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(72) Inventor: **Tebbat, Kim Henry**

Countesthorpe, Leicester LE8 5TJ (GB)

(74) Representative: **Stagg, Diana Christine et al**

**Lewis & Taylor,
144 New Walk**

Leicester LE1 7JA (GB)

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(71) Applicant: **Parker Plant Limited
Leicester LE4 6HD (GB)**

(54) Improved aggregate processing plant

(57) A mobile, road -hauled aggregate material processing plant comprises a wheel mounted chassis (2); a plant support frame mounted on the plant support frame; a raw material input hopper mounted on the plant support frame; a material processing means mounted on the plant support frame and fed from the input hopper and having an outlet; processed material outfeed delivery means mounted on the plant support frame and fed from the material processing means, said outfeed delivery means comprising a lateral conveyor (4) having a conveyor frame, a plurality of rollers (6,6',6'',6''') mounted on the conveyor frame, and an endless conveyor belt mounted on the rollers, said belt defining a conveyor plane; and articulation means for movement of the lat-

eral conveyor (4) from an operative position extending laterally of the chassis to a transport position.

The articulation means is mounted on the chassis and comprises a vertically mounted turntable (20), upon which turntable one end of the lateral conveyor (4) is pivotally mounted so that the lateral conveyor (4) is pivotable relative to the turntable (20) between an operating position in which the conveyor (4) extends laterally from the chassis and an intermediate position in which the lateral conveyor (4) extends substantially upright from the chassis and in which rotation of the turntable (20) causes the lateral conveyor (4) to be pivoted from the intermediate position to a transport position in which it extends along the length of and above the chassis.

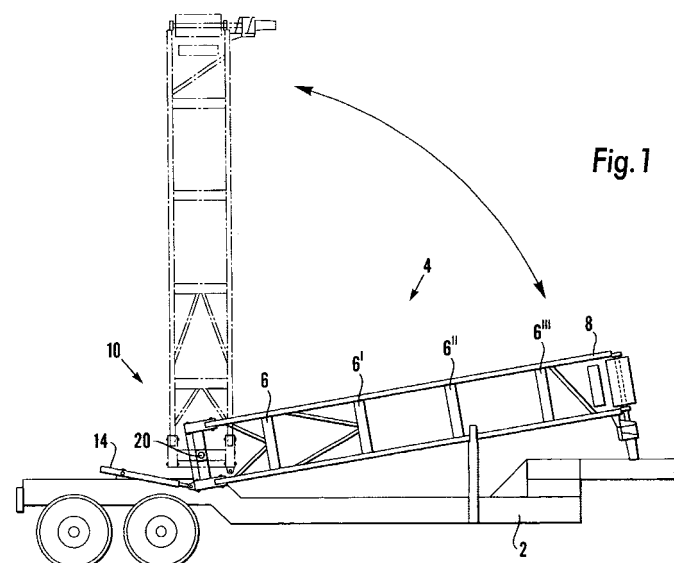


Fig. 1

EP 1 110 625 A2

Description

[0001] The present invention relates to mobile, road-hauled aggregate material processing plant such as a screening plant, crushing plant or mining plant of the type which includes a lateral conveyor which may be moved between a transport position, in which the lateral conveyor is within the lateral and vertical dimensions which are specified for vehicles which are to travel on the road, and an operating position in which the lateral conveyor extends laterally from the plant.

[0002] European Patent No 0 641 607 in the name of Rafferty describes and claims a mobile, road-hauled aggregate material processing plant comprising: a wheel mounted chassis; a plant support frame mounted on the plant support frame; a raw material input hopper mounted on the plant support frame; a material processing means mounted on the plant support frame and fed from the input hopper and having an outlet; processed material outfeed delivery means mounted on the plant support frame and fed from the material processing means, said outfeed delivery means comprising a lateral conveyor having a conveyor frame, a plurality of rollers mounted on the conveyor frame, and an endless conveyor belt mounted on the rollers, said belt defining a conveyor plane; and articulation means for movement of the lateral conveyor from an operative position extending laterally of the chassis to a transport position; characterised in that, said lateral conveyor comprises a tail section and a head section; and said articulation means comprises: a tail articulation means allowing movement of at least part of the tail section relative to the plant support frame from the operative position to the transport position, and at the transport position, it extends substantially upright above the chassis and with respect to the input hopper and the material processing means so that it does not extend laterally beyond the chassis; and a head articulation means connecting the head and tail sections to allow movement of the head section relative to the tail section from the operative position to the transport position, and at the transport position the head section extends longitudinally above the chassis and with respect to the input hopper and material processing means so that it does not extend laterally beyond the chassis.

