June 14, 1960 B. R. SHINDELDECKER 2,940,739

CONCRETE MIXER

Filed Sept. 3, 1958 2 Sheets-Sheet 1

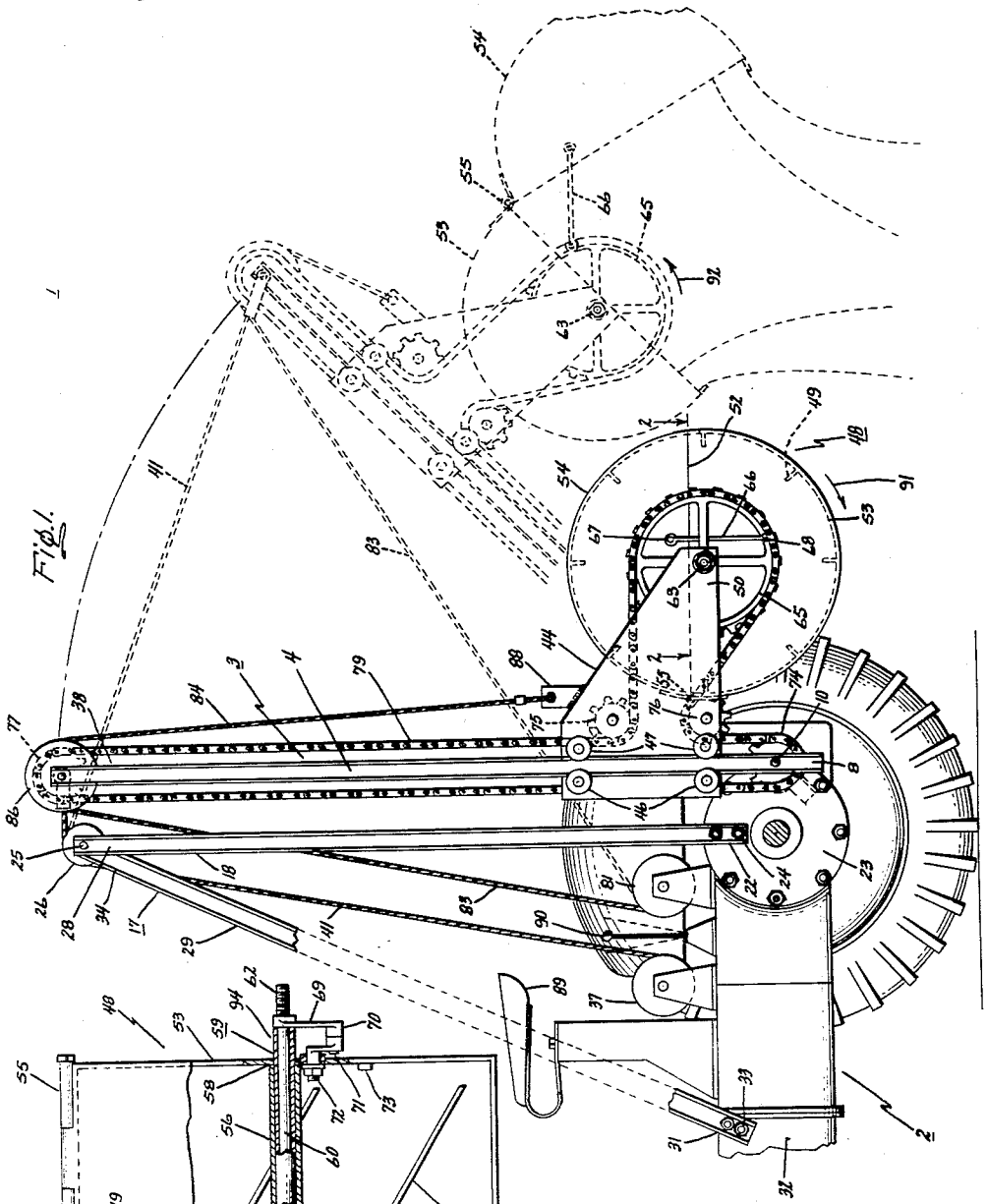


Fig. 1.

