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CONTINUOUS CONCRETE MIXER.

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1,044,807.

Patented Nov. 19, 1912.

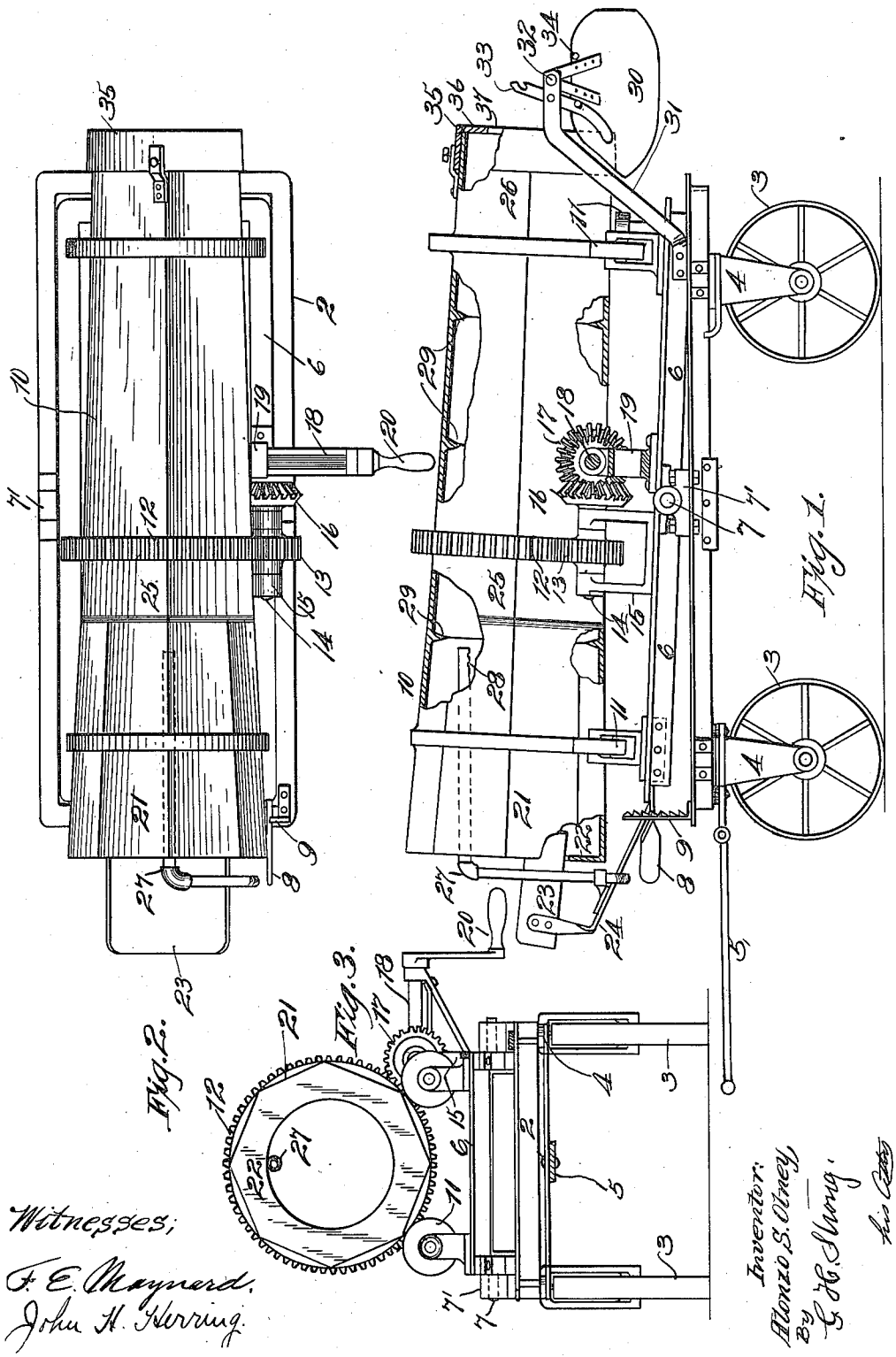

Fig. 1.

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

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CONTINUOUS CONCRETE-MIXER.

1,044,807. Specification of Letters Patent. Patented Nov. 19, 1912.

Application filed February 20, 1912. Serial No. 678,868.

