July 26, 1955 J. R. CASTENDYCK 2,713,929

DISTRIBUTING CHUTE FOR CONCRETE MIXERS

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Fig. 1.

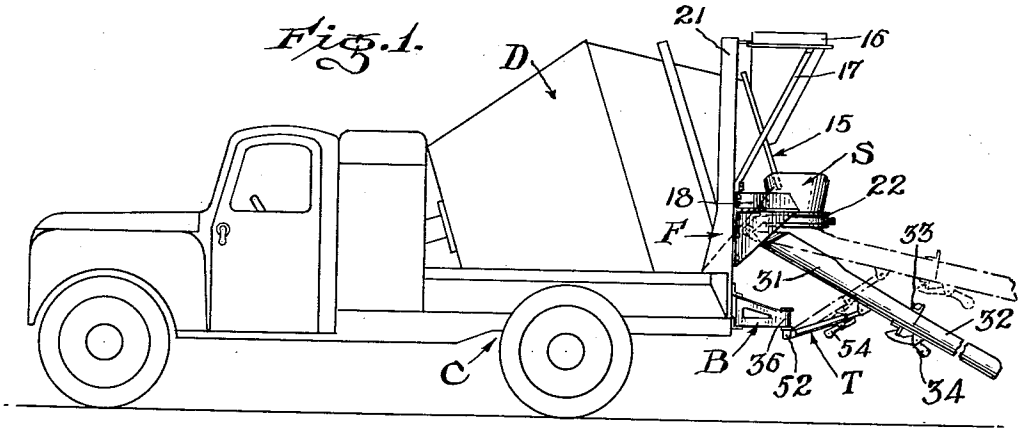


Fig. 6.

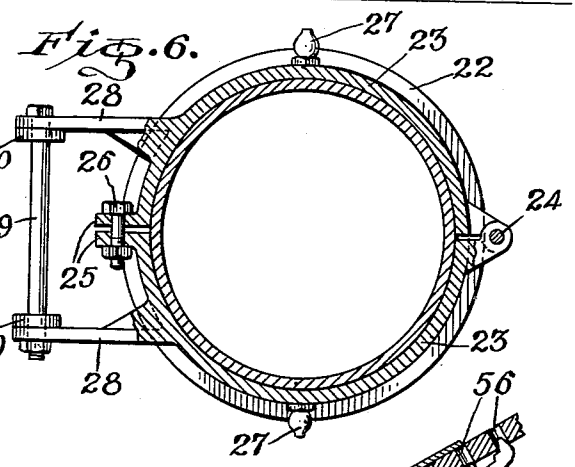


Fig. 7.

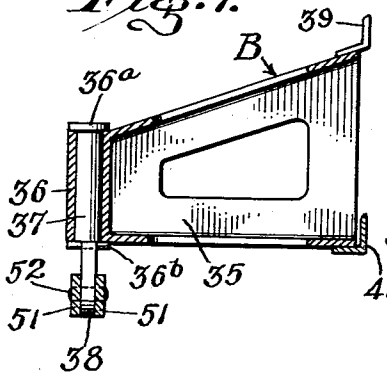


Fig. 8.

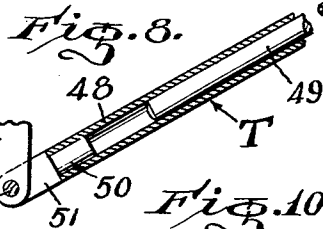


Fig. 9.

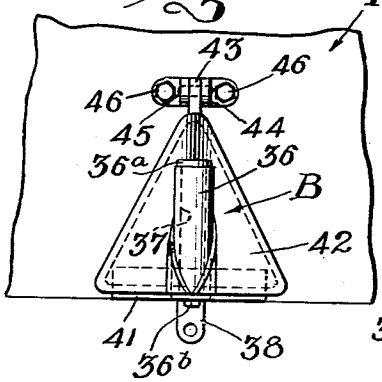
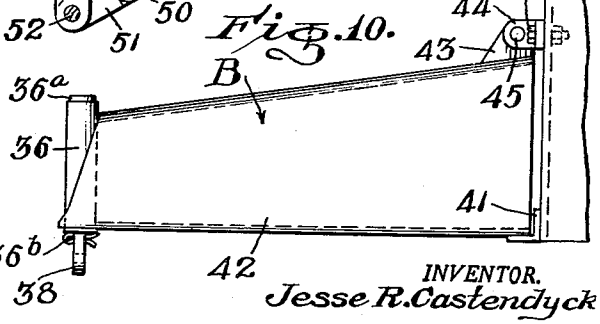


Fig. 10.