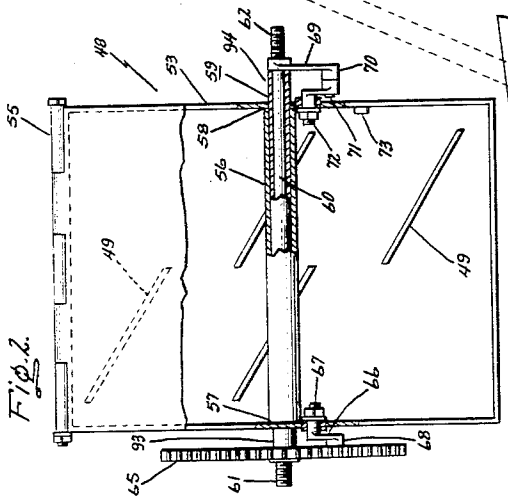


Fig. 2.

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Filed Sept. 3, 1958 2 Sheets-Sheet 2

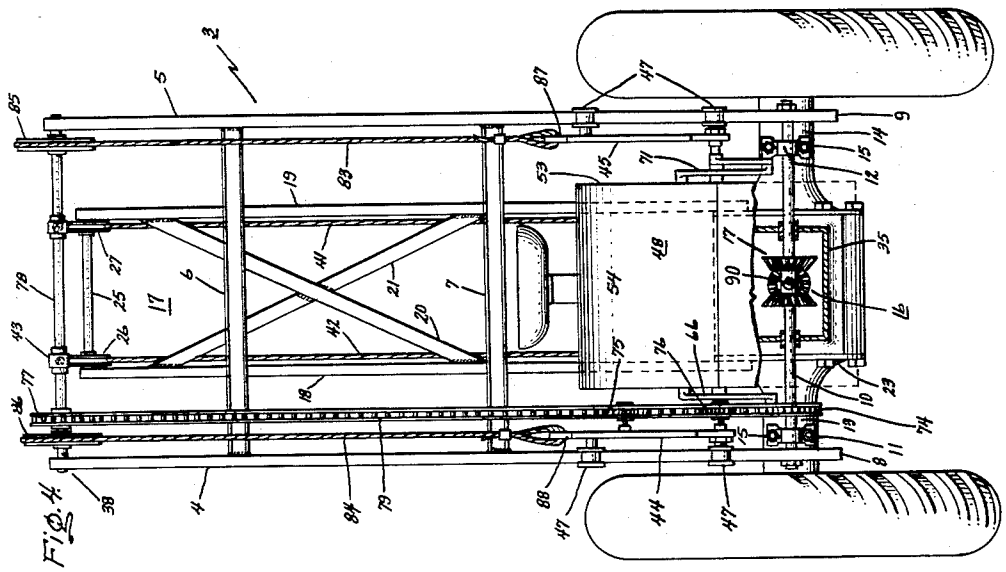


Fig. 4

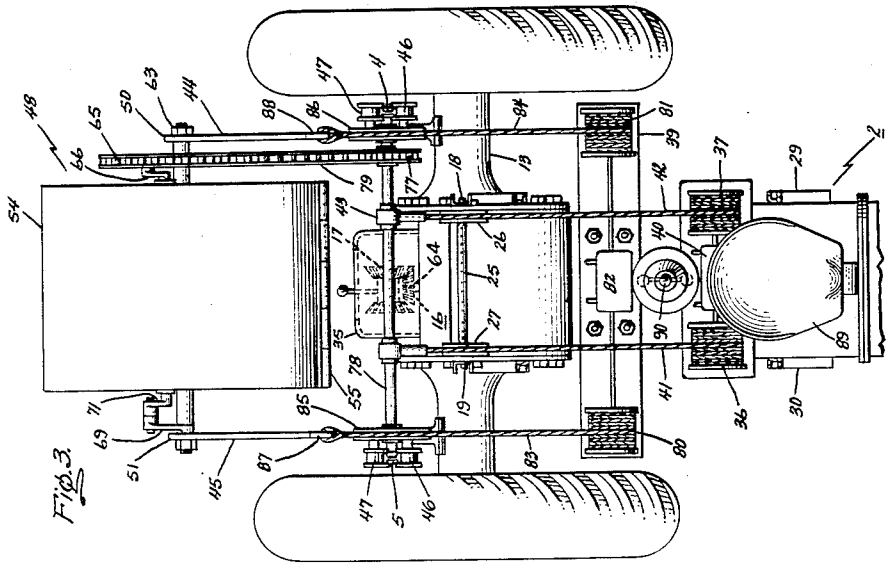


Fig. 3

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2,940,739

CONCRETE MIXER

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9 Claims. (Cl. 259—160)

This invention relates generally to concrete mixers and more particularly to a concrete mixer adapted for mounting on a tractor and to be powered from the power take-off thereof.

