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EUROPEAN PATENT APPLICATION

21 Application number: **89307867.5**

51 Int. Cl.⁵: **E 01 C 19/20**
E 01 H 5/06

22 Date of filing: **02.08.89**

30 Priority: **03.08.88 GB 8818434**
11.04.89 GB 8908109

43 Date of publication of application:
07.02.90 Bulletin 90/06

84 Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

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54 **Grit Spreaders.**

57 The grit spreader has a hopper (20) for grit, a spreader (17) associated with an outlet (19) in the hopper and means (14) or (70) to actuate the spreader means. The frame (10) of the grit spreader is attachable to the front end of a vehicle (69). In one embodiment the means to actuate the spreader is a ground engageable wheel (14) mounted on the frame (10) to rotate a slave wheel (16) when the vehicle moves to actuate the spreader (17). In another embodiment, the means to actuate the spreader (17) is an hydraulic motor (70), connected to the spreader and connectable to an hydraulic power supply (71) on the vehicle (69) to which the grit spreader is attached. The frame (10) has a bracket (26) at the front end (25) for temporary attachment of a snow plough. Also disclosed is a snow plough (50) for attachment to the front of a vehicle the frame (51) of the plough having a hopper (60) for grit and means (65/66) for rotating a spreader (62).

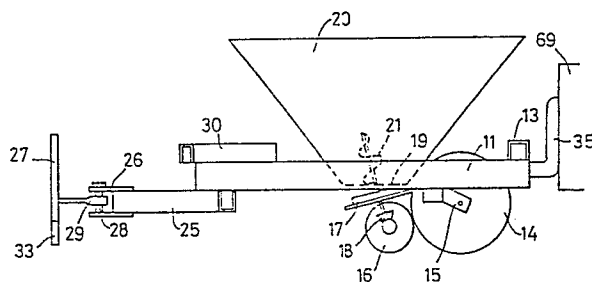


Fig. 2

Description

GRIT SPREADERS

This invention relates to grit spreaders, and more particularly to a grit spreader which can optionally convert to a snow plough. At present grit spreaders are connected to the rear of a vehicle and towed, but this has several disadvantages.

Firstly, if the grit spreader is intended for use in public road, it requires rear lights and other features to comply with road safety.

Secondly, and more importantly, the grit spread by the towed spreader does not assist the vehicle towing it.

An object of this invention is to obviate or mitigate the aforesaid disadvantage.

Therefore, according to one aspect of the present invention there is provided a grit spreader comprising a frame having means for attachment to the front end of a vehicle, a hopper for grit, spreader means associated with an outlet in the hopper and means to actuate the spreader means.

In one embodiment the means to actuate the spreader means is a ground engageable wheel mounted on the frame and adapted when rotated by movement of the vehicle to actuate the spreader means.

In another embodiment the means to actuate the spreader means comprises an hydraulic motor connected to an hydraulic power supply of the vehicle to which the frame is attached.

The spreader means may be a disc rotatable about a substantially upright axis or a paddle means rotatable about a horizontal axis.

The frame may have longitudinal channels to receive forks of a fork lift vehicle.

Alternatively, the frame is attachable to bracket means which is fixedly attached to the structural points at the front of the vehicle. Said bracket means is preferably attached to the vehicle via chassis-mounted bumper fixings.

Preferably, the forward end of the grit spreader frame is provided with means for temporary attachment of a snow plough blade.

Said attachment means preferably attaches to the centre of the snow plough blade so that the blade can be set at an angle to the transverse relative to the direction of travel.

Front mounted snow ploughs are known which comprise an 'A' frame attached to bracket means fixedly attached to structural points at the front of a vehicle, the pointed end of the frame extending forwards and carrying a snow plough.

Such snow ploughs when mounted on a vehicle can be used in conjunction with grit spreaders towed behind that vehicle.

According to another aspect of the present invention there is provided a snow plough for attachment to the front of a vehicle, comprising a frame having at one end, the forward end, a snow plough blade and at the other end means for attachment to the front of a vehicle, said frame also having between its forward and rear ends hopper means for grit, a spreader means associated with an

outlet in the hopper and means to actuate the spreader means.

Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings in which:

Fig. 1 is a plan view of a grit spreader according to one aspect of the invention;

Fig. 2 is a side elevation of Fig. 1;

Fig. 3 is a detail of a modified grit spreader;

Fig. 4 is a side elevation of a grit spreader according to another embodiment of the invention.

Fig. 5 is a plan view of a snow plough according to another aspect of the invention; and

Fig. 6 is a side elevation of Fig. 5.

Referring firstly to Figs. 1 and 2, the grit spreader comprises a frame 10 having a pair of parallel hollow longitudinal beams 11 and transverse supports 12, 13 at the forward and rear ends respectively.

Within the frame 10 is a road engageable wheel 14 attached thereto by a suspension arm 15. The wheel 14 engages a slave wheel 16 which when rotated, rotates a disc spreader 17 via gearing 18.

The disc spreader 17 is located below an outlet 19 of a hopper 20 mounted on the frame 10. An agitator 21 extends upwards from the disc 17 into the hopper and has, e.g. an auger blade to assist delivery of grit, or salt, from the hopper to the disc. The disc lies at a slightly forwardly and downwardly angle to the horizontal.

Preferably, but not necessarily, the front end of the frame 10 carries a forwardly pointing 'A' frame 25 having a bracket 26 to which a snow plough blade 27 can be detachably mounted. Thus, the bracket 26 has an upright pin 28 and the back of the blade 27 has a centrally mounted ring 29 for location of the pin 28.

The blade 27 can pivot about the pin 28 and angled side arms 30 extend from the frame 10 to selectively secure one end of the blade via a bracket 31 on the blade and bolt, not shown which passes through apertures 32 in the respective arm 30 and bracket 31. Thus, the blade 27 can swing to either side of the frame 10 to lie at an angle to the transverse relative to the direction of travel. The blade, preferably, has a rubber body or ground engaging strip 33. Blade 27 is shown transverse in Fig. 2.

The grit spreader-cum-spreader and plough as hereinbefore described is specifically for location at the front of a fork lift vehicle, the forks 35 locating in the longitudinal beams 11. With the forks supporting the frame such that the ground engaging wheel 14 is in contact with the ground, the fork lift vehicle can be driven forward thus pushing the frame 10 forward to rotate wheel 14, stave 15 and disc spreader 17. A lever (not shown) controls closure of the hopper outlet 19 which when open or partly open delivers grit (or salt) to the rotating disc 17.

Grit is therefore laid down in front of the wheels of the fork lift vehicle.

The grit spreader can be adapted for use with other vehicles such as land rovers, tractors, medium and light vans or even private cars.

Thus, as illustrated in Fig. 3, the frame 10 is modified to have on the rear transverse bar 13 two apertured lugs 40 for attachment to a pair of apertured lugs 41 on a bracket 42 known per se fixedly attached by bolts 43 structural points at the front of the vehicle in known manner, i.e. by permanent fixing to chassis mounted bumper fixings behind the vehicle's bumper 44. A pin 45 locates through the registered apertures of the lugs 40, 41.

Where the grit spreader is for attachment to the front of a vehicle other than a fork lift vehicle, the frame need not have longitudinal beams for location of the forks; thus, the frame may be an A-frame or of other suitable construction.

The means for spreading the grit may be other than a disc; for example any known spreader, such as a transverse paddle bar or a 'Vicon' gear box having a spreader tube directed forwardly or rearwardly.

The means for spreading the grit may be controlled by means other than a ground engaging wheel, for example as in the embodiment illustrated in Fig. 4 and now described herein.

The frame 10 is shown being carried by the forks 35 of a fork lift truck 69. It has a ground engagable wheel 14 which in this embodiment is an optional extra because it forms no part of the means for actuating the spreader 17.

The means for actuating the spreader, is an hydraulic motor 70 located below the hopper 20 and connected to the spreader 17 to cause it to rotate.

The hydraulic motor 70 is connected to an auxiliary hydraulic power supply 71 on the fork lift truck 69, via a pair of hose pipes 72 attached to the motor 70 and connectable to the auxiliary power supply 71 via couplings 73 which fit onto nozzles 74 of the power supply.

The vehicle carrying the grit spreader of this embodiment may be other than a fork lift truck, provided it has auxiliary hydraulic power supply; otherwise the mechanical means to actuate the spreader as described in the first embodiment is utilized.

