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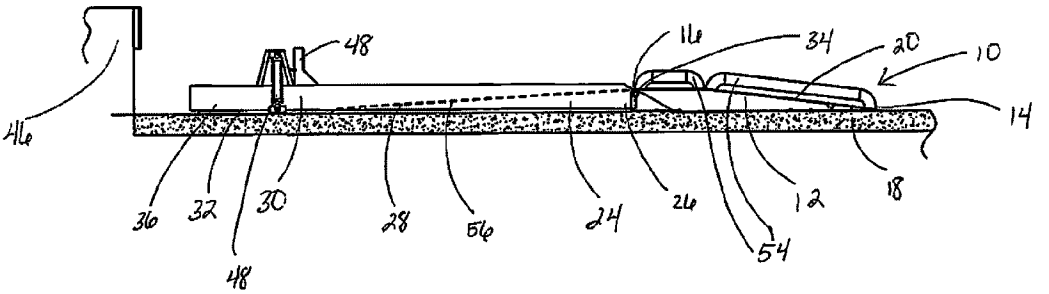
(54) Titre : VERIN A VEHICULE AVEC DRAINAGE AMELIORE
(54) Title: VEHICLE LEVELER WITH IMPROVED DRAINAGE



(57) Abrégé/Abstract:
The vehicle leveler includes a first portion which has a leading edge and a trailing edge, the trailing edge is disposed further from the driveway than the leading edge and forms a ramp section. The first portion has a flat section adjacent the trailing edge. The embodiment also includes a second portion which has a leading edge and a trailing edge, the leading edge of the second portion is disposed further from the driveway than the trailing edge of the second portion. The second portion includes an extension portion. The vehicle leveler also has at least one drainage aperture which is formed within and extends through the second portion for improved user safety.

ABSTRACT

The vehicle leveler includes a first portion which has a leading edge and a trailing edge, the trailing edge is disposed further from the driveway than the leading edge and forms a ramp section. The first portion has a flat section adjacent the trailing edge. The embodiment also includes a second portion which has a leading edge and a trailing edge, the leading edge of the second portion is disposed further from the driveway than the trailing edge of the second portion. The second portion includes an extension portion. The vehicle leveler also has at least one drainage aperture which is formed within and extends through the second portion for improved user safety.

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VEHICLE LEVELER WITH IMPROVED DRAINAGE

FIELD OF THE INVENTION

This invention relates to vehicle levelers and more particularly to a vehicle leveler having multiple surface angles as well as improved drainage for safety.

BACKGROUND OF THE INVENTION

A variety of truck levelers have been devised to adjust the height of different trailers to properly match the deck of the trailer to the height of the dock. By aligning the height of the trailer and the dock the loading and unloading of cargo is facilitated.

One such device is seen in U.S. Patent No. 4,624,446 to *Gould* which discloses a reinforced platform pivotally mounted to the ground at one end and includes a support assembly having hydraulic cylinders. In operation the rear wheels of a truck trailer are backed onto the platform and then the non-mounted end of the platform is lifted by the hydraulic cylinders until the deck of the trailer is equal to the height of the dock.

A similar device is shown in U.S. Patent No. 4,765,792 to *Cherry, et al.* which also discloses a pivotally-mounted and hydraulically-raised platform. In addition to the disclosure of *Gould*, the device includes mounting the hydraulics inwardly from the non-mounted end of the platform and an aperture in the non-mounted end of the platform to accommodate a truck restraining device.

Another design is disclosed in U.S. Patent No. 6,368,043 to *Leum, et al.* which teaches a low-profile truck leveler. In this design a low-profile leveler is enabled through the use of a raised rear beam and two lateral beams that extend above the upper surface of the platform. In addition, a central beam adds further to the strength and rigidity of the leveler.

Vehicle levelers of the prior art typically have certain disadvantages. The majority of vehicle levelers have ramp surfaces which are not highly adjustable. This is a distinct disadvantage when vehicles are being loaded or unloaded with cargo. Levelers of the prior art are also not able to accommodate all types of vehicles. This is yet another disadvantage.

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Some levelers of the prior art have certain shortcomings and disadvantages to which this device is drawn. Specifically, it would be advantageous to have a vehicle leveler which is highly adjustable and can elevate both the rear and front axles of a vehicle at the same time so as to minimize the slope of the internal floor of the vehicle and thereby allow safer loading and unloading of cargo. It would also be advantageous to have a vehicle leveler which has enhanced safety features such as an improved drainage for vehicle operators.

In summary, there are problems and shortcomings in the prior art vehicle levelers and it is to these needs that this device is drawn.

OBJECTS OF THE INVENTION

It is an object of this invention to provide a vehicle leveler which is highly adjustable and can elevate both the rear and front axles of a vehicle at the same time so as to minimize the slope of the internal floor of the vehicle or trailer.

Another object of this invention is to provide a vehicle leveler which has improved safety during loading and unloading of cargo from a vehicle which is on the leveler.

Yet another object of this invention is to provide a safe walkway surface so as to give the vehicle driver a wide walk surface to assist them as they step into and out of a vehicle as well as when they walk around adjacent trailers.

Yet another object of this invention is to provide a vehicle leveler with improved drainage for enhanced user safety.

These and other objects of the invention will be apparent from the following descriptions and from the drawings.

SUMMARY OF THE INVENTION

The preferred embodiment of the invention includes a vehicle leveler for use with a driveway which includes a first portion having a leading edge and a trailing edge. The trailing edge is disposed further from the driveway than the leading edge and forms a ramp section, the first portion having a flat section adjacent the trailing edge, the flat section being disposed about parallel with the substantially flat driveway. The second portion also includes an extension portion which extends from

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the trailing edge of the second portion toward the rear of the leveler and includes a substantially flat section disposed about parallel with the substantially flat driveway. The first portion and second portion are each unitary structures which are separate from each other until they are removably attached together by a connection apparatus. It is highly preferable that the vehicle leveler includes opposing side portions which extend the length of and contact the second portion and extension portion, the opposing side portions having a top surface which forms a walkway.

In highly preferred applications, two or more vehicle levelers can be installed adjacent to each other and an extended walkway surface can be removably installed between each vehicle leveler to form a large surface for a vehicle driver to use. It is preferable that the extended walkway surface and top surface form a large walkway for a vehicle driver. In some preferred embodiments each vehicle leveler has two, opposing top surfaces which each form a separate walkway. The walkway can extend the complete length of the top surface in some preferred embodiments or it can only extend a portion of the length of the top surface.

Preferably, the walkway and extended walkway surface include metal grating for safe contact surface for a vehicle driver walking on the walkway or extended walkway surface.

The first portion and second portion are each preferably unitary structures which are separate from each other until they are removably attached together by a connection apparatus. It is highly preferred that the second portion including the extension portion can be moved between a lowered position and a raised position to accommodate varying dock heights for loading and unloading of cargo from vehicles. It is also preferable that the ramp section can be of varying lengths and heights to accommodate a single, rear axle vehicle as well as a large trailer.

It is highly preferable that the vehicle leveler include at least one drainage aperture which is formed within the second portion and extends through the second portion. It is also preferable that the at least one drainage aperture includes a flange for channeling water away from the underside of the second portion. Preferably, the flange is a unitary piece which is connected to the drainage aperture.

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BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate preferred embodiments including the above-noted characteristics and features of the device. The device will be readily understood from the descriptions and drawings. In the drawings:

FIGURE 1 is a perspective view of the vehicle leveler;

FIGURE 2 is a top view of the vehicle leveler in FIGURE 1;

FIGURE 3 is a perspective view of the vehicle leveler of FIGURE 1 with a truck on the leveler and the leveler in the lowered position;

FIGURE 4 is a perspective view of the vehicle leveler of FIGURE 1 with a truck on the leveler and the leveler in the raised position;

FIGURES 5-6 are perspective views of the vehicle leveler in the raised position;

FIGURE 7 is a perspective view of the vehicle leveler of FIGURE 1 in the lowered position with a trailer on the leveler;

FIGURE 8 is a perspective view of the vehicle leveler of FIGURE 1 with a vehicle driver using the top surface/walkway;

FIGURE 9 is a top view of the vehicle leveler illustrating the top surface/walkway extending partially along the length of the leveler;

FIGURE 10 is a top view of the vehicle leveler illustrating the top surface/walkway extending farther along the length of the leveler;

FIGURE 11 is a front view of the leveler illustrating the opposing side portions and extended walkway surface;

FIGURE 12 is a front view of the extended walkway surface;

FIGURE 13 is a front view of two levelers installed side-by-side and illustrating the large walkway;

FIGURE 14 is a top view illustrating four vehicle levelers installed adjacent to each other with a large walkway in between the levelers;

FIGURE 15 is a perspective view of the vehicle leveler with a drainage aperture;

FIGURE 16 is a close up view of the drainage aperture taken along line 16-16 of FIGURE 15;

FIGURE 17 is a cross section view taken along line 17-17 of FIGURE 16; and

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FIGURE 18 is perspective view of the vehicle leveler with two drainage apertures.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

A preferred embodiment of the present invention is shown in FIGURES 1-18. The vehicle leveler 10, as shown in FIGURE 1, includes three primary portions; a first portion 12, a second portion 24 and an extension portion 30 and is designed to be utilized in conjunction with a substantially flat driveway 18 near a loading dock wall 46. Furthermore, leveler 10 can be moved between a lowered position 36, shown in FIGURES 1 and 3 and a raised position 38, shown in FIGURES 4-6.

