May 23, 1950 A. G. ZICOVICH 2,508,632

CONCRETE MIXER

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FIG. 1

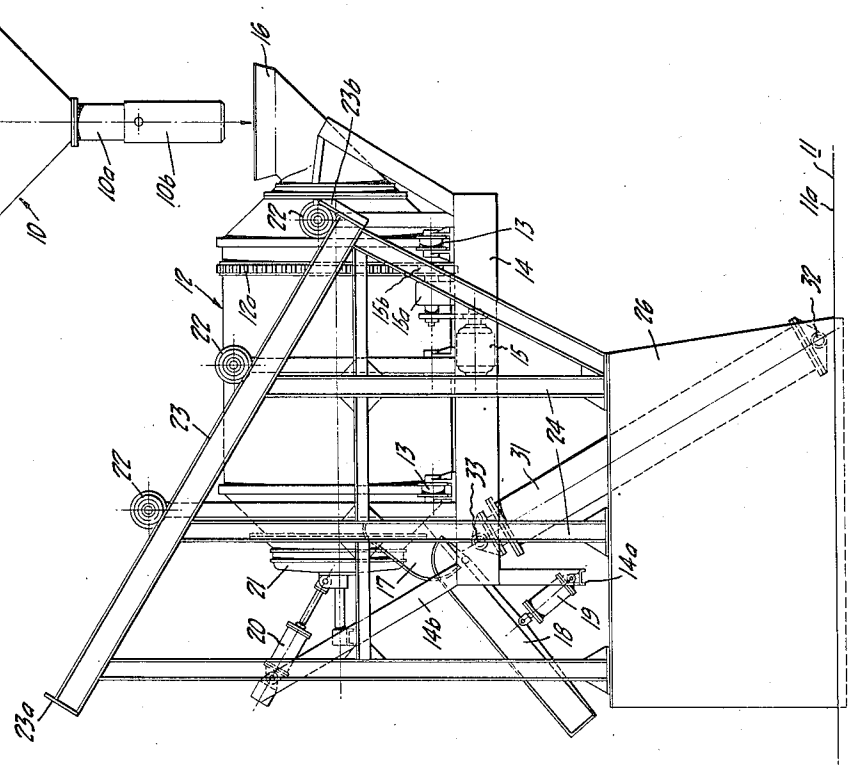
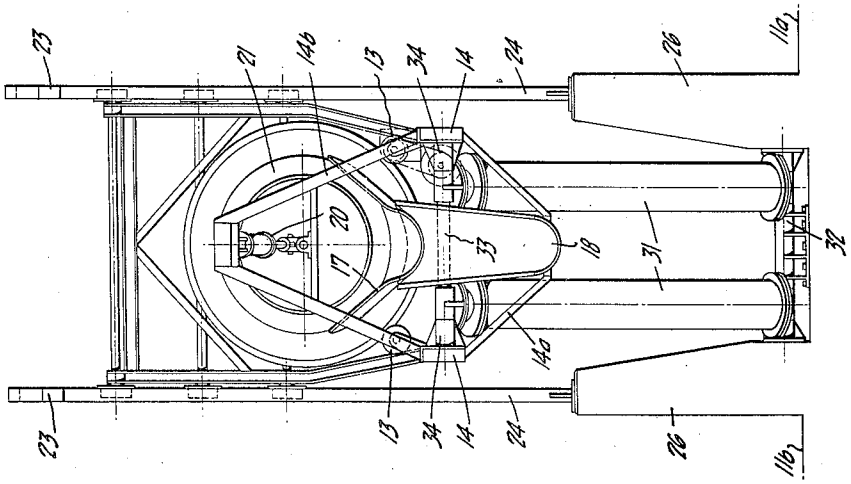


