

H. C. TOWNSEND.

CONCRETE MIXER.

APPLICATION FILED JAN. 27, 1908.

933,501.

Patented Sept. 7, 1909.

4 SHEETS—SHEET 1.

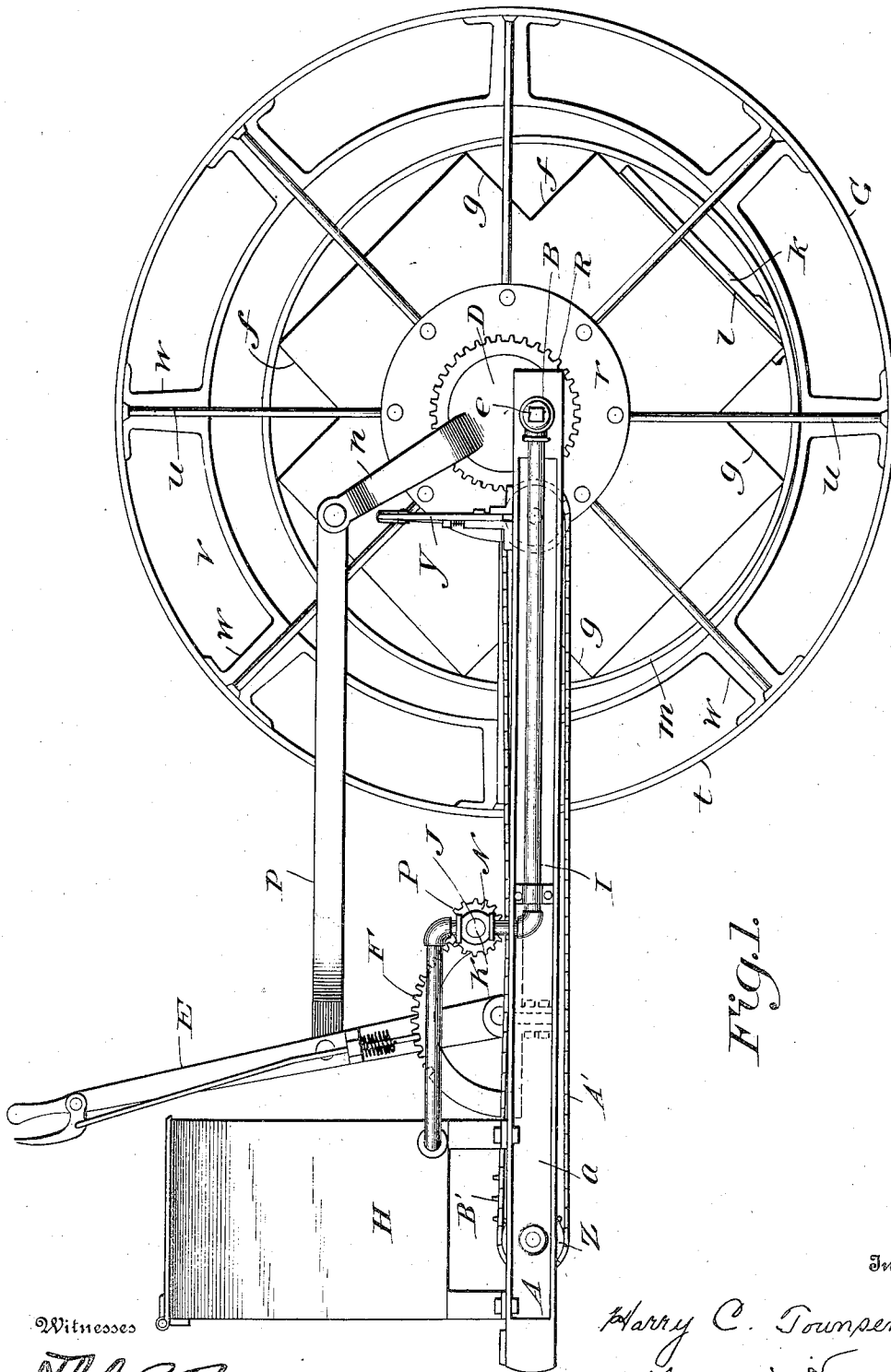


Fig. 1.

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Witnesses

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4 SHEETS—SHEET 2.

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Fig. 2.

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4 SHEETS—SHEET 3.