To all whom it may concern:

Be it known that I, ALONZO S. OLNEY, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Continuous Concrete-Mixers, of which the following is a specification.

This invention relates to a concrete mixing apparatus.

The object of the present invention is to provide a continuous, rotary concrete mixer involving details of construction designed to produce a cementitious mixture, the ingredients of which are thoroughly commingled during transit through the apparatus, and which device is easily operated, readily shiftable and adjustable to the different requirements and may be operated with a minimum expenditure of power.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the apparatus in partial section. Fig. 2 is a plan view thereof. Fig. 3 is an end view.

In the illustrated embodiment of the invention 2 represents a suitable frame or truck, having a plurality of bearing wheels 3 which may be adjustably connected to the frame 2, as by pivotal adjustments or connections 4, the front of the truck being provided with a tongue or handle 5 by which it may be drawn along the roadway or platform adjacent to the material to be mixed or moved sidewise along a trench to be filled.

Pivoted for tilting on the frame or truck 2 is a carrier 6 provided with trunnions 7 mounted in suitable bearings 7′ on the truck; the upper end of the carrier 6 being provided with a spring lock or latch 8 engageable with a stationary rack 9, secured to the adjacent end of the truck 2, so that the carrier 6, when adjusted in the desired angular position about its trunnions 7, may be locked in the desired position by the latch 8.

The purpose of providing a tiltable carrier 6 with its latching device is to enable a certain adjustment or pitch to be given to a mixing drum 10 which is rotatable upon rollers 11 journaled on the frame or carrier 6. At a suitable position between the ends of the mixing drum 10 is a gear 12 adapted to mesh with a driving pinion 13 secured on a shaft 14 running in suitable journals or bearings 15. On one end of the pinion shaft 14 is secured a bevel-gear 16 meshing with and driven by a gear 17. The gear 17 is secured on a shaft 18, mounted in appropriate bearings 19, and having at its outer end a crank or other driving element 20 whereby power may be transmitted through the gear 17 to the shaft 14 and through the gear 13 revolve the drum gear 12.

One of the important features of the present invention is the peculiar structure and design of the mixing drum 10; the latter being shown in part, as at its uppermost or charging end as of octagonal or other suitable shape at 21, this end being provided with an inturned flange 22, into the opening of which projects a concave hopper or feed plate 23 supported by suitable brackets 24 fastened to the drum carrier 6. The length of the octagonal portion 21 of the drum 10 may be as desired. To the inner portion of the octagonal section of the drum is connected a polygonal section substantially square in cross section, as at 25, the square portion tapering gradually from its conjunction with the octagonal portion 21 to the discharge end 26. By this peculiar and specific form of mixing drum dry material, such as cement and stone of suitable size, being fed in from the hopper 23 will discharge into the octagonal portion 21 of the drum and as this is revolving the dry material will be thoroughly agitated and mixed before it is saturated with water which is admitted through a pipe 27 extending inwardly and having its inner end perforated, as at 28, the discharge of water from the perforations 28 occurring well within the feed end of the drum.

Adjacent to the end of the water feed pipe 27 there is securely mounted internally on the mixing drum 10 a continuous barrier or dam structure which is both annular and beveled, as shown at 29, the inwardly projecting flange of which is of sufficient depth to form a dam for the water and material at the lowermost portion of the mixing drum, and as the latter revolves the heavier material including the cement, gravel and stone is carried upwardly by the flat sides of the drum, the water meanwhile rushing downwardly to maintain a position at the lowermost portion of the drum 10. As the

material to be mixed is carried upwardly on the side planes of the drum it will gravitate downwardly, falling into the water at the lower part of the drum which is held back by the barrier 29. This constant infeeding of stone and cement and water will insure the gradual feed and discharge through the drum 10 of a thoroughly mixed cementitious material. As many of the baffles 29 may be introduced in the drum as is desired and spaced at distances determined by practice to be the most advantageous for different grades of concrete desired.

It will be seen that as the material to be mixed advances through the mixing drum 10 while this is revolving that the progress of the material is checked by the baffles 29 so that a large portion of the material is carried upwardly and caused to fall from the sides of the drum, when this is revolving, into the water which is normally seeking a level at the lowermost portion of the drum. That material which has been carried upwardly and falls is thoroughly saturated with water held behind the dams or barriers 29 and a perfect mixture is insured before the material is discharged from the discharge end 26 of the drum 10.

