A combined dump truck and spreader apparatus is disclosed. The apparatus includes a truck chassis and a dump body for receiving and dispensing materials. The dump body has a first end, a second end, a first side wall and a second side wall, the dump body being pivotally secured to the chassis about a pivotal axis. A hoist device extends between the dump body and the chassis for selectively pivoting the dump body about the pivotal axis. A tailgate is pivotally secured to the first end of the dump body about a further pivotal axis for selectively permitting dumping of the materials therethrough when the dump body is pivoted about the pivotal axis. A conveyor device is disposed substantially at a bottom of the dump body and extends substantially between the first end and the second end thereof for conveying the materials along the dump body. A spreader device cooperates with the conveyor device for spreading the materials. Also, the first side wall and the second side wall curve downwardly and inwardly toward the conveyor device such that the dump body defines a substantially semi-circular cross sectional configuration for guiding and deflecting the materials within the dump body toward the conveyor device.
BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a combined dump truck and spreader apparatus for selectively dumping and spreading materials. More specifically, the present invention relates to a combined dump truck and spreader apparatus for spreading salt and sand and the like on roadways.

[0004] 2. Background Information

[0005] In a typical prior art spreader apparatus, a V-box type spreader is mounted within the body of a dump truck.

[0006] The aforementioned V-box spreader includes a longitudinally extending conveyor disposed adjacent to the base of the V-box. The arrangement is such that the conveyor conveys materials along the V-box towards the back of the truck in a controlled manner. The materials which typically include sand and salt are dispersed by the conveyor through a guide chute and are dispersed by means of a rotary spinner which spreads the materials across the roadway being treated. However, such V-box spreaders have certain inherent disadvantages. More particularly, in adverse weather conditions with ice and snow covering a roadway, a problem exists when there is insufficient traction between the truck carrying the V-box spreader and the road.

[0007] Various relatively complex arrangements have been proposed in order to supply a quantity of sand and salt ahead of the rear wheels of the truck in order to increase the traction thereof.

[0008] Another problem with the prior art arrangements is that the considerable capacity of a typical dump truck body is not utilized when fitted with a V-box spreader.

[0009] Accordingly, the present invention provides a unique combination of a dump truck and a spreader. In its basic concept, the present invention includes a truck body having a conveyor means disposed at the base of the dump body which is of a generally semi-circular cross sectional configuration. The conveyor means conveys the materials selectively through a rear opening and/or a front aperture for spreading thereof. Additionally, the materials can be dumped through a tail gate at the rear end of the dump body.

[0010] The present invention provides an apparatus that not only permits the dispensing of sand and salt from the rear of the truck for normal spreading operations but also provides means for spreading the materials ahead of the rear wheels thereby enhancing the traction thereof.

[0011] Furthermore, in the present invention, the apparatus enables the rapid unloading of the materials from the truck body by a dumping operation which includes hoisting the dump body so that the materials flow from the body past the tailgate.

[0012] Also, the aforementioned hoisting is accomplished by means of a hoist cylinder disposed between the dump body and the cab. In a preferred embodiment of the present invention, the cylinder is located in front of the dump body so that the customary dog box for the reception of the cylinder is not required. Additionally, the forward location of the hoist permits the conveyor means to extend forwardly through the front end of the dump body for permitting spreading in front of the rear wheels to increase traction in icy conditions.

[0013] According to the present invention, the combined unit is able to move safely, economically and quickly, thereby allowing the user thereof to spread sand, salt or a variety of other products without having to raise or tilt the body or add additional equipment to perform the aforementioned functions.

[0014] Additionally, the apparatus according to the present invention doubles as a regular dump truck without having to remove bulky add-on spreading equipment.

[0015] The aforementioned apparatus according to the present invention permits spreading of the materials with up to four spinners. The conveyor runs forward or backward thereby allowing the dumping of materials to the rear only or front only. Such an arrangement allows the operator to spread sand mixed with salt ahead of the drive tires for traction on slippery surfaces or when going up steep hills or inclines.

[0016] On most prior art front discharge sanders, it is necessary to raise the body to move the materials forward or tilt the body sideways to accomplish front spreading. Such tilting of the body introduces safety problems because changing either the vertical or horizontal center of gravity of the body tends to make the truck less stable.

[0017] Also, when the body of the prior art truck arrangement is raised for spreading, there exists the danger of hitting trees, bridges, powerlines and the like.

[0018] The apparatus according to the present invention enables complete operation and control of the spreading and dump modes so that the apparatus can be converted from the spreading mode to the dumping mode from inside the cab. Most prior art arrangements having front discharge spreaders make it necessary for the operator to exit the cab in order to change a series of levers and latches to convert the apparatus.

