June 2, 1925.

1,540,381

J. G. WYNN

CONCRETE MIXER

Filed Sept. 1, 1921

2 Sheets-Sheet 1

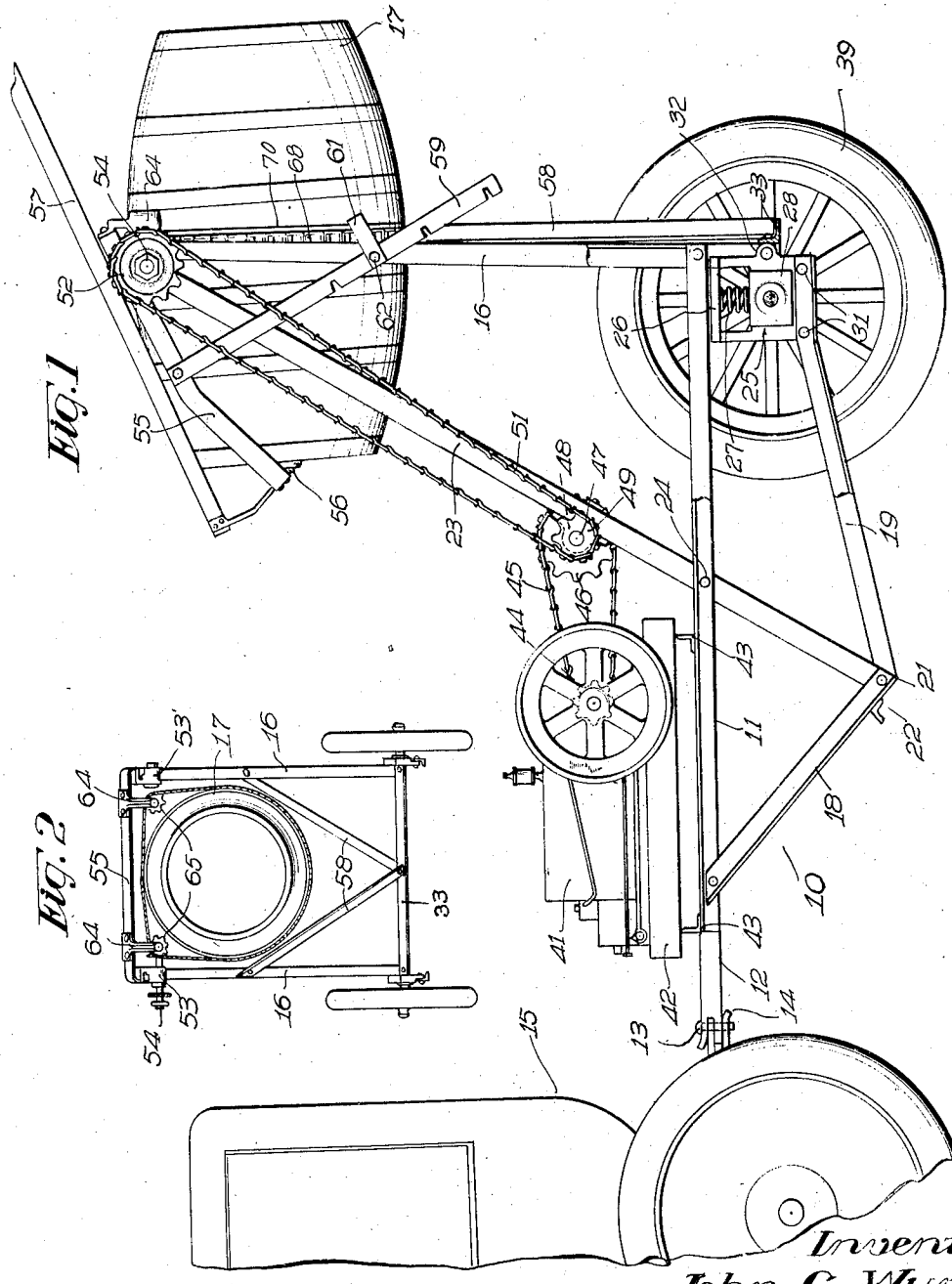


Fig. 1

Fig. 2

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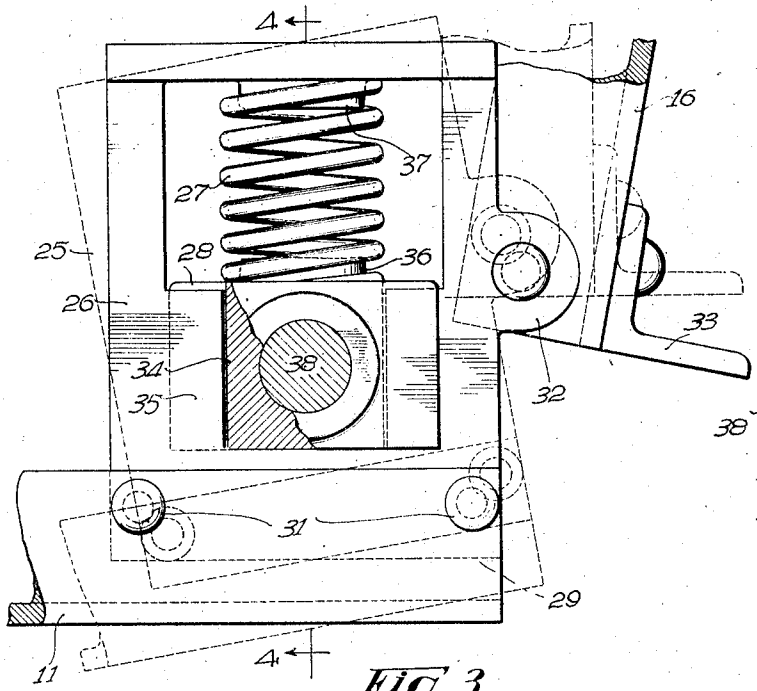


Fig. 3