In a second embodiment, Figs. 5 and 6, a snow plough 50 is provided for attachment to the bracket 42 of Fig. 3. The snow plough comprises an A-frame 51 the forward end of which is the apex and carries the blade 52 having a rubber skirt 53 via an adjustable plate 54 by which the disposition of the blade relative to the direction of travel can be adjusted so that the blade lies at an angle to the transverse, relative to the direction of travel towards one side of the direction of travel or the other.

The rear end of the A-frame has two apertured lugs 56 each of which engages a pair of apertured lugs 41 on the bracket 42.

The pin 45 passes through registering holes in the lugs 56, 41 to mount the A-frame 50 on the bracket 42. The A-frame carries between the front and rear ends a hopper 60 having an outlet in the form of a dispensing trough 61 and a spreader 62 which in this embodiment is a transverse bar 63 having paddles

64 which scoop the grit from the dispensing trough 61. A road engaging wheel 65 actuates the spreader 62 via slave wheel 66 to disperse grit on movement of the vehicle to which the snow plough-cum-plough/gritter is attached. The grit may be thrown forward (as illustrated by arrow 67 in Fig. 6) or rearward by the spreader paddle bar 64 and a baffle plate 68 (Fig. 6) may be provided to direct the grit downwardly, arrow 69, to avoid wind if thrown forward or to protect the vehicle if thrown rearward.

The grit spreader-cum-spreader/plough or snow plough with grit spreading equipment incorporated therewith are intended to be used on urban public roads, or in factory or other works grounds or driveways and on private roads or pathways or public areas such as parks where access is desirable in snowy or icy conditions.

The main advantage of the grit spreader and added snow plough or the snow plough incorporating grit spreading equipment as hereinbefore described is its location in front of the vehicle, thus laying grit in the path of the vehicle rather than the rear of the vehicle as with normal grit spreaders.

Claims

1. A grit spreader comprising a frame (10) having means for attachment to a vehicle (69) a hopper (20) for grit, spreader means (17) associated with an outlet (19) in the hopper and means (14/70) to actuate the spreader means, characterised in that the frame has means for attachment to the front end of a vehicle.

2. A grit spreader according to claim 1, characterised in that the means to actuate the spreader means (17) is a ground engageable wheel (14) mounted on the frame (10) and adapted when rotated by movement of the vehicle to actuate the spreader means (17).

3. A grit spreader according to claim 2 characterised in that the ground engageable wheel (14) actuates the spreader means (17) via a slave wheel (16).

4. A grit spreader according to claim 1, characterised in that the means (70) to actuate the spreader means (17) comprises an hydraulic motor (70) connected to the spreader means (17) and connectable to an hydraulic power supply (71) on the vehicle (69) to which the frame is attached.

5. A grit spreader according to any one of claims 1 to 4, characterised in that the frame (10) has longitudinal channels (11) to receive forks (35) of a fork lift vehicle (69).

6. A grit spreader according to any one of claims 1 to 4, characterised in that the frame (10) is attachable to bracket means (42) which is fixedly attached to structural points at the front of the vehicle (69).

7. A grit spreader according to claim 6, characterised in that said bracket means (42) is attached to the vehicle via chassis-mounted bumper fixings behind the vehicle's bumper (44)

8. A grit spreader according to any one of claims 1 to 7, characterised in that the forward end of the grit spreader frame (10/25) is provided with means (26) for temporary attachment of a snow plough blade (27).

9. A grit spreader according to claim 8, characterised in that said attachment means (26) pivotally attaches to the centre of the snow plough blade (27) so that the blade can be set at an angle to the transverse relative to the direction of travel.

10. A snow plough for attachment to the front of a vehicle, comprising a frame (51) having at one end, the forward end, a snow plough blade (52) and at the other end means (56/42) for attachment to the front of a vehicle, characterised in that the said frame (51) also has between its forward and rear ends, hopper means (60) for grit, a spreader means (62) associated with an outlet (61) in the hopper and means (65/66) to actuate the spreader means.