Large concrete mixers mounted on a truck body and arranged for transit mixing of the concrete are well known in the building trade and are a common sight upon the highway. However, there are numerous instances in small construction jobs where the relatively small quantity of concrete required does not justify the use of conventional transit-mix equipment. This has therefore in the past necessitated the use of small portable concrete mixers, commonly powered by a small gasoline engine. However, while such small mixers are readily transportable from one site to another, they are required to be operated in a fixed location, the aggregate and concrete was required to be loaded, i.e., charged by hand, and the finished concrete was conventionally deposited in a wheel barrow for transportation to the desired location. To alleviate these difficulties without necessitating the use of the large truck-mounted transit-mix apparatus, it has been proposed to mount a relatively small concrete mixer upon the rear of a tractor to be driven from the power take-off thereof. While such arrangements have greatly facilitated the mixing of concrete in small batches, all of those known to the present applicant have still generally required that the finished concrete be deposited in a wheel barrow for hand transportation to the desired site, particularly where the finished concrete is to be deposited in an excavation or any other location which cannot be reached directly by the tractor.

It is therefore desirable to provide an improved tractor-mounted concrete mixer with which the concrete can be mixed while the tractor is either standing still or in motion, and most particularly which will permit direct depositing of the finished concrete at a distance outwardly from the tractor such as in an excavation, over an obstruction, or even into a truck body. It is, of course, further desirable that such concrete mixing apparatus be relatively simple and be readily attached and detached from a conventional tractor without requiring extensive modification thereof.

It is accordingly an object of my invention to provide an improved tractor-mounted concrete mixer.

Another object of my invention is to provide improved concrete mixing apparatus adapted for attachment to a tractor and being driven from the power take-off thereof, the apparatus permitting depositing of the finished concrete at a distance away from the tractor.

A further object of my invention is to provide improved concrete mixing apparatus adapted for attachment to a conventional tractor and to be driven from the power take-off thereof in which mixing can be accomplished with the tractor either standing still or in motion, and in which the mixing drum may be selectively elevated or swung outwardly away from the tractor for charging or discharging.

My invention, in its broader aspects, provides a concrete mixing attachment for a tractor of the type having a power take-off, the attachment comprising an elongated frame with means for pivotally connecting one end of the frame to a part of the tractor and means for raising and lowering the frame about its pivotal connection. A concrete mixing drum rotatable about a horizontal axis is provided with means for opening the drum for charging the same and for discharging finished concrete therefrom. Means are provided movably engaging the frame for rotatably supporting the drum with other means being provided for moving the frame engaging means along the frame so that the drum is moved away from and toward the tractor, and means are provided for operatively coupling the power take-off of the tractor to the mixing drum for rotating the same. In the preferred embodiment of my invention, the concrete mixing drum is longitudinally split in a horizontal plane to form two sections, the sections being hingedly secured together along respective longitudinal edges so that the drum is opened for charging the same and for discharging finished concrete therefrom and closed for mixing concrete therein. Rotatable means are provided disposed concentrically with the drum and a link is provided connecting the rotatable means and one of the drum sections so that rotation of the rotatable means in one direction causes closing of the drum sections and rotation of the drum in the one direction and rotation of the rotatable means in the opposite direction causes opening of the drum sections, the rotatable means being operatively connected to the power take-off of the tractor.

Further objects and advantages of my invention will become apparent by reference to the following description and the accompanying drawings, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In the drawings:

Fig. 1 is a side-elevational view of my improved tractor-mounted concrete mixing apparatus showing several operative positions thereof;

Fig. 2 is a fragmentary cross-sectional view of a mixing drum element of my improved apparatus taken along the line 2—2 of Fig. 1;

Fig. 3 is a top-view of the improved tractor-mounted concrete mixing apparatus of my invention; and

Fig. 4 is a rear view, partly broken away, further illustrating my invention.