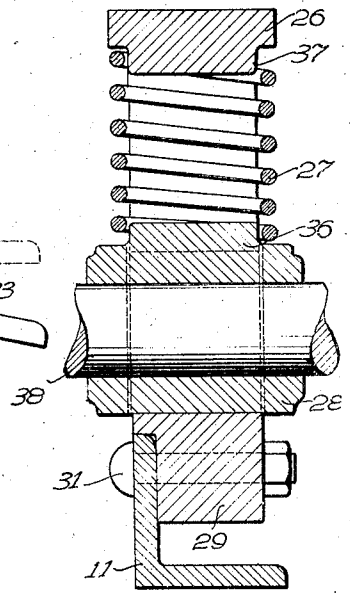


Fig. 4

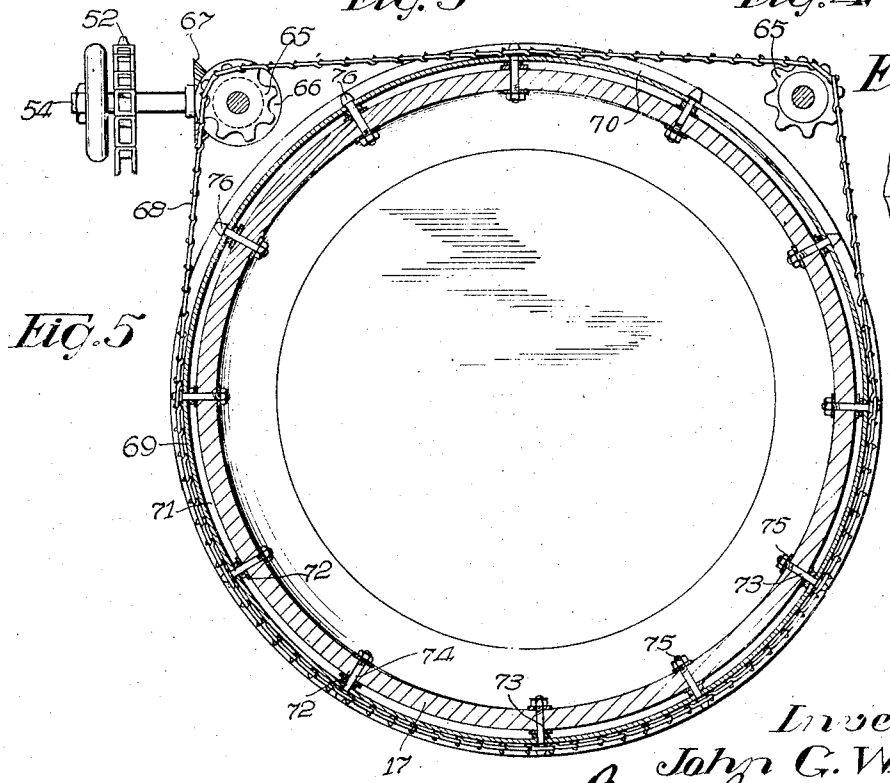


Fig. 5

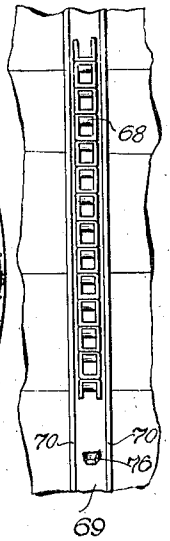


Fig. 6

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Patented June 2, 1925. 1,540,381

UNITED STATES PATENT OFFICE.