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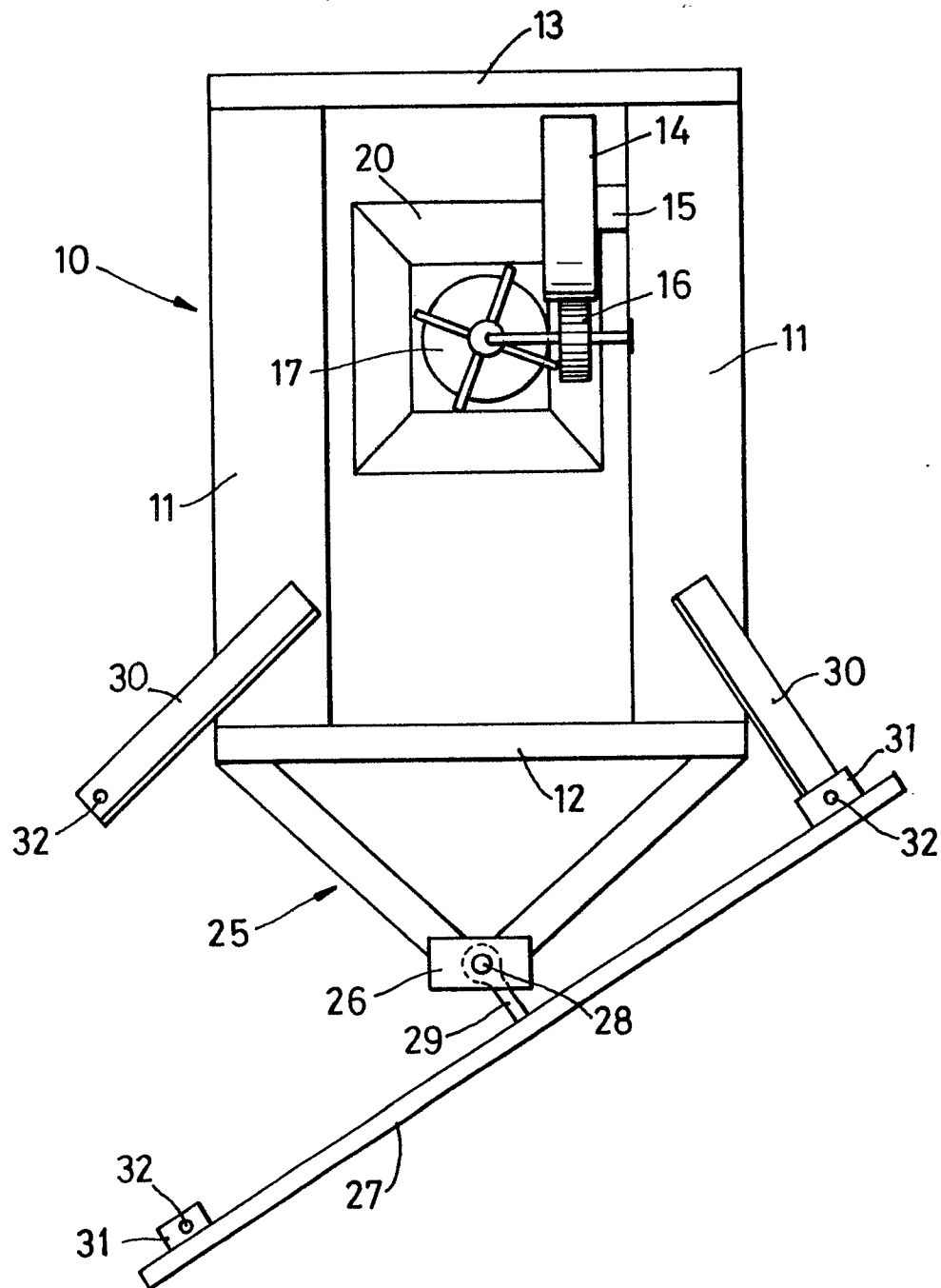