FIG. 2



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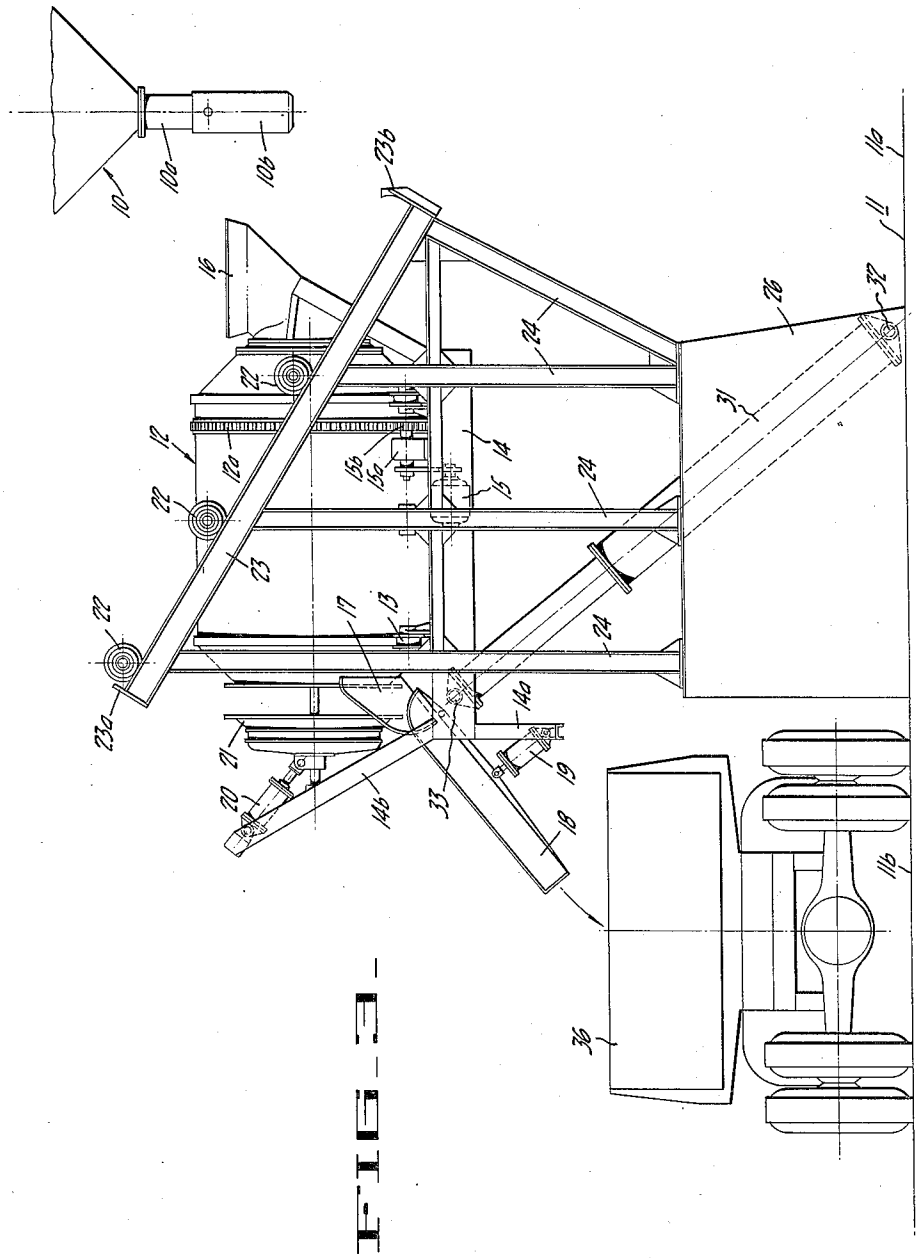


