W. L. JONES.

FEED OF CONCRETE MIXERS.

APPLICATION FILED JULY 19, 1915.

1,197,827.

Patented Sept. 12, 1916.

2 SHEETS—SHEET 1.

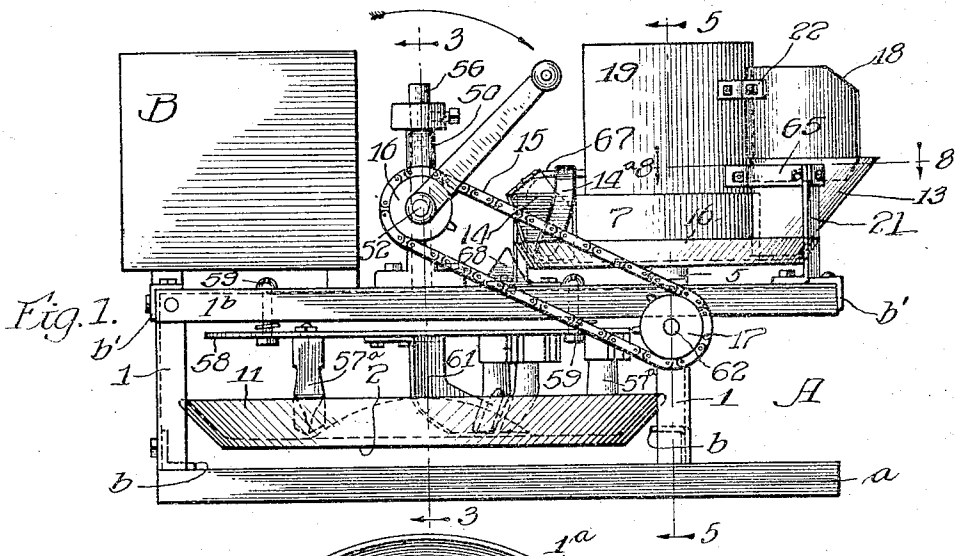

Fig. 1.

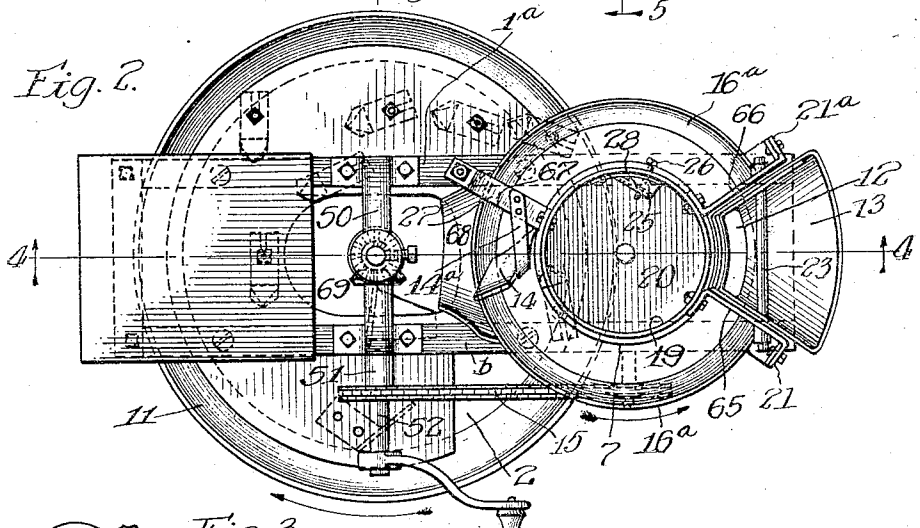

Fig. 2.

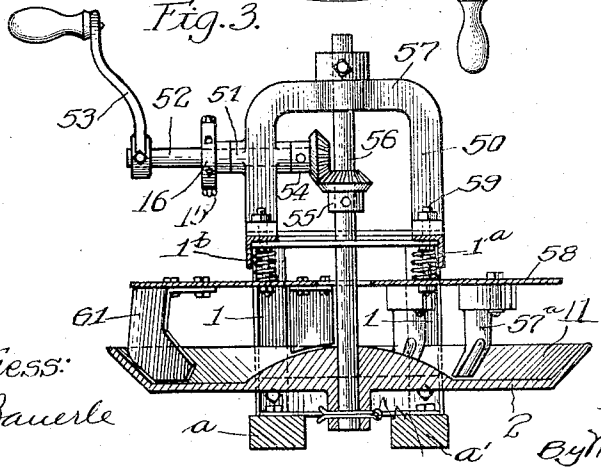

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 4.

