

J. MICHELS.
CONCRETE MIXER.
APPLICATION FILED JULY 8, 1913.

1,091,749.

Patented Mar. 31, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

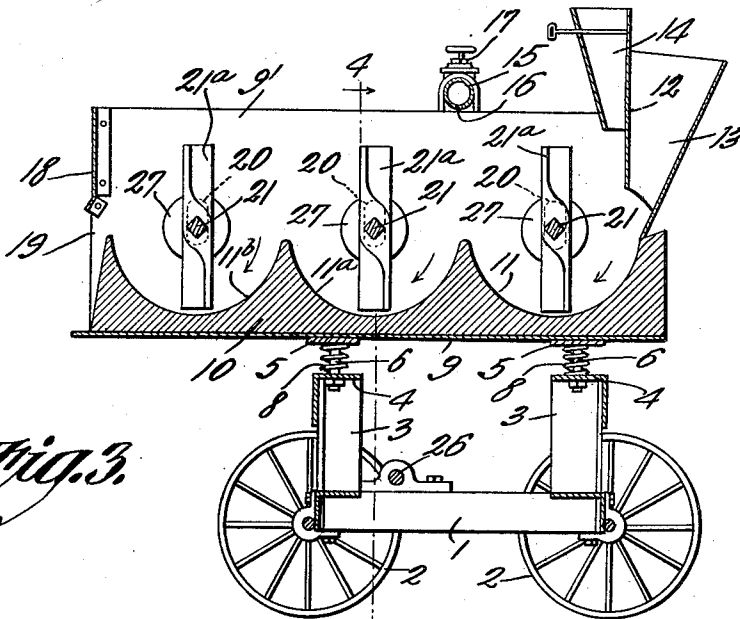
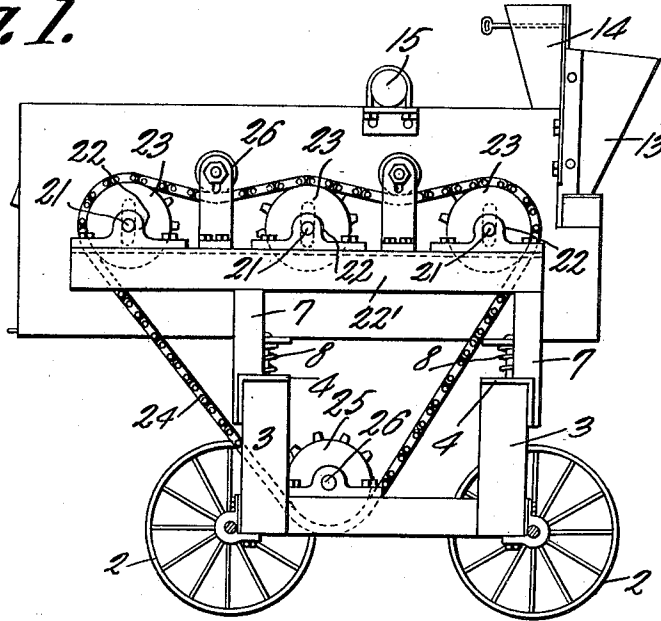


Fig. 3.

Witnesses

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2 SHEETS—SHEET 2.

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UNITED STATES PATENT OFFICE.

JOHN MICHELS, OF AURORA, ILLINOIS.

CONCRETE-MIXER.

1,091,749.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN MICHELS, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented a new and useful Concrete-Mixer, of which the following is a specification.

The present invention relates to improvements in concrete mixers, one object of the invention being the provision of a mixer, the trough and mixing members of which are independently mounted, the trough being resiliently supported, so that should any of the granular substances of the concrete tend to retard or jam the action of the mixing members, the trough will yield to such action, and prevent the breakage of the mixing mechanism.