JOHN G. WYNN, OF MADISON, WISCONSIN.

CONCRETE MIXER.

Application filed September 1, 1921. Serial No. 497,581.

To all whom it may concern:

Be it known that I, JOHN G. WYNN, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented a certain new and useful Improvement in Concrete Mixers, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to concrete mixers.

It is one of the principal objects of the present invention to provide an improved construction of portable concrete mixer embodied in the form of a two-wheeled trailer vehicle. The embodiment of a power driven concrete mixing apparatus in a two-wheeled trailer introduces new problems, involving the distribution of weight on the vehicle; the stability of the trailer when uncoupled and lowered for operation; the location of the pouring edge of the mixer and its accessibility to the wheelbarrows; the freedom of the mixer and power driving mechanisms from injurious shock and vibration when the trailer is hauled at a high rate of speed over uneven roads, etc. The mixing apparatus and power driving mechanism disclosed in the present application are of such form and are so related and mounted on the trailer vehicle as to provide a proper weight distribution and stability during operation, to accessibly dispose the pouring edge of the mixer, and to resiliently mount the mixer and and power driving mechanism. This will be more apparent from the following detailed description of the construction of the mixer.

The drive is transmitted to the mixing barrel through a flexible driving member, such as a chain, which partly encircles the mixing barrel and preferably assists in supporting the latter. There is a tendency for the wet concrete and water to flow down on the lower surface of the mixing barrel after the latter has been tipped, or as a result of overflow, and this concrete and water tends to rust and cake concrete on the chain and its supporting sprockets. A further object in this regard is to provide an improved arrangement of channel hoop, which supports the driving chain out of contact with the barrel and thereby prevents the concrete and water on the outer surface of the barrel from reaching the chain. This construction of channel hoop also affords a convenient manner of securing a positive drive between the chain and the barrel.

Other objects will be hereinafter set forth in the accompanying detailed description taken in connection with the drawings, in which:

Figure 1 is a side view of the trailer, partly in section, showing it coupled to a pulling vehicle;

Figure 2 is a reduced rear end view of the trailer;

Figure 3 is an enlarged side elevational view of the spring suspension for the trailer;

Figure 4 is a transverse sectional view through the same taken on the plane of the line 4—4 of Figure 3;

Figure 5 is a transverse sectional view through the mixing barrel, illustrating the channel hoop for supporting the chain; and

Figure 6 is a fragmentary side elevational view of the same.

The trailer frame 10 is constructed practically entirely of bars of stock section, such as angle irons, riveted or bolted together. Two substantially horizontal bars 11 form the main side members of the frame, these two bars being joined at their forward ends by a suitable member 12 which is adapted to have a coupling connection 13 with a draft connection 14 extending back from the pulling vehicle 15. The draft connection 14 is not always necessary, as the coupling connection 13 may be direct with the body or rear axle of the automobile 15. The rear ends of the horizontal bars 11 are secured to two substantially vertical bars 16 between the upper ends of which is swung the mixing barrel 17. An underslung bracing and resting support is formed at each side of the trailer frame by two diagonal struts of angle section 18 and 19 which are secured together at the intersection 21 and are spaced from the opposite pair by a transverse bar 22. The upper end of each upright 16 which carries the load of the barrel mixer 17 is braced against diagonal stresses imposed by the tilting of the barrel by a diagonal bracing iron 23 which extends down to the point of intersection 21 between the struts 18 and 19. Each of these diagonal bracing members is preferably riveted or otherwise secured to the vertical flange of each horizontal frame member 11 as indicated at 24.

Directly below each horizontal frame member 11 in the angle of intersection between the upright 16 and strut 19 is mounted a

spring suspension member or block 25 (Figures 3 and 4). Each block comprises a casting 26 having its central portion cut out to receive a compression spring 27 and the slidable axle block 28. The bottom of the casting 26 is formed with a depending flange 29 to which is riveted the horizontal angle bar 11 as shown at 31. One, preferably the rear, vertical edge of the casting 26 is formed with an ear 32 to which is bolted or riveted the upright bar 16. A transverse angle bar 33 is secured to the lower ends of both uprights 16 to transversely brace the lower part of the frame. The bearing block 28 is provided with vertical slots 34 along each vertical edge which embrace a rib or flange 35 projecting inwardly from the casting 26 serving to guide the vertical sliding motion of the block 28. The compression spring 27 is confined about circular lugs 36 and 37 projecting from the bearing block 28 and from the top of the casting 26 respectively. The axle 38 extends through the bearing blocks 28 at each side of the frame and mounts wheels 39. These wheels have resilient tires, preferably pneumatic, to minimize the shock and vibration transmitted to the concrete mixer and engine when driving at a high rate of speed over uneven roads. The spring suspension of the trailer afforded by the compression springs 27 and slidable bearing blocks 28 further assist in absorbing shock and vibration, and permits the trailer to be drawn at a high rate of speed, such as is desirable in a small unit of this type. The dotted line position in Figure 3 indicates substantially the position of the frame members when the trailer is unhitched and in position for operation of the mixing apparatus.