First portion 12 has a ramp section 20 which is inclined upwards and a flat section 22 adjacent ramp section 20. First portion 12 includes a leading edge 14 and a trailing edge 16. Trailing edge 16 is disposed further from driveway 18 than leading edge 14. Trailing edge 16 is part of flat section 22. Flat section 22 is disposed about parallel with substantially flat driveway 18.

FIGURE 1 illustrates that second portion 24 has a leading edge 26 and a trailing edge 28. Leading edge 26 of second portion 24 is removably attached to trailing edge 16 of first portion 12 as seen in FIGURES 1, 3-4. FIGURE 5 illustrates that first portion 12 and second portion 24 are removably attached as it shows first and second portions 12, 24 separated. Leading edge 26 of second portion 24 is disposed further from driveway 18 than trailing edge 28 of second portion 24.

Second portion 24 also includes an extension portion 30 as can be seen in FIGURES 1-7. Extension portion 30 extends from trailing edge 28 of second portion 24 toward a rear of the leveler 10 (nearest the loading dock wall 46) and includes a substantially flat section 32 disposed about parallel with the substantially flat driveway 18.

FIGURE 2 illustrates that first portion 12 and second portion 24 include metal grating 42 over a steel plate for contact with wheels of a vehicle as the vehicle moves onto and off of leveler 10. Metal grating 42 over a steel plate is a material which is both durable and also provides increased traction for vehicles when moving onto or off of leveler 10.

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FIGURES 1-7 illustrate that first portion 12 and second portion 24 are each unitary structures which are separate from each other as seen in FIGURE 5 until they are removably attached together by a connection apparatus 34 as seen best in FIGURES 1 and 3-4. Connection apparatus 34 is located on leading edge 26 of second portion 24 and connects to trailing edge 16 of first portion 12. Flat section 22 of first portion 12 is in front of connection apparatus 34 since connection apparatus 34 is located on leading edge 26 of second portion 24.

The drawings illustrate that second portion 24 including extension portion 30 can be moved between a lowered position 36 as seen in FIGURES 1, 3 and 7 and a raised position 38 as seen in FIGURES 4-6, to accommodate varying dock heights for loading and unloading of cargo from vehicles. FIGURES 4-7 show a variety of different types of vehicles which can utilize leveler 10.

Depending on the length of the vehicle, leveler 10 can be customized in a variety of ways including that extension portion 30 can consist of multiple extension portions which are identical and which are removably attached together so as to accommodate a vehicle which has a longer length. FIGURE 2 illustrates a leveler 10 with more than one extension portion 30. In an embodiment with multiple extension portions 30, each extension portion 30 is removably secured to another extension portion 30. In this type of embodiment, a first extension portion 30 would extend from the trailing edge 28 of second portion 24 toward a rear of leveler 10, and the extension portions 30 each would include a substantially flat section 32 disposed about parallel with the substantially flat driveway 18. In some embodiments, the multiple extension portions 30 can be of varying lengths and do not have to be identical in length.

Leveler 10 can be manufactured so that ramp section 20 can be of varying lengths and heights to accommodate a single, rear axle vehicle as well as a large trailer. FIGURES 1 and 6 each illustrate a ramp section 20 with a different length and height. Ramp section 20 and flat section 22 can be manufactured with different lengths and heights to accommodate single rear axle vans and trailers as well as 53-foot over the road tractor trailers. Therefore, leveler 10 can be manufactured so that any of the first portion 12, second portion 24 or extension portion 30, can be of varying lengths and heights so as to accommodate a variety of vehicles types and

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sizes. For example, FIGURES 3-4 show a box-type truck on leveler 10, FIGURES 5-6 show a larger vehicle on leveler 10 and FIGURE 7 illustrates a very large trailer on leveler 10.

With leveler 10 it is possible that both the front and rear axles of a vehicle can be elevated to minimize the incline or decline of an inside floor surface 40 of a trailer or vehicle thereby making loading and unloading of cargo safer. FIGURES 3-7 illustrate a variety of vehicles on leveler 10 and the dotted line in FIGURES 3-4 illustrates inside floor surface 40 of the vehicle. FIGURES 4-6 illustrate vehicles on leveler 10 that have both a front and rear axle elevated.

FIGURE 6 illustrates that leveler 10 can include opposed sidewalls 52 (see FIGURE 2) with a light-mounting channel 44 having at least one light 50 (which could be a single light, multiple lights or a rope light) integrated into light-mounting channel 44. Light(s) 50 assist vehicles, such as trailers, when they are backing in or pulling away from leveler 10.

A lifting system is also incorporated into the leveler 10 in the form of hydraulic lifts 48 which contact driveway 18 as seen in FIGURE 1. The hydraulic lifts 48 lift the second portion 24 including extension portion 30 of leveler 10. However, any other lifting systems known in the art could be utilized as well.

Leveler 10 may also include wheel guides 54 shown in FIGURE 1 which can be on any or all of first portion 12, second portion 24 or extension portion 30. FIGURE 1 illustrates wheel guides 54 on first portion 12. Wheel guides 54 act to guide the wheels of the trailer into the proper position for loading and unloading of cargo.

The relationship between first portion 12 and driveway 18 as well as second portion 24 and driveway 18 can also be defined in terms of angles as shown in FIGURES 1-7. Ramp section 20 of first portion 12 is inclined from driveway 18 about 1-15 degrees from parallel with driveway 18. Second portion 24 extending from first portion 12 toward a rear of leveler 10 includes a decline section 56 which declines toward the substantially flat driveway at between about 1-15 degrees from parallel with the substantially flat driveway 18.

In operation, a vehicle (including sometimes a large trailer) is backed up to leveler 10 to put the rear wheels onto first portion 12, specifically ramp section 20.

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The wheels and trailer are therefore elevated from driveway 18 as they are backed up onto ramp section 20. As the vehicle is further backed onto leveler 10 the rear wheels pass onto second portion 24 or decline section 56 and begin to be lowered back toward driveway 18. As the rear wheels continue to be backed up, they contact extension portion 30 and at this point, depending on the length and size of the trailer or vehicle, the rear of the trailer or vehicle may now be in contact with loading dock wall 46. Depending on the length of the vehicle or trailer, the front wheels may either be in contact with first portion 12 as can bess seen in FIGURES 3-4 or the trailer may be so large that only the back wheels are on leveler 10 as seen in FIGURE 7. Once though the rear wheels are backed up as far onto the leveler 10 as they can go, the lifting system can then be operated to lift the trailer to the proper height to safely load and unload cargo. Leveler 10 can elevate both the front and rear wheels of a vehicle to minimize the slope of the internal floor of the vehicle which allows for safer loading and unloading.

FIGURES 8-14 illustrate that vehicle leveler 10 includes opposing side portions 58 which extend the length of and contact first portion 12, second portion 24 and extension portion 30.

As seen best in FIGURES 9-10, opposing side portions 58 have a top surface 60 which forms a walkway 60. The walkway, also referred to herein as top surface 60, is a safety feature which is used by a driver when he enters or exits a vehicle which is using vehicle leveler 10. FIGURE 8 illustrates a driver using the walkway 60. Figure 10 illustrates that top surface/walkway 60 can extend the complete length of second portion 24 and extension portion 30, whereas FIGURE 9, illustrates that top surface/walkway 60 can only extend a portion of the length of second portion 24 and extension portion 30.

FIGURE 11 illustrates opposing side portions 58 as well as top surface/walkway 60. FIGURE 12 is a more detailed view of just the extended walkway surface 62 which is mounted between two vehicle levelers 10 to form a large walkway 64. FIGURES 13-14 illustrate that two or more vehicle levelers 10 can be installed adjacent to each other and extended walkway surface 62 can be removably installed between each vehicle leveler 10 to form a large walkway 64 for a vehicle driver to use. In FIGURE 14, each vehicle leveler 10 has two, opposing side portions

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58 with top surfaces 60 which each form a separate walkway. FIGURE 14 illustrates four vehicle levelers 10 installed adjacent to each other.

FIGURE 14 also illustrates that extended walkway surface 62 which forms large walkway 64 is a step (two or more walkway surfaces 62 can be put together to make large walkway 64 or walkway surface 62 can be manufactured to be wider and can be large walkway 64) which is wide so as to give the vehicle driver a wider walk surface to assist them as they step onto that and walk out to get around adjacent trailers.

