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 [21] Appl. No. 799,741
 [22] Filed Feb. 17, 1969
 [45] Patented Jan. 11, 1972
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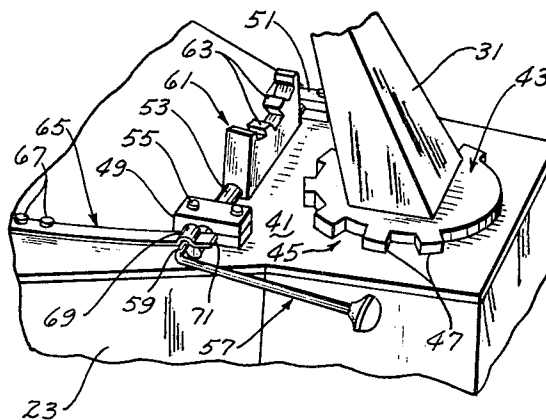
[54] **SUPPORT ASSEMBLY FOR A CONCRETE MIXER CHUTE**
 3 Claims, 7 Drawing Figs.

[52] U.S. Cl..... 193/10,
 70/190
 [51] Int. Cl..... B65g 11/12,
 B65g 11/18
 [50] Field of Search..... 70/190;
 193/10; 212/69; 74/527; 302/34

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ABSTRACT: A support assembly for a concrete mixer chute including a support member rotatably secured to the concrete mixer frame below the mixing drum discharge opening. The upper end of the chute is connected to the upper end of the support member and is connected intermediate its length to the lower end of the support member. The chute and support member are rotatable about a vertical axis with respect to the mixer so that the concrete can be directed to the desired unloading point. A first gear segment is rigidly secured to the support element for rotation therewith and a second gear element is movably mounted on the mixer frame. The second gear segment is movable into and out of engagement with the first gear segment to permit the chute and supporting member to be locked in various positions of their rotatable movement to maintain the chute in the desired unloading position. Means are also provided to maintain the second gear segment in its engaged position and its disengaged position with respect to the first gear segment.