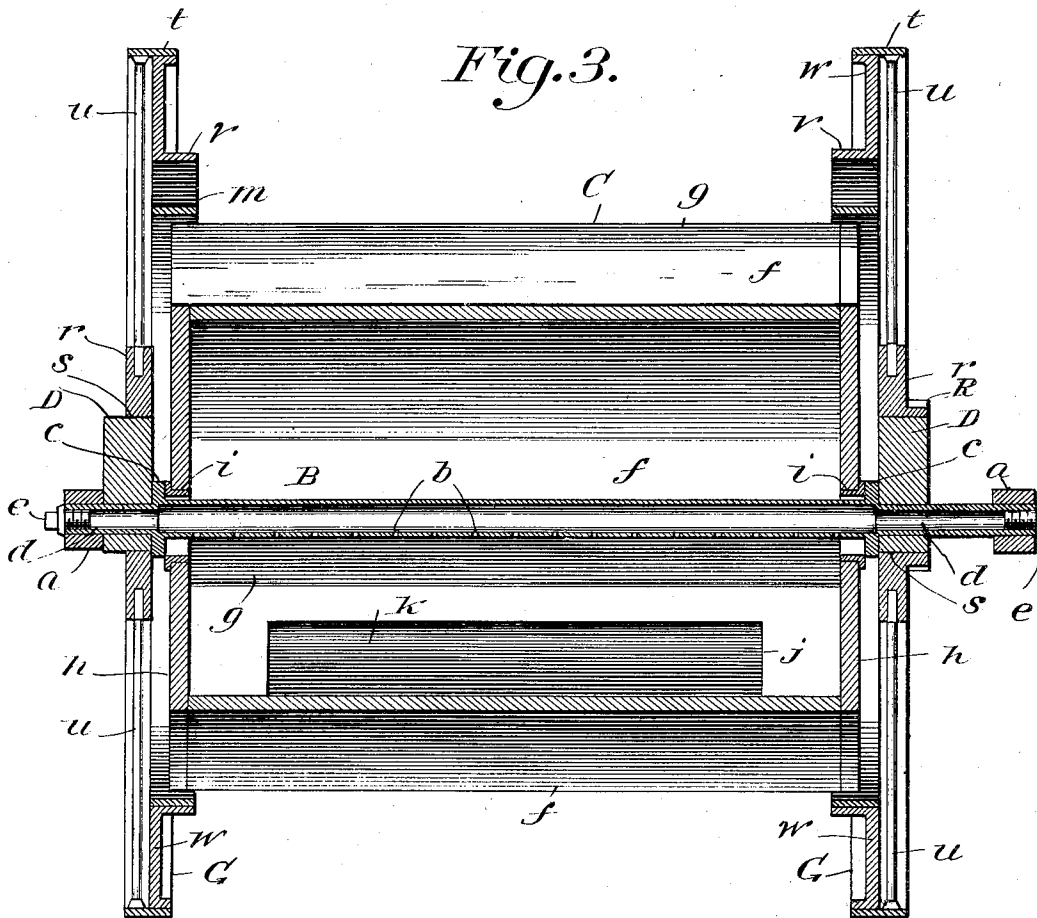
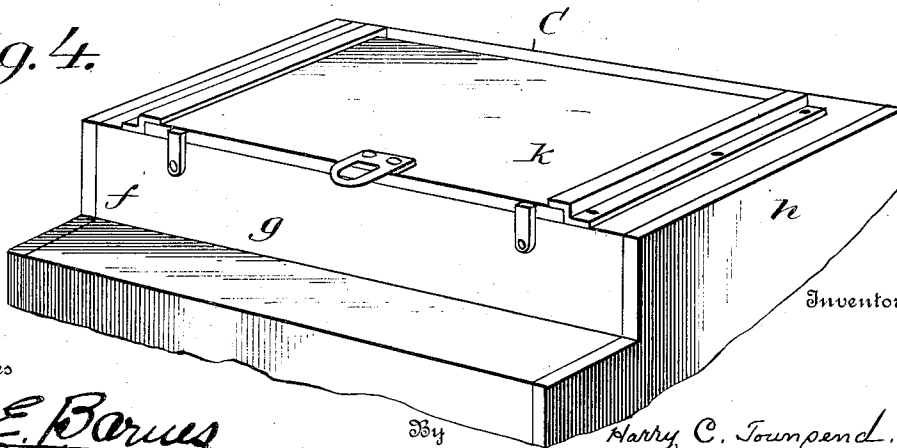


Fig. 4.