[0019] Also, with the apparatus according to the present invention, the center of gravity is lower than with the prior art V-box spreader arrangement. The dump body according to the present invention has a greater capacity than the capacity of a V-box spreader mounted in a dump body because with the V-box spreader, the walls thereof are inclined at 45 degrees whereas with the dump body according to the present invention, the walls are curved, thereby increasing the capacity thereof.

[0020] Also, the curved side walls of the semi-circular dump body according to the present invention, guide the materials contained therein towards the centrally disposed conveyor means.

[0021] Furthermore, usually in the prior art arrangements, the V-box spreader is located in the truck body and thus the truck is designated for long periods as a spreader unit only with no dump capability.

[0022] In essence, the apparatus according to the present invention permits spreading to the front or rear with a better
center of gravity, with less weight and more capacity while easily converting to a dump mode.

[0023] U.S. Pat. No. 5,466,112 to the Applicant of the present application enables simultaneous delivery of materials to both the front and rear of the dump body.

[0024] Therefore, the primary objective of the present invention is to provide a combined dump truck and spreader apparatus that overcomes the aforementioned inadequacies of the prior art arrangements and which makes a considerable contribution to the art of dumping materials from a truck and for spreading sand, salt and the like materials on a roadway to the front or rear.

[0025] Other objects and advantages of the present invention will be readily apparent to those skilled in the art by a consideration of the detailed description contained hereinafter taken in conjunction with the annexed drawings.

SUMMARY OF THE INVENTION

[0026] The present invention relates to a combined dump truck and spreader apparatus. The apparatus includes a truck chassis and a dump body for receiving and dispensing materials. The dump body has a first end, a second end, a first side wall and a second side wall, the dump body being pivotally secured to the chassis about a pivotal axis. A hoist device extends between the dump body and the chassis for selectively pivoting the dump body about the pivotal axis. A tailgate is pivotally secured to the first end of the dump body about a further pivotal axis for selectively permitting dumping of the materials therethrough when the dump body is pivoted about the pivotal axis. A conveyor device is disposed substantially at a bottom of the dump body and extends substantially between the first end and the second end thereof for conveying the materials along the dump body. A spreader device cooperates with the conveyor device for spreading the materials. Also, the first side wall and the second side wall curve downwardly and inwardly toward the conveyor device such that the dump body defines a substantially semi-circular cross sectional configuration for guiding and deflecting the materials within the dump body toward the conveyor device.

[0027] More specifically, the spreader means includes a spreader provided adjacent the second end of the dump body.

[0028] In another embodiment of the present invention, the spreader means includes a spreader provided adjacent the first end of the dump body.

[0029] More particularly, the conveyor means includes at least one chain which is disposed between the first side wall and the second side wall of the dump body. A first sprocket means drivingly co-operates with the chain and is disposed adjacent to the first end of the dump body for guiding the chain.

[0030] A second sprocket means drivingly co-operates with the chain and is disposed adjacent to the second end of the dump body for guiding the chain.

[0031] Also, a second sprocket means drivingly co-operates with the chain and is disposed adjacent to the second end of the dump body for guiding the chain.

[0032] A drive means is operably connected to at least one of the sprocket means for driving the conveyor means. The drive means includes a drive motor associated with at least one of the first and second sprocket means, the conveyor means being arranged for moving the materials toward the second end of the dump body.

[0033] Moreover, the spreader means includes a first spreader provided adjacent to the first end of the dump body and a second spreader provided adjacent to the second end of the dump body.

[0034] The conveyor means includes at least one chain disposed between the side walls of the dump body.

[0035] The first sprocket means drivingly co-operates with the chain and is disposed adjacent to the first end of the dump body for guiding the chain.

[0036] The second sprocket means drivingly co-operates with the chain and is disposed adjacent to the second end of the dump body for guiding the chain.

[0037] The second sprocket means drivingly co-operates with the chain and is disposed adjacent to the second end of the dump body for guiding the chain.

[0038] The drive means is operably connected to at least one of the sprocket means for driving the conveyor means, the drive means including a drive motor associated with at least one of the first and second sprocket means, the conveyor means being arranged for moving the materials selectively toward the first end of the dump body or toward the second end of the dump body.

[0039] Furthermore, the first side wall and the second side wall guide the materials downwardly toward the conveyor means, the arrangement being such that when the materials are received within the dump body, the first side wall and the second side wall deflect the materials toward the conveyor means.

[0040] The first side wall and the second side wall guide the materials downwardly toward the conveyor means, the arrangement being such that when the materials are received within the dump body, the first side wall and the second side wall deflect the materials toward the conveyor means.

