

G. CARLSON.
CONCRETE MIXER.

APPLICATION FILED APR. 6, 1908.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.

968,739.

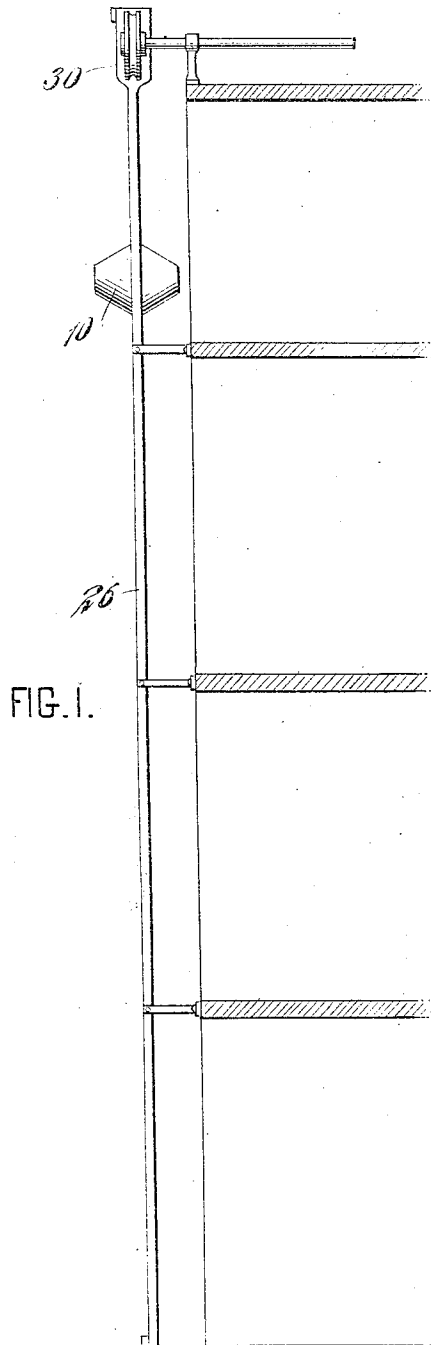


FIG. 1.

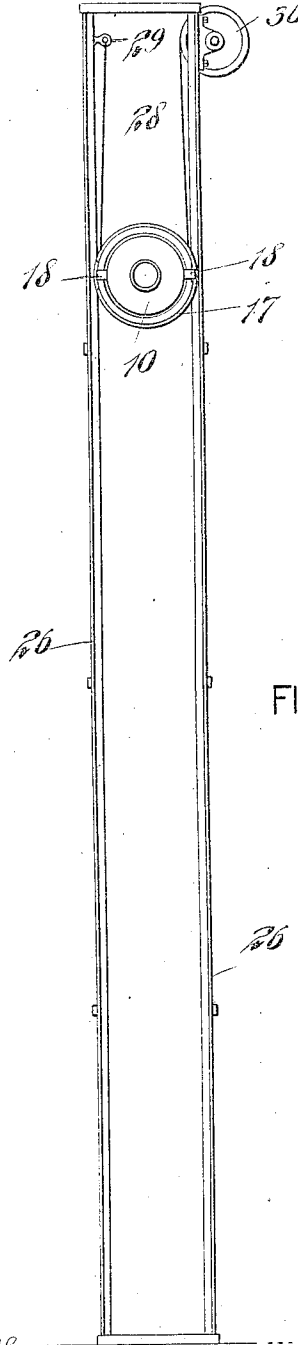
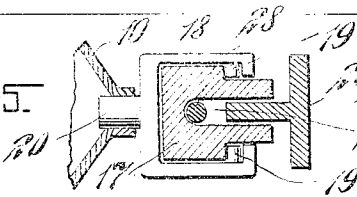


FIG. 2.

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FIG. 5.



