

994,536.

Patented June 6, 1911.

2 SHEETS-SHEET 1.

Fig. 1.

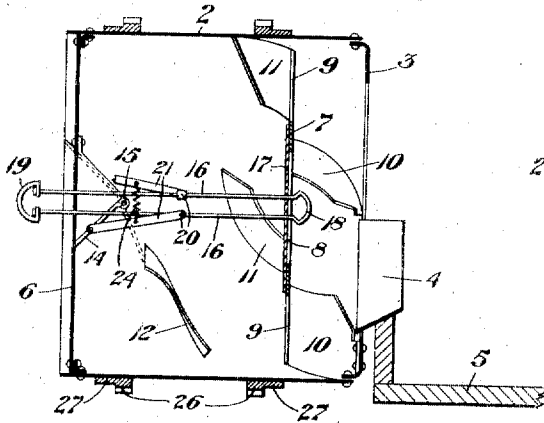


Fig. 2.

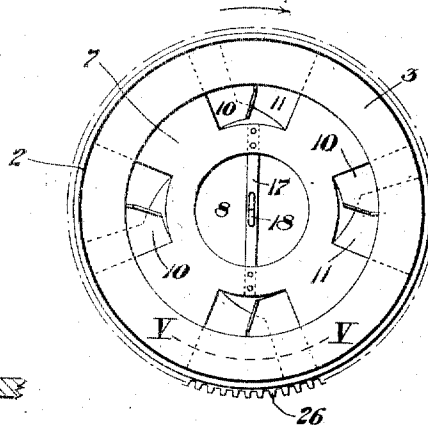


Fig. 3.

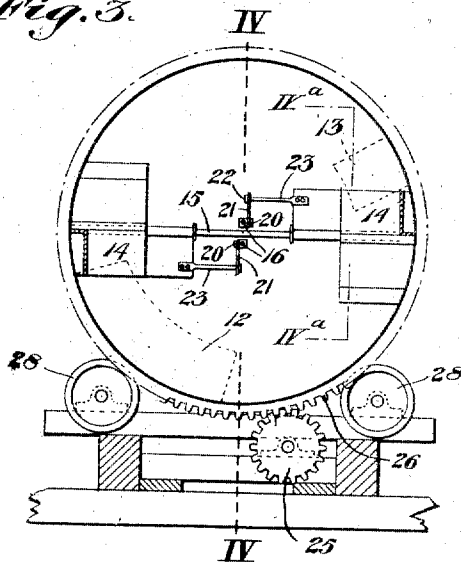


Fig. 4.

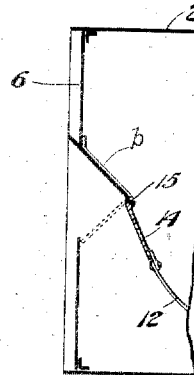


Fig. 5.

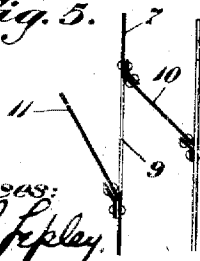


Fig. 4^a.

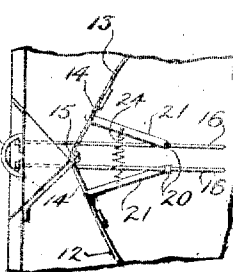


Fig. 6.



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994,536.

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CONCRETE MIXER.
APPLICATION FILED SEPT. 28, 1908.

Patented June 6, 1911.
2 SHEETS-SHEET 2

Fig. 7.

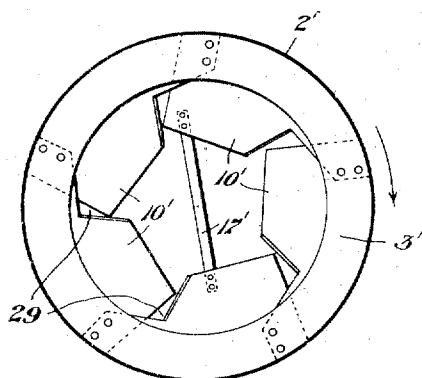


Fig. 8.

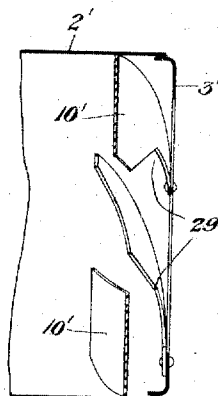


Fig. 9.

