Oct. 20, 1953 F. KNOWLTON 2,656,164

CONCRETE DUMPING DEVICE

Filed May 1, 1952 2 Sheets-Sheet 1

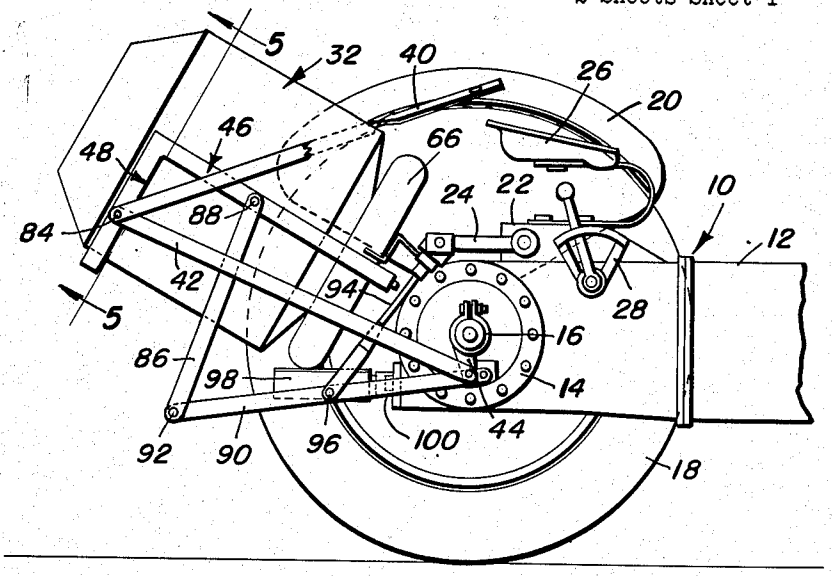


Fig. 1

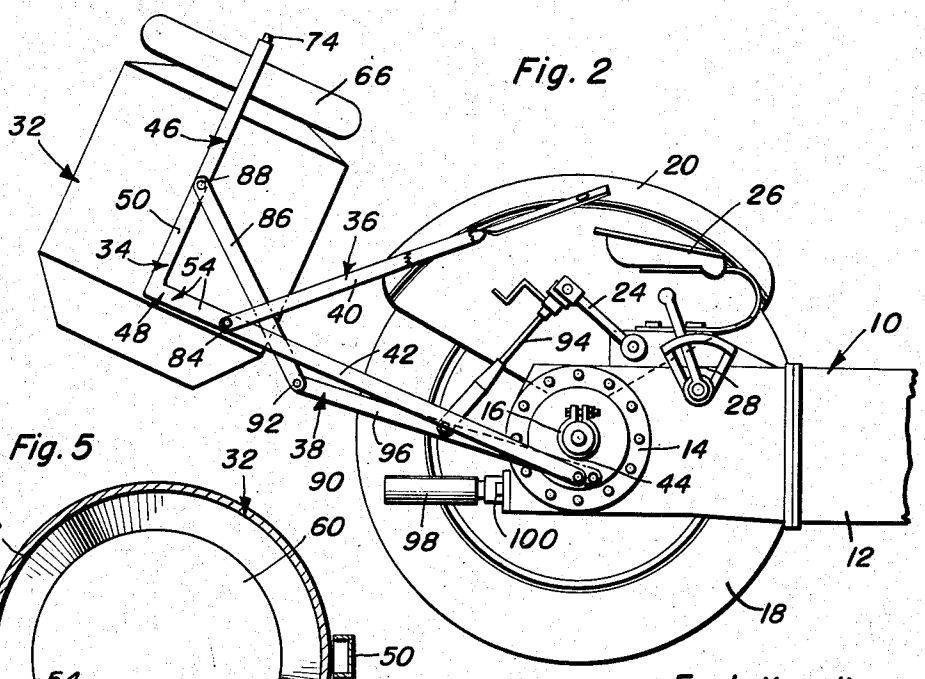
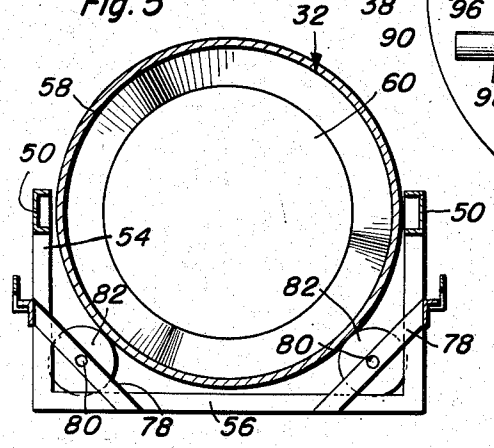