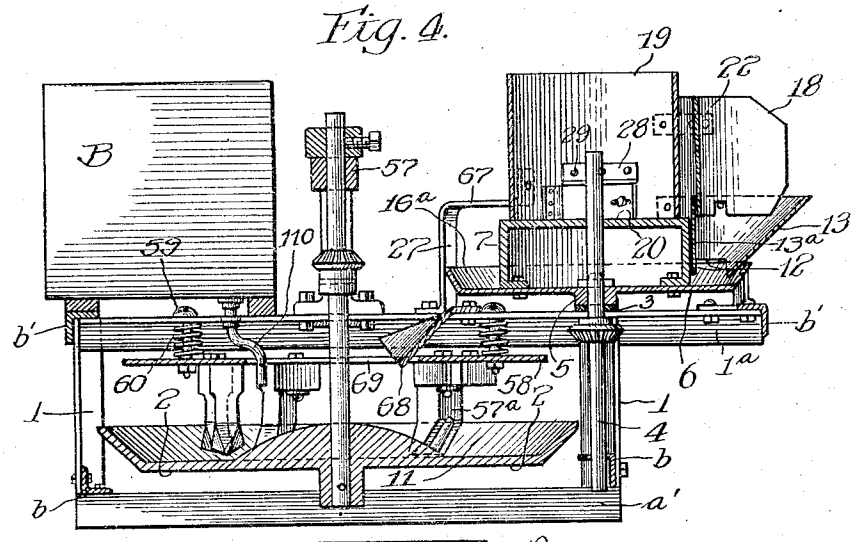


Fig. 5.

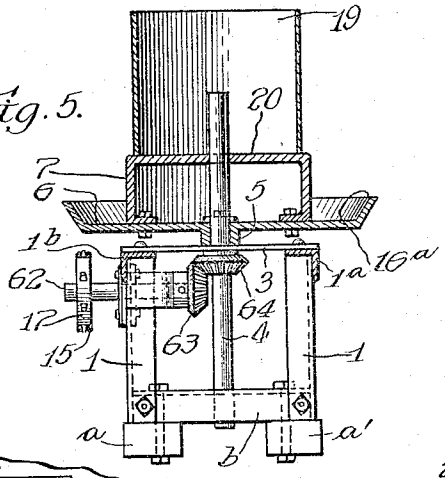


Fig. 6.

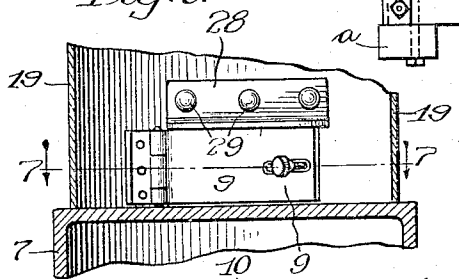


Fig. 7.

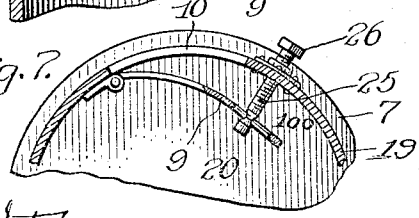
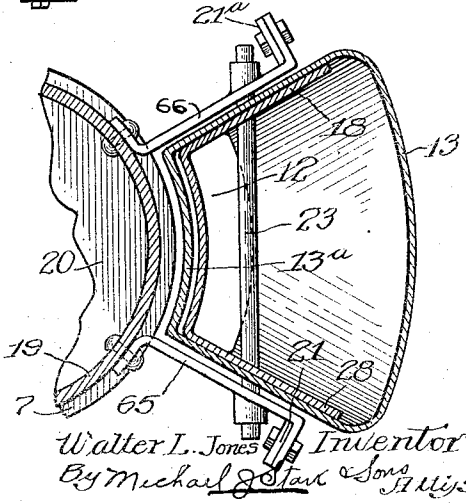


Fig. 8.



