

June 19, 1923.

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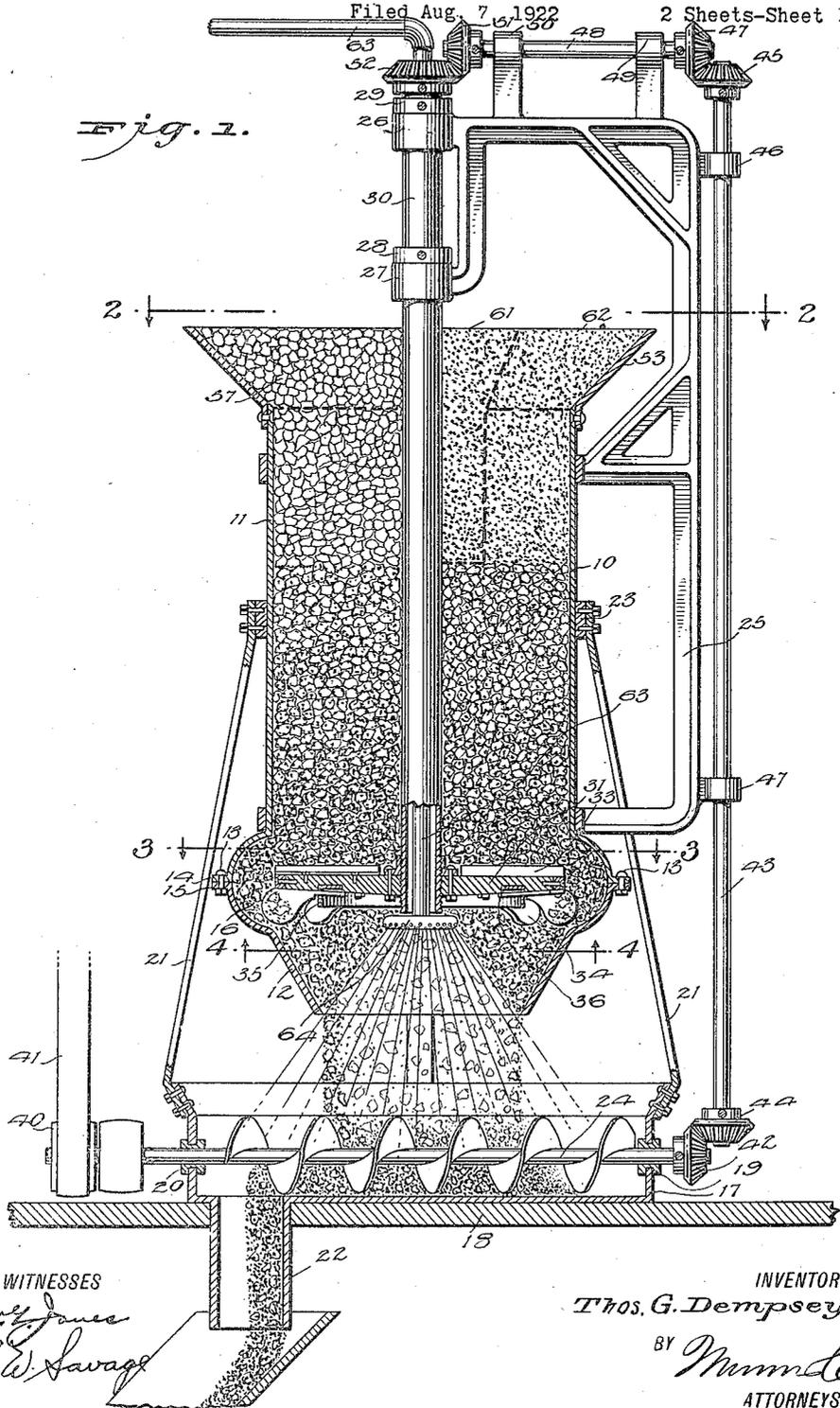
T. G. DEMPSEY

MIXER

Filed Aug. 7, 1922

2 Sheets-Sheet 1

Fig. 1.



WITNESSES  
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Fig. 2.

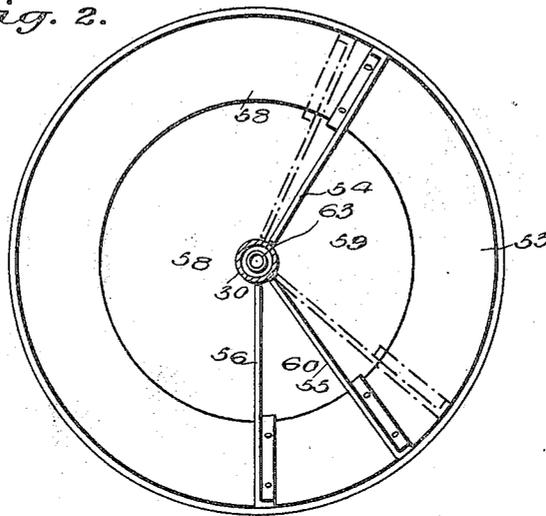


Fig. 3.