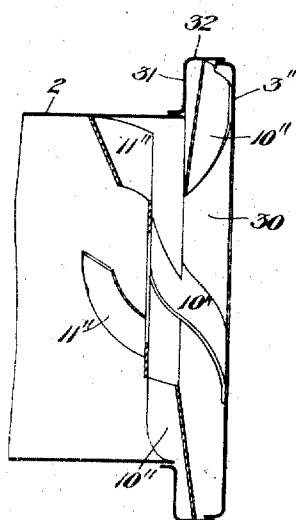
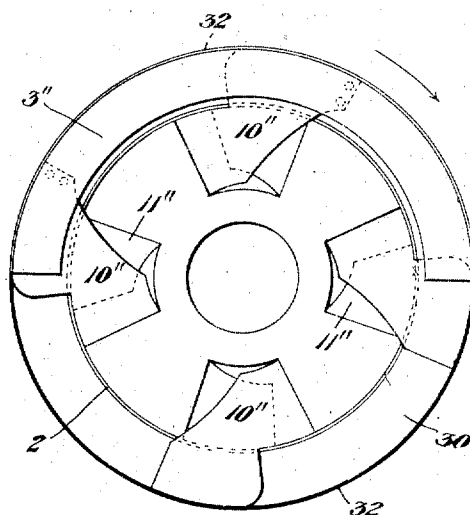


Fig. 10.



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UNITED STATES PATENT OFFICE.

MATTHEW HOWARD REED, OF PITTSBURG, PENNSYLVANIA.

CONCRETE-MIXER.

994,536.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed September 28, 1908. Serial No. 455,101.

To all whom it may concern:

Be it known that I, MATTHEW HOWARD REED, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Concrete-Mixers, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to improvements in concrete mixers, for mechanically mixing concrete composed of the usual ingredients, crushed stone, sand, cement and water, and it has for its object to provide a construction wherein the concrete may be thoroughly mixed by the rotation of a cylindrical drum provided with angularly arranged blades, means for receiving the ingredients at the lowermost portion of the front end, means for delivering the ingredients into the interior and for preventing their return backwardly, means for discharging the mixed product from time to time as made, together with other features of construction as shall be more fully hereinafter set forth.

The particular object of the invention is to provide an apparatus into which the ingredients may be charged at the lowermost portion so as to avoid the necessity of wheeling or hoisting thereinto from preliminary hoisting platforms or by other hoisting means, as is usually necessary in devices of this class.

In the drawings which show preferred forms of the apparatus; Figure 1 is a central longitudinal sectional view in normal position. Fig. 2 is an end view in elevation from the front or receiving end. Fig. 3 is a similar view from the rear or discharging end. Fig. 4 is a vertical sectional view on the broken line IV. IV. of Fig. 3, but showing the discharge gate open. Fig. 4^a is a similar view on the line IV^a. IV^a. of Fig. 3 showing the gate operating mechanism in open position. Fig. 5 is a horizontal sectional detail view on the line V. V. of Fig. 2. Fig. 6 is a detail view detached of a portion of the transverse partition, showing one of the segmental openings therein for discharge of the material. Figs. 7 and 8 are front and vertical sectional views respectively, showing modified constructions embodying combined charging and protecting or mixing blades. Figs. 9 and 10 are similar views showing a further modified arrangement of the parts and a laterally en-

larged annular receiving pocket for the material.

In the drawings 2 is the mixer drum or shell provided at its front end with an annular inwardly extending flange 3 forming its front end and having a central receiving opening concentric with the outer larger diameter of the drum, and constituting a front retaining wall, providing an annular pocket for receiving the ingredients or material to be mixed. 4 is a charging chute or rest of suitable form extending from the edge of said flange 3 at its lowermost portion, and adapted to receive the material as discharged thereinto and to convey it into said pocket, from any suitable conveying apparatus as a barrow, supported on platform 5, incorporated with the general structure. As will be observed the platform 5 is substantially on a level with the lower edge of the drum, a particular advantage of the invention being that the drum may thus be mounted only sufficiently above the ground level to provide for the necessary framing, thus greatly facilitating the access to the machine by the operator supplying the ingredients. The other end of the drum is closed by a head 6, preferably extending entirely across the area except where open to provide for outlet of the mixed material, as controlled by the outlet gates, hereinafter described.