Fig. 2

Fig. 5



Fred Knowlton
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Oct. 20, 1953 F. KNOWLTON 2,656,164

CONCRETE DUMPING DEVICE

Filed May 1, 1952 2 Sheets-Sheet 2

Fig. 3

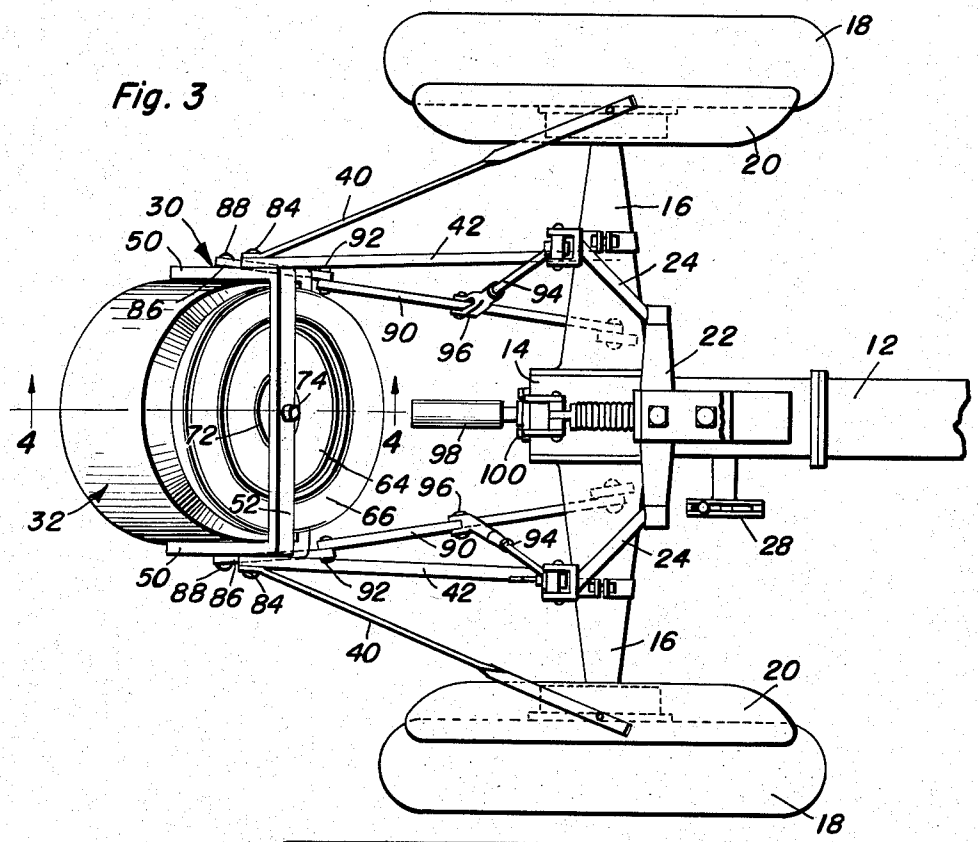
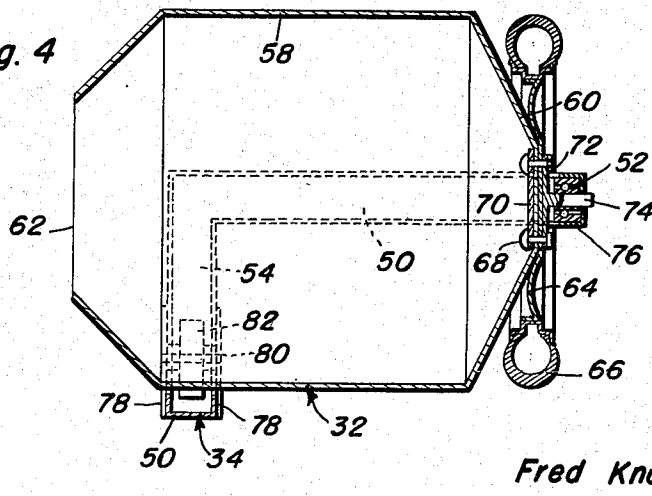


Fig. 4



Fred Knowlton

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Oct. 20, 1953 2,656,164

UNITED STATES PATENT OFFICE

2,656,164

CONCRETE DUMPING DEVICE

Fred Knowlton, Oxford, Kans.

Application May 1, 1952, Serial No. 285,365

6 Claims. (Cl. 259—171)

1

This invention relates in general to dumping mechanisms, and more specifically to a dumping device adapted to be secured to the rear of tractors for mixing and dumping concrete.