Referring now to the figures of the drawing, my improved concrete mixing apparatus, generally identified as 1, is adapted to be mounted on a conventional farm-type tractor 2, and comprises a frame or boom 3 formed of two transversely spaced elongated rails 4 and 5 interconnected by transverse frame members 6 and 7. Rails 4 and 5 of frame 3 respectively have their lower ends 8 and 9 pivotally mounted on a shaft 10 (but not rotatable therewith), shaft 10 being journaled in bearings 11 and 12 respectively secured to the axle housings 13 and 14 of the tractor 2 in any suitable manner, as by suitable bolts 15. Shaft 10 is arranged to be driven from the conventional power take-off 64 of the tractor by means of a suitable reversing gear assembly 16, preferably enclosed within a suitable housing 35, shown in dashed lines in Fig. 3; it will be readily understood that any conventional reversing gear arrangement including, if desired, a suitable clutch, may be employed for reversibly driving shaft 10, preferably in geared-down relationship, from the power take-off of the tractor 2.

The frame 3 is adapted to be raised and lowered between a first vertical position, shown in solid lines in Fig. 1, and a second inclined position, shown in dashed lines in Fig. 1, by means of a jack frame 17 comprising elongated transversely spaced apart elements 18 and 19

interconnected by frame elements 20 and 21, as best seen in Fig. 4. Elongated frame elements 18 and 19 are secured at their lower ends 22 to the differential housing 23 of the tractor 2 in any suitable manner, as by bolts 24 and a shaft 25 having a pair of spaced apart sheaves 26 and 27 mounted thereon extends transversely across their upper ends 28. A pair of brace elements 29 and 30 have their lower ends 31 secured to the transmission housing 32 of the tractor 2 in any suitable manner, as by bolts 33, and their upper ends 34 secured to the upper ends 28 of frame elements 18 and 19.

A pair of winches 36 and 37 are provided mounted on the upper surface of transmission housing 32 of the tractor 2 and being secured thereto in any suitable manner, the winches 36 and 37 being driven by suitable power means, such as a hydraulic motor 40. Winches 36 and 37 respectively have suitable cables 41 and 42 wound thereon which pass over the sheaves 26 and 27 and are secured to bushings 43 on shaft 78 extending between the rail members 4 and 5 of the frame 3 at their ends 38. It is thus seen that paying out of the cables 41 and 42 by means of the winches 36 and 37 respectively lowers the frame assembly 3 from its vertical position, shown in solid lines, to its inclined position, shown in dashed lines, in Fig. 1, and conversely, taking up of the cables 41 and 42 by means of the winches 36 and 37 raises the frame 3 again to its vertical position.

Mounted on the rails 4 and 5 of frame 3 for longitudinal movement therealong are a pair of bracket members 44 and 45. Each of the bracket members 44 and 45 has a first pair of rollers 46 and a second pair of rollers 47 respectively engaging opposite sides of the respective rail members 4 and 5, the pairs of rollers 46 and 47 respectively retaining the bracket members 44 and 45 on the rail members 4 and 5 and permitting their longitudinal movement therealong.

The concrete mixing drum 48 of my invention is disposed for rotation about a horizontal axis between extension portions 50 and 51 of the bracket members 44 and 45. Drum 48, which is generally cylindrical in configuration, is longitudinally split along a horizontal plane, as at 52, with the two resulting sections 53 and 54 being hingedly connected along respective longitudinal edges, as at 55. It will be seen that the drum section 53 has a transverse cross-section which is slightly more than a semi-circle, while the drum section 54 has a cross-section which is correspondingly less than a semi-circle. Mixing blades 49 are provided on the interior of drum 48 in accordance with conventional practice.

Extending longitudinally across section 53 of the drum 48 and concentric with the rotational axis thereof is a sleeve member 56 having its ends 57 and 58 respectively secured to the inner end walls of drum section 53 in any suitable manner, as by welding. Rotatably journaled within sleeve 56 is an inner sleeve member 59 having its ends 93 and 94 extending axially beyond the outer surfaces of the end walls of drum section 53 respectively. Rotatably journaled within the inner sleeve 59 is a shaft or axle 60 having its ends 61 and 62 respectively extending beyond the ends 93 and 94 of the inner sleeve 59. Axle 60 extends transversely between the extension portions 50 and 51 of the bracket members 44 and 45, being respectively secured thereto in any suitable manner, as by means of suitable nuts 63. It is thus seen that the drum 48 is rotatably supported between extension portions 50 and 51 of the bracket members 44 and 45.