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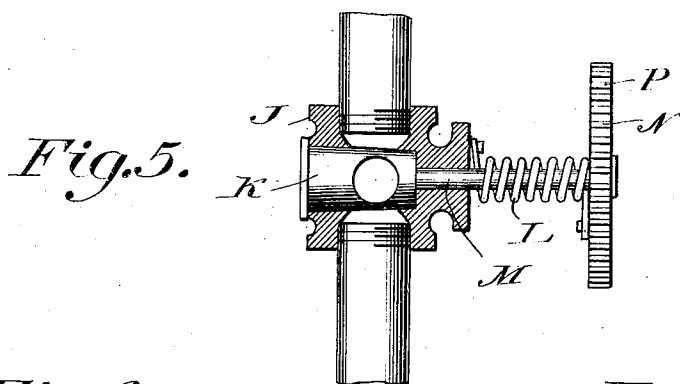


Fig. 6.

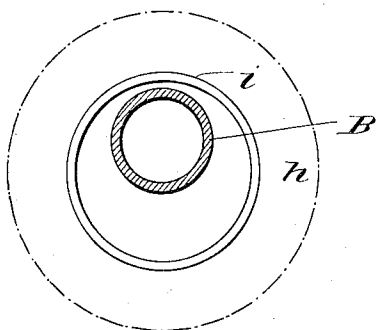


Fig. 7.

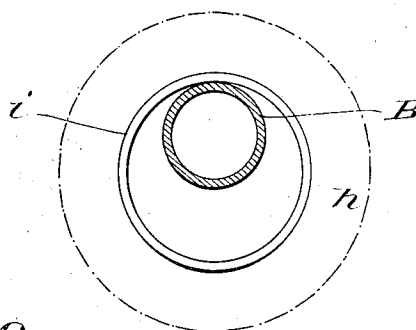


Fig. 8.

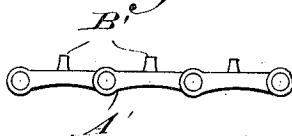
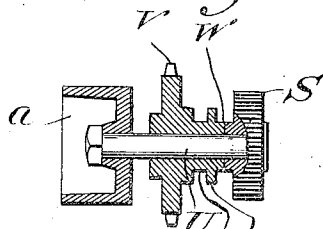


Fig. 9.



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UNITED STATES PATENT OFFICE.

HARRY C. TOWNSEND, OF PETOSKEY, MICHIGAN.

CONCRETE-MIXER.

933,501.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed January 27, 1908. Serial No. 412,853.

To all whom it may concern:

Be it known that I, HARRY C. TOWNSEND, a citizen of the United States, residing at Petoskey, in the county of Emmet and State of Michigan, have invented certain new and useful Improvements in Concrete-Mixers, of which the following is a specification.

My invention has relation to vehicles for conveying and mixing the constituents comprised in concrete and the like.

One of the objects of the invention is the provision of a vehicle for the purpose stated embodying simple and durable means for transmitting rotary motion from the traveling wheels to the receptacle in which the concrete constituents are placed.

Another object of the invention is the provision in a vehicle of the kind set forth, of means whereby the operator is enabled by the adjustment of certain parts to expeditiously and easily start and stop rotation of the receptacle while the vehicle is *en route* from one point to another.

Another object is the provision in a concrete mixing vehicle, of means for automatically supplying a proper quantity of water to the mixture in the receptacle while the vehicle is in motion, and still another object is the provision of means whereby the means for automatically supplying water may be put out of operation at the pleasure of the operator, and any desired quantity of water may be manually supplied to the receptacle.

There are many other advantageous characteristics peculiar to my invention, and these will be fully appreciated from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:

Figure 1 is a side elevation of the vehicle constituting the best practical embodiment of my invention at present known to me. Fig. 2 is a plan view of the vehicle. Fig. 3 is a vertical, transverse section of the vehicle, taken in a plane extending through the hollow axle. Fig. 4 is a fragmentary perspective view showing a portion of the receptacle comprised in the vehicle, and the door of said receptacle. Fig. 5 is a vertical section, on an enlarged scale, showing the valve for controlling the passage of water to the receptacle and the appurtenances of said valve. Figs. 6 and 7 are detail, fragmentary views showing the relative arrangement of

the hollow axle and the receptacle of the vehicle. Fig. 8 is a detail view of the sprocket belt, showing the tappets thereon for opening the water-supply valve. Fig. 9 is an enlarged detail section of the gearing comprised in the mechanism for actuating the water valve.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which:

A is the frame of my novel vehicle, which may be made of wood or metal in the discretion of the manufacturer. The said frame essentially comprises side bars *a*, but otherwise it may be of any construction compatible with the purpose of my invention.

