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 PORTABLE SCREENING PLANT
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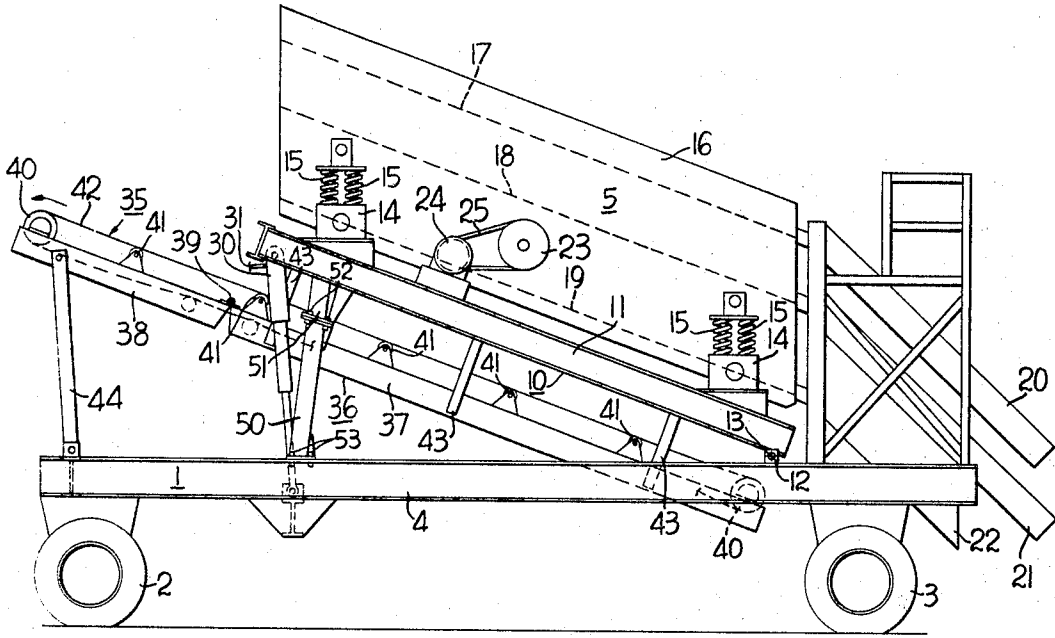


Fig. 1

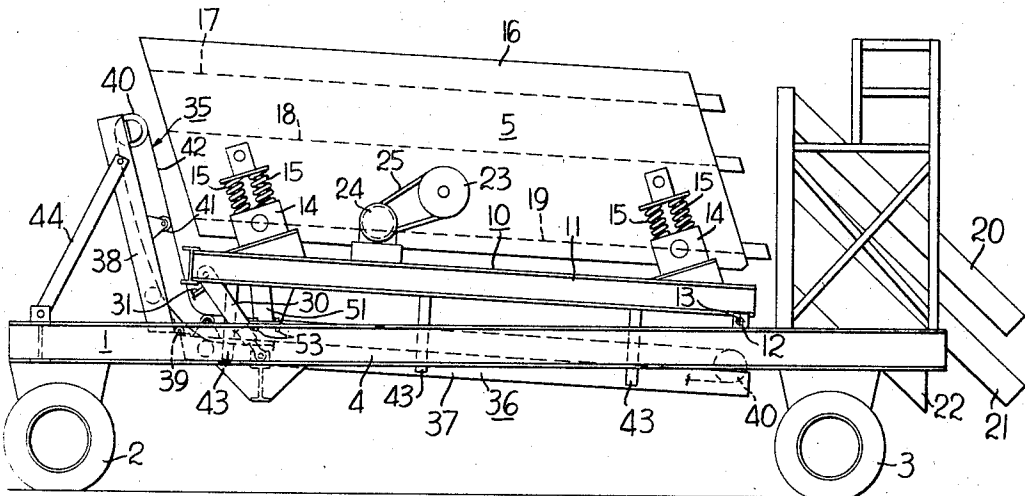


Fig. 2

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PORTABLE SCREENING PLANT

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4 Claims

ABSTRACT OF THE DISCLOSURE

A portable screening plant is disclosed for sizing aggregate material and the like. The plant includes a mobile frame mounted on wheels. A tiltable screen assembly is mounted on the mobile frame and one end of the screen assembly is pivotally connected thereto. A lift mechanism is mounted on the mobile frame beneath the end of the screen longitudinally opposite the pivot, and operates to tilt the screen about a horizontal pivot axis from a generally horizontal traveling position upwardly to an inclined screening position and vice versa tilt the screen down again. A screened material conveyer is arranged beneath the screen and comprises a first and second section connected by a hinge. The first section of the conveyer is suspended and supported from the screen. The end of the second section of conveyer, remote from the hinge, is supported by a pivot arm projecting upwardly from the mobile frame. Tilting the screen downwardly from the screening position lowers the first section of the conveyer and folds the pivot-arm-end of the second section of the conveyer toward the screen to provide a compact assemblage for travel.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to portable screening plants for aggregate material such as are used in connection with, for example, road construction projects. In particular this invention relates to a plant which will be moved from place to place along roads having limited clearance beneath bridges, power lines, and the like.