A suitable sprocket wheel 65 is mounted on end 93 of the inner sleeve 59 and it will here be observed that the sprocket wheel 65 and the inner sleeve 59 normally rotate independently of outer sleeve 56 and drum 48 on the one hand and axle 60 on the other hand. A link 66 is provided disposed between sprocket 65 and drum 48 with one end 67 thereof connected to a point on the upper drum section 54, and its other end 68 secured to a point adjacent the outer periphery of the sprocket 65. A crank

arm 69 is secured to the other end 57 of the inner sleeve 59 with an end 70 in longitudinal alignment with end 68 of link 66. Another link 71, identical to link 66, is provided having an end 72 secured to the end wall of upper drum section 54 opposite from the end wall to which link 66 is connected, the ends 67 and 72 of the links 66 and 71 likewise being in longitudinal alignment.

A driving sprocket wheel 74 is provided mounted on shaft 10 and rotatable therewith so as to be driven from the power take-off of the tractor 2 through cooperating gears 16. A pair of idler sprocket wheels 75 and 76 are mounted on the bracket member 44 and another sprocket wheel 77 is mounted on shaft 78 extending transversely between ends 38 of the rail members 4 and 5. An endless link chain 79 extends over the sprocket wheels 65, 74, 75, 76 and 77, as shown, and it will thus be seen that driving of the sprocket wheel 74 by shaft 10 from the power take-off of the tractor 2 through gears 16 and 17 will rotate sprocket wheel 65.

Bracket members 44 and 45 with drum 48 rotatably mounted therebetween are moved longitudinally along rails 4 and 5, i.e., raised and lowered in a position of frame 3 shown in solid lines in Fig. 1, by means of another pair of winches 80 and 81 mounted on a transverse support 39 secured to the upper surface of the transmission housing 32 of tractor 2, and driven in any suitable manner, as by another hydraulic motor 82. Winches 80 and 81 respectively have cables 83 and 84 wound thereon extending over sheaves 85 and 86 on shaft 78 and being attached to lift members 87 and 88 attached respectively to the bracket members 45 and 44. It will now be seen that reeling in of the cables 83 and 84 by means of the winches 80 and 81 driven by the hydraulic motor 82 will lift bracket members 44 and 45 and drum 48 from its position shown in solid lines in Fig. 1 to an elevated position, such as that shown in dashed lines in Fig. 1. It will further be seen that the drive sprocket 74 is capable of rotating sprocket 65 by means of the link chain 79 regardless of the longitudinal position of the bracket members 44 and 45 and the drum 48 along rail elements 4 and 5. Hydraulic motors 40 and 82 respectively controlling the winches 36 and 37 on the one hand and 80 and 81 on the other hand, may be suitably connected to the hydraulic system of the tractor 2 in any suitable manner, as is well known in the art, and respectively controlled by a suitable control lever 90 mounted for easy reach from the seat 89 of the tractor 2.

Referring now particularly to Fig. 1, it will be seen that when the driving sprocket 74 is rotated from the power take-off of the tractor in the direction to rotate the sprocket 65 clockwise in the direction shown by the arrow 91, links 66 and 71 are moved in a direction to close the sections 53 and 54 of the mixing drum 48 and thereafter to rotate the drum 48 in the direction shown by the arrow 91, i.e., clockwise. However, inspection of the portion of Fig. 1 shown in dashed lines will further reveal that rotation of the sprocket wheel 65 in the opposite direction, i.e., in the direction shown by the arrow 92, will cause the sprocket wheel 65 and link 66 on the one hand and crank arm 69 and link 71 on the other hand to open the two mixing drum sections 53 and 54, as shown, either to discharge fully mixed concrete, as shown in Fig. 1, or depending upon the point at which the counter-clockwise rotation 92 is initiated, for charging the mixing drum. It will be understood that the gear ratios of reversing gear 16 and sprocket wheels 74 and 65 must be suitably chosen to rotate drum 48 at a suitably slow speed, preferably under 85 r.p.m. A calibrated depth gauge 73 is preferably provided on one end wall of lower drum section 53 in order to aid in proper charging of the drum for various sized batches and mixes of concrete.