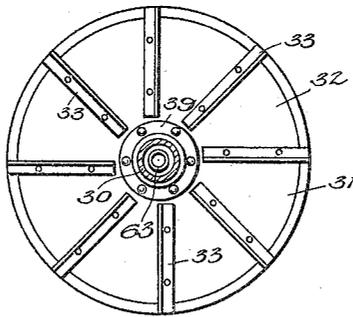
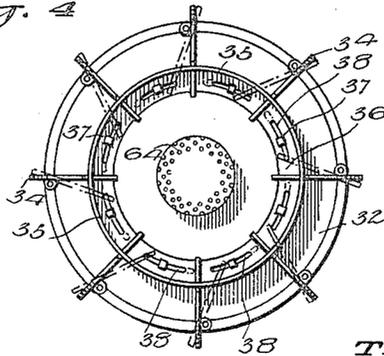


Fig. 4



WITNESSES

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## UNITED STATES PATENT OFFICE.

THOMAS G. DEMPSEY, OF NEW YORK, N. Y.

## MIXER.

Application filed August 7, 1922. Serial No. 580,199.

*To all whom it may concern:*

Be it known that I, THOMAS G. DEMPSEY, a subject of the King of Great Britain, a resident of the city of New York, borough of the Bronx, county of New York, and State of New York, have invented a new and Improved Mixer, of which the following is a full, clear, and exact description.

This invention relates to mixers and was primarily designed for use as a concrete mixer.

A common concrete mixer is constructed with a container in which the measured ingredients are placed for mixing. Mixing is accomplished by rotating the container or by operating the container in some manner. Such a type of mixer does not give a continuous flow of concrete. The water is added to the dry mixture while in the container and if the machine has to be stopped when charged the concrete sets and a great amount of labor is needed to remove it.

The general object of this invention is the provision of a simple and efficient mixer provided with means for giving the ingredients to be included in a mixture a helical movement as they pass through a casing to mix them.

A further object of the invention is the provision of a device for making dry mixtures which continuously delivers the mixture during operation.

Another object of the invention is to produce a device for mixing the dry ingredients of concrete provided with means for supplying water to the dry mixture as it leaves the casing.

This device is also provided with adjustable feeding means whereby the ingredients of the concrete may be fed in any desired proportions.

These objects are accomplished by mounting on a casing open at both ends an adjustable feeding means for supplying the ingredients of the concrete in any desired proportions, mounting in the casing a mixing wheel carried by a vertical shaft depending from the machine frame for giving the dry ingredients of the concrete a helical movement as they pass through the casing and introducing means for supplying water to the dry mixture as it leaves the casing.

These and other objects of the invention

will be more clearly understood from the following detailed description and accompanying drawings.

Fig. 1 is a vertical section through the mixer showing its construction.

Fig. 2 is a top plan view of the hopper.

Fig. 3 is a top plan view of mixing wheel.

Fig. 4 is a bottom plan view of the mixing wheel.

Referring to the above mentioned drawings which show that the mixer includes a casing open at both ends. This casing 10 is made up of two sections 11 and 12. The upper section 11 is cylindrical with a curved annular enlargement at its lower end while the lower section 12 has a curved annular enlargement on its upper end which registers with the enlargement on the upper section and walls, sloping inward at its lower end. These sections are attached to one another by bolts extending through the flanges 14 and 15 integral with the sections 11 and 12 respectively. The curved portions of the two sections fitted together form an annular channel 16 about the casing.

A box 17 is supported on a platform 18 and a spout 22 leading from the box extends through the platform. Carried by the box 17 is an openwork frame 21 supporting the casing 10 through a band 23. Bearings 19 and 20 are positioned in the walls of the box and a screw conveyor 24 is mounted in these bearings. Attached to the casing 10 is the frame 25 carrying bearings 26 and 27. A hollow shaft 30 is mounted in the bearings 26 and 27 and retained in position by the collars 28 and 29. This shaft 30 extends down into the casing 10 and is concentric with it.

Attached to the lower end of the shaft and positioned in alinement with the annular groove 16 is a mixing wheel 31. This wheel includes a disk 32 of a diameter approximately equal to the diameter of the upper casing section 11. A plurality of cleats 33 made from angle iron are attached to the disk and extend along radial lines on its top. Curved blades 34 are pivotally mounted on the bottom of the disk 32. These blades are spaced around the circumference of the disk and extend beyond its edge. The inner ends of the blades extend through the rim 35 of an annular plate 36. Slots 38 are

provided in the annular plate 32 and set screws 37 projecting through these slots serve to attach it to the disk 32. When the set screws are loose the annular plate 36 may be rotated through a certain angle adjusting the position of the blades 34. By tightening the set screws the blades may be set in any desired position. The disk 32 is attached to the shaft 30 by means of a threaded collar 39 bolted to the disk and engaging with a thread provided on the lower end of the shaft.