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Fig. 2.

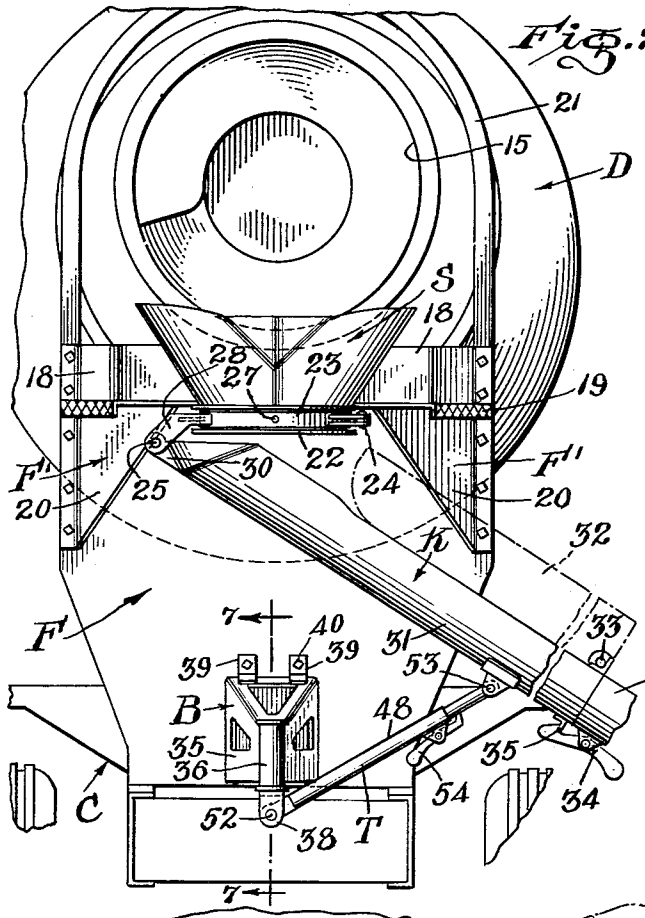


Fig. 3.

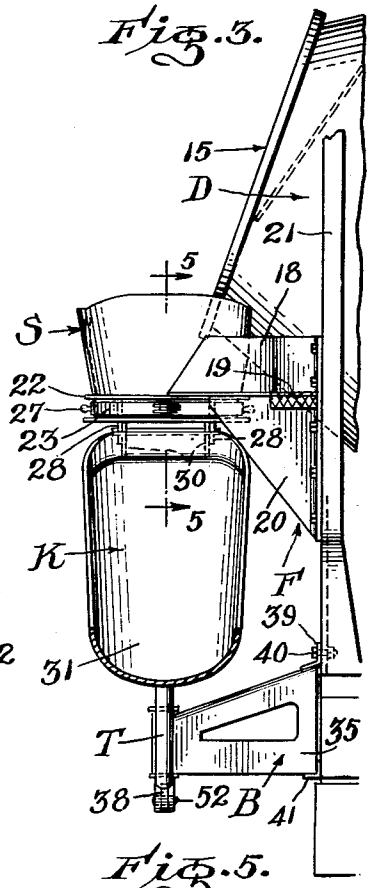


Fig. 5.