B is a hollow axle extending between and fixed in the side bars *a* of frame A. The said axle is provided in its underside at intervals of its length with minute discharge apertures *b*; and it is also provided with collars *c*, spindles *d* and plugs *e*, the latter for closing its ends. As clearly shown the collars *c* of the axle rest at the outer sides of the receptacle, presently described, while the spindles *d* extend to and through the side bars *a* of frame A. C is the said receptacle which is designed to receive the constituents that enter into concrete and the like. The receptacle is preferably, though not necessarily, cruciform in side elevation—*i. e.*, is square except that it has angular recesses *f*, this form being advantageous since the walls *g* of the said recesses *f* afford abutments against which the concrete constituents bring up incident to the rotation of the receptacle with the result that said constituents are expeditiously and thoroughly commingled. In the vertical walls *h* of the receptacle C circular openings *i* are provided, which openings *i* receive the hollow axle B and are larger in diameter than said axle in about the proportion illustrated for a purpose presently described. One of the rectangularly disposed walls of the receptacle C is provided with an opening *j* through which the broken stone or gravel and other constituents of the concrete may be introduced and also through which the concrete may be discharged when the receptacle is turned by hand on axle B to position said opening *j* at the lowermost point of the receptacle. The said opening *j* is controlled by a door *k* slidable in guideways *l*, Fig. 4, and when desired a suitable fastener (not shown) may be

employed for detachably securing the door in its closed position. On the side portions of the receptacle C are circular rims *m* designed to serve an important purpose herein-
 5 after pointed out in detail.

D D are eccentrics mounted on the axle spindles *d*, at the inner sides of the frame bars *a*, and arranged to swing about said spindles *d*. Said eccentrics are provided
 10 with arms *n* which are offset—i. e., are disposed in vertical planes outside the vertical planes of the major portions of the eccentrics: and the said arms *n* are connected through a bail-shaped link *p*, Fig. 2, with a
 15 lever E mounted on frame A. A segmental rack F is fixed on the frame A and the lever E is provided with the conventional or any other suitable detent to engage said rack, whereby it will be apparent that the eccen-
 20 trics may be fixed in various positions, relative to the axle B.

G G are the traveling wheels of the vehicle which serve to support the frame A and the parts carried thereby. The said traveling
 25 wheels respectively comprise a hub *r* having a circular opening *s* receiving one of the eccentrics D, a rim *t* connected through spokes *u* with the hub *r*, and a ring *v* arranged at the inner side of the spokes and connected
 30 through radial projections *w* with the rim *t*. The rings *v* of the two wheels G are arranged in the same vertical planes as the rims *m* of the receptacle C, and they serve when the frame A and axle B are lowered,
 35 relative to the wheels G, to support the receptacle C and to frictionally engage the said rims *m* of the receptacle C so as to cause said receptacle to rotate about the axle B when the vehicle is moved on the
 40 wheels G. In this connection it will be noticed that movement of the eccentrics D in one direction about the axle B will depress the frame A, axle B and receptacle C and put the rims *m* of the latter in frictional engagement with the rings *v* so as to
 45 assure the receptacle C rotating with the wheels G to thoroughly commingle the concrete constituents in the receptacle while the vehicle is *en route* from one point to another; and it will also be noticed that when the eccentrics D are moved in the opposite
 50 direction about the axle B, the frame A, axle B and receptacle C will be raised, relative to the wheels G, whereupon the receptacle C will hang on the axle B with its rims *m* clear of the rings *v* of wheels G and consequently said receptacle will remain at rest. From this it follows that while the vehicle is in motion, the operator is enabled to
 55 put and retain the receptacle C in engagement with the wheels G until the receptacle C is rotated a desired number of times, and may then put the receptacle C out of engagement with the wheels G so that the re-
 60 ceptacle will hang at rest on the axle B until

the point of discharge is reached. At this latter point and while the vehicle is stationary, the operator may turn the receptacle C on the axle B until the opening *j* of the receptacle is at the lowermost point thereof
 70 and may then by opening the door *k* effect the discharge of the concrete contained in the receptacle.