Mounted on one end of the shaft of the screw conveyor 24 is a pulley 40 which is driven by a belt 41 while on the other end a bevel gear 42 is fixed. A shaft 43 having bevel gears 44 and 45 attached to its ends is mounted in bearings 46 and 47 carried by the frame 25. The gear 44 meshes with the gear 42 and the gear 45 meshes with a bevel gear 47 fixed to one end of the shaft 48 mounted in bearings 49 and 50 carried by the frame 25. Attached to the other end of the shaft 48 is a bevel gear 51 which meshes with the bevel gear 52 fixed to the upper end of the shaft 30. Thus both the hollow shaft 30 and the screw conveyor are driven from the pulley 40.

A hopper 53 is carried by the casing 10. This hopper is divided into three sections 58, 59 and 60 by plates 54, 55 and 56 attached to the hopper wall. These plates may be attached at different points thus varying the size of the sections. The dry ingredients of the mixture are fed through these sections. The stones or coarse aggregate 57 are fed through the largest section 58, the sand 61 through the next largest 59 and the cement 62 through the smallest 60.

A water pipe 63 extends down through the hollow shaft 30 and has mounted on its lower end a spray 64. This spray 64 is located below the disk 32 and serves to supply water to the mixture as it leaves the casing.

When the mixer is set in operation coarse aggregate sand and cement are fed through the sections 58, 59 and 60 of the hopper respectively. These ingredients which are to form the dry mixture rest on the mixing wheel 31. The rotation of the wheel 31 starts the ingredients moving about the shaft 30. At the bottom they are turning more rapidly than at the top the speed gradually decreasing from bottom to top. This motion causes each particle to travel a helical path through the casing or if thrown out of its path by another to rotate with continually increasing speed about the shaft as it descends through the casing. When the ingredients reach the bottom they are thoroughly mixed. Water is supplied to the dry mixture through the spray 64 as it leaves the casing. The blades 34 serve to prevent the mixture from sticking in the annular channel 16, of the casing 10. After the con-

crete has been mixed it drops into the box 17, and is projected through the spout 22 by the conveyor 24.

The above described device provides a means for first mixing the dry ingredients and then supplying water to the mixture. If such a mixer is stopped while full there is no danger of the concrete setting since the mixture in the machine is dry. Access may be had to the box 17 through the open frame 21.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention I do not limit myself strictly to the exact details herein illustrated since manifestly the same can be considerably varied without departing from the spirit of the invention as defined in the appended claims.

What I claim is:

1. A concrete mixer, comprising a casing, means for feeding the solid ingredients into the casing in the desired proportions, a hollow vertical shaft depending into the container, a mixing wheel fixed to the lower end of the vertical shaft for giving the ingredients a helical movement to mix them, adjustable means mounted on the mixing wheel to prevent the ingredients clogging the casing, and means for supplying to the ingredients after they have been mixed, a spray of water.

2. A concrete mixer of the character described, comprising a cylindrical casing having an annular channel formed in it near its lower end, means mounted on the upper end of the casing for feeding the solid ingredients into the casing in the desired proportions, a vertical shaft rotatably mounted in the casing, a mixing wheel fixed to the lower end of the shaft and located in alignment with said channel, said mixing wheel serving to give the ingredients a helical movement to mix them, adjustable means mounted on the bottom of said mixing wheel for preventing the clogging of the solid ingredients in the channel, and means mounted in the hollow shaft for supplying a spray of water to the dry mixture as it passes from the casing.

3. In a device of the character described for making concrete including a casing, a mixing wheel rotatably mounted in said casing, said mixing wheel having a plurality of adjustable blades mounted on the bottom thereof and projecting beyond the periphery of the mixing wheel for preventing the mixture from clogging the casing.

4. In a device of the character described for mixing ingredients of concrete including a casing having an annular channel extending around it near its base, a mixing wheel rotatably suspended in said annular channel, comprising a circular disk, cleats mounted on said circular disk for engaging the in-

gredients, and a plurality of adjustable members mounted on the lower face of the said disk for engaging with the mixed ingredients to prevent clogging of the casing.

5 5. A concrete mixer of the character described, comprising a cylindrical casing having an annular channel formed in it near its base, a hollow vertical shaft suspended in said casing, a circular mixing wheel approximately the diameter of the casing 10 mounted to rotate in said annular channel so as to carry the whole column of ingredients fed into the casing, and means for supplying a spray of water to the mixed ingredients as they pass from the casing.

THOMAS G. DEMPSEY.