The engine 41 is preferably of a single cylinder type of any conventional construction, and has its bed 42 secured upon two transverse angle bars 43 extending across the top of the frame members 11 as through the medium of the longitudinal member 12. A sprocket 44 on the engine crank shaft connects through a sprocket chain 45 with a relatively larger sprocket 46 on a counter shaft 47. This counter shaft is suitably journaled in bearings 48 secured to the diagonal bracing members 23. At the opposite end of the counter shaft 47 from the large sprocket 46 is a relatively small sprocket 49 which drives a chain 51 extending up over a relatively large sprocket 52 journaled at the upper end of one of the upright members 16. Where the upright 16 joins with its corresponding diagonal brace 23 is secured a bearing bracket 53 which serves to join the members 16 and 23 and to provide a bearing for the shaft 54 on which the sprocket 52 is mounted. The barrel 17 is swung in a tilting frame 55 which has bearing support on the bearing bracket 53 at one side of the barrel, and on the other side of the barrel there is provided a similar bearing bracket 53′ which also joins the frame members 16 and 23 on the other side of the vehicle. The frame 55 is adapted for rocking motion concentrically with the axis of the shaft 54 for raising or lowering the rear discharge mouth of the mixing barrel 17. The rear part of this rocking frame 55 extends across the back or bottom of the barrel 17 and is provided with a suitable hub 56 for receiving a pivotal stud projecting from the rear or bottom head of the barrel. Attention is directed to my prior Patent No. 1,369,870 for details of this arrangement. An operating arm 57 extends forwardly from the rear end of this frame in position to be manipulated by the operator for raising or lowering the discharge mouth of the barrel.

The upright bars 16—16 are braced laterally for the support of the barrel by diagonal struts 58—58 (Figure 2) which are secured at their lower ends to an intermediate point in the transverse frame member 33. The barrel is adapted to be held in any one of a plurality of inclined positions by a notched link 59 which is freely pivoted to the rectangular or yoke-shaped barrel frame 55 and which has its lower end guided in a strap 61 secured to the adjacent upright 16. By lifting any one of the notches in the rear edge of the link 59 out of engagement with the bolt 62, the barrel can be rocked to any one of a plurality of angular positions and locked in that position by the engagement of one of these notches over the bolt 62.

As shown in Figures 2 and 5, the upper part of the rocking frame 55 which crosses the top of the barrel has secured thereto two bearing brackets 64 in which are journaled small sprocket wheels 65. The left hand sprocket wheel 65 (Fig. 5) is formed with a co-extensive bevel gear 66 which meshes with a driving bevel gear 67. The bevel gear 67 is rigidly mounted on the inner end of the short shaft 54 which carries the sprocket wheel 52 and which is journaled in the bearing bracket 53. Thus, the drive transmitted to the shaft 54 from the sprocket 52 is transmitted through the bevel gears 67 and 66 and through the adjacent sprocket pinion 65 to the driving chain 68. This chain passes over the two sprockets 65—65 and down under the central part of the barrel for supporting and rotating the latter in conjunction with the hub support 56. The chain tracks in a hoop 69 which is secured around the circumference of the barrel substantially midway between its ends. This hoop is of channel section having outwardly extending flanges 70 to prevent lateral displacement of the chain from the hoop. It will be apparent

that by reason of the rotation of the barrel any water or concrete flowing along the outer surface of the barrel resulting from tipping or otherwise, will run out over the adjacent flange of the hoop and onto the chain unless provision is made for allowing such water or concrete to pass freely past the hoop 69. This I accomplish by spacing the hoop out of contact with the circumference of the barrel. Thus, the water and cement is permitted to flow through the intervening spaces 71 between the barrel and hoop downwardly toward the lower end of the barrel without any of such water or cement reaching the inside of the hoop 69 and the chain 68. The support of the hoop 69 is obtained by interposing spacing washers, blocks, or the like 72 between the circumference of the barrel and the inner side of the hoop and passing studs or bolts 73 down through apertures in the web of the channel and through aligned openings in the washers 72. These bolts, or studs are preferably extended through the barrel for receiving nuts 75 or for having their inner ends riveted over on the inside of the barrel. The outer ends of these studs or bolts are formed with wedged shaped heads 76 which lie in the bottom of the channel hoop 69 and are adapted to engage as lugs or teeth in the links of the chain 68 thereby cooperating with the hoop to form a sprocket. By this arrangement, a positive drive is also secured between the chain 68 and the barrel 17. It will be apparent that the present spaced hoop may be in the form of a gear or other driving member for other driving systems.