FIG-3

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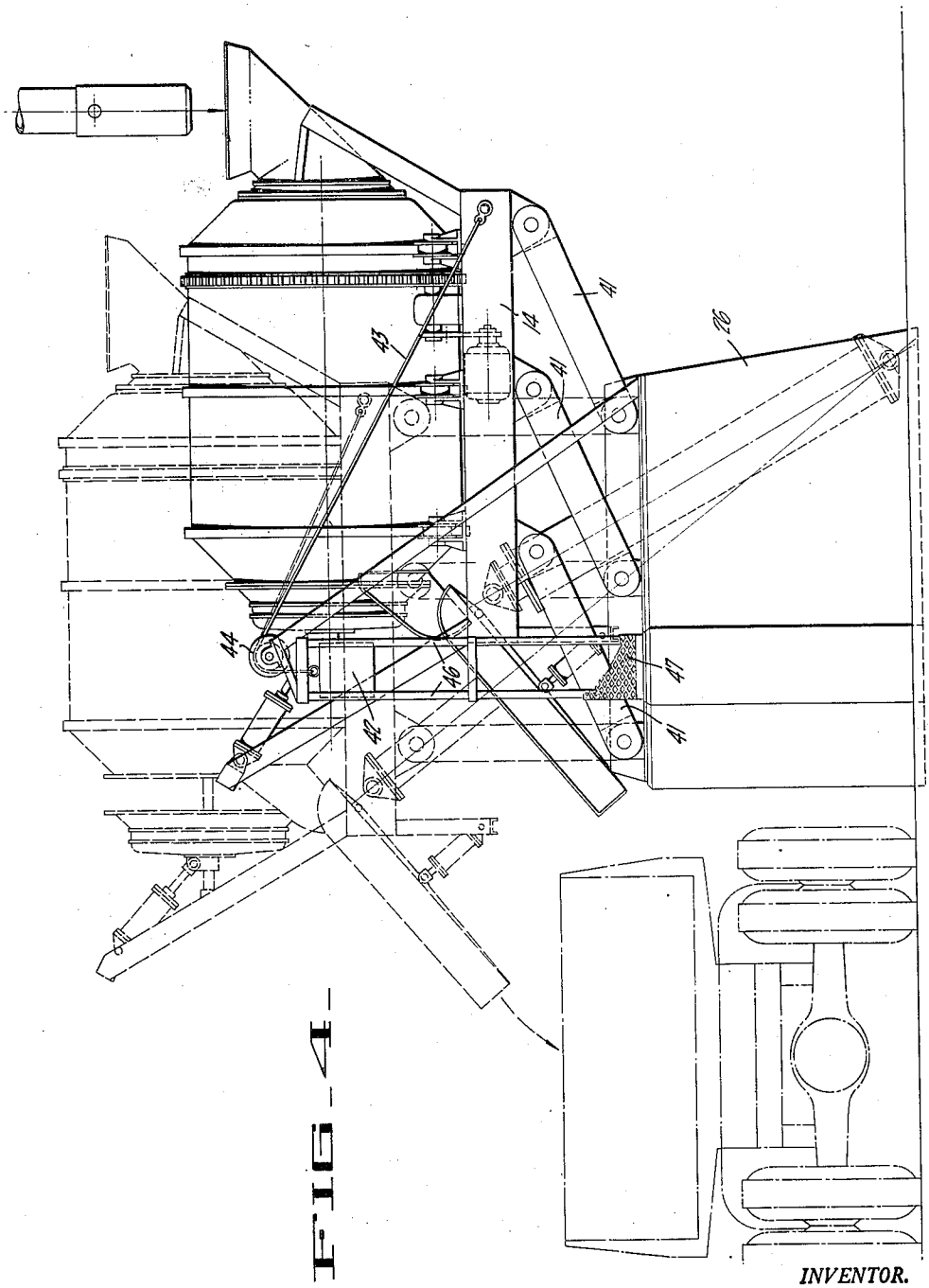


