The invention relates primarily to improvements in concrete mixers, in which the concrete is mixed in a rotary drum, but it is adaptable to other uses and purposes.

One of the objects of this invention is to provide a drum concrete mixer which is simple in construction and inexpensive to manufacture yet is very durable and requires a minimum of repair and servicing.

Another object is to provide a concrete mixer which is reinforced at the particular points where it receives the greatest stress and strain, and where accurate form and alignment is necessary.

Another object is to provide a concrete mixing drum whose revolving drum is free from weave or other irregular movement thus avoiding wear on parts.

Still another object of the invention is to provide a concrete mixer whose drum and drive may be aligned and realigned accurately to give the highest efficiency or to compensate for wear on the parts for use.

Herein it has been the practice to construct concrete mixers with a track or guide secured around its periphery, designed to travel in a groove or slot or some equivalent thereof, for the purpose of maintaining the mixing drum in alignment with other parts. The alignment of a circular track around the outer periphery of the mixing drum or the like is a costly provision and one which must be accurately constructed and applied, and with great care, or the drum will become misaligned by reason of any slight misalignment of the track. The present invention eliminates the necessity of a track altogether.

It has also been the practice hereetofore to form the ends of the mixing drums by bending the ends of the drum inwardly to make such end construction. This inward bend leaves a section of the drum at each end in more or less attenuated condition, the metal being thinner at these points than at any other point on the drum. Since it is common practice to locate idler rollers at the ends of the drum, for the purpose of stability, this means that the greatest strain on the mixing drum is placed on its weakest parts. The present invention, however, has for one of its objects the construction of a drum whose strongest point is the point of contact with such idler rollers.

Further objects and advantages will be apparent from the following specification and the drawings therein referred to.

Referring to the said drawings:

Fig. 1 is a plan view of the chassis of the mixer;

Fig. 2 is a longitudinal vertical section of the rotary drum mounted on the chassis.

Fig. 3 is a vertical medial cross section of the mixer and chassis.

Referring to the drawings, 1 represents the concrete mixing drum which has welded or otherwise secured around exterior at its medial portion an annular rack gear 2 which is in mesh with a drive pinion 3 affixed to the drive shaft 4. The drive shaft 4 is rotated or sprocket drive such as is commonly used in the art and is not shown in the drawings.

The drum 1 rests upon eight carrying rollers 5 and 5', near each end thereof and in spaced sets of four each, which are preferably made of rubber or other suitable resilient material. These sets of rollers are rigidly affixed to shafts 6, 6' respectively mounted in bearing housings 7, 7' which are secured to the mixer frame member 8, so that the rollers 5 and 5' and the accompanying shafts 6, 6' may rotate freely. On each of the shafts 6, 6' and centrally thereof, is located a guide roller consisting of a body portion 9 having drilled into it a threaded orifice 10 which receives a set screw 11. The body portion 9 is slightly greater in width than the width of the gear 2 and terminates in annular flanges 12 and 12' preferably integral therewith. These flanges 12 and 12' overlap the sides of the gear 2 and perform a function which will be explained later.

Referring to Fig. 3, it will be noted that the drum 1 is manufactured by forming a cylinder 13 and end members 14 and 15 therefor having the usual central charge and discharge openings 16 and 17. Each of these end pieces has an elongated or deep flange 14' and 15', respectively, which is welded or otherwise firmly united with the cylindrical section 13 at 16, 17, 18 and 19, so that the thickness of the metal at the zone where the rollers 5 and 5' support the weight of the mixing drum 1, and its contents, is doubled, thereby giving extra strength at the point of greater strain.

The purpose of the set screws 11 and the guide roller consisting of the body portion 9, with tapped hole 10 and flanges 12, 12', is to provide a means whereby the drum 1 may be adjusted and aligned so that the gear 2 and the pinion gear 3 may be placed in exact meshing alignment. Should these gears through use and wear become disaligned, the set screw 11 may be loosened and the drum 1 moved longitudinally until the gears 2 and 3 are again in perfect alignment and register, whereupon the set screw 11 may be tightened to secure and preserve the adjustment.

In operation, as the drum 1 rotates under the drive of the pinion 3 acting upon the peripheral
gear 2 there is a tendency due to the weight of heavy aggregates being thrown about in the drum to cause a slight weaving movement of the drum in a lateral direction. The maximum strain of lateral movement is checked by the action of the rollers 5 and 6, but is positively checked by the action of the flanges 12 and 12' which embrace the side edges of the peripheral gear 2, thus preventing any appreciable amount of weaving by the drum 1, and positively maintaining the alignment of the gears 2 and 3.

The annular rack and pinion need not be provided with teeth or be of metallic material, and one or both of the idler shafts may be driven. In this case, the pinion may be omitted. The grooved positioning rollers or one of them, may also be toothed with the annular gear or rack to drive the drum.

Other modifications of the details of construction described and shown, may be made without departing from the scope of the improvements.

What I claim is:

1. In a device of the character described, a frame, drum supporting idler rollers, shafts on which said rollers are secured on said frame, bearings for said shafts in said frame, a mixing drum mounted for rotation on said idler rollers, said drum comprising a cylindrical portion and members at the ends of said portion partly closing it overlapping said ends and united therewith to form a reinforced shell at the zone of contact of said idler rollers therewith, a medial rotational drive gear extending around the periphery of said drum, a positioning idler roller adapted securely on one of said shafts between said drum supporting rollers and adapted to engage said gear, said gear adapted also to engage drive mechanism for rotation of said drum.

2. In a device of the character described, a frame, drum supporting idler rollers, shafts on which said rollers are secured on said frame, bearings for said shafts in said frame, a mixing drum mounted for rotation on said idler rollers, said drum comprising a cylindrical portion and members at the ends of said portion partly closing it overlapping said ends and united therewith to form a reinforced shell at the zone of contact of said idler rollers therewith, a medial rotational drive gear extending around the periphery of said drum, a positioning idler roller adapted securely on one of said shafts between said drum supporting rollers and adapted to engage said gear, said gear adapted also to engage drive mechanism for rotation of said drum, comprising a driving pinion engaging said gear and means for driving said pinion.

3. In a device of the character described, a frame, drum supporting idler rollers, shafts on which said rollers are secured on said frame, bearings for said shafts in said frame, a mixing drum mounted for rotation on said idler rollers, said drum comprising a cylindrical portion and members at the ends of said portion partly closing it overlapping said ends and united therewith to form a reinforced shell at the zone of contact of said idler rollers therewith, a medial rotational drive gear extending around the periphery of said drum, a positioning idler roller adapted securely on at least one of said shafts between said drum supporting rollers, and having a recessed periphery receiving said gear, said gear adapted also to engage drive mechanism for rotation of said drum.

4. In a device of the character described, a frame, drum supporting idler rollers, shafts on which said rollers are secured on said frame, bearings for said shafts in said frame, a mixing drum mounted for rotation on said idler rollers, said drum comprising a cylindrical portion and members at the ends of said portion partly closing it overlapping said ends and united therewith to form a reinforced shell at the zone of contact of said idler rollers therewith, a medial rotational drive gear extending around the periphery of said drum, positioning idler rollers adapted securely on one of said shafts between said drum supporting rollers, and having a recessed periphery receiving said gear, said gear adapted also to engage drive mechanism for rotation of said drum.

WALTER MOLLER.

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