FIGURES 15-17 illustrate that vehicle leveler 10 includes at least one drainage aperture 110 formed within second portion 24 and extending through second portion 24. The at least one drainage aperture 110 includes a flange 112 for channeling water away from an underside of second portion 24 as seen in FIGURE 17.

As also seen in FIGURE 17, flange 112 is a unitary piece which is connected to drainage aperture 110. Flange 112 can also be a tube which is welded to drainage aperture 110. Drainage aperture 110 can be only one drainage aperture 110 or in some embodiments, more than one drainage aperture 110 can be present for improved drainage a seen in FIGURE 18. FIGURE 18 also illustrates that drainage aperture 110 can be placed in various locations on vehicle leveler 10 so as to maximize the amount of drainage of water and to eliminate water pooling and sitting on a top surface of vehicle leveler 10. Water, ice or snow which is allowed to collect on vehicle leveler 10 can be a safety hazard for a user of vehicle leveler 10. A wide variety of materials are available for the various parts discussed and illustrated herein. Although the device has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, it is intended to embrace all such alternatives, modifications and variations that fall within the spirit and broad scope of the appended claims.

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CLAIMS

1. A vehicle leveler for use with a driveway comprising:

- a first portion having a leading edge and a trailing edge wherein the trailing edge is disposed further from the driveway than the leading edge and forms a ramp section, the first portion having a flat section adjacent the trailing edge,
- a second portion having a leading edge and a trailing edge wherein the leading edge of the second portion is disposed further from the driveway than the trailing edge of the second portion, the second portion also including an extension portion which extends from the trailing edge of the second portion toward a rear of the leveler and includes a substantially flat section disposed about parallel with the substantially flat driveway; and
- at least one drainage aperture formed within the second portion and extending through the second portion.

2. The vehicle leveler of claim 1 wherein the at least one drainage aperture includes a flange for channeling water away from an underside of the second portion.

3. The vehicle leveler of claim 1 wherein the flange is a unitary piece which is connected to the drainage aperture.

4. The vehicle leveler of claim 1 further including opposing side portions, the opposing side portions extend the length of and contact the first portion, second portion and extension portion, the opposing side portions having a top surface which forms a walkway.

5. The vehicle leveler of claim 1 wherein the flat section is disposed about parallel with the substantially flat driveway.

6. The vehicle leveler of claim 1 wherein the flat section is substantially the same dimension as the ramp section.

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7. The vehicle leveler of claim 1 wherein the flat section is substantially the same dimension as the second portion.

8. A vehicle leveler for use with a substantially flat driveway, the leveler capable of movement between a lowered position and a raised position, the leveler in the lowered position comprising:

- a first portion having a leading edge at a front of the leveler and a substantially flat section wherein the substantially flat section is inclined from the substantially flat driveway at between about 1 and 15 degrees from parallel with the substantially flat driveway;
- a second portion extending from the incline portion toward a rear of the leveler including a substantially flat section wherein the substantially flat section is declined toward the substantially flat driveway at between about 1 and 15 degrees from parallel with the substantially flat driveway;
- an extension portion extending from the second portion toward a rear of the leveler and including a substantially flat section disposed about parallel with the substantially flat driveway;
- opposing side portions which extend the length of and contact the first portion, second portion and extension portion, the opposing side portions having a top surface which forms a walkway; and
- at least one drainage aperture formed within the second portion and extending through the second portion, the at least one drainage aperture including a flange for channeling water away from an underside of the second portion.

9. The vehicle leveler of claim 8 wherein the at least one drainage aperture includes a flange for channeling water away from an underside of the second portion.

10. The vehicle leveler of claim 8 wherein the flange is a unitary piece which is connected to the drainage aperture.

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11. The vehicle leveler of claim 8 further including opposing side portions, the opposing side portions extend the length of and contact the first portion, second portion and extension portion, the opposing side portions having a top surface which forms a walkway.

12. The vehicle leveler of claim 8 wherein the flat section is disposed about parallel with the substantially flat driveway.

13. The vehicle leveler of claim 8 wherein the flat section is substantially the same dimension as the ramp section.

14. The vehicle leveler of claim 8 wherein the flat section is substantially the same dimension as the second portion.

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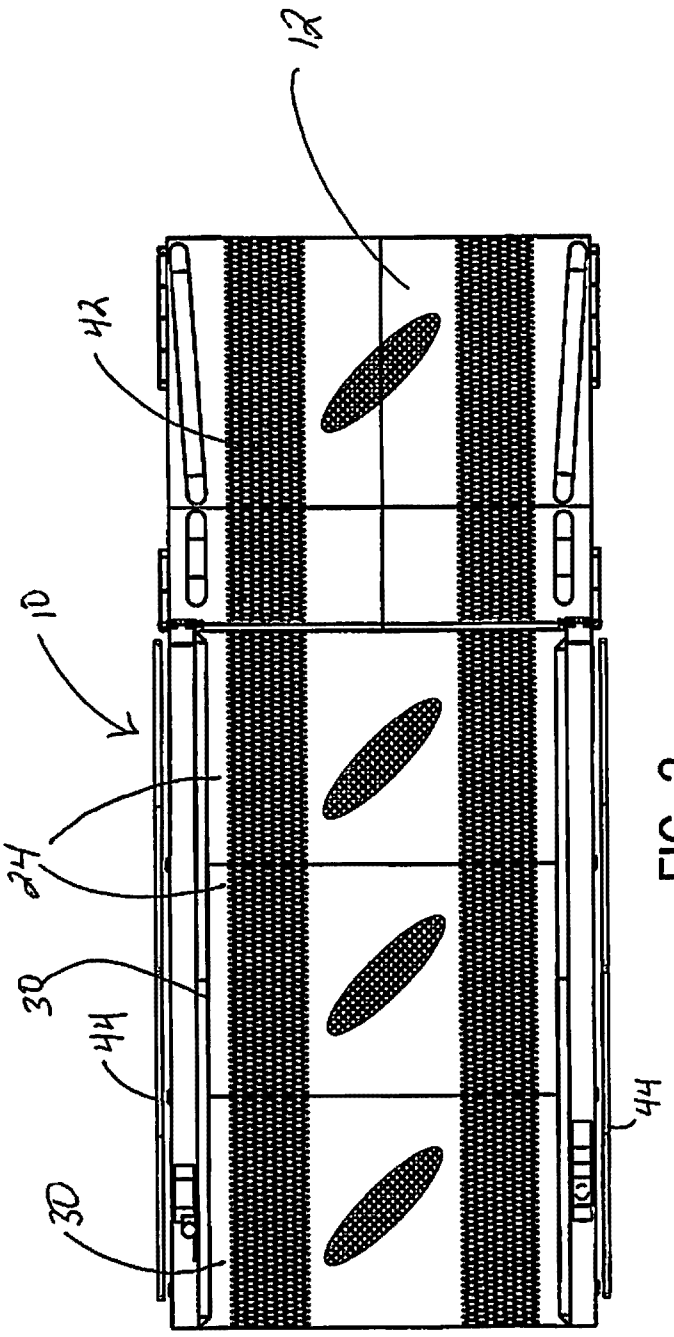
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FIG. 2

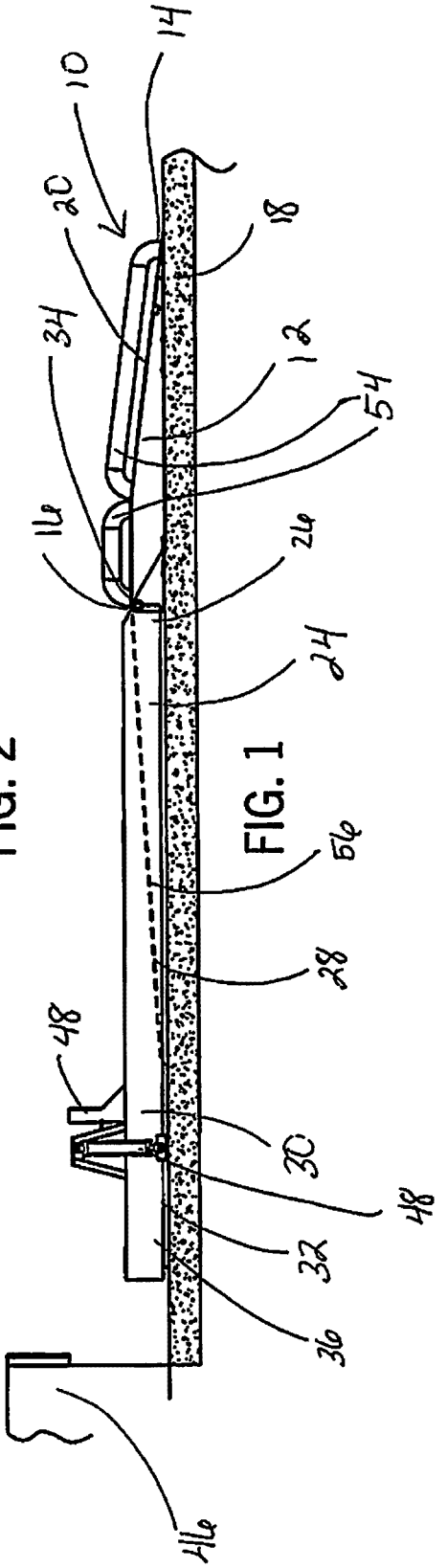
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FIG. 1