[0041] In another embodiment of the present invention, the conveyor means includes a first and second chain, the chains being disposed spaced and parallel relative to each other between the first side wall and the second side wall of the body.

[0042] Also, a plurality of materials moving slats are arranged with each slot extending between the chains. The first sprocket means drivingly co-operates with the chains and is disposed adjacent to the first end of the dump body for guiding the chains. The second sprocket means drivingly co-operates with the chains and disposed adjacent to the second end of the dump body for guiding the chains. The drive means is operably connected to at least one of the sprocket means for driving the conveyor means.

[0043] The drive means includes a drive motor associated with at least one of the first and second sprocket means.

[0044] Additionally, means are operatively connected between the drive motor and the associated sprocket means, the arrangement being such that movement of the conveyor means for moving the materials in either direction between the ends of the body is permitted.

[0045] Further, the conveyor means includes an auger and drive means operably connected to the auger for driving the auger. The drive means includes a drive motor, the conveyor means being arranged for moving the materials toward the second end of the dump body.
Also, according to the present invention, the spreader means includes a first spreader provided adjacent to the first end of the dump body and a second spreader provided adjacent to the second end of the dump body.

The conveyor means includes an auger and drive means operably connected to the auger for driving the auger. The drive means includes a drive motor. The conveyor means is arranged for moving the materials selectively toward the first end of the dump body or toward the second end of the dump body.

The first side wall and the second side wall guide the materials downwardly toward the conveyor means, the arrangement being such that when the materials are received within the dump body, the first side wall and the second side wall deflect the materials toward the conveyor means.

Furthermore, the first side wall and the second side wall guide the materials downwardly toward the conveyor means, the arrangement being such that when the materials are received within the dump body, the first side wall and the second side wall deflect the materials toward the conveyor means.

Many modifications and variations of the present invention will be readily apparent to those skilled in the art by a careful consideration of the detailed description contained herein and the appended drawings. However, such modifications and variations fall within the present invention as defined by the appended claims.

Included in such modifications would be the provision of a hydraulic motor for driving the conveyor means. Also, the present invention envisages the provision of a variable speed motor so that rapid dumping of the materials through the opening is permitted.

Also, although specific dumping means are disclosed herein, any arrangement for raising the body could be used which includes hoists endorsed by the National Truck Equipment Association for performing within specified performance ranges for particular truck body dimensions.

The present invention provides a multitude of combinations each suitable for a particular application. For example, the present invention includes an arrangement in which no hoist is provided for the dump body and in which the materials can alternatively be spread or dumped through the opening.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a side elevational view of a combined dump truck and spreader apparatus according to the present invention;

FIG. 2 is a similar view to that shown in FIG. 1 but shows the body raised so that the materials may be dumped therefrom;

FIG. 3 is a top plan view of the combined dump truck and spreader apparatus shown in FIG. 1 with the materials removed therefrom to show the auger means;

FIG. 4 is a rear view of the apparatus shown in FIG. 1;

FIG. 5 is an enlarged sectional view taken on the line 5-5 of FIG. 3;

FIG. 6 is a side elevational view of a combined dump truck and spreader apparatus according to the present invention;

FIG. 7 is a similar view to that shown in FIG. 6 but shows the body raised so that the materials may be dumped therefrom;

FIG. 8 is a top plan view of the combined dump truck and spreader apparatus shown in FIG. 6 with the materials removed therefrom to show the conveyor means;

FIG. 9 is a rear view of the apparatus shown in FIG. 6;

FIG. 10 is an enlarged sectional view taken on the line 5-5 of FIG. 8;

FIG. 11 is a similar view to that shown in FIG. 8 but shows a removable cover on the conveyor means; and

FIG. 12 is a similar view to that shown in FIG. 6 but shows the opposite side of the apparatus.

Similar reference characters refer to similar parts throughout the various views of the drawings.

**DETAILED DESCRIPTION OF THE DRAWING**

FIG. 1 is a side elevational view of a combined dump truck and spreader apparatus generally designated 10 according to the present invention for selectively dumping and spreading materials 12. The apparatus 10 includes a truck chassis generally designated 14 and a dump body generally designated 16 for receiving and dispensing the materials 12. The body 16 has a first and second end 18 and 20 respectively, that is a rear end 18 and a front end 20. The body 16 includes a first and second side wall 22 and 24 respectively, particularly as shown in the plan view of FIG. 3. The body 16 is secured to the chassis 14 about a pivotal axis 26 which extends normal to the length of the dump body particularly as shown in FIG. 2.