It is observed that one of the peculiar effects of the annular or endless barriers projecting inwardly from the inner surface of the rotary drum is that, as the material is carried upwardly by the flat sides to a certain distance, it falls or drops from the sides athwart the inwardly projecting blades or barriers and is "chopped" when falling across the edges of the barriers, thus greatly increasing the rapidity with which the water checked behind the dams can mingle with the component parts of the cement mixture. It is well known that finely powdered cement has a tendency to form in lumps which it is difficult to saturate with water, and the tumbling of the fine powdered cement by the peculiar shape of the drum, causing it to fall across the edges of the barriers, greatly facilitates the admixture of the powdered cement with the water. By extending the water feed pipe 27 inwardly near the upper portion of the drum, the water being discharged through the perforations 28 of the pipe, falls a distance equal the diameter, nearly, of the drum, thus striking against the bottom portion of the drum with sufficient force to wash off such portion of the material as may adhere to the inner surface, this being a very considerable factor in increasing the efficiency of the apparatus.

Since this machine is designed to mix batches of cementitious material, or to mix the material continuously when fed in regularly, and since the material discharging from the mixing drum may be precipitated directly into a form or mold or may be discharged into wheelbarrows positioned successively below the discharge end of the drum, in the latter case or use it is desirable to suspend a scoop or basin 30 from a bracket structure 31 by the pivots 32, so that during the interim, when there is no wheelbarrow in position beneath the discharge end of the drum 10, then the scoop 30 may be turned below the edge of the drum to catch the material continuously feeding. When the next wheelbarrow is positioned, the scoop 30 is swung about its pivots 32 to discharge its contents into the positioned wheelbarrow, and when not in use the scoop 30 may be tilted upwardly over the upper portion of the discharge end of the drum 10. A suitable pawl 33 fastened to the brackets 31 is adapted to engage pins 34 on the scoop 30 to hold it in either of its adjusted positions.

When it is desired to mix a batch or small quantity of cement, there is attachable to the lower end of the mixing drum 10 a cap 35 which has an inwardly directed flange 36 with a central opening 37; the flange 36 serving to hold back a batch of material in the drum when this is revolving, the depth of the flange 36 determining the quantity of the material which may be retained and mixed in the cylinder without a continuous discharge. When the batch of material has been thoroughly mixed, as it will be by being carried upwardly on the flat sides of the drum and tumbled about and thrown across the chopping edges of the barriers 29, which check the downward flow of water so that the material will fall into the small pool of water collected behind the barriers, it is then discharged from the drum 10, which may be tipped about its fulcrum or supporting trunnions 7, into a wheelbarrow or other receptacle.

Having thus described my invention what I claim and desire to secure by Letters Patent is—

1. In a mixing apparatus, the combination of a mixing drum having polygonal cross section from end to end, continuous baffles internally formed in the drum, and adapted to check the advance of material to be mixed through the drum, said baffles having sharpened edges adapted to impart a chopping effect to the material dropping athwart the baffles, and means for rotating said drum.

2. A concrete mixing apparatus including a rotary drum having a polygonal portion in which the concrete is mixed in a dry state and having a polygonal portion of different transverse area in axial line with the dry mixing part, and endless internal barriers spaced within the drum forming dams to check the flow of material through the drum, said barriers having sharpened inner edges adapted to impart a chopping

effect to the material dropping athwart said edges.

3. A concrete mixing apparatus including a rotary drum having a polygonal portion in which the concrete is mixed in a dry state and having a polygonal portion of different transverse area in axial line with the dry mixing part, endless internal barriers spaced within the drum forming dams to check the flow of material through the drum, said barriers having sharpened inner edges adapted to impart a chopping effect to the material dropping athwart said edges, and a cap having a smaller discharge aperture than the drum end.

4. In a concrete mixing machine, the combination of a longitudinally revoluble mixing drum having a polygonal cross section from end to end, means for rotating the drum, means for admitting water to said drum, a tiltable frame upon which the drum is mounted, said drum being provided with continuous baffles internally formed in the drum to hold the water until absorbed and to facilitate the mixing, said baffles having sharpened edges adapted to impart a chopping effect to the material dropping athwart thereof, and a cap adjustable to the discharge end of the drum.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALONZO S. OLNEY.

Witnesses:
CHARLES EDELMAN,
C. J. SWENSON.