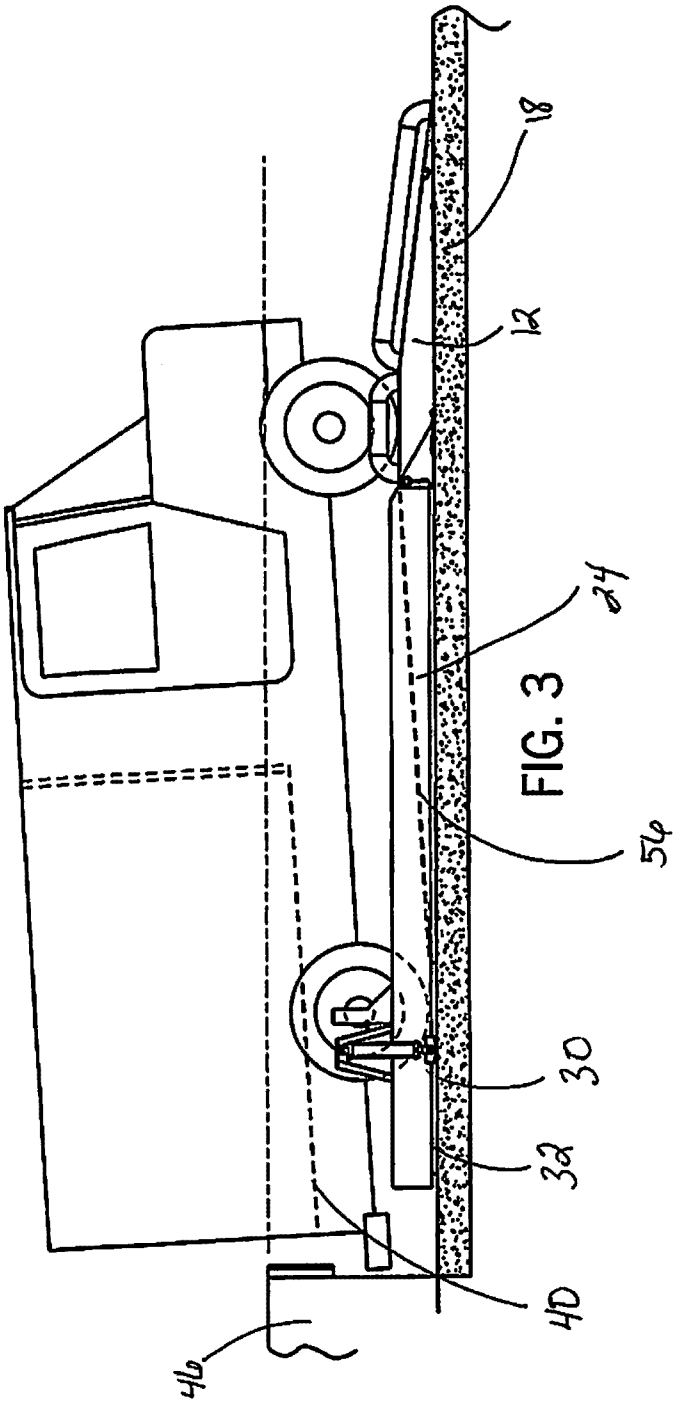

FIG. 3

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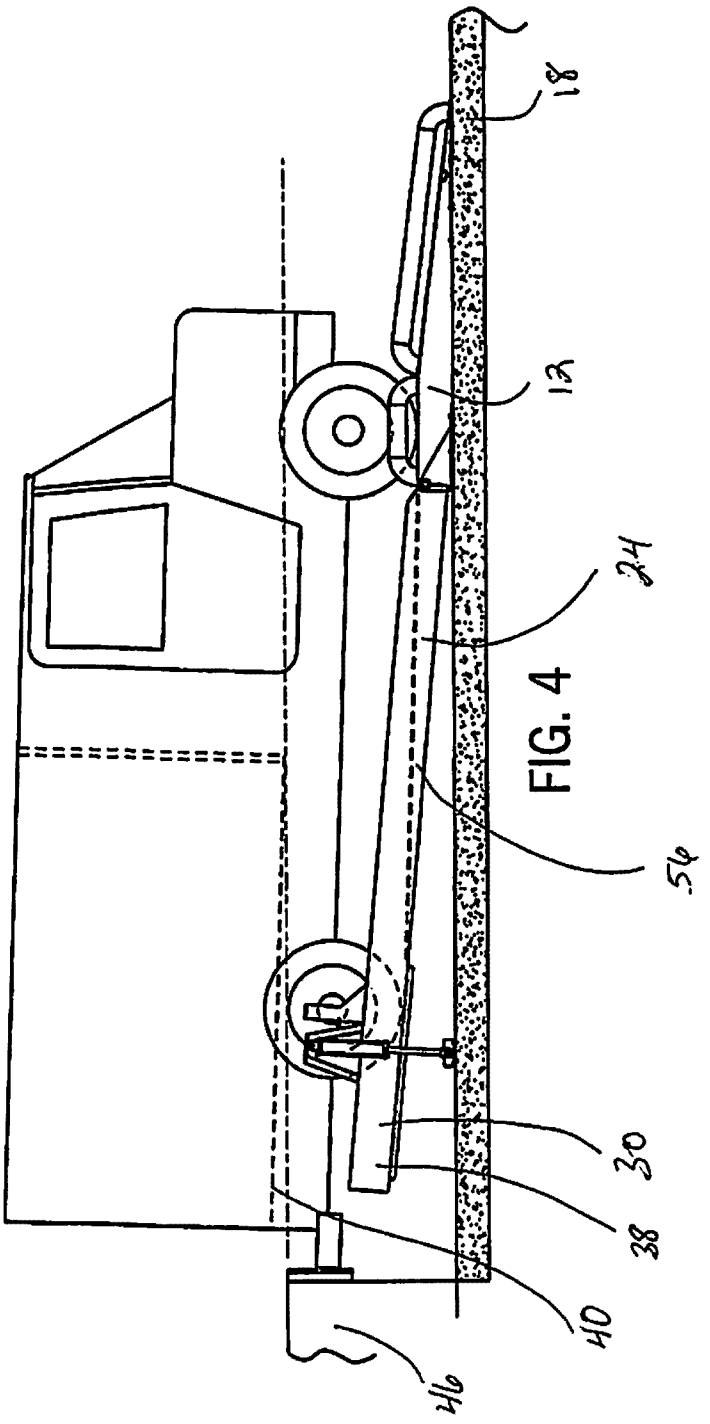

FIG. 4

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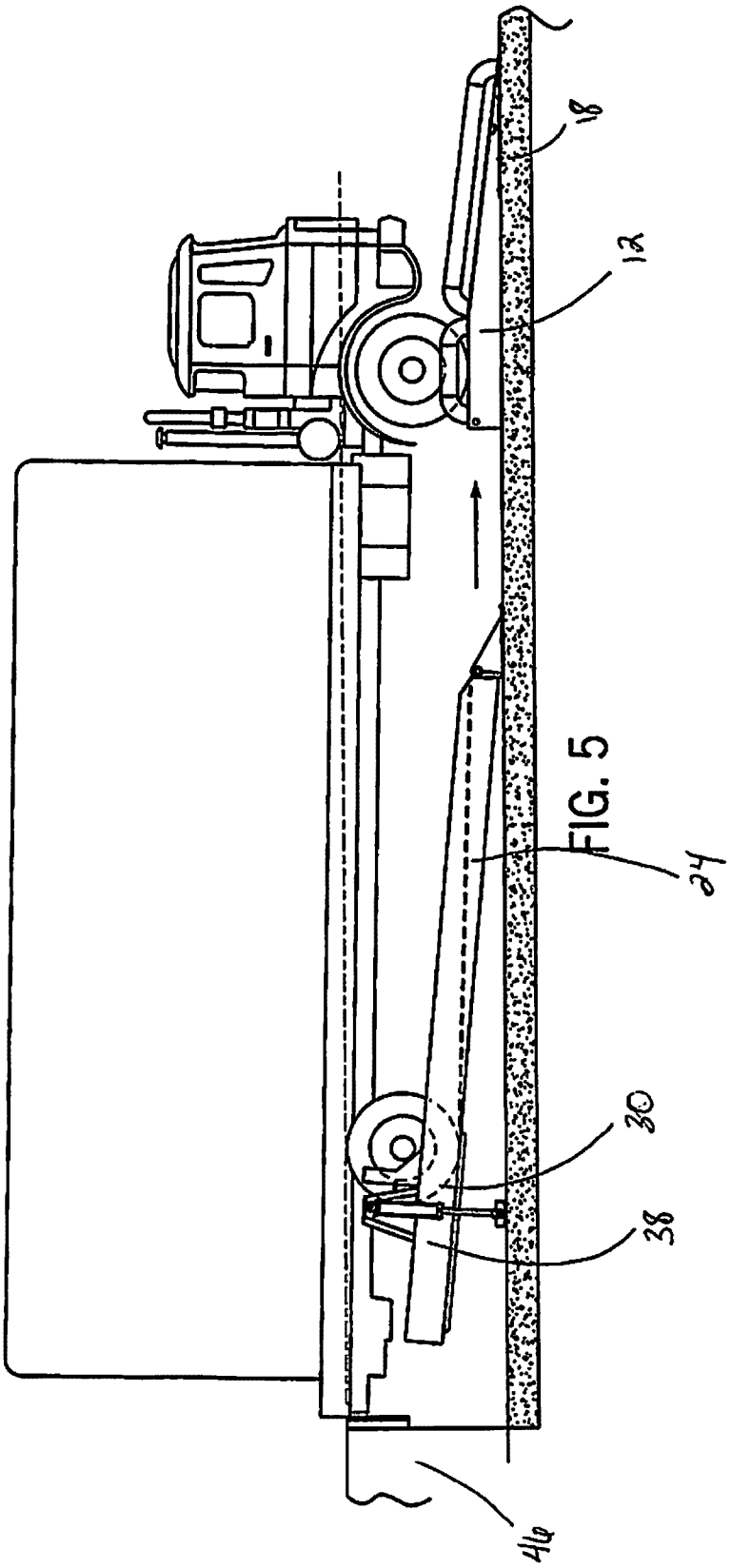