FIG. 4

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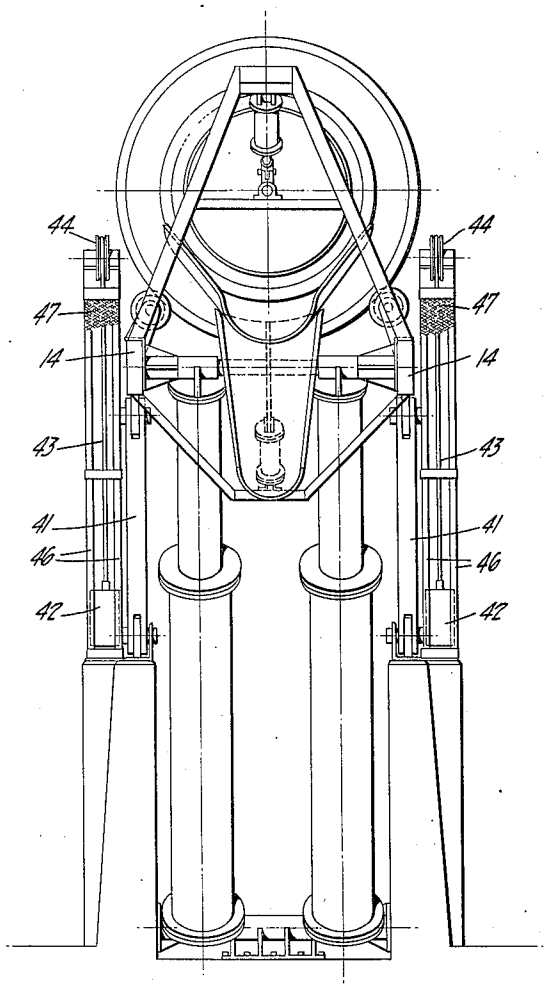


FIG. 5

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CONCRETE MIXER

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10 Claims. (Cl. 259—161)

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The present invention relates to concrete and cement mixing apparatus, and is concerned more particularly with an improved apparatus of this character for use in a batch plant to mix batches of material for delivery to trucks.

In batch plants which are used selectively for delivering aggregate directly to trucks or truck-type mixers or for delivering mixed batches of concrete to trucks, it is customary to provide a batch mixer at an elevated location in the batch plant requiring special apparatus for delivery of the aggregate and cement thereto. Such mixing apparatus is heavy and requires an expensive support structure when placed on the batch plant frame itself. In many instances batch plants which have been installed without such mixing apparatus and which are used solely for delivery of aggregate and cement require expensive alterations for installing such mixing apparatus and in many instances the cost is prohibitive.

The instant invention is designed to provide for a mixer installation of the batch type which can be easily installed in almost any existing batch plant.

Accordingly, it is a general object of the invention to provide an improved batch plant having means for the mixing of concrete in batches.

A further object of the invention is to provide a batch plant having a flexible and economical installation for mixing batches of concrete for delivery to trucks.

Another object of the invention is to provide a mixer for batches of concrete which can be used in connection with a conventional arrangement of aggregate bins and which will not interfere with the delivery of aggregate to trucks.

Another object of the invention is to provide a batch concrete mixer which is adjustable between a loading position and a discharging position.

A further object of the invention is to provide mixing apparatus attaining the foregoing objects which can be constructed and mounted in a simple and economical manner.

Other objects and advantages of the invention will be apparent from the following description of a preferred embodiment of the invention taken in conjuction with the accompanying drawings, in which:

Figure 1 is a side elevational view of a batch plant employing a mixer construction in accordance with the instant invention.

Figure 2 is an end elevational view of the discharge end of the mixer.

Figure 3 is a view similar to Figure 1 showing

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the mixing apparatus in its elevated or discharging position

Figure 4 is a view similar to Figure 1 illustrating a modified mounting of the mixer.

Figure 5 is an elevational view of the discharge end of the mixer shown in Figure 4.

Referring to Figures 1 through 3, the batch plant illustrated may include a conventional arrangement of bins (not shown) having selective discharge means 10 for selective delivery of different types of aggregate or cement to a discharge spout 10*a* having a flexible end portion 10*b*. The height of the discharge means 10*b* from the ground level 11 is such as to provide a truck station at 11*a* so that the trucks can be driven directly below the discharge means for delivery of material thereto.