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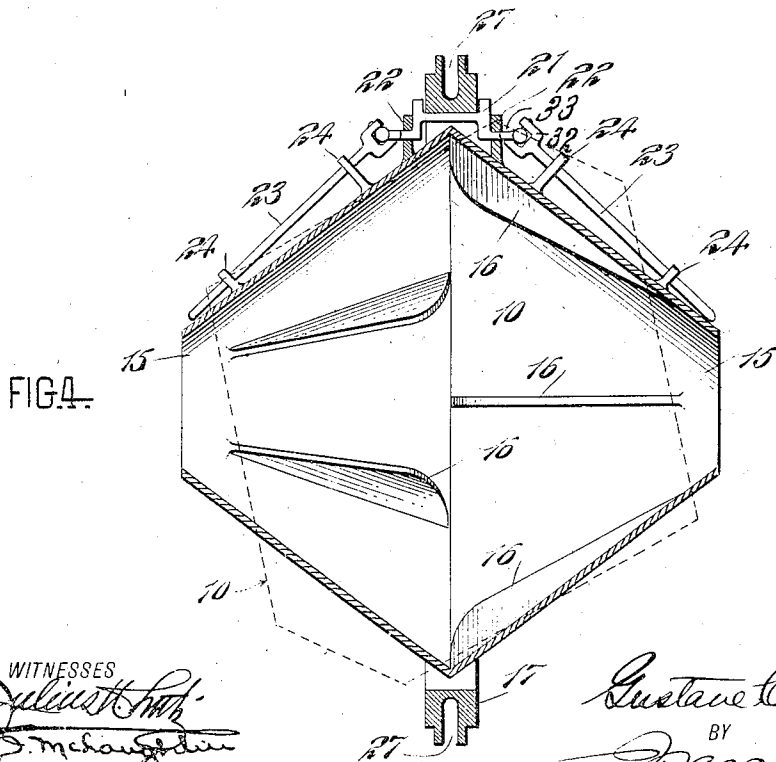
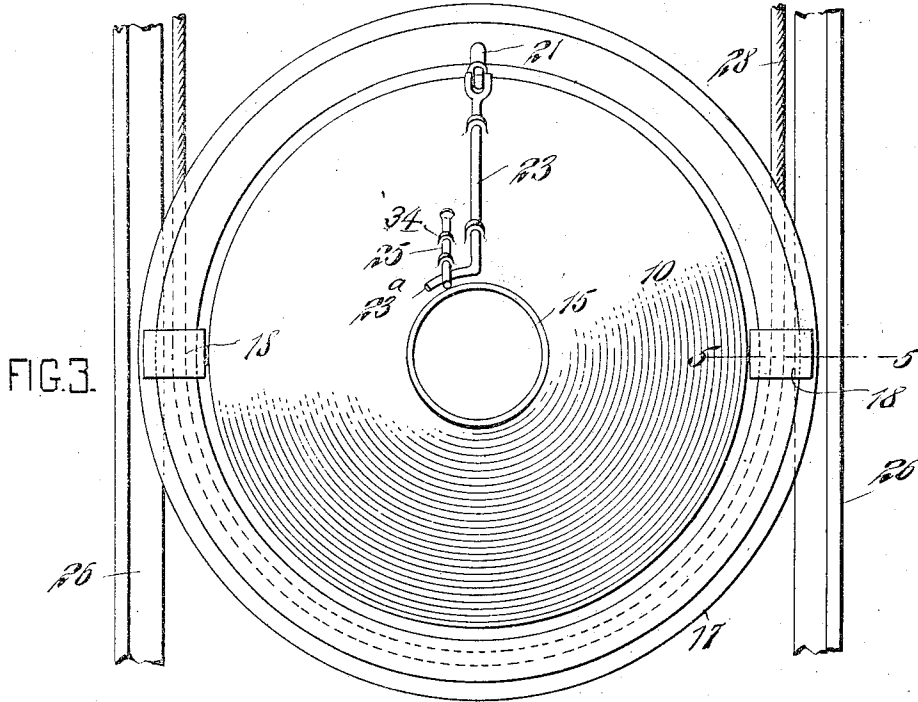
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GUSTAVE CARLSON, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO RANSOME CONCRETE MACHINERY COMPANY, OF DUNELLEN, NEW JERSEY, A CORPORATION OF NEW YORK.

CONCRETE-MIXER.

968,739.

Specification of Letters Patent. Patented Aug. 30, 1910.

Application filed April 6, 1908. Serial No. 425,419.

To all whom it may concern:

Be it known that I, GUSTAVE CARLSON, of Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Concrete-Mixers, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an apparatus for mixing concrete designed especially for use in the formation of concrete buildings and other structures which are raised above the level of the ground and the underlying object of the invention is to facilitate the mixing and lifting operations. I attain this end by organizing the mixer in such a manner that it serves also to lift the concrete, with the result that the mixing chamber may be charged with the aggregate of which the concrete is formed when the chamber is at the grade line and the operation of lifting the mixing chamber to the point of application of the concrete will also serve to rotate or otherwise agitate the mixing chamber so that the elements of the concrete are mixed simultaneously with the elevating operation. This brings about an obvious saving both in time and labor.

