CONCRETE DELIVERY CHUTE ATTACHMENT

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References Cited
UNITED STATES PATENTS
1,220,249 3/1917 McWhortor ...................... 222/S27

ABSTRACT

An attachment for the discharge end of the conventional delivery chute of a concrete mixer truck, affording a flexible tube extension thereof for directing concrete accurately and without appreciable spatter to desired locations about a substantial radius of action.
CONCRETE DELIVERY CHUTE ATTACHMENT

The present invention relates to new and useful improvements in apparatus for handling concrete, and more specifically pertains to the attaching features of and other details of an attachment for the discharge end of a conventional delivery chute of a concrete mixer truck, such attachment including a flexible tubular member for directing concrete into any desired position below and within a considerable horizontal radius of the discharge end of the chute.

The invention has to do with equipment for dispensing freshly mixed concrete, especially such as discharged by a concrete mixer truck. Exemplary of prior art proposals are U. S. Pat. No. 3,249,192 for Flexible Dispensing Chute Attachment which issued May 3, 1966 to D. E. Bushkirk and U. S. Pat. No. 3,150,753 for Tubing For Conveying Freshly Mixed Concrete which issued Sept. 29, 1964 to F. Ivanyi.

The paramount objective of the invention is to provide a flexible dispensing tube together with simple and rugged means free of moving parts that enables swift and sure coupling and decoupling of the tube to the discharge end of a conventional discharge chute, whereby concrete can freely pass from the chute into and gravitationally through the tube to any selected position below and within a substantial horizontal radius of the discharge end of the chute.

An important aspect of the invention involves a concrete distributing attachment for use with a concrete mixer truck delivery chute of the type having a pair of upstanding ears at its opposite sides at its discharge end, said attachment comprising a hollow body having a forwardly facing inlet opening adapted to receive loosely therein a rearwardly facing discharge end of a delivery chute, said body being provided with limit means therein adapted to be engaged by the discharge end of a delivery chute for limiting the entry of the latter into the body, said body being provided with suspension means adjacent and above said inlet opening for engaging the ears of a concrete delivery chute for pivotally supporting the body, said body having a discharge opening disposed rearwardly of the inlet opening, and an elongated flexible distributing tube secured to the body about the discharge opening, the arrangement being such that the body can be hung upon the ears of the discharge chute so as to gravitationally swing into a position that the latter extends into the body through the inlet opening to an extent limited by the limit means, whereupon concrete can be discharged from the chute into the body, with the discharge of concrete from the body being directable through the flexible tube.

Another important aspect of the invention involves a concrete mixer truck of the type having, during discharging operations, a downwardly inclined concrete delivery chute having a lower discharge end, and a pair of upstanding ears on opposite sides of the chute at its discharge end, the combination therewith of a hollow, funnel-like body having a relatively large open and forwardly facing inlet end receiving therein the discharge end of the chute, said body having an open framework adjacent said inlet opening through which the upstanding ears project so that the body is pivotally supported on the chute in a manner such that the body gravitationally swings forwardly, coacting means carried by the chute and the body for limiting said gravitational swinging movement, and an elongated flexible tube detachably secured to the body about said discharge end thereof.

The invention will be best understood in the light of the following description of a preferred embodiment of the same, such description being given in conjunction with the accompanying drawing illustrative thereof, wherein:

FIG. 1 is a rear view of a concrete mixer truck with the attachment of the invention applied to the discharge end of the delivery chute for directing concrete into a set of forms;

FIG. 2 is an enlarged fragmentary perspective view of the attachment and the delivery chute;

FIG. 3 is a fragmentary vertical sectional view taken upon the plane of section line 2—2 in FIG. 2; and,

FIG. 4 is a fragmentary perspective view of the attachment illustrating particularly the inlet of the latter.

Referring now to the drawings wherein like reference numerals designate like parts throughout the various views, the reference number 10 designates generally a conventional concrete mixer truck that includes rear ground support and drive wheels 12, axle housing and differential drive means 14, frame 16, rotatable mixing hopper 18, dispensing hopper 20 and discharge chute 22.

The discharge chute 22 is made of steel and is of entirely conventional character, the same being movably mounted on the truck and actuable in its movements by conventional means not shown so to be adjustable in azimuth (the direction in which it extends) and in its degree of vertical slope. The conventional chute 22 also includes telescoping sections (not shown), whereby the length of the chute can be adjusted. As will be well known to those familiar with cement mixer trucks, the chute 22 is retractable and collapsible (by means not shown) to a compact transit condition.