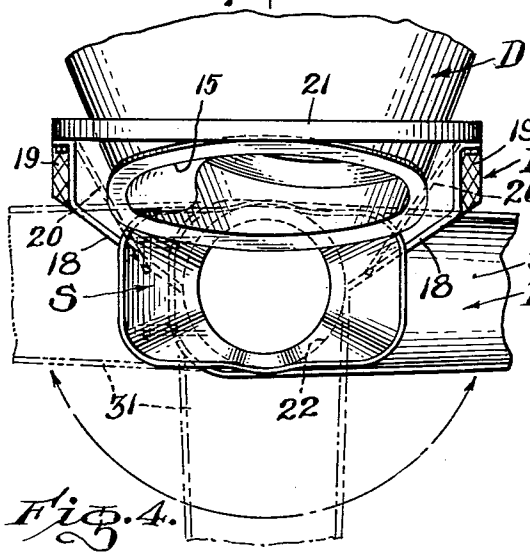
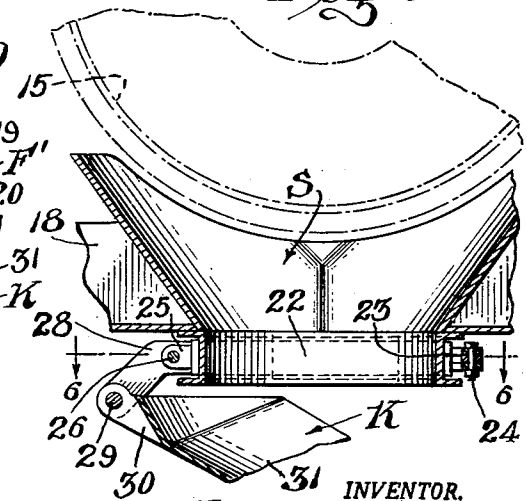


Fig. 4.



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DISTRIBUTING CHUTE FOR CONCRETE MIXERS

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Application March 12, 1951, Serial No. 215,100

1 Claim. (Cl. 193—10)

My invention relates to concrete mixers and particularly to the distributing chutes with which they are generally equipped.

The type of transit mixer to which my invention pertains is one having a mixing drum rotatably mounted in an upwardly tilted position on a truck chassis and having an opening at its rear end into which the unmixed concrete materials are delivered to the drum through a charging hopper on the truck above the opening, and to which the materials are delivered from a source above the hopper.

During transit of the truck to a job the drum is driven in one direction to effect mixing of the concrete therein, and upon reaching the job the drum is driven in the other direction to discharge the concrete into a delivery spout fixed on the truck, from whence it falls into a chute for distribution to any desired point and at various elevations. To effect such distribution means is provided for mounting the chute on the unit so that it is movable both horizontally and vertically to permit raising and lowering of its lower end as well as to rotate the chute to bring its lower end into any required position horizontally.

Such chute mounting means as heretofore proposed are relatively complex in construction, difficult of manipulation by a single operator, require various adjustments of their parts, and necessitate mounting thereof beneath the delivery spout resulting in a relatively low discharge of concrete from the chute to limit the area of distribution thereof.

It is a purpose of my invention to provide a means for mounting a distributing chute at the rear end of a transit type concrete mixer by which the chute is supported at substantially the same height as the delivery spout of the mixer thereby resulting in a higher effective height for the chute and thus making possible a wider range of adjustment for the chute inclination.

It is also a purpose of my invention to provide a distributing chute mounting means which embodies a quickly adjustable supporting strut by which the lower end of the chute is firmly held in any one of a wide variety of elevations.

A further purpose of my invention is the provision of a distributing chute mounting means which is of relatively simple construction to permit easy assembly and disassembly of its parts, and ready mounting and dismounting thereof on and from the mixer to provide the novel advantage of permitting quick dismounting thereof, together with the chute, so that when it is required on a job to discharge the concrete at heights above that impossible with the use of the chute such as when pouring into relatively high concrete forms, the chute and its mounting means and the strut can be quickly removed to allow the truck to be backed into a position in which the delivery chute is directly above the form to discharge the concrete directly into the form.

I will describe only one form of transit type of concrete mixer and one form of distributing chute and mounting means therefor, each embodying my invention, and will point out the novel features thereof in the claim.

In the accompanying drawings:

Fig. 1 is a view showing in side elevation, a transit type of concrete mixer having applied thereto one form

of distributing chute mounting means embodying my invention.

Fig. 2 is an enlarged view showing the mixer in rear elevation and with the distributing chute mounted thereon.

Fig. 3 is a fragmentary view showing in side elevation the rear end of the mixer and with the distributing chute in transit position thereon.

Fig. 4 is a top plan view of the rear end of the mixer and illustrating the horizontal range of adjustment of the distributing chute.

Fig. 5 is an enlarged vertical sectional view taken on the line 5—5 of Fig. 3.

Fig. 6 is an enlarged horizontal section view taken on the line 6—6 of Fig. 5.

Fig. 7 is an enlarged vertical section view taken on the line 7—7 of Fig. 2.