FIG. 5

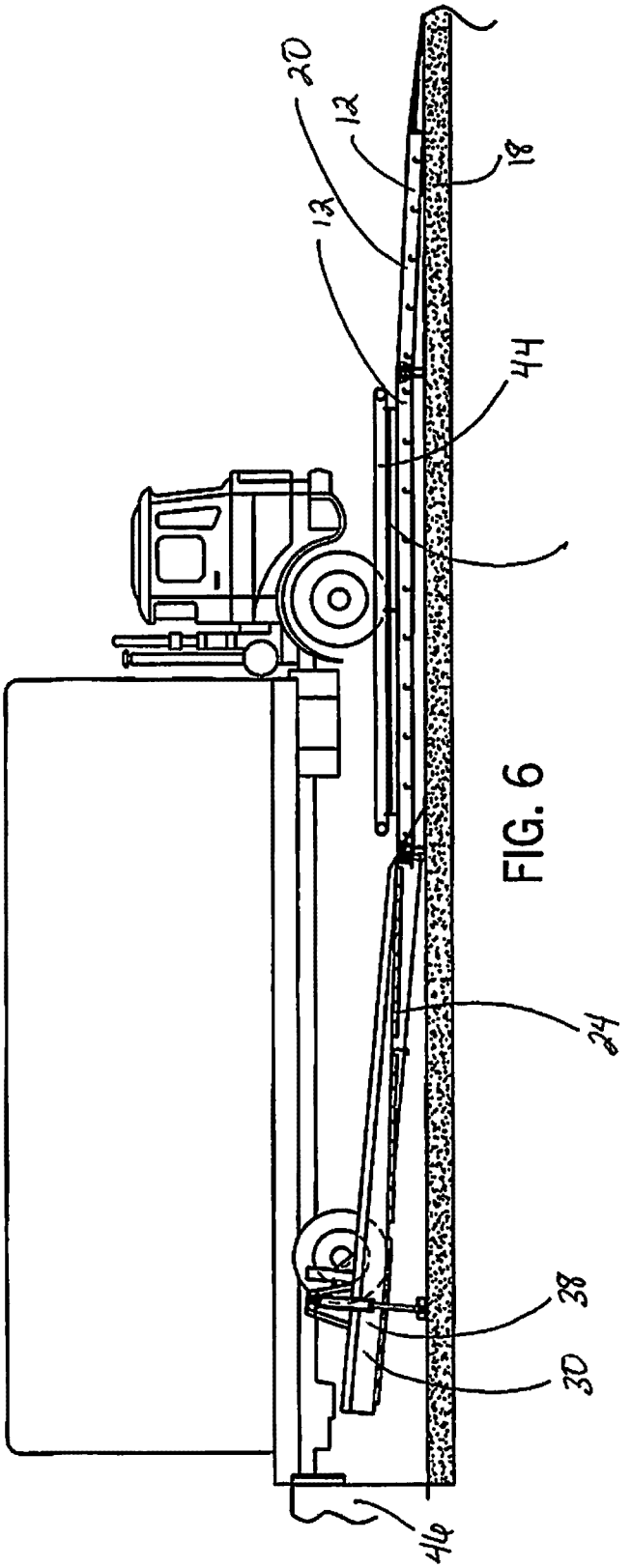

FIG. 6

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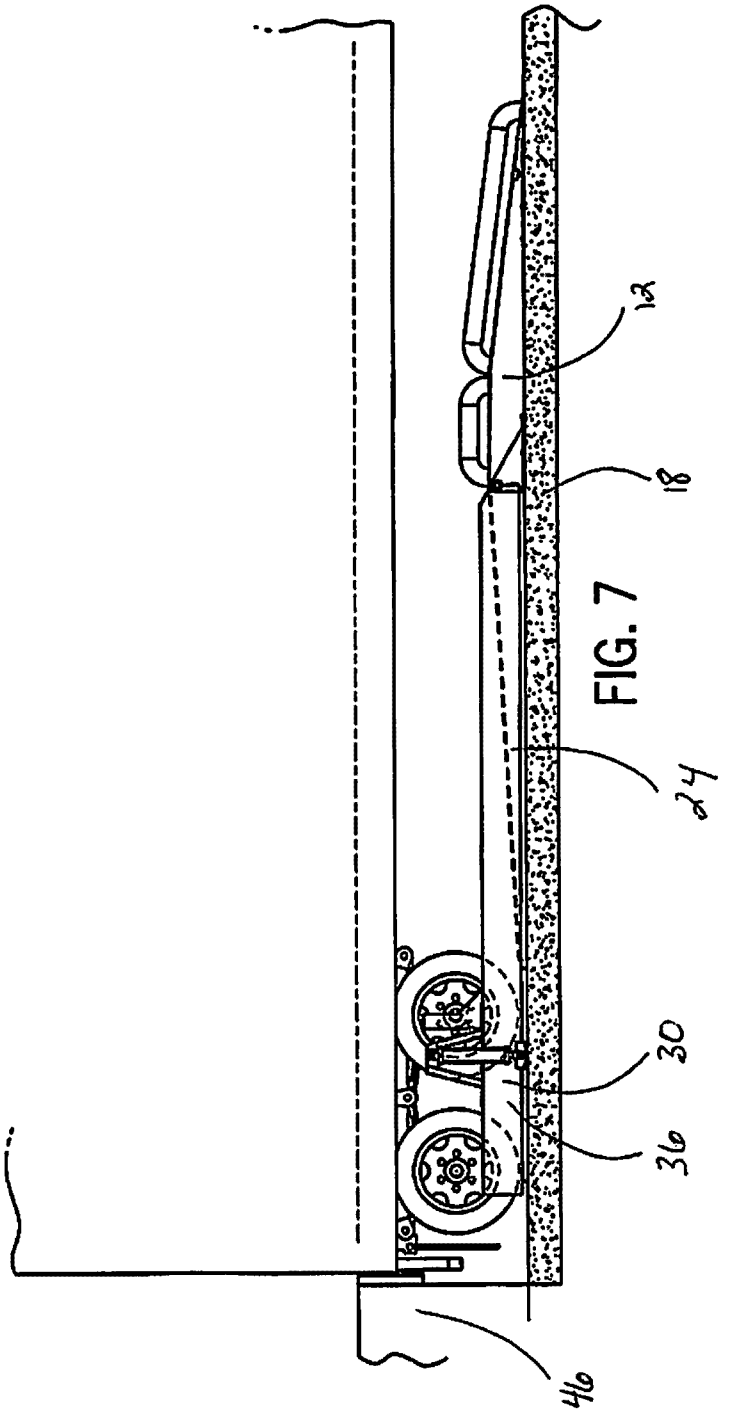