The structure thus far described is entirely conventional and does not in and of itself constitute the present invention. Suffice for the purposes of the present invention that the chute 22 be downwardly inclined and trough-like or of a U-shaped transverse section, and that the opposite sides 24 and 26 of the chute 22 be provided with upstanding ears 28 and 30.

The conventional discharge or delivery chutes 22 normally include upstanding ears at their opposite sides at their discharge ends, and if not, must be provided with such as by attaching such structure by welding or the like so that the attachment of the present invention can be used.

The distributing attachment of this invention is designated generally at 40 and comprises a hollow, funnel-like body 42 that is provided, adjacent its forward or inlet end 44, with means 46 for pivotally suspending the attachment 40 from the trough 22 for receiving from the latter thereto freshly mixed concrete 48. The attachment 40 also comprises a flexible tube 50 that is detachably secured to the body 42 at the outlet or discharge end 52 of the latter by means indicated at 54.

The hollow body 42 is made of steel and includes an open front or inlet end 44 that is partially defined by a generally U-shaped wall portion 60 that includes upstanding side portions 62 and 64 joined by a bottom portion 66. The U-shaped portion 60 is of a configuration somewhat similar to the chute 22 and is of a size that is considerably larger than transverse dimensions of the chute 22 as shown in FIGS. 2 and 3 of the draw-
ings so that the chute 22 can be quite loosely received in the open inlet end 44 of the body 42, it being noted that the bottom wall portion 66 of the body 42 projects forwardly sufficiently so as to underlie the trough 22 in substantial overlapping relationship. The arrangement is such that concrete 48 gravitationally flowing from the discharge end 70 of the chute will enter the hollow interior 72 of the body or housing 42 for gravitational flow rearwardly through the body 42 toward and through the discharge or outlet end 52 of the body.

The means 46 comprises an open framework fixed to the body, such framework being in the form of a pair of U-shaped steel rods 76 and 78 having their legs welded to the body 42 adjacent the junctures of the wall portions 62 and 64 with the top wall 80 of the body 42. The rods 76 and 78 are arranged to project their web or bight portions, respectively 82 and 84, forwardly. The web 84 is spaced forwardly of the web 82 so as to define a rectangular space or opening 86 therebetween. Preferably the webs 82 and 84 are reinforced by a short rod 88 extending between and welded thereto.

The dimensions of the U-shaped rods 76 and 78 and the opening 86 defined thereby are such that the upstanding ears 28 and 30 can be received upwardly through the opening 78 as shown in FIGS. 2 and 3. The extent of such upward extension of the ears 28 and 30 through the opening 86 is normally limited by outwardly extending pins 90 normally carried by conventional troughs 22 and in any event is limited by engagement of the web 84 with the upper edges 92 of the trough 22. Preferably the longitudinal extent of the opening 86 (which is transverse or normal relative to the plane of symmetry of the body 42 that is evident on inspection of the drawings) is only slightly greater than that necessary to accommodate the ears 28 and 30 with free working clearance therebetwehen. This is also true as to the transverse size of the opening 86.

The framework or means 46 constitutes in effect a hook releasably engageable over the ears 28 and 30 to pivotally support the body 42, with such engagement being effected with the rear end of the body relatively elevated. After such engagement is effected the body can be allowed to swing gravitationally about a transverse horizontal axis roughly defined by the ears 28 and 30 so that the body 42 moves clockwise as viewed in FIG. 3, whereupon the wall portion 66 moves below the chute 22 to a limiting position shown in FIG. 3. A vertical rod 96 is centrally welded within the body 42 as shown for the purpose of limiting the described swinging movement by limiting the extent that the chute 22 can extend into the body 42 by the chute 22 engaging the rod 96.

Thus the attachment 40 can be readily placed in position for coaction with the chute 22 for the delivery of concrete. The structure for effecting this purpose does not require either the chute 22 or the attachment 40 having relatively movable parts; the attachment 40 merely being movable relative to the chute 22. Such absence of relatively movable parts has substantial advantages in that, to name a few, no time consuming manipulation of movable parts is required, no special cleaning efforts of relatively movable parts must be made, manufacturing costs are lower, reduced wear, a stronger and more durable apparatus is obtained, and less skill or training on the part of users is required.

Disengagement of the attachment 40 is obviously and easily effected by reversing the attaching sequence.