It will be noted that as a result of the foregoing construction, the engine 41 is supported at a low point relative to the wheels 39 so that lateral stability of the trailer is maintained to prevent possible tipping of the trailer on lateral inclines or as a result of rapid hauling. The location of the engine at the hitching end of the trailer is also advantageous, in that it insures that the dropped end of the trailer will remain on the ground against any overbalancing tendency caused by the rotation or inclination of the mixing barrel. The engine 41 is disposed centrally on the trailer frame, and similarly, by extending the axis of the mixing barrel 17 parallel with the length of the frame, this barrel can be centrally disposed relative to the frame so that the lateral balance of the vehicle is substantially perfect. The chain support of the barrel affords added resiliency to the mounting of the barrel. By supporting the barrel in the elevated position shown at the rear end of the trailer, the discharge mouth of the barrel is readily accessible to wheelbarrows placed directly in the rear of the trailer.

I claim:

1. In combination, a concrete mixer, a driving chain having operative engagement with said mixer, a hoop mounted on said mixer and having radially extending shoulders for receiving said chain therebetween and spaced attaching means forming teeth for engagement by the links of the chain, and means for spacing said hoop from said mixer circumferentially.

2. In a concrete mixer, the combination of a rotating barrel, a channel hoop encircling said barrel, a driving chain engaging in said hoop for rotating said barrel, and means for spacing said hoop from the circumference of said barrel, said means including lugs forming teeth projecting into the hoop for engagement by the links of the chain.

3. In a concrete mixer, the combination of a rotating barrel, a chain for driving said barrel, a hoop mounted on said barrel for receiving said chain, and bolt members serving to attach said hoop to said barrel, said bolt members having heads projecting from said hoop and meshing with said chain for establishing a positive driving connection between said chain and said barrel.

4. In a concrete mixer, a frame, a suitable mixing container rotatably supported in the frame, a hoop mounted on the mixing container and secured at spaced points in spaced relation to the periphery thereof, said spaced securing means forming teeth, an endless drive chain engaged around the hoop and with said teeth, and means for actuating said drive chain.

5. In a concrete mixer, the combination of a rotating mixing container, a chain for driving said container, a hoop mounted on said container in spaced relation to its periphery for receiving said chain, and bolt members securing said hoop to said barrel at spaced points and having heads projecting outwardly therefrom to engage certain links of the chain, whereby the container may be rotated upon actuation of the chain.

6. In a concrete mixer, a rotatable mixing container, a toothed sprocket wheel arranged around the container and uniformly spaced from the periphery thereof throughout the circumference to provide an annular space therebetween, spaced securing means between the container and sprocket wheel and a drive chain engaged on the sprocket wheel.

7. In a mixer of the class described, a frame, a mixing container rotatably supported in the frame and having sloping walls, a channel hoop encircling the mixing container intermediately of its length, bolts connecting the hoop to the mixing container at spaced points, spacing means mounted on the bolts between the hoop and the periphery of the container, the bolts having wedge-

shaped heads projecting into the channel of the hoop and a suitably driven chain engaged around the hoop and meshing with said heads.

8. In a concrete mixer, the combination of a rotating barrel, a channel hoop encircling said barrel, a flexible driving chain engaging in said hoop for rotating said barrel, and means for securing the hoop to the barrel and forming teeth for engagement by the chain, said means spacing said hoop from the circumference of said barrel throughout the entire periphery of the latter, whereby to provide a space through which concrete material flowing on the exterior surface of the barrel may pass to prevent the same coagulating on the exterior of the hoop and drive member.

9. In a concrete mixer, the combination of a rotating barrel, a chain for driving said barrel, a hoop around and spaced from the barrel, and means for retaining the hoop on said barrel and presenting spaced lugs for engagement with the chain for establishing a positive driving connection between the chain and barrel, said hoop having side flanges for receiving and retaining the chain therein.

In witness whereof, I hereunto subscribe my name this 19th day of August, 1921.

JOHN G. WYNN.