FIG. 7

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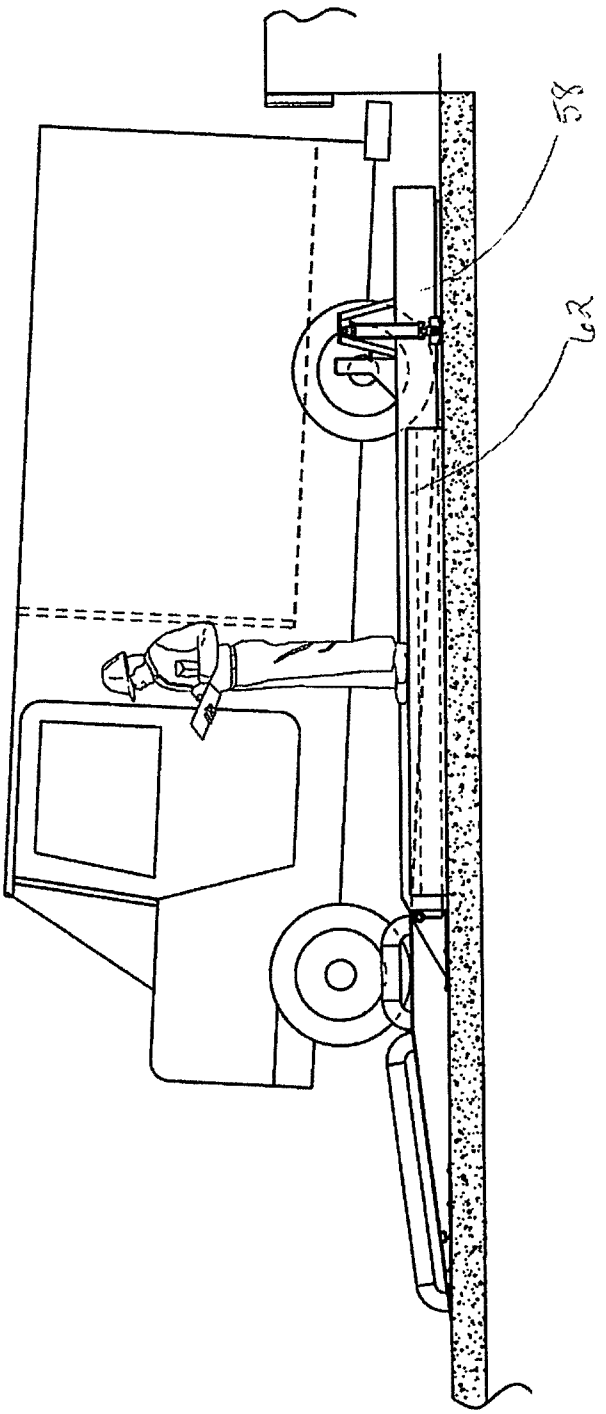

FIG. 8

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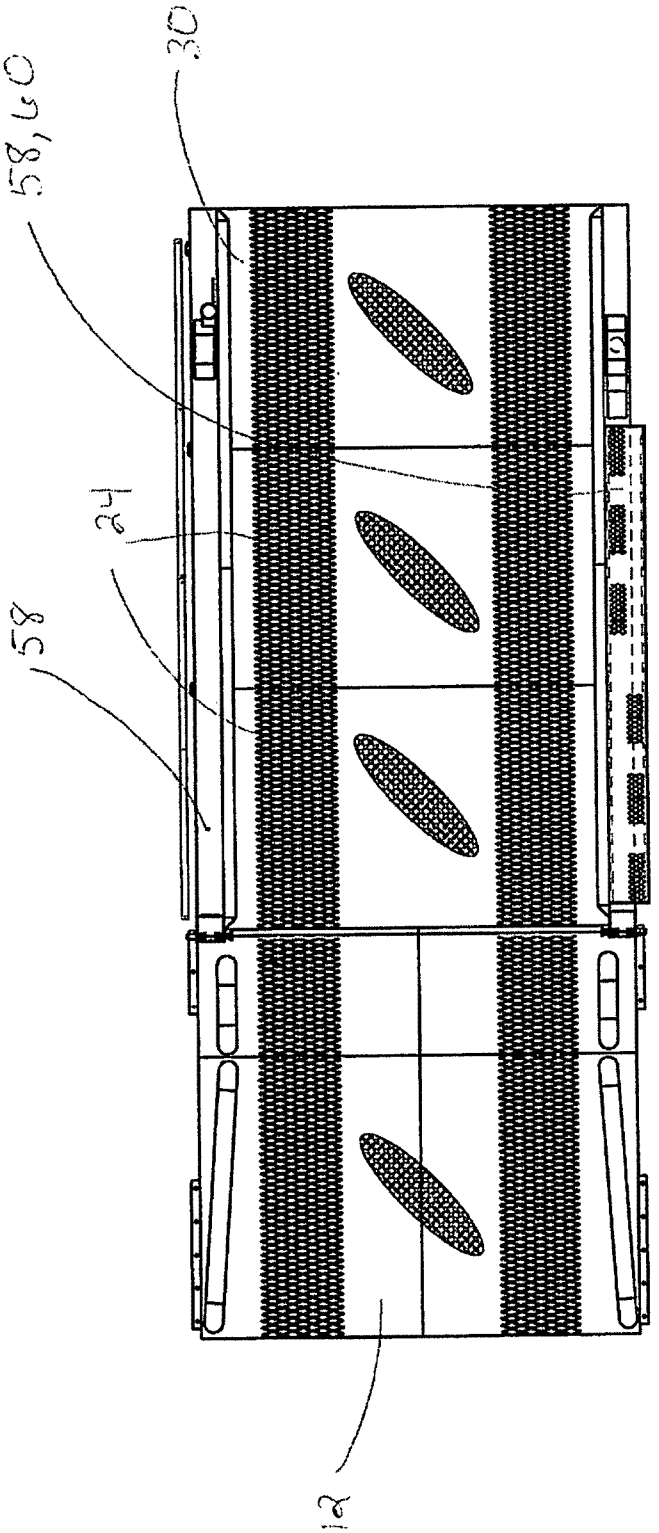