The primary object of this invention is to provide an improved supporting and dumping mechanism for a mixing barrel in a concrete mixer whereby the same may be conveniently carried at the rear of a tractor and tilted from a mixing position to a dumping position with a minimum of labor.

Another object of this invention is to provide an improved dumping mechanism for a concrete mixer mounted on the rear of a tractor, said dumping mechanism being actuated by the hydraulic lift arms of the tractor.

Another object of this invention is to provide an improved concrete mixing attachment for tractors, said concrete mixer attachment including a mixing barrel mounted on the rear of a tractor and hydraulic means for rotating the same conveniently connected to a power take-off of the tractor.

Another object of this invention is to provide an improved dumping mechanism for a concrete mixing barrel mounted on the rear of a tractor, said dumping mechanism being of such a nature whereby the driver of the tractor can easily dump concrete from the mixing barrel while seated on the tractor.

Another object of this invention is to provide an improved dumping mechanism for a concrete mixer mounted on the rear of a conventional farm tractor, said dumping mechanism being of such nature whereby the mixing barrel can be dumped in close place inasmuch as it is mounted on the rear of the tractor and extends rearwardly therefrom.

Another object of this invention is to provide an improved mounting and dumping mechanism for a mixing barrel whereby the same may be mounted on a conventional farm tractor, said mounting and dumping mechanism being of a simple and compact construction whereby it may be economically manufactured.

A further object of this invention is to provide an improved supporting and dumping mechanism for a mixing barrel which may be quickly attached to and removed from a conventional farm tractor, said mixing barrel being operated by drive mechanism of the tractor.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangement of elements and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings which form a material part of this application and in which:

2

Figure 1 is a side elevational view of the rear portion of a conventional farm tractor having mounted thereon the cement mixer attachment, which is the subject of this invention, the cement mixer being illustrated in its mixing position, one of the rear wheels of the tractor and its associated wheel guard being omitted in order to clearly show the support and dumping mechanism of the concrete mixer;

Figure 2 is a side elevational view similar to that of Figure 1 and shows the mixing barrel of the concrete mixer in a dumping position;

Figure 3 is a top plan view of the tractor of Figure 1 and shows the mixing barrel in a dumping position similar to that of Figure 2, the view showing the arrangements of the various elements of the supporting and dumping mechanism of the concrete mixer;

Figure 4 is an enlarged fragmentary longitudinal vertical sectional view taken substantially upon the plane indicated by the section line 4—4 on Figure 3 and shows the construction of the mixing barrel and the manner in which it is mounted in a mixing barrel cradle; and

Figure 5 is a transverse vertical sectional view taken substantially upon the plane indicated by the section line 5—5 on Figure 1 and shows the manner in which the mixing barrel is supported by its associated mixing barrel cradle adjacent the discharge end thereof.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in detail, it will be seen that there is illustrated a rear portion of a conventional farm tractor, which is referred to in general by the reference numeral 10. A farm tractor 10 includes a frame 12 which is provided at its rear end with a differential 14 which has extending outwardly therefrom axle housing 16. Disposed within the axle housing 16 are conventional axles on which are mounted rear wheels 18, the rear wheels 18 being provided with wheel guards 20 on the inner side thereof, said wheel guards 20 being carried by their respective axle housings 16. Carried by the rear of the frame 12 adjacent the differential 14 is a hydraulic lift mechanism 22 which in-

cludes a pair of rearwardly extending lift arms 24.

Mounted on the housing 12 adjacent the hydraulic lift mechanism 22 is a conventional seat 26. Carried by the frame 12 adjacent the seat 26 is control mechanism 28 for actuating the hydraulic lift mechanism 22. It will be understood that the control mechanism 28 may be actuated by a tractor operator seated in the seat 26.

Carried by the rear of the tractor 10 is a concrete mixer attachment, which is referred to in general by the reference numeral 30 and it is adapted to be driven by mechanism of the tractor 10. It would seem that the concrete mixer attachment 30 includes a mixing barrel 32 which is mounted within a mixing barrel cradle, which is referred to in general by reference numeral 34, for rotation. The mixing barrel cradle 34 is pivotally supported by a frame, which is referred to in general by the reference numeral 36 extending rearwardly from the rear portion of the tractor 10. Extending between the mixing barrel cradle 34 and the rear portion of the tractor 10 is a tilting mechanism, which is referred to in general by the reference numeral 38.