A tailgate 28 is secured to the first end 18 of the body 16 about a further pivotal axis 30 which is disposed spaced and parallel relative to the pivotal axis 26. The arrangement is such that when the tailgate 28 is in a closed disposition thereof as shown in FIG. 1, the materials 12 are contained within the body 16.

However, when the tailgate 28 is pivoted about the further pivotal axis 30 to an open disposition thereof as shown in FIG. 2, dumping of the materials 12 from the body 16 past the tailgate 28 is permitted.

FIG. 2 is a similar view to that shown in FIG. 1 but shows the body 16 in the raised position thereof for dumping materials 12 from the body 16.

More specifically, FIG. 2 shows hoist means generally designated 32 extending between the body 16 and the chassis 14 for selectively pivoting the body 16 about the pivotal axis 26. The arrangement is such that when the tailgate 28 is disposed in the open disposition thereof as shown in FIG. 2, dumping of the materials 12 is permitted.

FIG. 3 is a top plan view of the apparatus 10 shown in FIG. 1. FIG. 3 shows auger means generally designated 34 disposed within the body 16 and extending between the first and second ends 18 and 20 of the body 16 for transporting materials 12 along the body 16.

FIG. 4 is a view of the rear of the apparatus 10 shown in FIG. 1. FIG. 4 shows the tailgate 28 defining an opening 38. The opening 38 co-operates with the auger means 34 for permitting the flow therethrough as indicated by the arrow 42 of the materials 12. The arrangement is such that selective spreading of the materials 12 through the opening 38 is permitted.

The sloping side walls 22 and 24 guide the materials 12 towards the auger means 34 as indicated by the arrows 48 and 50.

The curved side walls 22 and 24 of the body 16 as shown in FIGS. 3 and 4 are disposed substantially parallel and spaced relative to each other with the auger means 34 disposed therebetween.
The tailgate 28 extends from the first to the second side wall 22 and 24 respectively of the body 16 as shown FIGS. 3 and 4. Also, as shown in FIG. 4, the tailgate 28 has a top and a bottom edge 62 and 64 respectively. The further pivotal axis 30 is disposed adjacent to the top edge 62 of the tailgate 28.

The tailgate 28 includes locking means generally designated 66 for releasably locking the tailgate 28 in the closed disposition thereof as shown in FIGS. 1, 3 and 4.

The hoist means 32 includes hydraulic cylinder means 90 shown in FIG. 2 which extends between the chassis 14 and the dump body 16 with the hydraulic cylinder means 90 being disposed preferably forwardly relative to the dump body 16 so that the auger means 34 extends through the second end 20 of the dump body 16 with sufficient clearance between the cylinder 90 and the auger means 34 to permit unimpeded hoisting of the dump body 16.

FIG. 3 shows the auger means 34 including a first and second augers 94 and 96. The augers 94 and 96 are disposed spaced and parallel to each other between the side walls 22 and 24 of the body 16.

The first auger 94 includes a first elongate shaft 98 and a first spiral flight 100 welded or otherwise secured to the first elongate shaft 98 such that when the first elongate shaft 98 is rotated, the first spiral flight 100 interacts with the materials 12 for feeding the materials 12 towards the first end 18 of the body 16 as indicated by arrow 42.

The second auger 96 includes a second elongate shaft 102 and a second spiral flight 104 welded or otherwise secured to the second elongate shaft 102 such that when the second elongate shaft 96 is rotated, the second spiral flight 104 interacts with the materials 12 for feeding the materials 12 towards the second end 20 of the body 16 as indicated by arrow 43.

Drive means generally designated 106 shown in FIG. 1 are selectively connected to the shafts 98 and 102 for driving the auger means 34. More specifically, as shown in FIG. 1, the drive means 106 includes a drive motor 108 which is associated with both the first and second augers 94 and 96.

Additionally, a gear box 110 is operatively connected between the drive motor 108 and associated shafts 98 and 102. The arrangement is such that movement of the auger means 34 for moving the materials 12 in either direct n as indicated by the arrows 42 and 43 between the ends 18 and 20 of the body 16 is permitted.

Also, as shown in FIG. 3, the second end 20 of the body 16 also defines an aperture 134. The aperture 134 cooperates with the auger means 34 for permitting the flow therethrough of the materials 12. The arrangement is such that selective spreading of the materials 12 through either or both the opening 38 and aperture 134 is permitted so that when the materials 12 flow through the aperture 134, spreading of the materials 12 from the second end 20 of the body 16 is permitted for increasing the traction of the combined apparatus.

FIG. 5 is an enlarged sectional view taken on the line 5-5 of FIG. 3. FIG. 5 shows the tailgate 28 as also including deflector means generally designated 116 rigidly secured to the bottom edge 64 of the tailgate 28 for deflecting the materials 12 within the body 16 towards the auger means 34.