Associated with the bin structure 10 there is provided a mixer 12 of conventional construction and including a rotary drum supported by the rollers 13 on a frame 14 which may also mount suitable drive means for the drum of the mixer. The drive means illustrated is an electric motor 15 suitably connected through a gear box 15*a* and a drive gear 15*b* to a large drive gear 12*a* on the mixer. The mixer 12 is provided with the usual upwardly opening intake hopper 16 and discharge means 17 leading to a downwardly extending discharge chute 18. The chute 18 may be adjusted by means of a pneumatic or hydraulic cylinder mechanism 19 pivoted to a depending portion 14*a* of the frame 14 and pivotally connected to the chute 18. The discharge end of the mixer 12 is provided with a conventional form of closure 21 which can be moved from the closed position shown in Figure 1 to the open position shown in Figure 3 by operation of the pneumatic or hydraulic cylinder mechanism 20 pivotally connected thereto and also pivoted in a V-shaped extension 14*b* of the frame 14.

To provide for movement of the mixer from its lower position shown in Figure 1 to an elevated position shown in Figure 3, the mixer frame 14 is provided at each side with three rollers 22 which engage an associated inclined track 23 having limit stops 23*a* and 23*b* at the ends thereof. Each of the tracks 23 is supported by suitable frame structure such at the I-beams 24 from an associated base or support structure 26 which is shown or may take the form of a concrete foundation structure which is located at one side of the truck station 11*a* and has at the other side a second truck station 11*b*.

The operating means for effecting controlled movement of the mixer 12 along its tracks 23

may include a pair of pneumatic or hydraulic cylinder mechanisms 31 pivotally mounted at the lower ends in a transverse bearing structure 32 between the foundation portions 26 of the support structure and pivotally connected at their upper ends to a transverse shaft 33 secured in the respective side portions of the frame 14 at 34.

The controls for the electric motor 15 and the cylinder mechanisms 19, 20 and 31 are located preferably at an operator's station which is preferably the operator's station of the batch plant.

The operator, therefore, by operation of the pneumatic or hydraulic mechanisms 31, can move the mixer 12 along the tracks 23 from its lower position where its intake hopper is disposed below the discharge means 10b of the bin structure to an upper position as shown in Figure 3 where the discharge chute 18 is disposed above a truck 36 at the truck station 11b. It will be noted in the Figure 3 position of the mixing apparatus that a truck can be driven below the discharge means 10b of the bin structure to receive aggregate directly therefrom.

Figures 4 and 5 illustrate a modified construction in which the frame 14 of the mixer is supported by three parallel links 41 on each side portion 26 of the foundation. Also, a counterbalance weight 42 is provided at each side of the mixer, and each weight 42 is suspended by a cable 43 which is trained over a pulley 44 and connected at its other end to the frame 14. Each pulley 44 is carried by a frame 46 on the main support structure and is housed within a guard 47. Otherwise, the mixer construction shown in Figures 4 and 5 is similar in construction and mode of operation of the form shown in Figures 1 to 3.

While I have shown certain preferred embodiments of the invention, it will be apparent that the invention is capable of further variation and modification and its scope should be limited only by the scope of the claims appended hereto.

I claim:

1. A batch plant comprising a bin structure having discharge means disposed at an elevation for discharge of material into a truck, a mixer having an upwardly extending intake hopper at one end and a downwardly extending discharge chute at the other end, said hopper and said chute being mounted for movement with said mixer, a support structure for the mixer, and parallel linkage means mounting the mixer on the support structure for both endwise and vertical movement between a lower position with said intake hopper disposed below said discharge means and an upper position with said discharge chute disposed at an elevation for delivery of material to a truck.

2. A concrete mixing apparatus comprising a support structure, a mixer having an upwardly opening intake means and a downwardly extending discharge means, said intake means and said discharge means being mounted for movement with said mixer, means including a parallel linkage mounting the mixer on the support structure for movement between a lower loading position and an upper discharging position, and power-operated means for moving said mixer between said positions.

3. A batch plant comprising a bin structure having discharge means disposed at an elevation for discharge of material into a truck on a driveway beneath said discharge means, a support structure at one side of the bin structure, a mixer having an upwardly opening intake means at one end and a downwardly extending discharge means at the other end, said intake means and said discharge means being mounted for movement with said mixer, means mounting the mixer on the support structure for both endwise and vertical movement between a lower loading position with its intake means below the bin structure and an upper discharging position with its discharge means projecting beyond the support structure for delivery of material to a truck on a second driveway extending past said support structure, and power-operated means for controlling movement of said mixer between said positions.