The frame 36 includes a pair of spaced parallel V-shaped frame elements disposed on each side of the mixing barrel cradle 34. Each of the V-shaped frame elements includes a first leg 40 which is connected at its forward end to its associated wheel guard 20 and extends downwardly and rearwardly therefrom. The other leg 42 is connected by clamp means 44 to the axle housing 16 in spaced relation to the adjacent wheel guard 20 and extends upwardly and rearwardly therefrom where it is connected to the rear end of the leg 40.

The mixing barrel cradle 34 includes a longitudinally extending cradle portion 46 and a transversely extending cradle portion 48, the cradle portions 46 and 48 being at right angles to each other and rigidly connected. The longitudinally extending cradle portion 46 is generally U-shaped and includes a pair of longitudinally extending legs 50 which are in spaced parallel relation and connected at their rear ends to outer ends of a transversely extending base member 52. The transversely extending cradle portion 48 includes a pair of vertically extending legs 54 which are connected at their upper ends to the rear ends of the legs 50 and at their lower ends to a horizontally disposed connecting member 56. It will be understood that the various elements of the mixing barrel cradle 34 are channel shaped in cross section.

The mixing barrel 32 is of the general shape of conventional concrete mixing barrels and includes a cylindrical body portion 58 which terminates at its forward end in a bottom 60 and at its rear end in a discharge opening 62. Secured to the bottom 60 and concentric with the longitudinal axis of the mixing barrel 32 is a wheel 64 on which is mounted a conventional tire 66. The wheel 64 is connected to the bottom 60 of the mixing barrel by a plurality of fasteners 68 and the connection is reinforced by a pair of plates 70 and 72, the plate 70 being disposed within the mixing barrel and the plate 72 being disposed forwardly thereof.

Extending forwardly from the plate 72 being provided with a forwardly extending center shaft 74 which is mounted within a bearing 76 carried by the base 52 of the mixing barrel cradle 34. It will be understood that the center shaft 74 supports the forward portion of the mixing barrel 32 and forms an axis about which the mixing barrel rotates.

Referring now to Figure 5 in particular, it is seen that extending diagonally between the legs 54 and the horizontal member 56 adjacent therein to sections are support members 78 which are mounted both forwardly and rearwardly of the legs and horizontal member. Extending longitudinally between each pair of support members 78 is a shaft 80 on which is mounted for rotation a roller 82. It will be noted that the rollers 82 underlie the cylindrical body portion 58 of the mixing barrel 32 adjacent its discharge end 62 and supports the rear end thereof.

The legs 54 of the mixing barrel cradle 34 are pivotally connected at the rear ends of the frame elements of the supporting frame 36 by pivot pins 84 by which the mixing barrel 32 and its associated cradle 34 tilt. It will be understood that the complete weight of the mixing barrel 32 and its cradle 34 are on and supported by the pivot pins 84.

The tilting mechanism 38 includes a first link 86 which is connected at its upper end to one of the legs 50 intermediate its ends by a pivot pin 88. The lower end of the first link 86 is pivotally connected to the rear end of a second link 90 by a pivot pin 92. The second link 90 extends forwardly and is connected to its respective axle housing 16 for pivotal movement with respect thereto. Pivotally connected to the rear end of one of the lift arms 24 of the hydraulic lift mechanism 22 of the tractor 10 is an actuating arm 94. The actuating arm 94 extends downwardly and rearwardly and is connected at its lower end to the second link 90 intermediate the ends thereof by pivot pin 96.

It will be understood that the tilting mechanism 38 includes similar links 86 and 90, and an actuating arm 94 on the opposite side of the mixing barrel cradle 34 and that the two sets of links are connected together by the pivot pin 92 which extends transversely therebetween. As is best illustrated in Figure 1, when the mixing barrel 32 is in its mixing position the lift arms 24 are in substantially horizontal positions and the tire 66 is in engagement with a roller 98 carried by a power take-off 100 extending from the rear portion of the differential 14. When it is desired to dump material disposed within the mixing barrel 32, the lift arms 24 are rotated clockwise towards the front of the tractor 10 by manipulating the control mechanism 28. The clockwise rotation of the lift arms 24 result in the upward movement of the pivot pins 96 and the straightening out of the links 86 and 90 with the result that the pivot pins 88 are urged upwardly and rearwardly and the mixing barrel cradle 34 is tilted about the pivot pins 84.

Inasmuch as the mixing barrel 32 is mounted at the extreme rear of the tractor 10 it will be seen that the tractor 10 may be backed into a corner and concrete dumped from the mixing barrel 32 in any tight place. Inasmuch as the dumping operation may be performed with the operator seated on the seat 26, it is obvious that no clearance behind the mixing barrel 32 is necessary for the operator doing a dumping operation.