As shown in FIG. 5, the deflector means 116 includes a gate means 118 for selectively controlling the flow of materials 12 as indicated by the arrow 42 through the opening 38.

FIG. 5 also shows means for adjusting a gate 118. A screw jack arrangement 138 is adjustable in a vertical direction for pivoting lever 140 about a pivot 142. A crossbar 144 is secured at the opposite end of the lever 140 relative to the screw jack 138. The crossbar 144 via links 146 causes the gate 118 to slide within guide 150 as indicated by the arrow 148. By adjusting the position of the gate 118, the flow of materials for spreading is regulated.

Those skilled in the art will appreciate that various control arrangements can be used in order to control the driving of the auger means 34. Also, the movement of the gate 118 can be controlled remotely as is well known in the art.

As shown in FIG. 5 of the drawings, a single transverse auger type dispenser 152 is used at the rear of the truck with rear spinners under the tailgate 28.

In operation of the apparatus, materials 12 are loaded into the body 16. Normally, the materials are fed through the opening 38 so that spreading by the rear spinners is accomplished. However, if traction difficulties are encountered on an incline, the second auger 96 is rotated so that sand and salt are spread through aperture 134 ahead of the rear tires towards the front spinners.

When the truck is required for moving materials, the hoist means 32 is operated remotely from within the cab when the locking means 66 has been released also from within the cab so that the load is dumped.

Also, if blacktop is being transported, a cover can be installed in order to prevent clogging of the auger means as disclosed in the aforementioned U.S. Pat. No. 5,466,112. All the subject matter of U.S. Pat. No. 5,466,112 is incorporated herein by reference.

The present invention also incorporates herein all of the disclosure of U.S. Pat. No. 5,772,239 as follows:

FIG. 6 is a side elevational view of a combined dump truck and sp reader apparatus generally designated 10' according to the present invention for selectively dumping and spreading materials 12'.

The apparatus 10' includes a truck chassis generally designated 14' and a dump body generally designated 16' for receiving and dispensing the materials 12'. The body 16' has a first and second end 18' and 20' respectively, that is a rear end 18' and a front end 20'. The body 16' also includes a first and second side wall 22' and 24' respectively particularly as shown in the plan view of FIG. 8. The body 16' is secured to the chassis 14' about a pivotal axis 26' which extends normal to the length of the dump body particularly as shown in FIGS. 7 and 8.

A tailgate 28' is secure to the first end 18' of the body 16' about a further pivotal axis 30' which is disposed spaced and parallel relative to the pivotal axis 26'. The arrangement is such that when the tailgate 28' is in a closed disposition thereof as shown in FIG. 6, the materials 12' are contained within the body 16'.

However, when the tailgate 28' is pivoted about the further pivotal axis 30' to an open disposition thereof as shown in FIG. 7, dumping of the materials 12' from the body 16' past the tailgate 28' is permitted.

FIG. 7 is a similar view to that shown in FIG. 6 but shows the body 16' in the raised position thereof for dumping materials 12' from the body 16'.

More specifically, FIG. 7 shows hoist means generally designated 32' extending between the body 16' and the chassis 14' for selectively pivoting the body 16' about the pivotal axis 26'. The arrangement is such that, when the tailgate 28' is disposed in the open disposition thereof as shown in FIG. 7, dumping of the materials 12' is permitted.

FIG. 8 is a top plan view of the apparatus 10' shown in FIG. 6. FIG. 8 shows conveyor means 34' disposed within
the body 16' and extending between the first and second ends 18' and 20' of the body 16' for conveying materials 12' along the body 16'.

[0102] FIG. 9 is a view of the rear of the apparatus 10' shown in FIG. 6. FIG. 9 shows the tailgate 28' defining an opening 38'. The opening 38' co-operates with the conveyor means 34' for permitting the flow therethrough as indicated by the arrow 42' of the materials 12'. The arrangement is such that selective spreading of the materials 12' through the opening 38' is permitted.

[0103] The sloping side walls 22' and 24' guide the materials 12' towards the conveyor means 34' as indicated by the arrows 48' and 50'.

[0104] The curved side walls 22' and 24' of the body 16' as shown in FIGS. 8 and 9 are disposed substantially parallel and spaced relative to each other with the conveyor means 34' disposed therebetween.

[0105] The tailgate 28' extends from the first to the second side wall 22' and 24' respectively of the body 16' as shown in FIGS. 8 and 9. Also, as shown in FIG. 9, the tailgate 28' has a top and a bottom edge 62' and 64' respectively. The further pivotal axis 30' is disposed adjacent to the top edge 62' of the tailgate 28'.