A further object of the present invention, is the provision of a concrete mixer, in which the granular substance and the cement are properly mixed in proportion in a primary mixing compartment and are delivered into an intermediate mixing compartment where the ingredients are sprayed with the necessary amount of water, a final compartment receiving such mixed ingredients and more intimately commingling the mass and finally delivering the same through the outlet of the machine, thus providing a continuous mixing mechanism that thoroughly commingles the ingredients and insures, when the same is delivered through the outlet end, a proper proportioning of the same as to the cement, granular material and water.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a side elevation of the complete mixer taken from the power side thereof. Fig. 2 is a top plan view thereof. Fig. 3 is a section taken on line 3—3 of Fig. 2. Fig. 4 is a section taken on line 4—4 of Fig. 3.

Referring to the drawings, the numeral 1 designates the platform or frame of the mixer, which as shown is mounted upon wheels 2 so that the same may be moved from place to place. In the present in-

stance, the same is shown as a mechanism to be drawn, but it is evident that the same may be operated by power, which power when the device is stationary will be the prime mover for the conveying mechanism.

Two pairs of vertical standards 3 are mounted upon the platform or frame 1 and are bridged by the respective transverse angle plates 4, that constitute a support for the vertical angle irons 7, there being four of the same which in turn properly support the journals, as will presently appear for the mixing and conveying mechanism. Two plates 5 are provided and are disposed in vertical alinement with the respective angle plates 4 and to each of the plates 5 are connected the two bolts 6, which are mounted for vertical sliding movement through the respective angle plates 4. A spring 8 surrounds each bolt 6, and forms a resilient support for the plates 5 which in turn, support the mixing and conveying trough 9 of the present mechanism. The terminals 5' of the plates 5, as clearly shown in Fig. 4, are disposed to fit within the vertical angle plates 7 and be guided therein, such plates 7 also limiting the outward movement of the plates 5 so that they are maintained in the proper position relatively to the main carrying frame of the machine.

The bottom of the trough 9 is provided with the solid portion 10, and it is provided with the respective transversely disposed receiving and mixing compartments 11, 11^a and 11^b, as particularly shown in Fig. 3.

Carried at the forward end of the trough 9 is a vertical partition wall 12, which has secured to its forward end, the granular material carrying hopper 13 and the cement carrying and delivering hopper 14. The outlet ends of these hoppers are disposed to deliver their respective materials into the forward end of the mixing compartment 11.

In order to properly supply the necessary amount of water during the conveying and mixing of the materials in the present concrete mixer, the transversely disposed water supplying pipe 15 is mounted transversely across the upper edge of the trough 9 and directly above the partition portion between the compartments 11 and 11^a so that the water is sprayed through the apertures 16 upon the material as the same is delivered from the compartment 11 into the compartment 11^a. A manually controlled valve 17 is

provided in the pipe 15, so that the water may be supplied in the desired proportion.

Bridging the rear end of the hopper or casing 9, is a plate 18, which with the outlet end of the compartment 11^b provides the outlet 19 for the delivery of the mixed concrete from the rear end of the machine to any mechanism or receptacle that may be found expedient to be used with the present device.

Formed in the respective long walls 9' of the trough 9 approximately above the centers of the respective compartments 11, 11^a and 11^b, are the elongated apertures or slots 20, for the reception of the respective shafts 21, there being three in the present instance, which are properly journaled in the journals 22 carried by the longitudinal angle beams 22' disposed upon the upper ends of the vertical plates 7. By this means, the shafts 21 are maintained in the proper relative position at all times while the trough 9 is permitted the necessary vertical movement due to the resiliency of the springs 8, and as will presently appear. Keyed upon each of the respective shafts 21 between the walls 9' of the trough, are two blades 21^a, which are disposed at quartering positions relatively to each other, and which are disposed to be rotated in the direction of the arrows Fig. 3, so that the ingredients will be fed continuously from one end to the other.

Keyed upon the respective shafts 21 are the sprocket wheels 23, which are actuated simultaneously by means of the sprocket chain 24 which receives motion from the sprocket 25 disposed upon the drive shaft 26. This shaft 26 as before described may be operated from any form of motor, so that all of the shafts 21 and their respective mixing paddles 21^a are operated simultaneously. In order to produce the necessary tightening of the chain 24, the adjustable idlers 27 are provided.