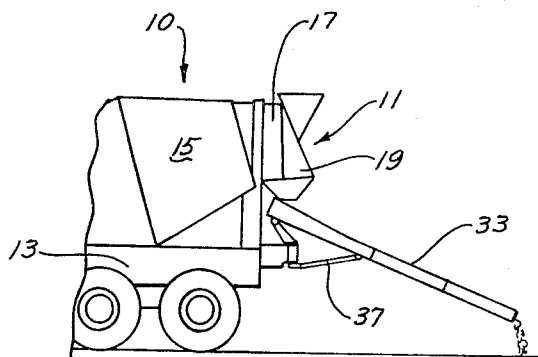


Fig. 1

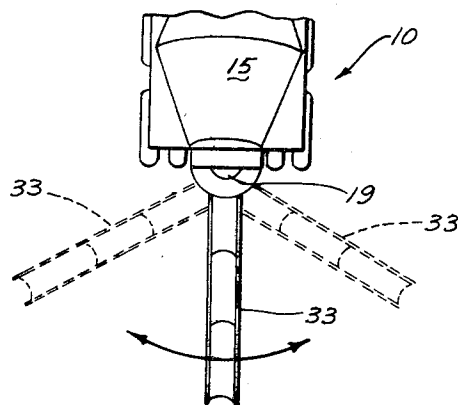


Fig. 2

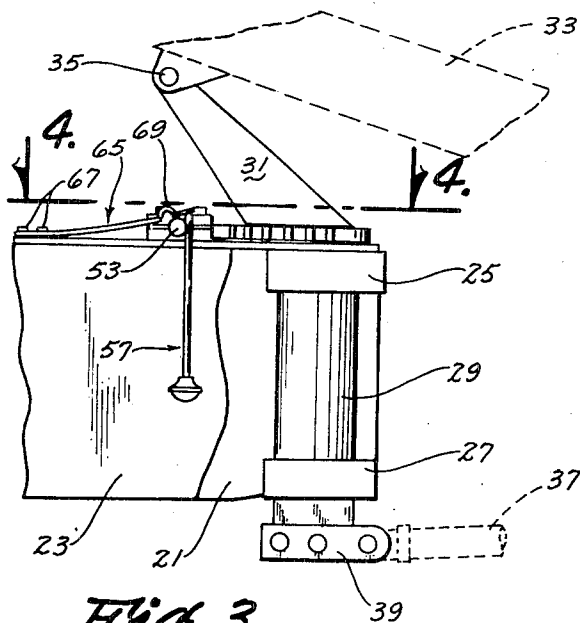


Fig. 3

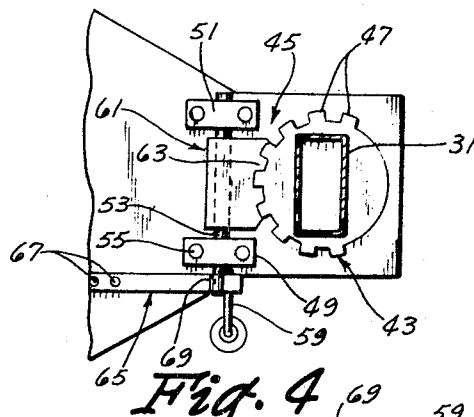


Fig. 4

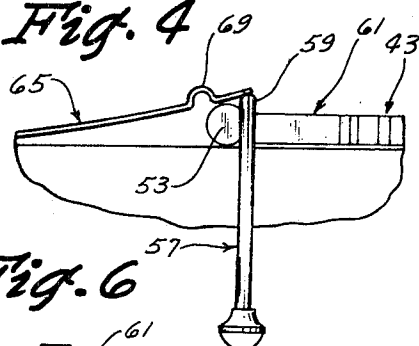


Fig. 6

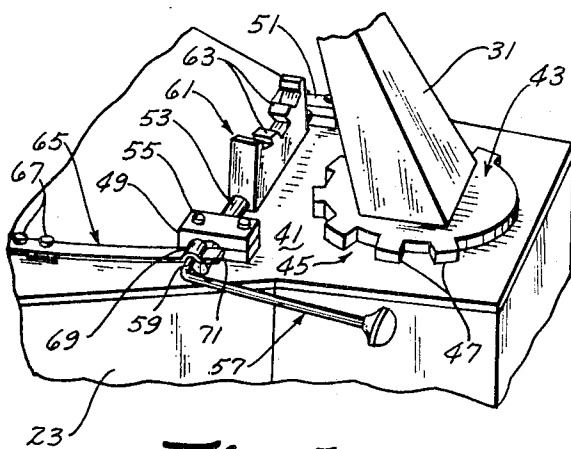


Fig. 5

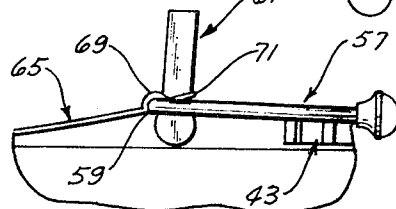


Fig. 7

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SUPPORT ASSEMBLY FOR A CONCRETE MIXER CHUTE

Conventional concrete truck mixers have a discharge chute pivotally connected to the rearward end of the mixing truck to permit the concrete to be discharged some several feet away from the mixer. It was necessary at one time for a workman to grasp the discharge chute during the discharge of the concrete therefrom so that the chute would remain in its desired unloading position. Obviously, the necessity of the attendance of a workman to position the discharge chute was an inefficient operation. Some attempts have been made at overcoming the inefficient operation described hereinbefore by means of selectively locking the discharge chute in various positions of its rotatable movement with respect to the mixing drum. However, these attempts were somewhat less than satisfactory due to the manufacturing expense thereof and due to the fact that considerable maintenance was required to keep the locking means free from foreign materials such as rocks, concrete, etc. Additionally, the existing locking means sometimes fail to properly maintain the discharge chute in its proper position which resulted in the concrete being spilled.

Therefore, it is a principal object of this invention to provide a support assembly for a concrete-mixing chute.

A further object of this invention is to provide a support assembly for a concrete mixer chute having means thereon to selectively lock the discharge chute in various unloading positions.

A further object of this invention is to provide a support assembly for a concrete mixer chute and means for locking and unlocking of the discharge chute being accomplished by first and second gear segments which are moved into and out of engagement with each other.

A further object of this invention is to provide a support assembly for a concrete mixer chute and means for locking the same in various positions with respect to the mixing truck, the locking means including means to yieldably maintain the locking means in its unlocked and locked positions.