Witness:

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UNITED STATES PATENT OFFICE.

WALTER L. JONES, OF ORLAND, ILLINOIS.

FEED OF CONCRETE-MIXERS.

1,197,827. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed July 19, 1915. Serial No. 40,768.

To all whom it may concern:

Be it known that I, WALTER L. JONES, a citizen of the United States, residing at Orland, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Feeds of Concrete-Mixers, of which the following is a specification.

This invention relates to a device for proportioning and conveying cement and gravel or other materials to a mixing receptacle preparatory to their being blended into mortar.

The object of the invention is to provide a feed for concrete-mixers that will be simple and durable in construction and one that includes relatively stationary and movable members that co-act in proportioning and conveying the cement and gravel or other materials to a mixing member where they are subsequently moistened and blended into mortar.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportion and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the construction, reference may be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a concrete mixer, in which my improved feeding and measuring device is incorporated. Fig. 2 is a plan of Fig. 1. Fig. 3 is a transverse, vertical section in line 3—3 of Fig. 1. Fig. 4 is a longitudinal, vertical section in line 4—4 of Fig. 2. Fig. 5 is a transverse, vertical section in line 5—5 of Fig. 1. Fig. 6 is a vertical section of a detail of my newly improved feeding and measuring device. Fig. 7 is a horizontal section of a fragment in line 7—7 of Fig. 6. Fig. 8 is a horizontal section in line 8—8 of Fig. 1.

Like parts are indicated by corresponding symbols or characters of reference in all the figures of the drawings.

The aim of my invention is the production of a simple, cheap, and efficient device for the measuring of, and the feeding of, the aggregates (such as sand, stone, and cement) into a concrete mixer in such a manner that the quantities of the various materials are properly proportioned to produce good concrete; and, in which device the aggregates will secure a partial dry mix before being introduced into the mixer proper.

Another aim of my invention is to provide means whereby the quantity of cement introduced into the remaining aggregates may be quickly varied, so that the proper concrete mixture for various purposes may readily be obtained. And, while herein and in the drawings made a part hereof, I describe and disclose my invention as being applied to a mixer of peculiar and novel type, I wish it understood that I do not confine the application of my measuring and feeding device to that construction of mixer alone.

Referring now to the drawings, A indicates a combined frame for a mixer and my measuring and feeding device. This frame includes a pair of parallel floor sills *a* and *a'*, from which arise four properly disposed angle irons 1. To the upper ends of these angle irons are fixed longitudinal angle members 1^a and 1^b, to the upper faces of which angle irons, the various parts of my invention are affixed or attached. Transverse, horizontal angles *b* and *b'* are provided for the frame A where necessary, to impart proper and ample rigidity to the said frame structure.

Mounted transversely of the angle irons 1^a and 1^b, intermediate their length, is an inverted U-shaped bracket 50, in one of the legs of which is formed a horizontal journal box 51, for the reception of a horizontal driving shaft 52, which shaft may be rotated by a crank handle 53, or other desirable media. On the inner end of this shaft 52, within the U-shaped bracket 50 is fixed a bevel gear 54, which gear engages or meshes with a similar gear 55, which is mounted on a perpendicular shaft 56. The upper end of this shaft is journaled in the cross bar 57 of the U-shaped bracket 50, and at its lower end, between the floor sills *a* and *a'* and the longitudinal angle irons 1^a and 1^b, is fastened to a circular pan 2, which pan is provided with an outwardly and upwardly flared marginal rim or wall 11. This pan is rotatively attached to the shaft

56 and constitutes the mixer proper of my device. Having their lower ends in relatively close contact with the bottom of the pan 2, are a plurality of mixing plows 57^a, which depend from a disk like plate 58, suspended from the longitudinal angle irons 1^a and 1^b by rods 59; and, it is to be noted that there are located helical springs 60, surrounding the said rods, and located between the angles 1^a and 1^b and the disk 58, so that a pressure contact of the plows 57^a against the bottom of the pan 2 may be maintained. But, the main reason of thus yieldingly suspending the plate 58 is to permit a certain amount of "yield" or "give" of the plows 57^a while churning and mixing up the aggregates into concrete.