In order to properly seal the elongated apertures 20 of the walls 9', there are disposed upon the respective shafts 21 within the hopper the disks 27, which being carried by the shafts 21 fit over such slots 20 and thus as the trough 9 moves up and down due to the resiliency of the springs 8, will properly seal such slots and prevent the passage therethrough of the mixed concrete.

From the foregoing description, taken in connection with the drawings, it is evident that the first series of paddles 21^a disposed in the compartment 11, will receive the ingredients in the dry state, and that the same will properly commingle such ingredients, and finally deliver the same over the partition between the compartment 11 and the compartment 11^a into the compartment 11^a, such ingredients receiving the water from the pipe 15 during its passage over such partition so that the water supplied thereto

and while the same is within the compartment 11^a will be sufficient to produce the necessary consistency in the concrete while the same is being mixed in the compartment 11^a and finally delivered to the last compartment 11^b. It is also evident that by disposing the paddles 21^a, as herein shown, that a continuous movement is imparted to the commingled mass so that it will be finally delivered through the outlet 19 after having been properly mixed. It is also evident that the sprockets 23 may be of varying sizes, so that the shafts 21 will be operated at different speeds.

As the granular material often carries large stones, when gravel or crushed stone is used, there may be a tendency of some to be jammed between the ends of the paddles 21^a and the adjacent portion of its respective compartment, and therefore in order to prevent the breakage of the paddles, the trough 9 is resiliently supported upon the springs 8, so that the trough will be forced downwardly when any such granular material is jammed between the paddles and thus relieve any jar upon the paddles and thus prevent the breakage thereof during the mixing of the concrete.

The wheel 2 may be placed in any convenient position to render the more easy feeding of the machine, while a platform for containing the cement and sand for delivery to the compartments may be supported by the frame of the machine.

What is claimed is:

1. A mixing machine, including a supporting frame having a plurality of upstanding angle plates, a mixing trough disposed between the plates for vertical movement, and two resiliently supported plates attached to the bottom of the trough and having their ends in sliding engagement with the angle plates of the frame.

2. A mixing machine, including a supporting frame having a plurality of upstanding angle plates, a mixing trough disposed between the plates for vertical movement, two resiliently supported plates attached to the bottom of the trough and having their ends in sliding engagement with the angle plates of the frame, two angle beams connected fixedly to the upper ends of the angle plates and upon opposite sides of the trough, and a plurality of mixing paddle carrying shafts journaled upon the beams and extending transversely of the trough.

3. A mixing machine, including a supporting frame having a plurality of vertically disposed angle plates, a mixing trough provided with a plurality of transversely disposed compartments mounted between the plates, two transversely disposed plates connected to the bottom of the trough and having their ends seated for sliding engagement between the angle plates, a plurality of

5 springs disposed between the frame and the under side of the transversely disposed plates for resiliently supporting the trough, and a plurality of paddles one to each compartment of the trough disposed in the trough.

10 4. A mixing machine, including a supporting frame having a plurality of vertically disposed angle plates, a mixing trough provided with a plurality of transversely disposed compartments mounted between the plates, two transversely disposed plates connected to the bottom of the trough and having their ends seated for sliding engagement
15 between the angle plates, a plurality of springs disposed between the frame and the under side of the transversely disposed plates for resiliently supporting the trough, the

walls of the trough being provided with alined pairs of elongated slots, one pair to each compartment, a shaft journaled exteriorly of the trough one to each alined pair of slots of the trough, a paddle keyed upon each shaft one to each compartment of the trough, the shaft and the paddles remaining
25 in fixed relation to each other while the trough is permitted vertical movement due to the resilient support thereof.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature
30 in the presence of two witnesses.

JOHN MICHELS.

Witnesses:

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W. H. ZILLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."