A further object of this invention is to provide a support assembly for a concrete mixer chute which is durable in use, convenient to operate and economical of manufacture.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings in which:

FIG. 1 is a fragmentary side elevational view of the concrete mixer truck illustrating the device of this invention;

FIG. 2 is a fragmentary top view of the mixer truck illustrating the concrete chute extending therefrom, the broken lines illustrating the positions to which the chute may be moved;

FIG. 3 is a fragmentary side view of the support assembly of this invention with portions thereof cutaway to more fully illustrate the invention;

FIG. 4 is a sectional view as seen along lines 4—4 of FIG. 3;

FIG. 5 is a fragmentary top perspective view of the support assembly of this invention;

FIG. 6 is a fragmentary side elevational view of the device illustrating the second gear segment in a locked position; and

FIG. 7 is a view similar to FIG. 6 except that the second gear segment is positioned in its unlocked position.

The numeral 10 generally designates a concrete mixer truck having a rearward end 11 and a frame means 13. A mixing drum 15 is rotatably mounted on the truck 10 at the rearward end thereof and includes a discharge end 17 at the upper rearward end thereof. A collecting hopper 19 is provided on the truck 10 at a point below discharge end 17 and is adapted to receive the concrete being discharged from the discharge end 17 of the drum 15.

Truck 10 is provided with a rearwardly extending frame means 21 which is partially shown in FIG. 3 and which is enclosed by a cover means 23. A pair of spaced apart bearings 25 and 27 are secured to the rearward end of the frame means 21 by any convenient means such as welding or the like. A

shaft 29 is rotatably mounted in bearings 25 and 27 and has its upper and lower ends partially extending therefrom. A pedestal 31 is secured to the upper end of shaft 29 and extends upwardly and rearwardly therefrom as best viewed in FIG. 3. The upper end of the discharge chute 33 is pivotally connected to the upper end of the pedestal 31 at 35 and extends downwardly and outwardly therefrom. A hydraulic cylinder means 37 is pivotally connected at one end to a collar 39 which is rigidly secured to the lower end of the shaft 29 as viewed in FIG. 3. The other end of the hydraulic cylinder means 37 is pivotally connected to the under side of the chute 33 intermediate the length thereof. The hydraulic cylinder means is operatively connected to the mixer truck hydraulic circuit to permit the lower end of the chute 33 to be raised or lowered.

As seen in FIG. 5, a top cover 41 is positioned over the cover means 23, shaft 29 and bearings 25 and 27 to prevent foreign material from dropping down into the interior of the cover means 23. Top cover 41 is provided with a suitable opening formed therein to permit the operative connection of the pedestal 31 with the upper end of the shaft 29. A gear segment 43 is secured to the lower end of the pedestal 31 and extends therearound as illustrated in FIGS. 4 and 5. Gear segment 43 is secured to pedestal 31 by any convenient means such as welding or the like to provide the rigid connection therebetween. If desired, the gear segment 43 may be secured to the upper end of the shaft 29 with the pedestal 31 then being secured to the upper surface of the gear segment 43 providing proper materials and welding procedures are employed to achieve the necessary strength.

Gear segment 43 includes a face portion 45 which is defined by the spaced-apart teeth 47. The numerals 49 and 51 refer to a pair of spaced-apart bearing blocks having a rod 53 rotatably mounted therein and extending therebetween as illustrated in FIG. 5. Bearing blocks 49 and 51 are provided with suitable capscrews 55 to permit the bearing blocks to be disassembled to facilitate the insertion of the rod 53 therein. As seen in FIG. 5, one end of rod 53 protrudes outwardly from bearing block 49. The numeral 57 generally designates a handle member having its end portion 59 secured to the outer end of the rod 53 by welding or the like in an eccentric relationship as best illustrated in FIGS. 6 and 7. A gear segment 61 is secured to the rod 53 between the bearing blocks 49 and 51 and includes a face portion 63 which is complementary to the face portion 45 of gear segment 43 and which is adapted to engage the same as illustrated in FIG. 4. A spring 65 is secured to one of its ends to top cover 41 by screws 67 and extends rearwardly therefrom. Spring 65 includes an arcuate portion 69 which is adapted to receive the lower end portion 59 of handle 57 (FIG. 7) when the gear segment 61 has been moved to its inoperative or unlocked position with respect to the gear segment 43. Spring 65 also includes an end portion 71 which is located outwardly of the arcuate portion 69 and which is adapted to engage the end portion 59 of handle 57 (FIG. 6) when the gear segment 61 has been moved into mating engagement with the gear segment 43 and which engages the rod 53 (FIGS. 5 and 7) when handle 57 has been moved to cause the gear segment 61 to be moved out of engagement with the gear segment 43.