H is a water tank arranged on and carried by the frame A, and I is a conduit extending between the tank H and the hollow axle B and having for its office to carry water from the former to the latter so as to assure a proper supply of water to the stone, cement etc. in the receptacle C. In the said
 80 conduit I is a valve casing J containing a rotary cut-off valve K which is arranged, when opened against the action of a spring L surrounding its stem M as shown, to permit water to pass to the hollow axle B and thence to the mixture in the receptacle C.
 85 On the stem M of valve K is a disk N having peripheral projections P, and on the hub *r* of one wheel G is a spur gear R. Carried by the frame A and arranged, when said
 90 frame A, the axle B and the receptacle C are depressed, to intermesh with the gear R is a gear S having at one side a clutch member T. Loosely mounted on the shaft U which carries the gear S is a sprocket gear
 95 V, movable laterally on the shaft and having a clutch member W complementary and opposed to the clutch member T, and also having a collar X having a circumferential groove X', designed to receive the lower end
 100 of a lever Y. When the sprocket gear V is moved laterally through the medium of lever Y to place the clutch member W in engagement with the clutch member T of the gear S, the sprocket gear V will obviously
 105 rotate with the gear S, but when the sprocket gear V is moved laterally in the opposite direction the connection between the two gears will be interrupted and the gear V will be rendered idle.

110 Passed around the sprocket gear V and on idler sprocket gear Z arranged on frame A in advance of the gear V is a sprocket belt A¹ having three (more or less) tappets B¹, Figs. 1 and 8, arranged to engage the pro-
 115 jections P of disk N in passing the same and thereby open the valve K to permit water to pass from the source of supply to the receptacle C. Thus it will be seen that when the receptacle C is in position to rotate and the
 120 vehicle is in motion, water will be supplied at an interval to the mixture in said receptacle. It will also be seen that by interrupting the connection between the gears S and V, the operator may expeditiously and easily
 125 stop such supply of water to the mixture in receptacle C; and it will further be seen that when it is desirable to continuously supply water to the mixture in receptacle C, the operator may through the medium of the
 130

disk N open the valve K by hand and hold said valve open as long as may be essential.

The device may be employed to advantage as follows: A proper amount of cement is placed in receptacle C and the tank is charged with water up to a mark (not shown) which may be provided in the inside thereof. The device is then hauled, while the receptacle C is out of engagement with wheels G, to a sand or gravel pit, and sand or gravel is put in the receptacle C up to another mark which may be provided in the receptacle. The door *k* of the receptacle C is then closed, and the eccentrics D are adjusted to put the receptacle C in gear with the wheels G, and the device is driven toward the point where the concrete is to be used. While the device is *en route* the operator may at his pleasure establish and cut off the supply of water to the mixture in receptacle C, and when such point of use is reached, the operator may raise the frame A, axle B and receptacle C. The operator may then by hand turn the receptacle C on axle B until the opening *j* of the receptacle is at the lowermost point thereof, when by opening the door *k* the receptacle will be discharged of its contents.

It will be gathered from the foregoing that my novel device is calculated to expeditiously and thoroughly mix the constituents that enter into concrete and the like; also that the device is simple and inexpensive in construction and is well adapted to withstand the rough usage to which devices of corresponding character are ordinarily subjected.

As before stated the construction herein illustrated and described constitutes the best practical embodiment of my invention of which I am cognizant, but I desire it understood that in the future practice of the invention such changes or modifications may be made as fairly fall within the scope of my invention as set forth in the claims appended.

Having described my invention, what I claim and desire to secure by Letters Patent, is:

1. In a device for mixing concrete and the like, the combination of a frame, an axle, traveling wheels one of which is provided with a ring, a vertically movable, rotary receptacle having a rim, adapted in the lower position of the receptacle to engage the ring of the wheel and derive motion therefrom, and means for raising the receptacle to interrupt connection between the wheel and the same.

2. The combination in a wheeled concrete mixer, of a receptacle, a source of water supply, a conduit intermediate said source of supply and receptacle, movable means normally preventing the passage of water through the conduit, and means operated by

one of the wheels and adapted to move the movable means at intervals to permit the passage of water through the conduit.

3. In a device for mixing concrete and the like, the combination of a frame, an axle, traveling wheels one of which is provided with a ring, and a rotary receptacle having a rim arranged to engage said ring of the traveling wheel and derive rotary motion therefrom.