Fig. 1

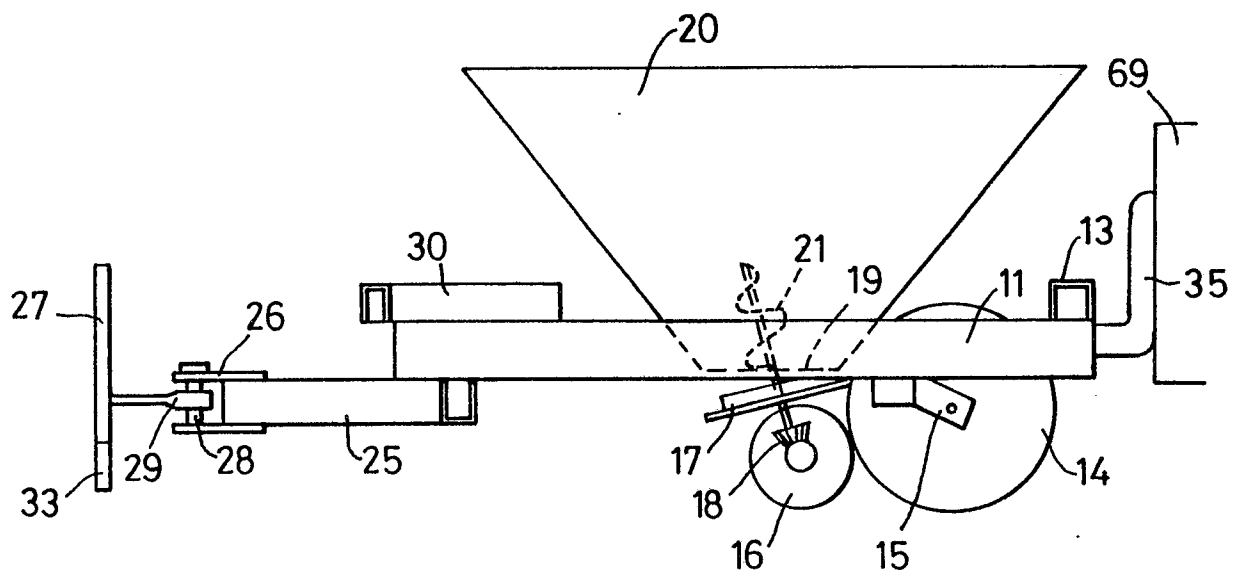


Fig. 2

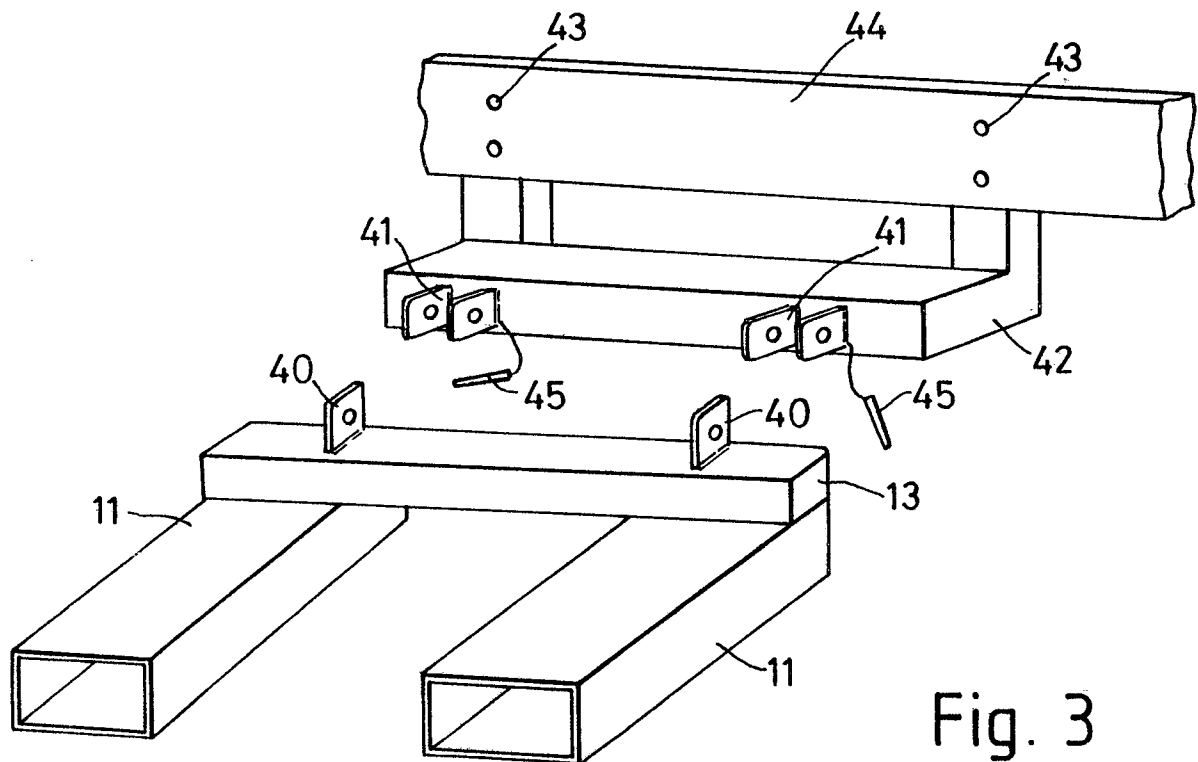