FIG. 5 illustrates the relationship of the gear segments 43 and 61 when it is desired to permit the chute 33 to be freely moved with respect to the mixer truck. In the position illustrated in FIGS. 5 and 7, gear segment 61 is maintained in its unlocked position due to the eccentric relationship between the end portion 59 of handle 57 and the rod 53 and due to the fact that end portion 59 is received in the arcuate portion 69 of spring 65. Additionally, the end portion 71 of spring 65 engages rod 53 and the combined effect is to create sufficient leverage on the gear segment 61 to maintain the same in the position of FIG. 7 so that the chute can be moved to its proper position. The fact that the chute 33 is operatively connected to the shaft 29 permits the chute 33 to be moved to the positions illustrated by broken lines in FIG. 2 or to any position

therebetween. When the chute 33 has been moved to its proper position, handle 57 is simply pivoted from the position of FIG. 7 to the position of FIG. 6 which causes the disengagement of the end portion 59 from the arcuate portion 69 of spring 65 and causes the gear segment 61 to be lowered into mating engagement with the gear segment 43. The spring force exerted on the end portion 59 of handle 57 (FIG. 6) together with the weight of the handle 57 and gear segment 61 is sufficient to yieldably maintain the gear segment 61 in its position of engagement with gear segment 43. The combined leverage exerted on the gear segment 61 is sufficient to prevent the inadvertent disengagement of the gear segment 61 from the gear segment 43.

It can be appreciated that an extremely durable support assembly for a concrete mixer chute support assembly has been provided which includes locking means to permit the chute to be maintained in various positions of its movement with respect to the mixer truck. The support assembly described herein is such that the chute can be easily locked into position or quickly unlocked to permit its repositioning. The opposite faces of the gear segments 43 and 61 is such that very little "play" will exist between the gear segments 43 and 61. The configuration of the faces of the gear segments 43 and 61 is also such that a large number of chute positions is possible and the number of positions will be only limited by the number of teeth on the gear segment 43. Thus it can be seen that the support assembly accomplishes at least all of its stated objectives.

Some changes may be made in the construction and arrangement of my support assembly for a concrete mixer chute without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure, or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In a discharge chute support for concrete mixers or the like,
 - a frame means,
 - a support means operatively secured to said frame means,
 - a support member operatively rotatably secured to said support means and adapted to be secured to said discharge chute and to rotatably support the same with respect to said frame means,
 - a locking means selectively locking said support member in various positions of its rotatable movement with respect

to said support means,

said locking means including a first locking means rigidly secured to said support member for rotation therewith, a second locking means operatively secured to and movably mounted on said support means, said first and second locking means having first and second registering portions provided thereon respectively adapted to be selectively interlocked with each other at times, said second locking means being movable from a first position wherein said registering portions are not interlocked to a second position wherein said registering portions are interlocked,

said discharge chute being maintained in various positions of its rotatable movement with respect to said support means when the registering elements are interlocked,

said first and second registering portions being comprised of first and second gear segments respectively,

said second gear segment being mounted on a horizontally disposed pivotal rod means,

a handle means connected to said rod means for pivotally moving said second gear segment into and out of engagement with said first gear segment,

said handle means including an end portion which is secured to said rod means in an eccentric relationship with respect to said second gear segment and said rod means,

and a spring means yieldably engaging said end portion of said handle means when said gear segments are interlocked to yieldably maintain the same in said interlocked position,

said spring means being elongated and including an arcuate portion adapted to receive said end portion of said handle means when said second gear segment has been moved to a position out of interlocking engagement with said first gear segment.

2. The apparatus of claim 1 wherein the axis of said end portion of said handle means is disposed above the axis of said rod means and is disposed above the plane of said second gear segment when said gear segments are interlocked.

3. The apparatus of claim 2 wherein the axis of said end portion of said handle means is disposed above the axis of said rod means and is disposed below the registering portion of said second locking means when said gear segments are not interlocked.

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