4. A batch plant comprising a bin structure having discharge means disposed at an elevation for discharge of material into a truck on a driveway beneath said discharge means, a support structure at one side of the bin structure, a mixer having an upwardly opening intake means at one end and a downwardly extending discharge means at the other end, said intake means and said discharge means being mounted for movement with said mixer, means mounting the mixer on the support structure for both endwise and vertical movement between a lower loading position with its intake means below the bin structure and an upper discharging position with its discharge means projecting beyond the support structure for delivery of material to a truck on a second driveway extending past said support structure, a power unit for operating said mixer and mounted for movement therewith, and power-operated means for controlling movement of said mixer between said positions.

5. A batch plant comprising a bin structure having discharge means disposed at an elevation for discharge of material into a truck on a driveway beneath said discharge means, a support structure at one side of the driveway, a pair of spaced apart inclined tracks mounted on the support structure with their lower ends adjacent the driveway, a mixer mounted for movement on said tracks and having its intake end facing the driveway and its discharge end facing a second driveway at the opposite side of said support structure, said mixer being mounted for movement on said inclined tracks between a lower position with its intake end in cooperative relation with said discharge means and an upper position with the discharge end of said mixer disposed above the second driveway at an elevation for delivery of material to a truck thereon.

6. A batch plant comprising a bin structure having discharge means disposed at an elevation for discharge of material into a truck on a driveway beneath said discharge means, a support structure at one side of the driveway, a pair of spaced apart inclined tracks mounted on the support structure with their lower ends adjacent the driveway, a mixer mounted for movement on said tracks and having its intake end facing the driveway and its discharge end facing a second driveway at the opposite side of said support structure, a drive motor for said mixer mounted for movement therewith, said mixer being mounted for movement on said inclined tracks between a lower position with its intake end in cooperative relation with said discharge means and an upper position with the discharge end of said mixer disposed above the second driveway at an elevation for delivery of material to a truck thereon, and power-operated means for controlling the movement of said mixer along said tracks.

7. A batch plant comprising a bin structure having discharge means disposed above a driveway for trucks at an elevation for discharge of

material into a truck on the driveway, a mixer having an intake hopper and a discharge chute, said hopper and said chute being mounted for movement with said mixer, a support structure for said mixer at one side of the driveway, and means mounting the mixer on its support structure for movement between a lower position with said intake hopper disposed over said driveway and operatively related to said discharge means and an upper position for operatively relating the discharge chute to a truck.

8. A batch plant comprising a bin structure having discharge means disposed above a driveway for trucks at an elevation for discharge of material into a truck, a mixer having an intake hopper and a discharge chute, said hopper and said chute being mounted for movement with said mixer, a support structure for said mixer at one side of the driveway, and means mounting the mixer on its support structure for movement between a position with said intake hopper disposed over said driveway and operatively related to said discharge means and another position for operatively relating the discharge chute to a truck and in which said intake hopper clears said driveway.

9. A batch plant comprising a bin structure having discharge means disposed at an elevation above a driveway for discharge of material into a truck on the driveway, a mixer having an upwardly opening intake hopper at one end and a downwardly extending discharge chute at the other end, said hopper and said chute being mounted for movement with said mixer, and means mounting the mixer for both endwise and vertical movement between a lower position with

said intake hopper over said driveway and disposed below said discharge means and an upper position with said discharge chute disposed at an elevation for delivery of material to a truck and in which said intake hopper clears said driveway.

10. A batch plant comprising a bin structure having discharge means disposed at an elevation above a driveway for discharge of material into a truck on the driveway, a mixer having an upwardly extending intake hopper at one end and a downwardly extending discharge chute at the other end, a support structure for the mixer, and means including inclined tracks for mounting the mixer on the support structure for both endwise and vertical movement between a lower position with said intake hopper disposed over said driveway and below said discharge means and an upper position with said discharge chute disposed at an elevation for delivery of material to a truck and in which said intake hopper clears said driveway.

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