The rear end 52 of the body 42 is formed as a cylindrical extension of relatively short extent, and the elongated flexible tube 50 has one end 102 disposed to encircle such cylindrical portion 100. The tube 50 is detachably retained about the cylindrical portion 100 by the means 54, and the latter can be of any conventional and suitable character. Exemplary of a suitable provision in this regard is a split ring 104 that is releasably clamped about the tube portion 102 by a threaded fastener 106 in the well known style of automobile radiator hose clamps. Alternatively, though not shown, the means 54 can simply be a wire with its ends twisted up tight; this arrangement being especially effective and inexpensive if the outer diameter of the free end of the cylindrical portion 100 is bulged slightly.

The tube is of rubber and of a degree of flexibility generally comparable to the inner tube of an automobile tire. Indeed, an old inner tube unsuited for its originally intended function can be readily used as the tube 50 at essentially little or no cost. The tube 50 is preferably an elastomeric material relatively resistant to chemical attack by the concrete.

In use the chute 22 is positioned with its discharge end 70 above the approximate center of an area in which concrete is to be deposited by a vertical extent very approximately the length of the tube 50. On the discharge of concrete 48 from the chute 22, a man handles the tube 50 to move the free and lower end 110 of the latter to deposit the concrete at the position desired, such as between the forms 112 and 114 as shown in FIG. 1. The attachment 40 has been useful in pouring sidewalks, driveways, subgrade level house footings and the like; all such operations enabling a greater pour between necessary readjustments of the position of the chute 22, all with a minimum mess and splatter as the user can more or less control rate of delivery by choking the tube 50. Not nearly as great care is needed in positioning the chute 22 before commencing any pour. The attachment 40 is of great value in pouring house basements and enables a relatively uniform, initial deposit and most important of all, a greatly reduced frequency of need for movement of the truck itself.

Reference to the appended claims should be made to ascertain the actual scope of the invention.

1. A concrete distributing attachment for use with a concrete mixer truck delivery chute of the type having a pair of upstanding ears at its opposite sides at its discharge end, said attachment comprising a hollow body having a forwardly facing inlet opening adapted to receive loosely therein a rearwardly facing discharge end of a delivery chute, said body being internally provided with limit means adapted to be engaged by the discharge end of a delivery chute for limiting the entry of the latter into the body, said body being provided with suspension means adjacent and above said inlet opening for engaging the ears of a concrete delivery chute for pivotally supporting the body about a horizontal and transversely extending axis, said body having a discharge opening disposed rearwardly of the inlet opening, and an elongated flexible distributing tube secured to the body about the discharge opening, the arrangement being such that the body can be hung upon the ears of the discharge chute so as to gravitationally
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swing about said axis into a position that the latter extends into the body through the inlet opening to an extent limited by the limit means, whereupon concrete can be discharged from the chute into the body, with the discharge of concrete from the body being directable through the flexible tube.

2. The combination of claim 1, wherein said suspension means comprises the body having an opening in the top thereof adapted to accommodate upwardly therethrough the upstanding ears.

3. The combination of claim 1, wherein the limit means comprises an elongated member disposed within the body and having its opposite ends fixed to the body.

4. The combination of claim 2, wherein the limit means comprises an elongated member disposed within the body and having its opposite ends fixed to the body.

5. A concrete distributing attachment for use with a concrete mixer truck delivery chute of the type having a pair of upstanding ears at its opposite sides at its discharge end, said attachment comprising a hollow funnel-shaped body having an open forward inlet end and an open rearward discharge end, said body being provided with an open framework adjacent its inlet end, said open framework being adapted to receive upwardly therethrough the upstanding ears to pivotally support the body from the chute about a horizontal and transverse axis with the discharge end of the latter being relatively swingable into and out of the inlet end of the body, and said body having an internal transverse member for limiting relative swinging movement of the chute into the body, and an elongated flexible tube fixed to the body about the open discharge end of the body.

6. A concrete mixer truck of the type having, during discharging operations, a downwardly inclined concrete delivery chute having a lower discharge end, and a pair of upstanding ears on opposite sides of the chute at its discharge end, the combination therewith of a hollow, funnel-like body having a relatively large open and forwardly facing inlet end receiving therein the discharge end of the chute, said body having an open framework adjacent said inlet opening through which the upstanding ears project so that the body is pivotally supported about a horizontal and transverse axis on the chute in a manner such that the body gravitationally swings forwardly to receive the discharge end of the chute within the inlet thereof, coacting means carried by the chute and internally by the body for limiting said gravitational swinging movement, and an elongated flexible tube detachably secured to the body about said discharge end thereof.

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