Located adjacent the flared margin 11 of the pan 2, and likewise depending from the plate 58, is a deflecting blade 61, the object of which blade is to deflect the mixed concrete upwardly and over the margin 11 of the pan 2 into any suitable receptacle (not shown).

The operation of the mixing device proper may now be briefly described; it being assumed that the aggregates (sand, stone, and cement) have first been deposited in the center of the pan 2 and that a proper amount of water has been added to the pan to produce the proper mixture:—The crank handle 53 is manipulated to rotate the pan 2. The plows 57^a, which it is to be understood are stationary, are so arranged that in the rotation of the pan in the direction shown by the arrow pointer in Fig. 2, a movement of the concrete toward the flared, marginal wall 11, will be caused to take place, so that when the concrete reaches the deflecting blade 61, the said concrete will be forced upwardly of said blade and over the upper edge of the said marginal wall 11. Properly positioned in the frame structure A is a horizontal, transversely located shaft 62, Figs. 1 and 5, at the outer end of which is fixed a sprocket wheel 17. This sprocket wheel is in alinement with a like sprocket wheel 16, located on the main drive shaft 52; and, over these sprockets is trained a sprocket chain or chain belt 15. At the inner end of the said shaft 62 is located a bevel gear 63, which gear meshes with a like gear 64, affixed to a perpendicular shaft 4. The lower end of this shaft 4 is journaled in one of the horizontally transverse angle irons b of the frame structure A, and intermediate its height is likewise journaled in a flat, metallic bar 3, extending across the top faces of the longitudinal angles 1^a and 1^b of the said frame. Fastened to the shaft 4, with its axial hub 5 resting upon the bar 3 aforesaid, is a disk-like pan 6, having an upwardly and outwardly flared flange or margin 16^a; and, mounted on the bottom of this pan, and axially thereof, is an upstanding, cylindrical shell 7, the upper end of which is closed by a plane, top wall 20. Superimposed above this top wall, there is an open ended cylindrical shell 19, which may now be termed the cement receptacle of my measuring and feeding device. This receptacle is supported free from actual contact with the wall 20 of the shell 7 by means of brackets 21, 21^a, and 27, arising from the top faces of the longitudinal angles 1^a and 1^b, as clearly seen in Fig. 2, and these brackets have horizontally bent extensions 65, 66, and 67, which are rigidly fixed to the wall of the receptacle 19, whereby the same is immovably maintained during rotation of the pan 6 and the closed shell 7. Positioned in the pan 6, between the shell 7 and the flared marginal wall 16^a, is located an upwardly inclined deflecting blade 14, which blade is yieldably maintained in position by a bent metallic bar 14^a, one end of which is fixed to the horizontally bent extension 67 of the bracket 27 and the opposite end to the blade aforesaid. The purpose of which blade is now disclosed as follows: It is first to be noticed that there is an annular space in the pan 6, between the upstanding shell 7 and the marginal flared wall 16^a. This space is for the reception of the aggregates (sand, stone, and cement) to be mixed into concrete. Assuming this annular space to contain these aggregates and the pan 6 being rotated, it is evident that when the said aggregates reach the blade 14, the same will be forced upwardly of this blade and over the upper edge of the marginal flange 16^a of the pan 6, whence said aggregates drop into a chute 68 located below the said pan and thence through an opening 69 in the spring pressed plate 58 into the mixing pan 2, at or near the center thereof.

Preferably located substantially opposite the blade 14 and loosely suspended from a shaft 23, supported by the horizontal extensions 65 and 66 of the brackets 21 and 21^a, is a hopper 13, having an opening 12 in its throat or lower end to admit stone and sand into the annular space in the pan 6. The location of this shaft 23 is such as to cause the lower end of the hopper 13 supported thereby to swing toward the shell 7 by gravity, thereby causing the rear wall 13^a of said hopper to impinge against the periphery of the shell 7, so that during rotation of the pan 6 and the said shell, a slight shaking and oscillatory motion is imparted to the hopper to accelerate the flow of materials therethrough. Projecting into the upper part of the hopper 13 is a U-shaped guard 18, fastened to the cement receptacle 19 by brackets 22, the object of

which guard being to increase the receptive capacity of the hopper, in a manner easily understood.