Description of the prior art

Examples of portable plants, including screens, that have been suggested for utilization in fields to which this invention may be applied, are shown in U.S. Patents 242,581 of 1881; 1,611,128 of 1926; 1,659,211 of 1928; 2,593,353 of 1952; 3,073,536 of 1963; 3,203,632 of August 1965; 3,207,306 of September 1965; and 3,226,043 of December 1965. None of these references disclose any concepts related to a portable plant in which a screen is lowered and a conveyer folded to make a compact assemblage for travel, such as will be herein described.

SUMMARY OF THE PRESENT INVENTION

It is a primary object of the present invention to provide a portable screening plant that will be a compact assemblage, especially when being moved from one location to another location.

Another object of the present invention is to provide for material discharge from a screen in a forward and/or rearward direction, rather to one or the other sides of the plant, to attain maximum utilization of the width of the plant for screening purposes and yet keep overall width within such limitations as apply to any wheeled device moving over public roads, as plants according to this invention may be required to do from time to time.

Still another object of the present invention is to provide a portable plant with a tiltable screen that pivots downwardly and folds conveying equipment into a compact

assemblage a minimum overall height for travel from one location to another.

According to a preferred embodiment of the present invention a mobile frame is provided with a tiltable screen assembly mounted on the mobile frame with one end of the screen pivotally connected thereto. A lift mechanism is mounted on the mobile frame beneath the end of the screen longitudinally opposite the pivot and is operative to tilt the screen about a horizontal pivot axis from a generally horizontal traveling position upwardly to an inclined screening position and vice versa down again. A screened material conveyer is arranged beneath the screen and comprises a first and second section connected by a hinge. The first section of the conveyer is suspended and supported from the screen. The end of the second section of conveyer, remote from the hinge, is supported at an elevation above the hinge by a pivot arm projecting upwardly from the mobile frame. Tilting the screen downwardly from the screening position lowers the first section of the conveyer and folds the pivot-arm-end of the second section of the conveyer toward the screen to provide a compact assemblage for travel.

Other features and objects of the invention that have been attained will appear from the more detailed description to follow with reference to an embodiment of the present invention shown in the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 of the accompanying drawing shows in side elevation, a portable screening plant according to the present invention in operating position; and

FIG. 2 is a view of the plant shown in FIG. 1 but in its traveling position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, a plant is disclosed having a mobile frame 1 carried by front wheels 2 and rear wheels 3. The mobile frame includes a pair of laterally spaced and parallel beam members 4, one of which is shown in FIG. 1 and the other is spaced directly behind the beam there shown. A screen assembly 5 is mounted on the frame 1 between the wheels 2 and 3.

The screen assembly 5 includes a second frame 10 having a pair of laterally spaced and parallel beam members 11, and similarly as with beam members 4, one beam member 11 is shown in FIG. 1 with the other being spaced directly behind the beam 11 which is shown. A pivot 12 connects one end of the second frame 10 to the mobile frame 1 for pivotal movement in a vertical plane about a horizontal axis 13 transverse to the beam members 4 and 11. Brackets 14 are mounted on beam members 11 and carry springs 15 which in turn resiliently support a vibrating screen body 16. The screen body 16 contains perforated or woven decks, here indicated as being decks 17, 18 and 19, having different size openings for screening and sizing particulate material such as aggregates for concrete road paving. The top deck 17 has the largest openings, intermediate deck 18 somewhat smaller openings and the bottom deck 19 the smallest openings. Material too large to pass through a deck will move down the incline into chutes 20, 21 and 22 provided to receive material from the decks 17, 18 and 19, respectively. A vibrator 23 may be carried by the screen body 16 and driven by a motor 24 mounted on the second frame 10 and connected to the vibrator 23 by a driving belt 25. The vibrating screen 16 and vibrator 23 may be of such types as are further described in U.S. Patent 2,292,327 or 2,702,634.