It will now be seen that the bracket members 44 and 45, together with mixing drum 48, may be raised and lowered on rails 4 and 5 of pivotal frame 3 by means of winches 80 and 81 and cables 83 and 84 regardless of the

pivotal position of the frame 3 and with the drum 48 in motion. It will thus be seen that with the boom-frame 3 in its vertical position, as shown in solid lines in Fig. 1, with the bracket members 44 and 45 in their lower position as likewise shown in solid lines in Fig. 1, counterclockwise rotation of sprocket wheel 65 (direction 92) will cause opening of the two drum sections 53 and 54 for initial charging of the drum with aggregate and concrete, and thereafter that clockwise rotation (direction 91) of the sprocket wheel 65 will cause closing of the drum sections 53 and 54 and mixing of the concrete. It will further be seen that thereafter bracket members 44 and 45 and drum 48, while the same is being rotated by means of the link chain 79 in the clockwise direction 91, may be elevated by means of cables 83 and 84 under the influence of winches 80 and 81, the tractor moved to a different site, the boom-frame 3 lowered into the position shown in dashed lines in Fig. 1, and the direction of rotation of sprocket wheel 65 then reversed to the counterclockwise direction (92) thereby to open the drum sections 53 and 54 as shown to discharge the finished concrete into an excavation, over an obstacle, such as a wall, or even into a truck body.

While I have illustrated and described a specific embodiment of my invention, further modifications and improvements will occur to those skilled in the art and I desire that it be understood therefore that this invention is not limited to the specific form shown, and I intend in the appended claims to cover all modifications which do not depart from the spirit and scope of my invention.

What is claimed is:

1. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: an elongated frame; means for pivotally connecting one end of said frame to a part of said tractor; means for raising and lowering said frame about said pivotal connection; a concrete mixing drum rotatable about a horizontal axis; means for opening said drum for charging the same and for discharging finished concrete therefrom; means movably attached to said frame for rotatably supporting said drum; means for moving said movably attached means along said frame whereby said drum is moved away from and toward said tractor; and means for operatively coupling said power take-off to said drum for rotating the same.

2. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: a frame having two spaced parallel elongated rail elements; means for pivotally connecting one end of each of said rail elements to a part of said tractor; means for raising and lowering said frame about said pivotal connections between a first substantially vertical position and a second position extending outwardly away from said tractor; a concrete mixing drum rotatable about a horizontal axis; means for opening said drum for charging the same and for discharging finished concrete therefrom; a pair of bracket elements respectively mounted on said rails for longitudinal movement therealong, said bracket elements rotatably supporting said drum therebetween; means operatively connected to said bracket elements for moving the same along said rails whereby said drum is moved away from and toward said tractor; and means for operatively coupling said power take-off to said drum for rotating the same.

3. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: a frame having two spaced parallel elongated rail elements; means for pivotally connecting one end of each of said rail elements to a part of said tractor; means for raising and lowering said frame about said pivotal connections between a first substantially vertical position and a second position extending outwardly away from said tractor; a concrete mixing drum rotatable about a horizontal axis; means for opening said drum for charging the same and for discharging finished concrete therefrom; a pair of bracket elements respectively mounted on said rails for

longitudinal movement therealong, said bracket elements rotatably supporting said drum therebetween; means operatively connected to said bracket elements for moving the same along said rails whereby said drum is moved away from and toward said tractor; wheel means operatively connected to said drum for causing rotation of the same; a pair of wheel means mounted on one of said bracket elements; wheel means mounted on the other end of the respective rail element; a driving wheel mounted on said one end of the respective rail element coaxial with said pivotal connection and adapted to be operatively connected to the power take-off of said tractor; and endless drive belt means engaging said wheels for causing rotation of said drum in any position of the same along said rails.

4. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: a first frame having two spaced parallel elongated rail elements; means for pivotally connecting one end of each of said rail elements to a part of said tractor; a second elongated frame adapted to have one end thereof fixedly secured to a part of said tractor forwardly of said first frame, said second frame having first sheave means mounted at its other end, first winch means including cable means passing over said first sheave means and secured to said first frame adjacent the other ends of said rail elements whereby said first frame is raised and lowered about said pivotal connections between a first substantially vertical position and a second position extending outwardly away from said tractor; a concrete mixing drum rotatable about a horizontal axis; means for opening said drum for charging the same and for discharging finished concrete therefrom; a pair of bracket elements; each of said bracket elements having rollers mounted thereon and engaging opposite sides of a respective rail whereby said bracket elements are movable longitudinally along said rails, said bracket elements rotatably supporting said drum therebetween outwardly from said rails; second sheave means mounted on said first frame adjacent the other ends of said rails; second winch means including cable means passing over said second sheave means and secured to at least one of said bracket elements for moving the same longitudinally along said rails whereby said drum is moved away from and toward said tractor; a first wheel operatively connected to said drum for causing rotation of the same; second and third idler wheels mounted on one of said bracket elements; a fourth wheel mounted on said other end of the respective rail element; a driving wheel mounted on said one end of the respective rail element coaxial with said pivotal connection and adapted to be operatively connected to the power take-off of said tractor; and endless drive belt means engaging said wheels for causing rotation of said drum in any position thereof along said rails.

5. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: an elongated frame; means for pivotally connecting one end of said frame to a part of said tractor; means for raising and lowering said frame about said pivotal connection; a concrete mixing drum rotatable about a horizontal axis, said drum being longitudinally split in a horizontal plane to form two sections, said two sections being hingedly secured together along respective longitudinal edges whereby said drum is opened for charging the same and for discharging finished concrete therefrom and closed for mixing concrete therein; means movably engaging said frame for rotatably supporting said drum; means for moving said frame engaging means along said frame whereby said drum is moved away from and toward said tractor; rotatable means disposed concentrically with said drum; a link connecting said rotatable means and one of said drum sections whereby rotation of said rotatable means in one direction causes closing of said drum section and rotation of said drum in one direction and rotation of said rotatable means in the opposite direction causes

opening of said drum sections; and means for operatively connecting said power take-off to said rotatable means.

6. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: an elongated frame; means for pivotally connecting one end of said frame to a part of said tractor; means for raising and lowering said frame about said pivotal connection; a concrete mixing drum rotatable about a horizontal axis, said drum being longitudinally split in a horizontal plane to form two sections, said two sections being hingedly secured together along respective longitudinal edges whereby said drum is opened for charging the same and for discharging finished concrete therefrom and closed for mixing concrete therein; one of said drum sections having a cross-section greater than a semi-circle and the other having a cross-section correspondingly less than a semi-circle; a pair of spaced apart bracket elements respectively movably engaging said frame; axle means extending between said bracket elements and rotatably supporting said one drum section thereof concentrically of said drum when said drum sections are closed; means for moving said bracket elements along said frame whereby said drum is moved away from and toward said tractor; rotatable means mounted on said axle means on one side of said drum and rotatable with respect to said axle means; a link connecting said other drum section and said rotatable means at a point thereon spaced from said axle means whereby rotation of said rotatable means in one direction causes closing of said drum section and rotation of said drum in said one direction and rotation of said rotatable means in the opposite direction causes opening of said drum sections; and means for operatively connecting said power take-off to said rotatable means.

7. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: an elongated frame; means for pivotally connecting one end of said frame to a part of said tractor; means for raising and lowering said frame about said pivotal connection; a concrete mixing drum rotatable about a horizontal axis, said drum being longitudinally split in a horizontal plane to form two sections, said two sections being hingedly secured together along respective longitudinal edges whereby said drum is opened for charging the same and for discharging finished concrete therefrom and closed for mixing concrete therein; one of said drum sections having a cross-section greater than a semi-circle and the other having a cross-section correspondingly less than a semi-circle; a pair of spaced apart bracket elements respectively movably engaging said frame; axle means extending between said bracket elements and rotatably supporting said one drum section thereon concentrically of said drum when said drum sections are closed; means for moving said bracket elements along said frame whereby said drum is moved away from and toward said tractor; rotatable means mounted on said axle means on one side of said drum and rotatable with respect to said axle means; a link connecting said other drum section and said rotatable means at a point thereon spaced from said axle means whereby rotation of said rotatable means in one direction causes closing of said drum section and rotation of said drum in said one direction and rotation of said rotatable means in the opposite direction causes opening of said drum sections; crank means mounted on said axle means on the other side of said drum and rotatable with respect to said axle means, said crank means being connected to said rotatable means and being rotatable therewith, another link connecting said other drum section and said crank means; and means for rotatably connecting said power take-off to said rotatable means.

8. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: an elongated frame; means for pivotally connecting one end of said frame to a part of said tractor; means for raising and lowering said frame about said pivotal connection; a concrete mixing drum rotatable about a horizontal axis, said drum being longitudinally split in a horizontal plane to form two sections, said two sections being hingedly secured together along respective longitudinal edges whereby said drum is opened for charging the same and for discharging finished concrete therefrom and closed for mixing concrete therein; one of said drum sections having a cross-section greater than a semi-circle and the other having a cross-section correspondingly less than a semi-circle; a first sleeve extending longitudinally across said one drum section and respectively secured to the opposite ends thereof, said first sleeve being concentric with the axis of said drum when said sections are closed; a second sleeve journaled within said first sleeve and extending respectively axially beyond said drum ends; an axle journaled in said second sleeve and extending respectively axially beyond the ends of said second sleeve, a pair of spaced apart bracket elements respectively movably engaging said frame, said axle extending between said bracket elements with its ends respectively secured thereto whereby said drum is rotatably supported between said bracket elements; means for moving said bracket elements along said frame whereby said drum is moved away from and toward said tractor; a wheel concentrically secured to one end of said second sleeve; a first link connecting a point on one end of said other drum section to a point on said wheel remote from the axis thereof; a crank having one end secured to the other end of said second sleeve and having its other end in longitudinal alignment with said point on said wheel; a second link connecting a point on the other end of said other drum section to the other end of said crank, said points on said ends of said other drum section being in longitudinal alignment; and means for operatively connecting said power take-off to said wheel for rotating the same whereby rotation of said wheel in one direction causes said links to close said drum sections and to rotate said drum in said one direction and rotation of said wheel in the opposite direction causes said links to open said drum section.

9. A concrete mixing attachment for a tractor having a power take-off, said attachment comprising: a first frame having two spaced parallel elongated rail elements; means for pivotally connecting one end of each of said rail elements to a part of said tractor; a second elongated frame adapted to have one end thereof fixedly secured to a part of said tractor forwardly of said first frame, said second frame having first sheave means mounted at its other end; first winch means including cable means passing over said first sheave means and secured to said first frame adjacent the other ends of said rail elements whereby said first frame is raised and lowered about said pivotal connections between a first substantially vertical position and a second position extending outwardly away from said tractor; a concrete mixing drum rotatable about a horizontal axis, said drum being longitudinally split in a horizontal plane to form two sections, said two sections being hingedly secured together along respective longitudinal edges whereby said drum is opened for charging the same and for discharging finished concrete therefrom and closed for mixing concrete therein; one of said drum sections having a cross-section greater than a semi-circle and the other having a cross-section correspondingly less than a semi-circle; a first sleeve extending longitudinally across said one drum section and respectively secured to the opposite ends thereof, said first sleeve being concentric with the axis of the drum when said section is closed; a second sleeve journaled within said first sleeve and extending respectively axially beyond said drum end; an axle journaled in said second sleeve and extending respectively axially beyond the ends of said second sleeve; a pair of spaced apart bracket elements, each of said bracket elements having rollers mounted thereon engaging opposite sides of a respective rail whereby said bracket elements are movable longitudinally along said rails, said axle extending between

said bracket elements wtih its ends respectively secured thereto whereby said drum is rotatably supported between said bracket elements outwardly from said rails; second sheave means mounted on said first frame adjacent the other ends of said rails; second winch means including cable means passing over said second sheave means and secured to at least one of said bracket elements for moving the same longitudinally along said rails whereby said drum is moved away from and toward said tractor; a wheel concentrically secured to one end of said second sleeve; a first link connecting a point on one end of said other drum section to a point on said wheel adjacent the outer periphery thereof; a crank having one end secured to the other end of said second sleeve and having its other end in longitudinal alignment with said point on said wheel; a second link connecting a point on the other end of said other drum section to the other end of said crank, said points on said ends of said other drum section being in longitudinal alignment; second and third idler wheels mounted on one of said bracket elements, a fourth wheel mounted on said other end of the respective rail element; a driving wheel mounted on said one end of the respective rail element coaxial with said pivotal connection and adapted to be operatively connected to the power take-off of said tractor; and endless drive belt means engaging said wheels for causing rotation of said first wheel in any position of said bracket members along said rails, rotation of said first wheel in one direction causing said links to close said drum sections and to rotate said drum in said one direction, rotation of said first wheel in the opposite direction causing said links to open said drum sections.

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