Fig. 3

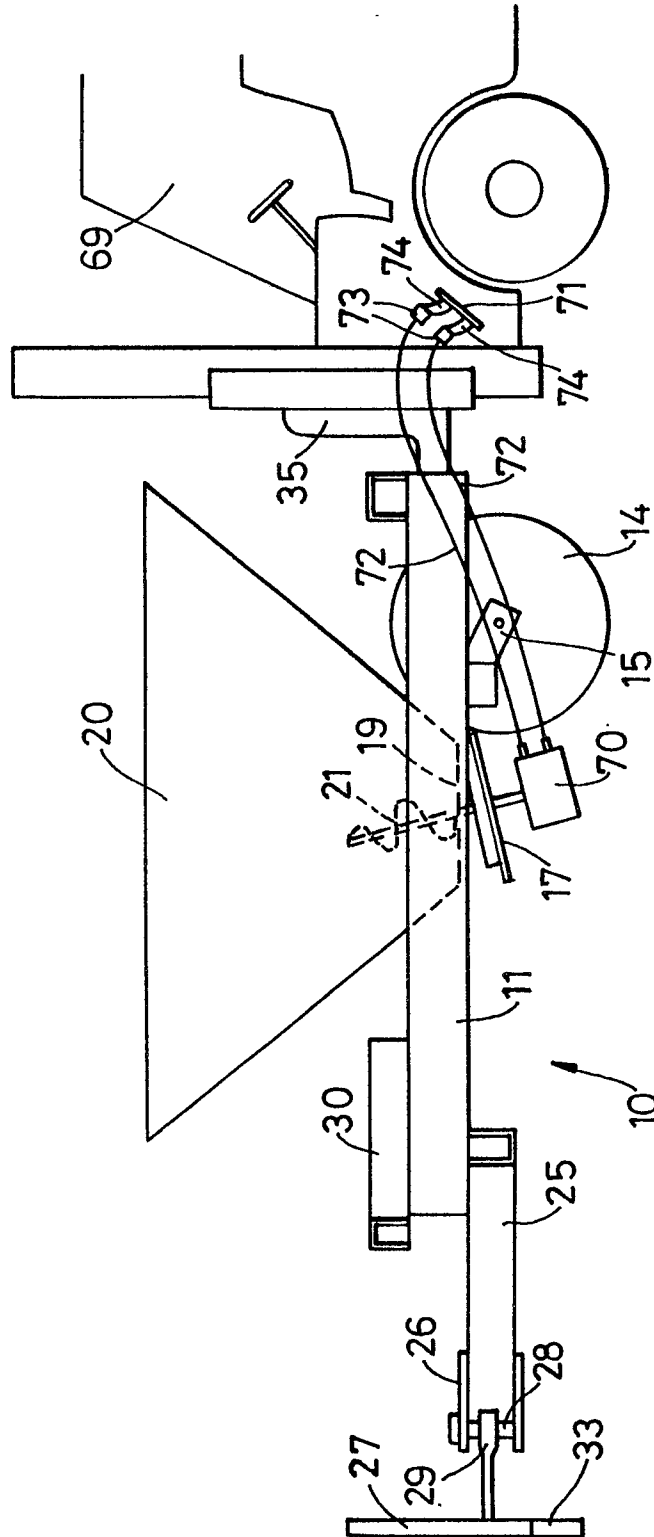


Fig. 4