Fig. 8 is an enlarged fragmentary vertical sectional view of the strut shown in Figs. 1 and 2.

Fig. 9 is an end elevational view of a modified form of supporting bracket as applied to the mixer.

Fig. 10 is a view showing the bracket of Fig. 9 in side elevation and as attached to the rear end of the mixer.

Referring now particularly to the drawings, my invention is shown applied to a conventional form of transit concrete mixer wherein a mixing drum (see Fig. 1) is rotatably mounted on the chassis C of a truck with the charging and discharging end opening 15 thereof located at the rear of the truck. The drum D is adapted to be charged with concrete forming materials through a charging hopper 16 supported in part on rods 17.

Upon charging the drum it is driven in one direction to effect mixing of its contents, and once the charge is mixed rotation of the drum is reversed to discharge the concrete through the opening 15 into a spout S. This spout is of funnel-like form with its upper end elongated to prevent spillage of concrete as it is discharged from the drum, while its lower end is of circular form. The spout is supported in fixed position on the chassis C with its lower end at a substantial elevation above the ground.

To so support the spout S a vertically disposed plate-like frame F is fixed at its lower end to the rear end of the chassis C, with two sub-frames F1 secured to and extending horizontally from the rear side of the frame F and constructed to rigidly support the spout. The sub-frames may comprise vertical plates 18 welded to the spout at one edge and flanged and bolted to the frame at another edge, and horizontal plates 19 which form steps. Gussets 20 are secured to the under side of the plates 19 and to the frame F for rigidly bracing the steps. The rods 17 are secured to the opposite edges of the frame F, and an inverted U-shaped yolk 21 is also secured to the frame to extend over the drum and to which the upper end of the hopper 16 is secured.

The lower or outlet end of the spout S has welded thereto as well as to the plates 19 an annular channel member or ring 22, and between the flanges of the member there is rotatably fitted a band 23 made in two semicircular parts which at one end are connected by a hinge 24 so that they may be opened to allow detachment of the band when required. The other ends of the band parts have ears 25 through which a bolt, 26, extends for securing the band parts in closed position, the bolt being readily removable when desired to detach the band from the channel member. Grease fittings 27 are carried by the band parts to allow lubrication of the contacting surfaces of the channel member and band and insure free rotation of the latter in the former.

As seen best in Fig. 6, the two parts of the band 23 have a pair of arms 28 fixed at one end to and projecting in parallelism from the same on opposite sides of the

ears 25. The other ends of the arms 28 are bent downwardly and connected by a cross pin 29 in the form of a bolt on which, at points between the arms, a pair of ears 30 are rotatably mounted. These ears are fixed to and project upwardly from the upper end of a distributing chute K. The pin 29 being horizontally positioned coacts with the ears 30 to provide a horizontally disposed pivotal mounting for the upper end of the chute about which the latter is adjustable vertically to assume a wide range of inclination.

The aforedescribed channel members 22 and the band 23 constitute a swivel connection between the upper end of the chute K and the spout S which allows the chute to be adjusted horizontally and through an angle of 180 degrees (see Fig. 4). This horizontal adjustment, when coupled with the adjustment provided by the pivotal mounting afforded by the pin 29 provides a mounting means which permits both horizontal and vertical movements of the chute K to attain a wide range of elevation of the lower end of the chute, and at the same time wide range of horizontal adjustment of the chute. Since the pivot 29 is located laterally of the swivel connection provided by the band and channel member, the upper end of the chute K is, in any of its various adjustments, always in position to receive the concrete pouring from the spout, and by having the pivot 29 and the upper end of the chute at substantially the same height as the lower end of the spout, maximum effective discharge height for the chute is obtained. At the same time sufficient clearance between the spout and the upper end of the chute is always maintained to permit unrestricted vertical movement of the chute to its various inclinations.

As shown in Figs. 1 and 2, the chute K may be made in two sections 31 and 32 to give added length thereto when required. The upper end of the lower section 32 is connected to the lower end of the upper section by a hinge 33 which permits the section 31 when not in use to be folded on the section 32. In the extended position of the lower section it can be secured by a latch 34 pivoted on such section and engaging a keeper 35 on the section 31. The latch may be of the gravity-actuated type, that is, gravity operates to maintain it in engagement with the keeper.