[0106] The tailgate 28' includes locking means generally designated 66' for releasably locking the tailgate 28' in the closed disposition thereof as shown in FIGS. 6, 8 and 9.

[0107] The hoist means 32' includes hydraulic cylinder means 90' shown in FIG. 7 which extends between the chassis 14' and the dump body 16' with the hydraulic cylinder means 90' being disposed preferably forwardly relative to the dump body 16' so that the conveyor means 34' extends through the second end 20' of the dump body 16' with sufficient clearance between the cylinder 90' and the conveyor means 34' to permit unimpeded hoisting of the dump body 16'.

[0108] FIG. 8 shows the conveyor means 34' including a first and second chain 94' and 96'. The chains 94' and 96' are disposed spaced and parallel to each other between the side walls 22' and 24' of the body 16'.

[0109] A plurality of materials slats 98', 99', and 100' are arranged such that the slats 98' to 100' extend between the chains 94' and 96'.

[0110] A first sprocket means 102' co-operates with the chains 94' and 96' and is disposed adjacent to the first end 18' of the body 16' for guiding the chains 94' and 96'.

[0111] A second sprocket means 104' co-operates with the chains 94' and 96' and is disposed adjacent to the second end 20' of the body 16' for guiding the chains 94' and 96'.

[0112] Drive means generally designated 106' are connected to at least one of the sprocket means 102', 104' for driving the conveyor means 34'. More specifically, as shown in FIGS. 8 and 11, the drive means 106' includes a drive motor 108' which is associated with either the first or second sprocket means 102' and 104'.

[0113] Additionally, a gear box 110' is operatively connected between the drive motor 108' and associated sprocket means 102' or 104'. The arrangement is such that movement of the conveyor means 34' for moving the materials 12' in either direction as indicated by the arrow 42' between the ends 18' and 20' of the body 16' is permitted.

[0114] Also, as shown in FIGS. 6 and 8, the second end 20' of the body 16' also defines an aperture 134'. The aperture 134' co-operates with the conveyor means 34' for permitting the flow therethrough of the materials 12' as indicated by the arrow 135'. The arrangement is such that selective spreading of the materials 12' through either the opening 38' or aperture 134' is permitted so that when the materials 12' flow through the aperture 134', spreading of the materials 12' from the second end 20' of the body 16' is permitted for increasing the traction of the combined apparatus 10'.

[0115] FIG. 10 is an enlarged sectional view taken on the line 5-5 of FIG. 8. FIG. 10 shows the tailgate 28' as also including deflector means generally designated 116' rigidly secured to the bottom edge 64' of the tailgate 28' for deflecting the materials 12' within the body 16' towards the conveyor means 34'.

[0116] As shown in FIG. 10, the deflector means 116' includes a gate means 118' for selectively controlling the flow of materials 12' as indicated by the arrow 42' through the opening 38'.

[0117] FIG. 10 also shows means for adjusting a gate 118'. A screw jack arrangement 138' is adjustable in a vertical direction for pivoting lever 140' about a pivot 142'. A crossbar 144' is secured at the opposite end of the lever 140' relative to the screw jack 138'. The crossbar 144' via links 146' causes the gate 118' to slide within guide 150' as indicated by the arrow 148'. By adjusting the position of the gate 118', the flow of materials for spreading is regulated.

[0118] FIG. 11 is a similar view to that shown in FIG. 8 but shows additionally the body 16' as further including a removable cover 130' slidably received on the conveyor means 34'. The arrangement is such that when the conveyor means 34' is inoperative, the cover 130' prevents the flow of materials 12' onto the conveyor means 34'.

[0119] Those skilled in the art will appreciate that various control arrangements can be used in order to control the driving of the conveyor means 34'. Also, the movement of the gate 118' can be controlled remotely as is well known in the art.

[0120] As shown in FIG. 10 of the drawings, a single auger type dispenser 152' is used at the rear of the truck with spinners 154' and 155' under the tailgate 28' as shown in FIG. 11.

[0121] FIG. 12 is a view similar to that shown in FIG. 6 but shows the opposite side of the truck. As shown in FIG. 12, in a preferred embodiment of the present invention, spinners 156' and 157' are located on either side of aperture 134' as particularly shown in FIGS. 11 and 12.

[0122] In operation of the apparatus, materials 12' are loaded into the body 16'. Normally, the materials are fed through the opening 38' so that spreading by spinners 154' and 155' is accomplished. However, if traction difficulties are encountered on an incline, conveyor means 34' is reversed so that sand and salt are spread through aperture 134' ahead of the rear tires towards spinners 156' and 157'.