FIG. 9

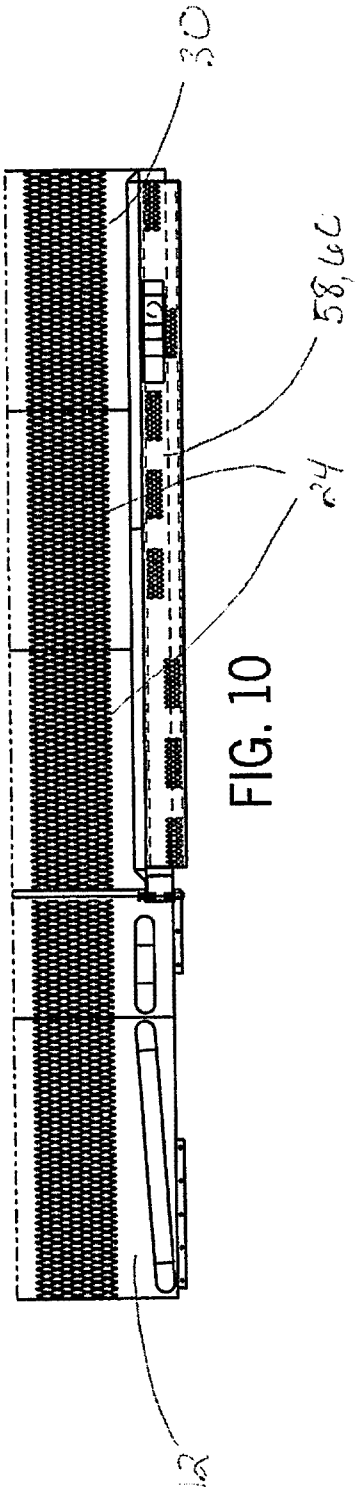


FIG. 10

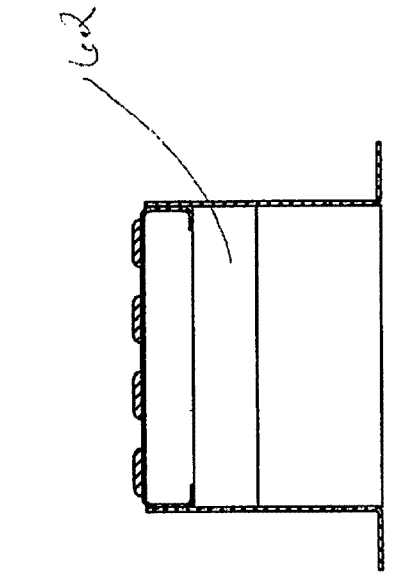


FIG. 12

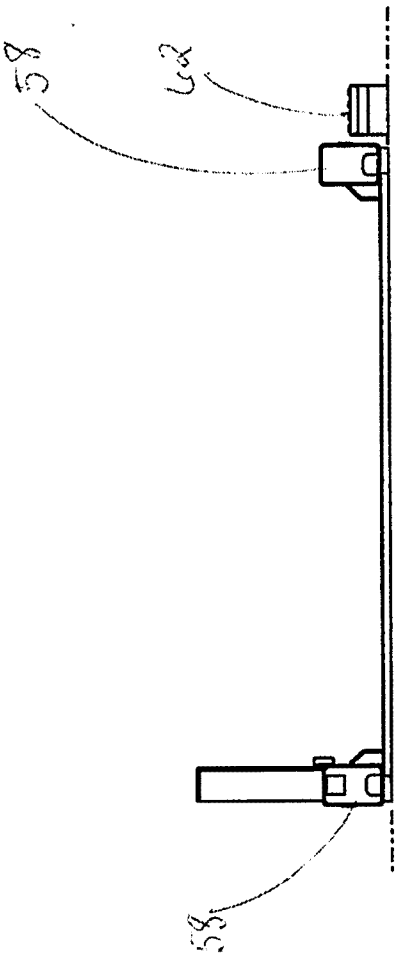


FIG. 11

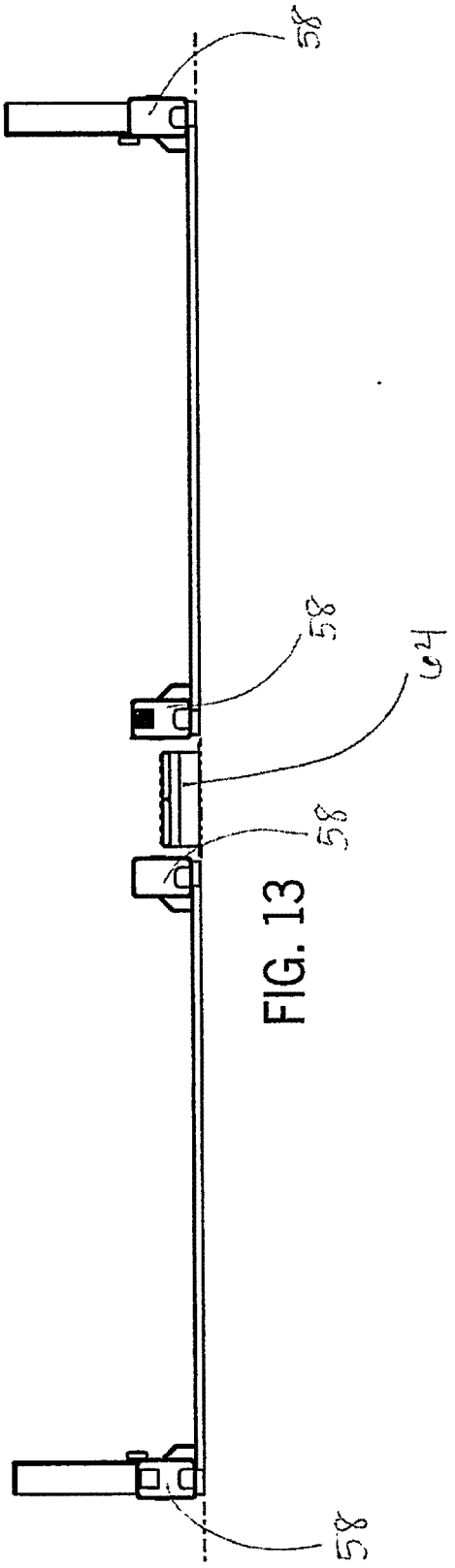


FIG. 13

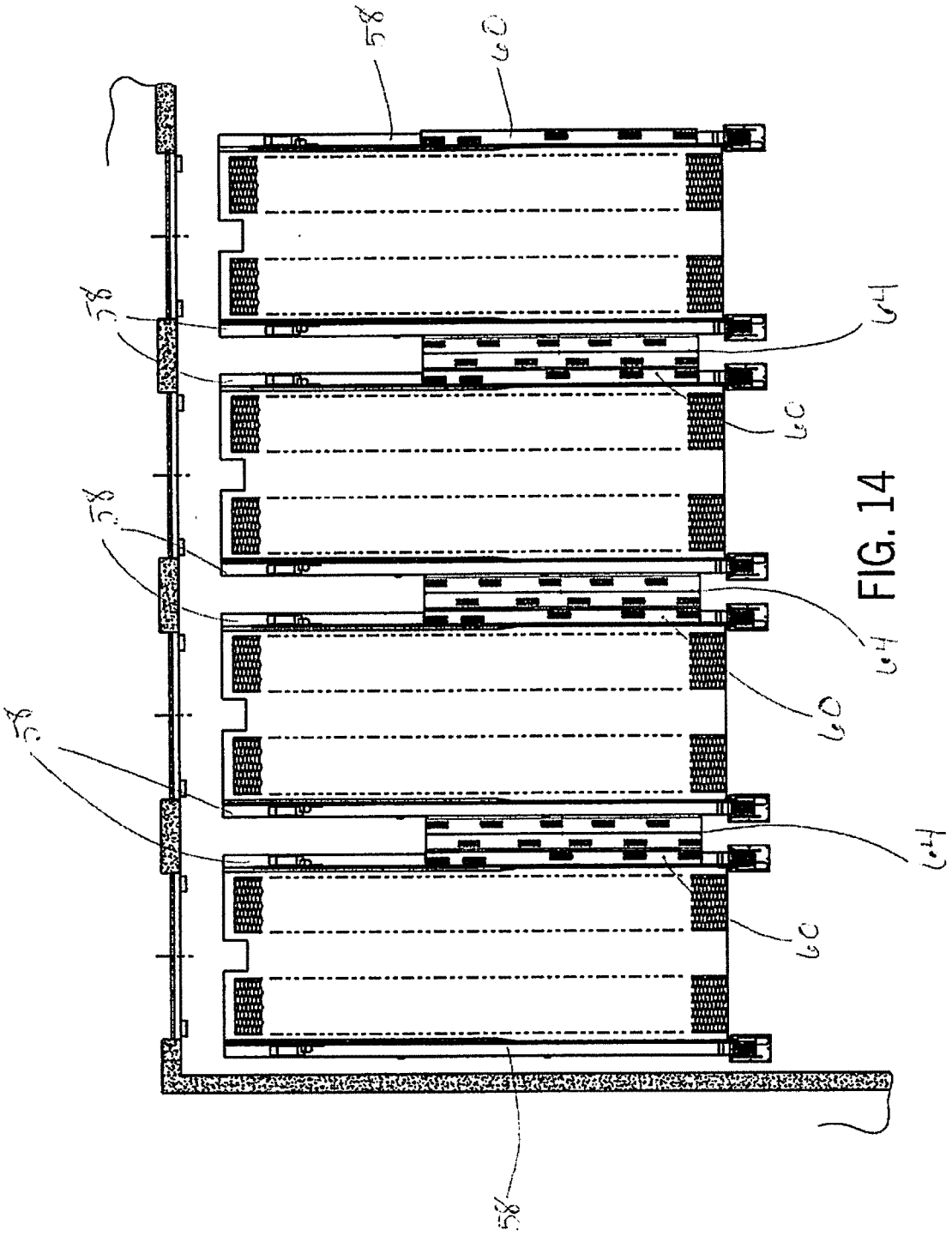


FIG. 14

Date Reçue/Date Received 2022-01-26

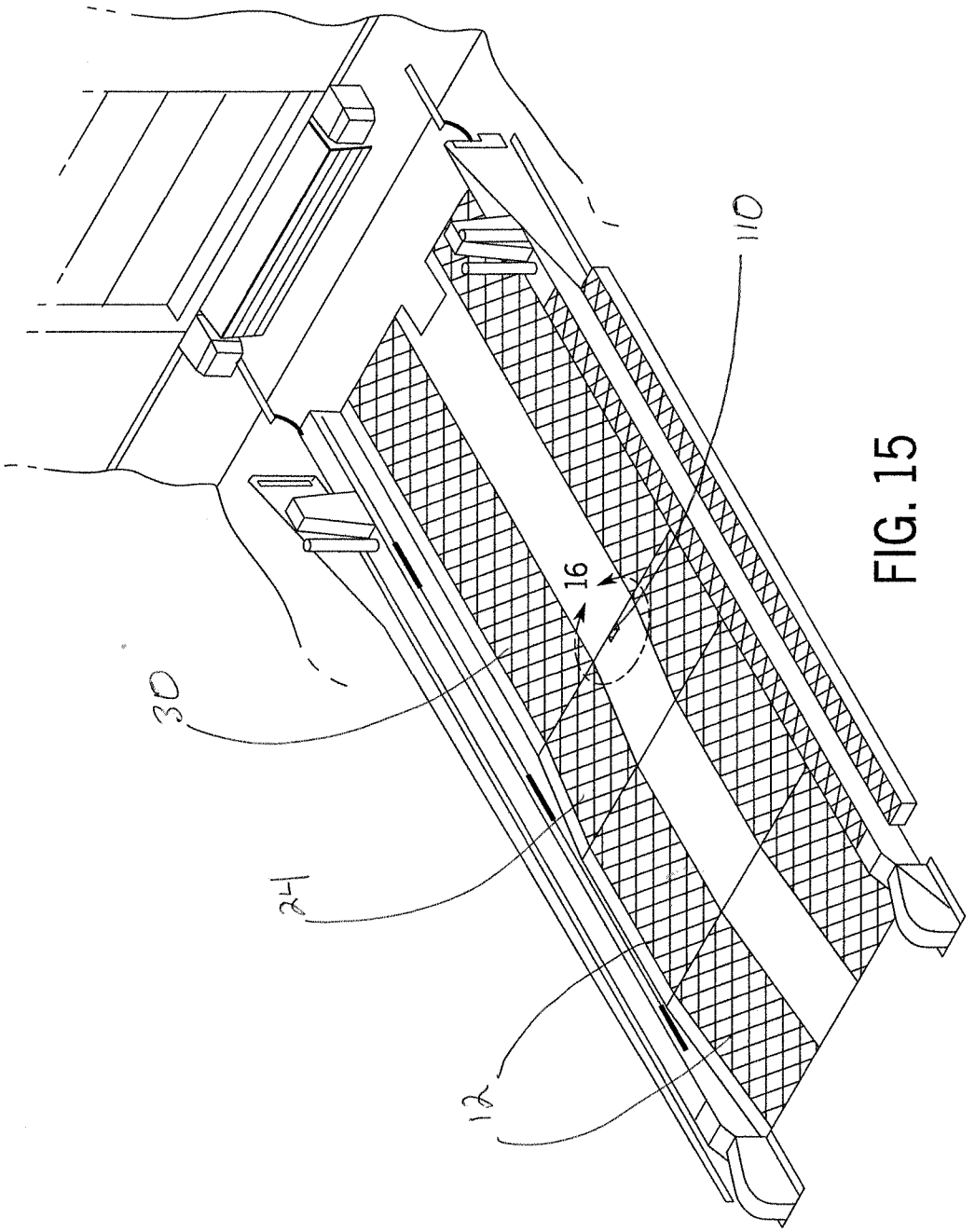


FIG. 15