Extending transversely across the area of the mixer drum near to and somewhat back from its front end, and forming if desired the rear wall of the receiving pocket referred to, is a partition 7, preferably provided with a central opening 8 for inspection of the interior, although said opening may be dispensed with if desired. Said partition 7, in the construction shown, is provided with a plurality of radial openings 9 of segmental or other suitable form as clearly shown in Fig. 6, through which the ingredients are discharged inwardly by the directing blades, to the mixing interior. 10 are charging blades extending angularly outwardly from said partition, radially of the machine and preferably attached to said partition and to the front flange 3 by riveting or other suitable means. 11 represents protecting blades similarly secured to partition 7 under the opposite side of the openings 9 and also to the shell of the drum. Said charging blades and protecting blades are so disposed, with relation to the parti-

tion 7, that they extend outwardly therefrom in opposite directions angularly toward the front and interior respectively, as clearly shown. The object of this construction

5 tion is as the drum revolves in the direction of the arrow, and as the material is discharged into the peripheral pocket at the front through the charging chute 4, it will be engaged successively by each of the
10 charging blades 10 at their lowermost position, carried around and upwardly, falling by gravity inwardly and downwardly to the interior of the mixer. Protecting blades 11, traveling in the same manner will fend the
15 material being mixed away from opening 10 at the lowermost portion, preventing its escape therethrough to the front and providing a clear receiving space for the successive charge of new material.

20 The main interior peripheral wall of the drum is provided with any suitable mixing or carrying elements as one or more mixing blades 12 and one or more mixing plows 13, so disposed angularly across portions of the
25 interior, extending outwardly from the walls and secured thereto, as to best facilitate thorough admixture of the contents.

As shown in the drawings, I have employed but one mixing blade 12 and one
30 mixing plow 13, arranged substantially opposite each other, but it will be understood that the number and arrangement of these elements may be varied to suit different conditions of use, and that their depth,
35 angularity, or other features may be changed or modified as desired.

For the purpose of discharging the mixed contents from time to time, I provide one
40 or more discharge gates 14 adapted to open and close a discharge opening through head 6, two such gates being preferably employed as shown in the drawings. Said gates are hinged upon a supporting cross bar 15 from
45 which they extend outwardly angularly toward and bear against head 6 in normal closed position, (Fig. 1) so that in the rotation of the machine the material will fall against the inner side of the gate and be
50 thrown backwardly into the interior, thus facilitating the mixing operation.

Gates 14 are adapted to be opened or closed from either end of the machine during its rotation, avoiding the necessity of
55 stopping, by means of longitudinal rods 16, 16, extending through rear head 6 and through the front cross bar 17 respectively, and provided with terminal grips 18, 19,
60 one at each end at front and back. Pivotaly mounted at 20, 20, to said rods 16, 16, are links 21, 21, pivotaly mounted at their outer ends at 22, to the extended stems 23,
23, or other suitable portions of gates 14. Links 21 are preferably connected by spring
65 24, tending to hold the gates normally closed, or normally open.

The gates are opened by pushing in rear grip 19, or pulling front grip 18, drawing
the gates backwardly on their hinges and the front edges of mixing blade 12 and
70 plow 13 respectively are preferably so located that a portion will receive and support the edge or a part of the gate when opened and the material will be directed toward the discharge gate and opening by
75 the mixing blades, as clearly shown in Fig. 4. The hinge 15 of each gate 14 is located adjacent to the inner end of the inclined gate blade or chute 6 forming part of the head 6 surrounding the discharge opening,
80 so that when opened the gate 14 will deliver material from blade 12 to the said gate blade or chute, by which it is discharged from the machine. When thus opened, it will be seen that the contents of the mixing chamber of the drum or a portion of it,
85 may be discharged outwardly to the ground or any suitable receiving receptacle, after which the gates may be readily closed and the operation continued.

The drum is rotated by any suitable
90 means, as a driving pinion or pinions 25, engaging a peripheral rack or racks 26 surrounding the drum. Said racks may be separate or may form a portion of the surrounding supporting band 27 carried on
95 rollers 28 of the supporting framework, as will be readily understood.

In Figs. 7 and 8 I have shown a modified construction in which the separate charging
100 blades and protecting blades are embodied in series of single blades 10' angularly disposed around the front inner portion of drum 2' in a closely consecutive adjacent series. As shown the terminal corner of
105 each of said blades 10' extends beyond the body portion of the next adjacent blade, which is angularly cut out as indicated at 29 for clearance of the entering material. The blades in such construction are somewhat wider than the singly acting blades,
110 extending inwardly toward the center and for the purpose of bracing the inner edges of the blades and providing a bearing for the gate operating rods, one or more longitudinal cross bars 17' are attached to the
115 inner edges of the blades as shown. By this construction, the material will be received within the front end of the shell back of the flange 3' and will be automatically carried around and delivered into the
120 interior from which it can pass outwardly, due to the construction and arrangement of the series of blades.