The lower end of the chute section 31 is supported by an adjustable strut T and a bracket B. The bracket may have the form shown in Figs. 1 and 7 or the form shown in Figs. 9 and 10. In Figs. 1 and 7, the bracket comprises a hollow body 35 rectangular in cross section and tapered from a wide end to a narrow end where it is shaped to provide a vertical sleeve 36 which forms a bearing for a vertical pin 37 having an ear 38 on its lower end, a head 36*a* on its upper end, and a removable key 36*b* for securing the pin against displacement from the bearing.

On the upper side of the body 35 at its wide end are welded a pair of angle brackets 39 through which bolts 40 extend for securing the bracket B to the rear side of the frame F and in such position that the pivot pin 37 is coaxial with the spout S. Welded along the lower edge at the end of the body 35 is an angle bar 41 which reinforces the body and provides a flat surface contacting with the frame F to aid in securing the bracket against any transverse movement on the frame.

The bracket of Figs. 9 and 10 comprises a hollow body 42 tapered in length and of triangle form in cross section. Its wide end also carries an angle bar 41 on its lower edge, and a single ear 43 on its upper corner edge which extends between a pair of ear brackets 44 where it is secured by pin 45. The brackets 44 are removably secured to the frame F by bolts 46. The pointed end of the body 42 has a vertical sleeve 36 welded thereon for receiving a pin 37 which corresponds to the sleeve and pin of the bracket shown in Fig. 7.

The strut T comprises a tubular section 48 and a solid section 49 which telescopes in the tubular section. The section 48 at one end is closed by a plug 50 fixed therein

and having spaced ears 51 between which the ear 38 of the pin 36 is pivotally secured by a horizontal pin 52. The solid section 49 is connected at its outer end to the under side of the chute section 31 at a point adjacent the lower end thereof by a horizontal hinge connection 53. The section 49 can be secured in any longitudinal position of adjustment in the section 48 by a gravity latch 54 pivoted as at 55 on the under side of the section 48 so that its bill can engage within any one of a series of transverse openings 56 in the section 49. By this adjustment the overall length of the strut can be varied as required. This strut adjustment, together with the location of the pivots 36, 52 and 53, allows the chute to be moved to any inclination and in any position radially as limited by the frame F, and to be rigidly supported in any of these positions by the strut.

The carrying or transit position of the chute is shown in solid lines in Fig. 2 wherein it is swung to one extreme position on its vertical axis so as to lie transversely of the truck. With the two chute sections folded one on the other, the chute does not project from the sides of the mixer, and in this position it may be secured against the back of the truck in any suitable manner to prevent outward swinging motion thereof during travel of the truck.

Should it be required, as it frequently is, to distribute concrete from the mixer into forms the height of which prevent the use of the chute, the chute can be quickly detached from the spout, and the bracket B detached from the frame F, to allow the truck to back into a position in which the spout is directly above the form to discharge the concrete into the form. Such an operation merely involves removal of the pin 29 to allow detachment of the upper end of the chute from the arms 28, and removal of the bolts 46 to detach the bracket B from the frame F. This leaves an unobstructed path from the spout to the form to allow discharge of the concrete directly from the spout into the form.

Although I have herein shown and described only one form of distributing chute for concrete mixers embodying my invention, it is to be understood that various changes and modifications may be made in the chute mounting means without departing from the spirit of my invention and the spirit and scope of the appended claim.

What I claim as my invention is:

In a transit concrete mixer: a vertically disposed discharge spout; an annular channel member fixed horizontally to the lower end of said spout; an annular band having a rotatable fit on said member, said band of semicircular sections; a hinge so connecting one end of said sections as to allow the sections to be opened for detachment thereof from said member; fastening means detachably connecting the other ends of said sections to maintain said sections in band-formation; a pair of arms fixed at one end to and projecting in spaced parallelism from said sections at opposite sides of said fastening means and substantially tangent to said band; a chute of U-form in cross section; a pair of ears fixed to the upper end of the chute at opposite sides thereof; means extending through said ears and said arms for pivotally connecting the two to suspend the upper end of the chute for swinging movement in a vertical plane intersecting the vertical axis of the spout; and means coacting with the first mentioned means for supporting said chute in various inclined positions in all of which its upper end will be so disposed as to receive material discharged from said spout.

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