The invention involves various other features of importance, and all will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is had to the accompanying drawings which illustrate as an example, the preferred embodiment of my invention, in which drawings,

Figure 1 is a side view showing the general organization of the apparatus; Fig. 2 is a front view of the same; Fig. 3 is an enlarged end view of the mixing chamber, the sustaining cable and guides; Fig. 4 is an enlarged section of the mixing chamber showing the devices for adjustably holding it in its supporting ring or gimbal; and Fig. 5 is an enlarged detail section on the line 5-5 of Fig. 3.

The mixing chamber or drum 10 is preferably of double conical form with open ends 15 for charging and discharging the materials. Interiorly I prefer to provide the drum with lifting flanges 16 the form and arrangement of which however, is quite immaterial to the present invention. Embracing the mixing drum 10 at its largest

diameter is an annular member in the form of a gimbal ring 17 which, as shown in Figs. 3 and 5 is itself embraced by a yoke 18 having sliding engagement with the gimbal ring and provided, if desired, with anti-friction rollers or equivalent devices 19. These yokes 18 have studs 20 on which the drum 10 is rotatably mounted. By this arrangement the drum is carried bodily within the gimbal ring but it is capable of rotation therein and also of pivotal movement, the pivotal movement allowing the drum to tilt toward either side in the manner shown by dotted lines in Fig. 4, to dump its contents.

Devices are provided for releasably locking the drum in the gimbal ring to prevent it from rotating in the plane of the ring and from tilting around the studs 20. These devices may be of various embodiment but, as here shown, they consist of a rocking lock 21 mounted in bearings 22 secured to the middle of the drum and said lock being capable of rocking outward into firm engagement with the gimbal ring so that it not only prevents pivotal movement of the drum around the studs 20, but also prevents rotating movement of the drum in the plane of the gimbal ring. This lock is adapted to be operated from each end of the drum, the devices here shown for this purpose consisting in rock shafts 23 connected by universal joints 32 with the terminals of the trunnions 33 of the rocking lock 21, the trunnions 33 being journaled in the bearings 22, the rock shafts 23 being mounted in bearings 24 on the sides of the drum and provided with cranked ends 23^a with which latches 25 coact respectively, these latches holding the rock shaft securely, yet removably, in that position which corresponds to the active position of the lock 21. The latches 25 are rods disposed on the drum which slide in the guides 34 the heads on rods preventing them from slipping through the said guides. To release the drum from the ring, therefore, it is only necessary to push the latches 25 upwardly and impart a partial rotation to the shafts 23 thus throwing the lock 21 against the drum and disengaging it from the gimbal ring. The drum is then free to tilt around the studs 20 and to roll in the ring independently thereof around the longitudinal axis of the drum.

In adapting the mixer to use in connection with vertical structures, two guide rails

26 are located vertically in parallelism along the front of the building or other structure and are so spaced from each other that they may be loosely received in a peripheral groove 27 formed in the gimbal ring 17 as shown best in Figs. 3 and 5. This groove 27 also receives a cable 28 which passes inside of the guide rails 26 and has one end fastened at the top of the structure as indicated at 29 while the other end is attached to a suitable winding drum or other winding device 30. The cable 28, it will be perceived, runs free in the groove 27 of the gimbal ring and upon winding the cable on the drum 30 the mixer drum 10 is given a combined lifting and rotating action.

In the use of the invention the mixing drum is lowered to the grade line and the lock 21 is thrown up into engagement with the gimbal ring so that the mixing drum 10 and gimbal ring 17 move as a unit. The various materials of which the concrete mixture is formed are now charged into the drum and the winding device 30 is operated which causes the mixing drum and gimbal ring to move up between the guides 26 with a combined lifting and rotating action. This lifting action raises the materials to the point of use and the rotating action thoroughly mixes them so that by the time the materials are lifted to the desired point on the building they are thoroughly mixed and the concrete is ready for use. At this time the operator disengages the lock 21 from the gimbal ring with the result that the weight of the concrete in the drum will cause it to roll slightly in the ring until the studs 20 of the yokes 18 lie in a horizontal line. This operation may, if desired, be assisted by manual pressure on the drum. During said operation the lock 21 may be held so that it still engages the sides of the gimbal ring and prevents the mixing drum from tilting around its pivots or studs 20. However, after the drum has rolled to place these pivots 20 in a horizontal line the disengagement of the lock 21 from the gimbal ring may be completed and thereupon the drum will be free to tilt around its pivots 20. This operation may be guided and controlled by the operator so that the drum will be caused to tilt inward dumping its contents into carts or other devices provided for the reception of the same. The drum may then be returned and the lock 21 engaged with the gimbal ring, after which the parts will be ready for a second operation.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. An apparatus for mixing concrete having a drum, an annular member disposed around the periphery of the drum adapted to move independently thereof, there being a groove in the member, means to releasably