Date Reçue/Date Received 2022-01-26

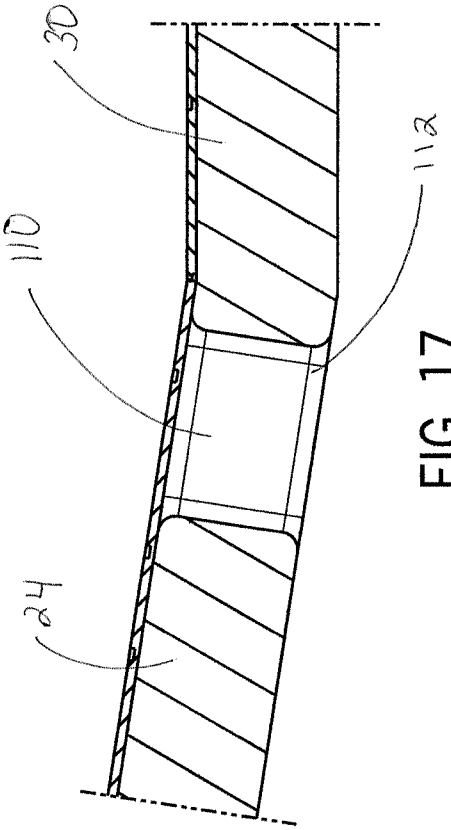


FIG. 17

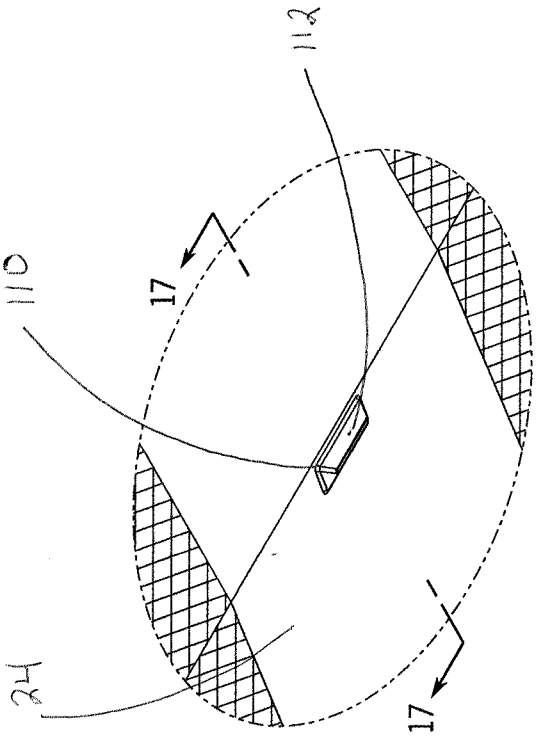


FIG. 16

Date Reçue/Date Received 2022-01-26

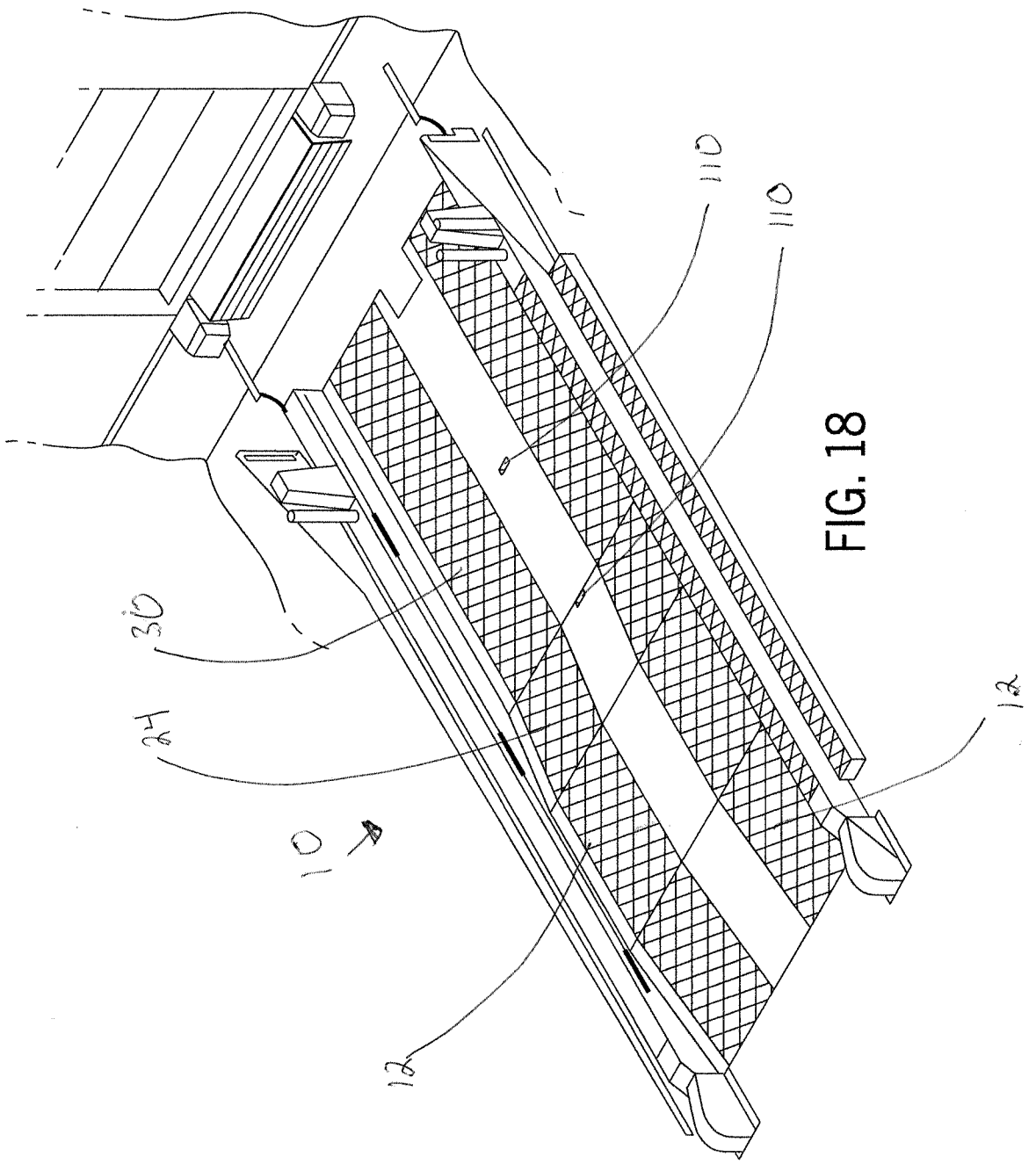
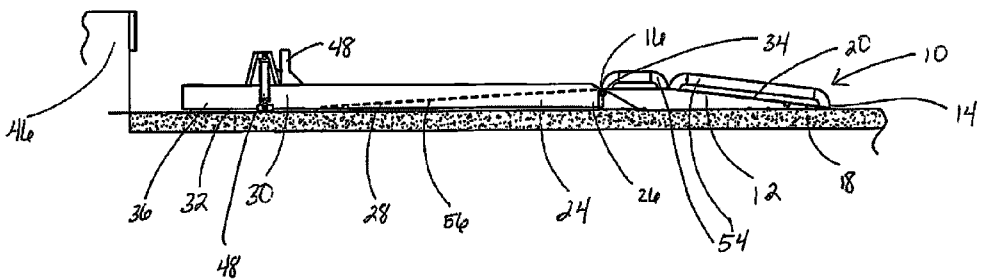


FIG. 18

Date Reçue/Date Received 2022-01-26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