4. In a device for mixing concrete and the like, the combination of a frame, an axle, traveling wheels one of which is provided with a ring, and a rotary rectangular receptacle mounted between and adapted to turn in the same direction as said wheels and having angular recesses at its corners, the walls of which form transverse abutments in the receptacle, and also having a rim arranged to engage said ring of the traveling wheel and derive rotary motion therefrom.

5. In a device for mixing concrete and the like, the combination of a frame, an axle, eccentrics mounted on the axle, means for adjustably fixing said eccentrics, traveling wheels mounted on the eccentrics and having rings, and a receptacle arranged on and movable vertically with respect to the axle, and having rims arranged in one position of the eccentrics to frictionally engage the rings of the wheels and derive rotary motion therefrom.

6. In a device for mixing concrete and the like, the combination of a frame, a source of water supply thereon, a hollow axle connected with the source of water supply and having a discharge aperture, traveling wheels, a receptacle surrounding the hollow axle, a connection intermediate one of the traveling wheels and the receptacle for rotating the latter by the former, means for interrupting said connection to render the receptacle idle, a normally closed valve in the connection between the source of water supply and the axle, and means actuated by one of the traveling wheels for opening said valve at intervals.

7. In a device for mixing concrete and the like, the combination of a frame, an axle fixed thereon, eccentrics mounted on and arranged to turn about the axle, means for adjusting and adjustably fixing said eccentrics with respect to the frame, traveling wheels mounted on the eccentrics and having rings, and a receptacle surrounding the axle and having openings in its sides of larger size than the axle receiving said axle and also having rims arranged in one position of the parts to engage the rings of the traveling wheels.

8. In a device for mixing concrete and the like, the combination of a frame, a hollow axle fixed in the frame and having a discharge aperture, eccentrics loosely mounted on the axle, means for adjusting and ad-

justably fixing said eccentrics with respect to the frame, traveling wheels mounted on the eccentrics and having rings, a receptacle surrounding the axle and having openings 5 in its sides of larger size than the axle receiving said axle and also having rims arranged in one position of the parts to engage the rings of the traveling wheels, a water tank on the frame, and a conduit intermediate said tank and the hollow axle. 10

9. In a device for mixing concrete and the like, the combination of a frame, a hollow axle fixed in the frame and having a discharge aperture, eccentrics loosely mounted 15 on the axle, means for adjusting and adjustably fixing said eccentrics with respect to the frame, traveling wheels mounted on the eccentrics and having rings, a receptacle surrounding the axle and having openings 20 in its sides of larger size than the axle receiving said axle and also having rims arranged in one position of the parts to engage the rings of the traveling wheels, a water tank on the frame, a conduit intermediate said 25 tank and the hollow axle, a normally closed valve in said conduit, and means actuated by one of the wheels for opening said valve at intervals.

10. In a device for mixing concrete and the like, the combination of a frame, traveling wheels, a receptacle, a water tank on the frame, a conduit intermediate said tank and the interior of the receptacle, a normally closed valve in said conduit, and means actuated by one of the wheels for opening said 35 valve at intervals.

11. In a device for mixing concrete and the like, the combination of a frame, traveling wheels, a receptacle, a water tank on the frame, a conduit intermediate said tank and the interior of the receptacle, a normally 40

closed valve in said conduit; said valve having a toothed disk on its stem; a belt mounted in the frame and having a tappet for engaging the toothed disk and opening the valve, 45 and a connection between one of the wheels and the belt for driving the latter by the former.

12. In a device for mixing concrete and the like, the combination of a frame, traveling wheels, a receptacle, a water tank on the frame, a conduit intermediate said tank and the interior of the receptacle, a normally closed valve in said conduit; said valve having a toothed disk on its stem, a belt mounted 50 in the frame and having a tappet for engaging the toothed disk and opening the valve, and a connection between one of the wheels and the belt comprising clutch members one of which is movable into and out of engagement with the other. 55

13. In a device for mixing concrete and the like, the combination of a frame, traveling wheels, a receptacle, a water tank on the frame, a conduit intermediate said tank and the interior of the receptacle, a normally closed valve in said conduit; said valve having a toothed disk on its stem, a belt mounted 60 in the frame and having a tappet for engaging the toothed disk and opening the valve, a connection comprising clutch members one of which is movable into and out of engagement with the other, and a hand lever mounted on the frame and engaged with a circumferential groove in said movable clutch 65 member. 70

In testimony whereof I affix my signature in presence of two witnesses.

HARRY C. TOWNSEND.

Witnesses:

O. B. Root,

H. H. Goodwin.