In Figs. 9 and 10, the drum 2 is provided with a diametrically enlarged annular
125 receiving pocket 30 formed by radially extended head 31, a surrounding pocket drum 32 and a front retaining flange 3'', as clearly shown in Fig. 10. The charging
130 blades 10'' and the protecting blades 11''

are of substantially the same construction as has already been described as to the principal figures of the drawings, except that blades 10" extend outwardly beyond the main drum diameter to the annular walls of the extended drum 32, thereby crossing the area of the pocket 30 radially at intervals. The advantage of this construction is that the ingredients may be received at a still further point from the center of the drum, lower than in the construction employing a uniformly straight drum, thereby rendering it possible to locate the machine even below the level of any ordinary platform, its operation being substantially the same as that already described.

The operation of the invention will be understood from the foregoing description. The discharge doors are normally closed, the material is charged into the machine as has been described, at the lowermost portion of its receiving pocket, passing inwardly and undergoing the mixing process, being discharged from time to time as needed or when thoroughly mixed. The operation of the machine is rendered comparatively easy by the avoidance of any necessity for carrying the material up to a raised receiving chute, the machine itself operating to automatically receive the material at practically the ground level, and into its interior.

The advantages of the invention will be readily appreciated by all those familiar with this class of apparatus. The invention is comparatively simple in construction, cheap and not liable to get out of order, and will operate continuously without attention.

Having described the invention, what I claim is:—

1. A concrete mixer of the rotatable drum type having interior mixing elements incorporated with its shell and provided with a discharge chute at one end, and a pivotally mounted discharge gate of the swinging door type mounted within and revoluble with the drum and adapted in open position to receive mixed material directly from one of said mixing elements and deliver it to the chute and in closed position to deflect the material backwardly into the drum.

2. A concrete mixer of the rotatable drum type having a discharge chute, a discharge gate of the swinging door type pivotally mounted within the drum adjacent to the chute, and an interior radially arranged blade secured to the inner side of the drum near its discharging end and extending into the path of the discharge gate.

3. A concrete mixer of the rotatable drum type having an interior spirally disposed blade secured to the inner side of the drum, a discharge chute leading outwardly through one end of the drum, a pivotally mounted discharge gate mounted within the drum adjacent to said blade and chute, and spring

controlled operating mechanism therefor adapted to open and hold the gate against the terminal of said blade and provide a bridge therefrom to the chute, and to close and hold the gate over the chute to deflect the material backwardly into the drum.

4. A concrete mixer consisting of a rotatable drum having means to introduce the material thereinto, a rear wall having an outlet opening and a surrounding framing, a discharge gate pivotally mounted within and revoluble with the drum and covering said opening, and an operating handle for said gate extending longitudinally through a portion of the machine, substantially as set forth.

5. A concrete mixer consisting of a rotatable drum having means to introduce the material thereinto, a rear wall having an outlet opening, a discharge gate covering said opening, and an operating handle for said gate extending longitudinally through a portion of the machine, and provided with a spring-controlled link engaging the gate, substantially as set forth.

6. A concrete mixer consisting of a rotatable drum having means to introduce the material thereinto, a rear wall having an outlet opening, a discharge gate pivotally mounted within and revoluble with the drum and covering said opening, and an operating handle for said gate extending longitudinally through a portion of the machine, and provided with means engaging the gate and hand-grips at each end, substantially as set forth.

7. A concrete mixer consisting of a rotatable drum having means to introduce the material thereinto, a rear wall having an outlet opening, a discharge gate covering said opening, actuating means for said gate provided with an operating handle, and spring mechanism connected therewith for holding the gate either open or closed.

8. In a mixer, the combination with a revoluble drum having a closing head provided with a discharge opening, a door adapted to close said opening, opening and closing mechanism for said door mounted to revolve with the drum, and a diagonally arranged blade leading toward the discharge opening and having a terminal adapted to act as an arresting stop for the door when in open position and to deliver mixed material thereover toward the discharge opening.

9. In a machine for mixing concrete, the combination of a rotatable mixing drum having a feed opening at one end and a discharge opening at the other, a delivery chute, and an adjustable flat pivoted gate within and revoluble with the drum arranged when adjusted to one position to set vertically above the inner end of the chute and substantially closing the same, and when in this position having its free edge adjacent to the

end wall of the drum above the discharge opening, the gate being then inclined downward and inward, the pivot of the said gate being so disposed that the free edge of the gate moves into the drum when the gate is adjusted from the aforesaid diverting position.

10. In a machine for mixing concrete, the combination of a rotatable mixing drum having a feed opening at one end and a discharge opening at the other end, a delivery chute and an adjustable flat pivoted gate within and revoluble with the drum ar-

ranged when adjusted to one position to set vertically above the inner end of the chute and substantially close the same, and when in this position having its free end adjacent to the end wall of the drum above the discharge opening, the gate being then inclined downward and inward.

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

MATTHEW HOWARD REED.

Witnesses:

JOSEPH SIMPSON,
L. YATES.