While the mixing barrel 32 has been described for the sole purpose of mixing concrete, it will be understood that it is not intended to so limit the invention as the mixing barrel may also be utilized in mixing, transporting or dumping stock feed, silage, dirt, water or manure.

The operation of this device will be understood

from the foregoing description of the details thereof, taken in connection with the above recited objects and the drawings. Further description would appear to be unnecessary.

Minor modifications of the device, varying in minor details from the embodiment of the device illustrated and described here, may be resorted to without departure from the spirit and scope of this invention, as defined in the appended claims.

Having described the invention, what is claimed as new is:

1. A concrete mixer attachment for tractors, said concrete mixer attachment comprising a mixing barrel, a mixing barrel cradle supporting said mixing barrel for rotary movement, a supporting frame for mounting said cradle on a tractor, said cradle being pivotally carried by said supporting frame, means for tilting said mixing barrel from a mixing position to a dumping position, said tilting means including a first link pivotally connected to said mixing barrel cradle, a second link pivotally connected to the other end of said first link, said second link being adapted to be pivotally connected to said tractor, an actuating arm secured to said second link intermediate the ends thereof.

2. In combination with a tractor, a cement mixer attachment, said attachment comprising a rearwardly extending frame rigidly connected to said tractor, a mixing barrel cradle pivotally supported by said frame, means for tilting said mixing barrel cradle extending between said mixing barrel cradle and said tractor and actuated by hydraulic lift arms of said tractor, said frame including a pair of rearwardly extending V-shaped frame elements, each of said frame elements including pair of legs connected together at their rear ends, the forward end of one of said legs being connected to an axle housing, and the forward end of said other leg being connected to an adjacent wheel guard, said one leg sloping rearwardly and upwardly and said other leg sloping rearwardly and downwardly.

3. A concrete mixer attachment for tractors comprising a pair of spaced rearwardly extending V-shaped frame elements, each of said frame elements having legs diverging in both horizontal and vertical planes, forward ends of said legs being attached to different parts of a tractor, a cradle pivotally carried between said frame elements, a mixing barrel rotatably carried by said cradle, said barrel having a central shaft at its forward end carried by said cradle, a rear portion of said barrel being supported by a plurality of rollers carried by said cradle and engaging an outer surface of said barrel, means for selectively tilting said cradle.

4. A concrete mixer attachment for tractors comprising a pair of spaced rearwardly extending V-shaped frame elements, each of said frame elements having legs diverging in both horizontal and vertical planes, forward ends of said legs being attached to different parts of a tractor, a cradle pivotally carried between said frame elements, a mixing barrel rotatably carried by said cradle, a first link having one end pivotally connected to said cradle, a second link having one end pivotally connected to the other end of said first link, the other end of said second link being adapted to be pivotally secured to an associated tractor, an actuating arm pivotally secured to said second link intermediate its ends for selectively pivoting said links to tilt said barrel.

5. A concrete mixer attachment for tractors comprising a pair of spaced rearwardly extending V-shaped frame elements, each of said frame elements having legs diverging in both horizontal and vertical planes, forward ends of said legs being attached to different parts of a tractor, a cradle pivotally carried between said frame elements, a mixing barrel rotatably carried by said cradle, said barrel having a central shaft at its forward end carried by said cradle, a rear portion of said barrel being supported by a plurality of rollers carried by said cradle and engaging an outer surface of said barrel, a first link having one end pivotally connected to said cradle, a second link having one end pivotally connected to the other end of said first link, the other end of said second link being adapted to be pivotally secured to an associated tractor, an actuating arm pivotally secured to said second link intermediate its ends for selectively pivoting said links to tilt said barrel.

6. A concrete mixer attachment for tractors comprising a pair of spaced rearwardly extending V-shaped frame elements, each of said frame elements having legs diverging in both horizontal and vertical planes, forward ends of said legs being attached to different parts of a tractor, a cradle pivotally carried between said frame elements, a mixing barrel rotatably carried by said cradle, said barrel having a central shaft at its forward end carried by said cradle, a rear portion of said barrel being supported by a plurality of rollers carried by said cradle and engaging an outer surface of said barrel, means for selectively tilting said cradle, said cradle being engageable with legs of said frame elements for limiting pivotal movement of said cradle.

FRED KNOWLTON.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,439,178	Lund	Dec. 19, 1922
1,453,634	Martin et al.	May 1, 1923
2,447,071	Huffman	Aug. 17, 1948
2,492,895	Schulz	Dec. 27, 1949
2,508,697	Tull	May 23, 1950