**, the anti-friction means comprising balls **36** disposed between races **37** and **38**, the races **37** being confined axially to the shaft **10** by a spline **39**, the races **38** being disposed in recesses in the ends of the tubular bearing member **9**.

Disposed within the barrel **12** are mixing blades **40** which are welded at one end to the wall of the barrel **12** and at the other end to the base **14** of same, the attachment to the base coinciding with the periphery of the conical reinforcing member **15** so that a triangulated construction is achieved which results in rigid bracing of the base **14** by the member **15** and a similar bracing of the wall of the barrel **12** by the series of blades **40** of which four are shown but which number may be varied. The base **14** extends around to the line **42** where the base is welded to the main body of the barrel **12**.

From the foregoing it will be appreciated that the general arrangement of the device is such that normally the barrel **12** is positioned to project forwardly and upwardly so that materials may be fed into the open end **16** of same and will then fall down towards the base, the angle being sufficient to prevent the materials from falling out of the barrel when the barrow is pushed along by the handles **4**.

To discharge the materials from the barrow it is only necessary to tip same forward, this then bringing the axis of the shaft **10** into a downward inclination and causing the materials to fall from the barrel **12**.

While this downward inclination of the barrel exists, the detent **30** falls into the teeth **28** of the crown wheel and locks the barrel against rotation, this preventing the barrel from swinging around to bring the handle **19** into the path of the materials discharging from the barrel.

In the embodiment shown in Fig. 5 the shaft **21** is engaged in an eccentric bushing **42** in turn held in the lower bearing **22**, the bushing **42** having a handle **43** whereby it may be set to

bring the teeth on the pinion **27** into or out of engagement with the member **15**. The upper bearing is preferably similarly provided with an eccentric bushing. This arrangement permits rapid disengagement of the driving handle **20** when the handle **19** is being used.

From the foregoing it will be appreciated that a very useful barrow is provided in which conveying of materials from place to place can be effected and in which effective mixing can also be carried out, this making the invention particularly suitable for concrete mixers where, as previously said, it may be desired to pick up the aggregate and cement from different localities and to add the water at another locality, and after mixing to discharge the mix at some further locality where the work is being carried out.

The invention is of course useful for conveying earth or sand or other materials from place to place or for gathering leaves and rubbish.

What I claim is:

1. A combined portable mixer and barrow comprising; a wheeled frame, handles projecting rearwardly on the said frame, legs on the said frame, a barrel closed at one end and disposed longitudinally on the said frame having its axis upwardly inclined and having an open end disposed approximately over the wheel axis, a shaft projecting axially from the closed end of the barrel, a conical bracing member engaged over the said shaft and having its periphery secured to the closed end of the barrel, a tubular bearing member secured on the said frame engaging the said shaft, blades in the said barrel secured at one end to the base of the barrel adjacent the periphery of the conical member and at the other end to the barrel towards its open end to form mixing and also bracing means, teeth formed in the said conical member, a handle rotatably engaged in bearings, a bracket supporting the last said bearings, clamping means on the said bracket engaged around the tubular bearing means on the frame to be adjustable about the axis of the said tubular bearing member, and longitudinally on same, and a bevel pinion on the said handle engaging the teeth in the said conical member.

2. A combined portable mixer and barrow comprising; a wheeled frame, handles projecting rearwardly on the said frame, legs on the said frame, a barrel closed at one end and disposed longitudinally on the said frame having its axis upwardly inclined and having an open end, a shaft projecting axially from the closed end of the barrel, a conical bracing member engaged over the said shaft and having its periphery secured to the closed end of the barrel, teeth formed in the said conical member, bearing means secured on the said frame engaging the said shaft, a handle rotationally supported on the said frame, a pinion on the said handle engaging the teeth in the said conical member on the barrel adjacent the periphery of the conical member and at the other end to the barrel towards its open end, and means to lock the barrel against rotation when materials are discharged from the barrel.

3. A combined portable mixer and barrow comprising; a wheeled frame, handles projecting rearwardly on the said frame, legs on the said frame, a barrel closed at one end and disposed longitudinally on the said frame having its axis upwardly inclined and having an open end disposed approximately over the wheel axis, a shaft projecting axially from the closed end of the barrel, a conical bracing member engaged over

the said shaft and having its periphery secured to the closed end of the barrel, a tubular bearing member secured on the said frame engaging the said shaft, blades in the said barrel secured at one end to the base of the barrel adjacent the periphery of the conical member and at the other end to the barrel towards its open end, teeth formed in the said conical member, a handle rotatably engaged in bearings, a bracket supporting the last said bearings, clamping means on the said bracket engaged around the tubular bearing means on the frame to be adjustable about the axis of the said tubular bearing member, a bevel pinion on the said handle engaging the teeth in the said conical member, and a detent adjacent the teeth in the said conical member pivoted to fall into the teeth when the barrow is tipped to discharge materials from the barrel.

4. A combined portable mixer and barrow comprising; a wheeled frame, handles projecting rearwardly on the said frame, legs on the said frame, a barrel closed at one end and disposed longitudinally on the said frame having its axis upwardly inclined and having an open end disposed approximately over the wheel axis, a shaft projecting axially from the closed end of the barrel, a conical bracing member pressed from sheet metal and engaged over the said shaft and having its periphery secured to the closed end of the barrel, blades in the said barrel secured

at one end to the base of the barrel adjacent the periphery of the conical member and at the other end to the barrel towards its open end, teeth formed in the said conical member by pressing metal inwards, a tubular bearing member secured on the said frame to form part thereof engaging the said shaft, a handle rotatably supported by the said frame, and a bevel pinion on the said handle engaging the teeth in the said conical member.

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