In the cement receptacle 19, in the lower edge of its side wall, there is an opening 10 of proper size, which opening is adapted to be closed by a hinged door 9, there being a threaded bolt 25 having a head 26, forming a connection between the said door and the side wall of the cement receptacle, whereby the degree of opening of the said door may be regulated.

Fixed to and extending inwardly from the interior of the wall of the cement receptacle 19, at a height slightly in excess of the height of the opening 10, and of the height of the door 9, is fixed by rivets 29, a guard member 28, to prevent the outflow of cement over the upper edge of the door 9 when the latter is open. It is now pointed out that the door 9 coacting with the opening 10 performs the function of a measuring device for the quantity of cement discharged from the cement receptacle 19, upon the sand and stone in the annular space of the pan 6.

In operation it is expected that a full supply of cement be maintained in the cement receptacle 19 and that the hopper 13 be supplied with sand and stone by frequent additions. As the pan 6 is rotated by the crank handle 53 and its allied mechanism, the sand and stone will flow into the annular space of the pan 6 to a height equal to the height of the opening 12 in the throat of the hopper 13. The cement in the cement receptacle 19 being supported upon the top wall of the shell 7, which rotates with the pan 6, the cement in the cement receptacle will likewise be rotated. When, therefore, the door 9 is opened, as shown in Fig. 7, a continuous "slice" of cement, as it were, of a thickness equal to the width of the space 100 between the said door and the wall of the cement receptacle, and of a height equal to the height of the said door, will be expelled through the opening 10 upon the sand and stone below, so long as rotation of the pan 6 continues. And it is now evident that as the cements are of much finer mesh than either the sand or the stone aggregates, the cement issuing from the cement receptacle and dropping upon the other aggregates, will enter the voids therein and produce a partial dry mix before the materials are introduced into the mixer proper. The quantity of cement discharged per unit of time from the cement receptacle may be easily varied by manipulating the threaded bolt 25 to increase or reduce the space 100 between the door 9 and the inner wall of the cement receptacle. A water tank B is mounted upon the frame structure A at a convenient point, wherefrom water may be discharged through a pipe 110 into the mixing pan 2.

I have hereinbefore disclosed the preferred mode of practising my invention, but I reserve the right to make such and any changes as might occur to one skilled in the art to which this invention appertains, or to make any and all such alterations as may be permitted under the doctrine of equivalents.

What I claim is:—

1. In a device of the class described, a frame, a circular pan having outwardly flared marginal walls, said pan being mounted for rotation on said frame, an upright member axially disposed of said pan, said upright member having a plane top surface, said upright member being adapted for rotation together with said pan, means above said upright member adapted to confine material supported on the plane surface of said upright member, means constructed to enforce a flow of said material from said upright member into said pan, a hopper, said hopper entering said pan adjacent said marginal wall, said hopper being constructed to deposit other material in said pan adjacent said wall, means constructed to force the elevation of said material over the edge of said marginal wall upon the rotation of said pan, and means constructed to rotate said pan.

2. A device of the class described, including a frame, a disk-like pan mounted for rotation thereon, said pan having a continuous, flared, marginal wall; an axial, upstanding, cylindrical member possessed of a closed upper end, on said pan and rotatable therewith, there being an annular space in said pan between said wall and member, an open ended stationary shell superimposed above said member for confining materials supported above and rotated by said cylindrical member, there being an outlet from said stationary shell to said annular space for said materials, and means for elevating said materials from said annular space, and means for rotating said pan.

3. A device of the class described, including a frame, a rotatable disk like pan thereon, said pan having a continuous, flared, marginal wall, a stationary, open ended shell mounted axially above said pan, means axially of said pan and rotatable therewith, closing the lower end of said receptacle, and adapted to support and to rotate materials confined in said receptacle, there being an outlet from said receptacle to said pan for said materials, and means for rotating said pan.

4. A device of the class described, including a frame, a disk-like pan having a flared, marginal wall, mounted for rotation on

said frame, an upstanding, cylindrical member fixed axially of said pan and rotatable therewith, there being an annular space in said pan, between said wall and said member, a hopper entering said annular space for the flow of material thereinto, an open ended shell superimposed axially over said member and supported by said frame, for confining materials supported by and rotated by said cylindrical member, there being an opening in said shell permitting a flow of said materials into said space, and means for rotating said pan.

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Witnesses:
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