A lift mechanism which may be, as shown, a fluid pressure operated ram 30 is mounted on the mobile frame 1 beneath and connected to the end of the second frame

10 remote from pivot 12. The ram 30 may be provided with a fluid pressure inlet 31 for admitting pressure to extend the length of ram 30 and vent pressure to contract the length of ram 30.

A conveyer 35, for carrying away fine material that passes through all of the decks 17, 18, 19, is arranged beneath the screen assembly 5 and in a vertical plane between the beam members 4 of the mobile frame 1 and between the beam members 11 of the second frame 10. The conveyer 35 comprises a frame 36 having a first section 37 and a second section 38 connected by a hinge 39. End rolls 40, and idler support rollers 41 at intervals along the entire length of conveyer 35, support a belt 42 for carrying screened material from beneath screen assembly 5 in the direction indicated by an arrow. The first section 37 of conveyer frame 36 is supported by arms 43 depending from the second frame 10. A pivot arm 44 is pivotally connected on one end to the mobile frame 1 on the side of the ram 30 remote from pivot 12, and the other end of arm 44 is pivotally connected to the end of the second section 38 of conveyer frame 36 remote from hinge 39. The length of the pivot arm 44 is such as to support the end of the second section 38, to which it is attached, at an elevation above the elevation of the hinge 39.

In the operation of the described plant, fluid pressure is admitted to ram 30 through inlet 31 to extend the length of ram 30 as shown in FIG. 1. In this position, in order to relieve the load on ram 30, a removable column 50 is inserted between mobile frame 1 and a bracket 51 depending downwardly from the second frame 10. This column may be secured in this position by bolts at the locations indicated by the reference numbers 52 and 53. A material, such as aggregate, may then be dumped on the upper end of the upper screen deck 17. Material will pass through one or more, or none, of the decks and pass into one of the conduits 20, 21, 22 or as is the case with material passing through all decks, such material will be deposited on belt 42 of conveyer 35.

When it is desired to move the plant to a new location, the apparatus is converted to a traveling position by first removing the bolts at 52 and 53, then removing support column 50 and then venting fluid pressure from 31 to contract ram 30. As the ram 30 contracts it will pivot the entire screen assembly downwardly about the axis 13 of pivot 12. This lowering of the screen assembly 5 lowers the first section 37 of conveyer 35 downwardly between the beam members 4 of the mobile frame 1 and folds the end of the second section 38, of conveyer 35, to which arm 44 is connected, toward the screen assembly to provide a compact assemblage for travel as shown in FIG. 2.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a portable screening plant for aggregate and the like, a mobile frame, a screen assembly mounted on said mobile frame intermediate the ends thereof and with one end of the screen assembly connected by a first pivot to the mobile frame for pivotal movement in a vertical plane

about a horizontal axis transverse to said mobile frame, a lift mechanism mounted on said mobile frame beneath and connected to the end of said screen assembly remote of said pivot and operative to lift said screen assembly about the pivot axis from a generally horizontal traveling position to an inclined screening position and vice versa lower said screen assembly back down to a generally horizontal traveling position, a screened material conveyer arranged beneath said screen assembly, said conveyer comprising a first and second section connected together by a hinge, said first section of said conveyer being suspended in supporting relation between and beneath longitudinal edges of said screen assembly, and a pivot arm pivotally connected on one end to said mobile frame on a side of said lift mechanism which is remote of said first pivot and the other end of said pivot arm being pivotally connected to an end portion of said second section of said conveyer remote of said hinge, whereby lowering of said screen assembly lowers the first section of said conveyer and folds the end of said second section of said conveyer remote of the hinge toward the screen assembly to provide a compact assemblage for travel.

2. In a plant according to claim 1, said mobile frame including a pair of laterally spaced longitudinally extending parallel beam members, and said conveyer beneath the screen assembly being arranged to be in a vertical plane between the beam members of said mobile frame, whereby lowering the screen assembly lowers the first section of the conveyer between the beam members of said mobile frame and folds the end of said second section of said conveyer remote of the hinge toward the screen assembly to provide a compact assemblage for travel.

3. In a plant according to claim 1, said pivot arm is of a length to support the end of the second section of said conveyer to which said pivot arm is attached at an elevation above said mobile frame that is above the elevation of said hinge.

4. In a plant according to claim 1, said screen assembly comprising a screen body resiliently mounted on a second frame, with said second frame being connected by said first pivot to said mobile frame, whereby said screen body is free to vibrate relative to said second frame and said mobile frame.

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