[0123] When the truck is required for moving materials, the hoist means 32' is operated remotely from within the cab when the locking means 66' has been released also from within the cab so that the load is dumped.

[0124] Also, if blacktop is being transported, cover 130' can be installed in order to prevent clogging of the sprocket and chain mechanism.

[0125] The present invention provides a combined dump truck and spreader apparatus in which materials can be quickly dumped from a body through the tailgate. Alternatively, the materials can be spread on both sides of the truck by the conveyor means either behind the truck or ahead of the truck in order to increase traction in adverse weather conditions.

1-18. (canceled)

19. A combined dump truck and spreader apparatus for selectively dumping and spreading materials, said apparatus comprising:
a truck chassis;
a dump body for receiving and dispensing the materials, said dump body having a rear first end and a front second end and a first side wall and a second side wall, said dump body being pivotally secured to said truck chassis about a first pivotal axis;
a hoist extending between said dump body and said truck chassis;
a tailgate pivotally secured to said rear first end of said dump body about a second pivotal axis for selectively permitting dumping of the materials when said dump body is pivoted about said first pivotal axis;
a first auger disposed substantially along a lower portion of said dump body and extending substantially between said rear first end and said front second end thereof for transporting the materials along said dump body;
said tailgate defining an opening which co-operates with said first auger for permitting the materials to flow through the opening, the arrangement being such that selective spreading and dumping of the materials from said opening is permitted; and
said first side wall and said second side wall curving downwardly and inwardly toward said first auger such that said dump body defines a substantially semi-circular cross sectional configuration for guiding and deflecting the materials within said dump body toward said first auger substantially along the length of said first auger.

20. A combined dump truck and spreader apparatus as set forth in claim 19 wherein said tailgate has a top portion and a bottom portion, said tailgate further including:
a deflector secured to said bottom portion of said tailgate, said deflector deflecting the materials within said dump body toward said first auger; and
a gate selectively controlling said flow of materials through said opening.

21. A combined dump truck and spreader apparatus as set forth in claim 19 wherein said pivotal axis extends normal to said first side wall and said second side wall and wherein said second pivotal axis is disposed spaced and parallel to said first pivotal axis such that when said tailgate is in a closed position, the materials are contained within said dump body and when said tailgate is pivoted about said second pivotal axis to an open position, dumping of the materials from said dump body is permitted.

22. A combined dump truck and spreader apparatus as set forth in claim 20 wherein said tailgate extends from said first side wall to said second side wall of said dump body, said second pivotal axis being disposed adjacent to said top portion of said tailgate.

23. A combined dump truck and spreader apparatus as set forth in claim 19 wherein said first side wall and said second side wall of said body are disposed substantially parallel and spaced relative to each other.

24. A combined dump truck and spreader apparatus as set forth in claim 19 further comprising:
a second auger, said first auger and said second auger being disposed spaced and parallel relative to each other between said first side wall and said second side wall of said dump body;
said first auger comprising:
a first elongate shaft;
a first spiral flight secured to said first elongate shaft such that when said first elongate shaft is rotated, said first spiral flight interacts with the materials for feeding the materials toward said first end of said dump body;
said second auger comprising:
a second elongate shaft;
a second spiral flight secured to said second elongate shaft such that when said second elongate shaft is rotated, said second spiral flight interacts with the materials for feeding the materials toward said second end of said dump body;
a drive operably connected to said first auger and to said second auger for driving said first auger and said second auger.

25. A combined dump truck and spreader apparatus as set forth in claim 24 wherein said drive comprises a drive motor associated with said first auger and said second auger, said drive motor and said first auger and said second auger being arranged such that movement of the materials in either or both directions between said ends of said dump body is permitted.

26. A combined dump truck and spreader apparatus as set forth in claim 20 wherein said second end of said dump body defines an aperture which co-operates with said first auger for permitting the materials to flow through the aperture, the arrangement being such that selective spreading of the materials through said aperture is permitted so that when the materials flow through the aperture, spreading of the materials from said second end of said dump body is permitted for increasing traction of said combined dump truck and spreader apparatus.

27. A combined dump truck and spreader apparatus, said apparatus comprising:
a truck chassis;
a dump body for receiving and dispensing materials, said dump body having a rear first end, a front second end, a first side wall, and a second side wall, said dump body being pivotally secured to said truck chassis about a first pivotal axis;
a hoist extending between said dump body and said truck chassis;
a tailgate pivotally secured to said rear first end of said dump body about a second pivotal axis for selectively permitting dumping of the materials when said dump body is pivoted about said first pivotal axis;
a conveyor disposed substantially at a bottom of said dump body and extending substantially between said rear first end and said front second end of said dump body for conveying the materials along said dump body;
a first spreader cooperating with said conveyor for spreading the materials; and
said first side wall and said second side wall curving downwardly and inwardly toward said conveyor such that said dump body defines a substantially semi-circular cross sectional configuration for guiding and deflecting the materials within said dump body toward said conveyor.

28. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said first spreader is provided adjacent the front second end of the dump body.

29. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said first spreader is provided adjacent the rear first end of the dump body.

30. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said conveyor comprises:
at least one chain disposed substantially between said first side wall and said second side wall of said dump body;
a first sprocket co-operating with said chain and disposed adjacent to said rear first end of said dump body for guiding said chain;
a second sprocket co-operating with said chain and disposed adjacent to said front second end of said dump body for guiding said chain;

a drive motor operably connected to at least one of said first and second sprockets for driving said conveyor, said drive motor associated with at least one of said first and second sprockets, said conveyor being arranged for moving the materials toward the front second end of said dump body.

31. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said conveyor comprises:

at least one chain disposed substantially between said first side wall and said second side wall of said dump body;
a first sprocket co-operating with said chain and disposed adjacent to said rear first end of said dump body for guiding said chain;
a second sprocket co-operating with said chain and disposed adjacent to said front second end of said dump body for guiding said chain;
a drive motor operably connected to at least one of said first and second sprockets for driving said conveyor, said drive motor associated with at least one of said first and second sprockets, said conveyor being arranged for moving the materials toward the rear first end of said dump body.

32. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said first spreader is provided adjacent the rear first end of the dump body and further comprising a second spreader provided adjacent the front second end of the dump body;

said conveyor comprising:
at least one chain disposed substantially between said first side wall and said second side wall of said dump body;
a first sprocket co-operating with said chain and disposed adjacent to said rear first end of said dump body for guiding said chain;
a second sprocket co-operating with said chain and disposed adjacent to said front second end of said dump body for guiding said chain;
a drive motor operably connected to at least one of said first and second sprockets for driving said conveyor, said drive motor being associated with at least one of said first and second sprockets, said conveyor being arranged for moving the materials selectively toward the rear first end of the dump body or toward the front second end of the dump body.

33. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said conveyor comprises:
a first chain and a second chain, said chains being disposed spaced and parallel relative to each other substantially between said first side wall and said second side wall of said dump body;
a plurality of materials moving slats, each slot extending between said chains;
a first sprocket co-operating with said chains and disposed adjacent to said rear first end of said dump body for guiding said chains;
a second sprocket co-operating with said chains and disposed adjacent to said front second end of said dump body for guiding said chains; and

a drive operably connected to at least one of said first and second sprockets.

34. A combined dump truck and spreader apparatus as set forth in claim 33 wherein said drive comprises:
a drive motor associated with at least one of said first and second sprockets;
said drive motor and the associated sprocket being connected such that movement of said conveyor moves the materials in either direction between said ends of said dump body.

35. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said conveyor comprises:
a auger; and

a drive motor operably connected to said auger for driving said auger, said auger being arranged for moving the materials toward the front second end of said dump body.

36. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said conveyor comprises:
a auger; and

a drive motor operably connected to said auger for driving said auger, said auger being arranged for moving the materials toward the rear first end of said dump body.

37. A combined dump truck and spreader apparatus as set forth in claim 27 wherein said first side wall and said second side wall guide the materials downwardly toward said conveyor, the arrangement being such that when the materials are received within said dump body, said first side wall and said second side wall deflect the materials toward said conveyor.

38. A combined dump truck and spreader apparatus, said apparatus comprising:
a truck chassis;
a dump body for receiving and dispensing materials, said dump body having a rear first end, a front second end, a first side wall, and a second side wall, said dump body being pivotally secured to said truck chassis about a first pivotal axis;
a hoist extending between said dump body and said truck chassis;
a tailgate pivotally secured to said rear first end of said dump body about a second pivotal axis for selectively permitting dumping of the materials when said dump body is pivoted about said first pivotal axis;
a conveyor disposed substantially at a bottom of said dump body and extending substantially between said rear first end and said front second end of said dump body for conveying the materials along said dump body;
said tailgate comprising an opening which co-operates with said conveyor for selectively permitting the flow of the materials through the opening;
a first spreader cooperating with said conveyor for spreading the materials; and
said first side wall and said second side wall curving downwardly and inwardly toward said conveyor such that said dump body defines a substantially semi-circular cross sectional configuration for guiding and deflecting the materials within said dump body toward said conveyor.

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