secure the annular member to the drum, a cable disposed in the groove and fixed at one end, means for pulling upwardly the other end of the cable whereby to impart to the drum a combined lifting and rotating action and guides which engage the member.

2. An apparatus for mixing concrete having a receptacle for the materials, a supporting member in which said receptacle is pivoted, means for releasably holding the receptacle against pivotal movement and devices engaged with said supporting member to impart to it and to the receptacle a combined lifting and rotating movement the axis of the latter being at an angle to the axis of the pivoted connection between the receptacle and the supporting member.

3. An apparatus for mixing concrete having a receptacle for the materials, a supporting member in which said receptacle is pivoted, means for releasably holding the receptacle against pivotal movement and devices engaged with said supporting member to impart to it and to the receptacle a combined lifting and rotating movement the axis of the latter being at an angle to the axis of the pivoted connection between the receptacle and the supporting member, such devices comprising a cable engaged with the supporting member and means for pulling upward on one end of the cable.

4. An apparatus for mixing concrete having a receptacle for the materials, a supporting member in which said receptacle is pivoted, means for releasably holding the receptacle against pivotal movement, devices engaged with said supporting member to impart to it and to the receptacle a combined lifting and rotating movement the axis of the latter being at an angle to the axis of the pivoted connection between the receptacle and the supporting member, such devices comprising a cable engaged with the supporting member, means for pulling upward on one end of the cable and a vertical guide with which the said supporting member is engaged.

5. An apparatus for mixing concrete having a receptacle for the materials, a gimbal ring encircling the same, devices slidable on the gimbal ring to which said receptacle is pivoted, whereby to allow the receptacle ready motion independently of the ring in the plane thereof and pivotal motion in the ring, means for releasably locking the receptacle against such motions in the ring and means coacting with the ring for imparting thereto a combined rotating and lifting motion.

6. In an apparatus for mixing concrete the combination of a receptacle for the materials, a gimbal ring encircling the same, two yokes arranged to slide freely on the gimbal ring, means for pivoting said receptacle to the yokes, means for releasably

locking the receptacle against movement independent of the ring and means for imparting to the ring a combined rotating and lifting motion.

5 7. An apparatus for mixing concrete having a receptacle for the materials, a ring, pivotal connections between the receptacle and ring, to permit the receptacle to tilt, means for securing the receptacle to the
10 ring to lock the receptacle against tilting and means for supporting the ring, said means being adapted to impart to said ring a rotating motion in its own plane.

8. An apparatus for mixing concrete comprising a receptacle for the materials, a ring encircling the same, means for mounting the receptacle within the ring to allow the receptacle rotation motion in the plane of the ring and pivotal motion across the axis of
20 rotation of the receptacle, devices for releasably locking the receptacle against movement independently of the ring which secures the ring to the receptacle during their complete rotation and means for supporting
25 the ring which is adapted to impart thereto a rotating motion.

9. In an apparatus for mixing concrete the combination of a receptacle for the materials, a ring encircling the same, there being a groove in the ring, means by which
30 the receptacle is pivoted to the ring, means

for locking the receptacle to the ring, so that they will be secured together during their complete rotation, a cable disposed in the groove and means for pulling upwardly
35 on one end of the cable whereby to impart to the drum a combined lifting and rotating action.

10. An apparatus for mixing concrete having a drum converging toward its heads, a
40 ring in which the drum is pivoted, the ring being disposed substantially in the plane of the greatest diameter of the drum and being spaced therefrom, means for rotating
45 the ring in its own plane and means for locking the receptacle against movement independent of the ring so that they will be secured together during their complete rotation.

11. In an apparatus for mixing concrete
50 having a drum, an annular member disposed around the periphery of the drum adapted to move independently thereof, two yokes which embrace and have sliding engagement with the annular member, the drum being
55 pivoted to the yokes, means for securing the drum to the annular member and means for rotating the annular member.

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Witnesses:

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