[0003] It is a disadvantage of the mobile, road-hauled aggregate material processing plant described and claimed in European Patent No 0 641 607 that the pivot joint for articulation of the tail section of the lateral conveyor relative to the head section thereof is located outboard of the processing plant when the lateral conveyor is in the operating position. In a preferred embodiment of the mobile, road-hauled aggregate material processing plant described and claimed in European Patent No 0 641 607, the drive means for the articulated tail section comprises a hydraulic ram drive means mounted between the tail and head sections, and it is a further disadvantage that this hydraulic ram drive means is also

located outboard of the processing plant when the lateral conveyor is in the operating position. The outboard location of the pivot joint and the hydraulic drive means in the operating position of the lateral conveyor are particularly disadvantageous because of the hostile and difficult environmental conditions under which the plant is operated.

[0004] It is a further disadvantage of the outboard location of the pivot joint that the lateral conveyor cannot be mechanically locked relative to the plant in its operating position.

[0005] It is an object of the present invention to provide a mobile, road-hauled aggregate material processing plant in which the above disadvantages are reduced or substantially obviated.

[0006] The present invention provides a mobile, road-hauled aggregate material processing plant comprising: a wheel mounted chassis; a plant support frame mounted on the plant support frame; a raw material input hopper mounted on the plant support frame; a material processing means mounted on the plant support frame and fed from the input hopper and having an outlet; processed material outfeed delivery means mounted on the plant support frame and fed from the material processing means, said outfeed delivery means comprising a lateral conveyor having a conveyor frame, a plurality of rollers mounted on the conveyor frame, and an endless conveyor belt mounted on the rollers, said belt defining a conveyor plane; and articulation means for movement of the lateral conveyor from an operative position extending laterally of the chassis to a transport position characterised in that the articulation means is mounted on the chassis and comprises a vertically mounted turntable, upon which turntable one end of the lateral conveyor is pivotably mounted so that the lateral conveyor is pivotable relative to the turntable between an operating position in which the conveyor extends laterally from the chassis and an intermediate position in which the lateral conveyor extends substantially upright from the chassis and in which rotation of the turntable causes the lateral conveyor to be pivoted from the intermediate position to a transport position in which it extends along the length of and above the chassis.

[0007] In a preferred embodiment of the mobile, road-hauled aggregate material processing plant according to the invention, the vertically mounted turntable is provided with mechanical locking means operative to lock the lateral conveyor in the operating position.

[0008] The mobile, road-hauled aggregate material processing plant according to the invention is preferably provided with two lateral conveyors, each of which extends from the chassis of the plant, the first from the right hand side and the second from the left hand side.

[0009] An embodiment of a mobile, road-hauled aggregate material processing plant will now be described with reference to the accompanying drawings in which

Figure 1 is a side view of part of a mobile, road

-hailed aggregate material processing plant, showing a lateral conveyor in the transport position in solid lines and in the intermediate position in shadow;

Figure 2 is a rear view of the mobile, road -hailed aggregate material processing plant of Figure 1 showing the lateral conveyor in the operating position in solid lines and in the intermediate position in shadow;

Figure 3 is a section through a detail of the mobile, road -hailed aggregate material processing plant of Figure 1 showing the mounting of a vertical turntable on the chassis of the processing plant, in the operating and intermediate positions of the lateral conveyor and

Figure 4 is a section on the line IV-IV of Figure 3.

[0010] A mobile, road -hailed aggregate material processing plant shown generally at 10 in Figure 1 comprises a chassis 2 on which is pivotably mounted a lateral conveyor 4. The lateral conveyor 4 comprises a plurality of conveyor rollers 6, 6', 6", 6''' mounted for rotation on a frame 8. A flexible conveyor belt (not shown) for conveying aggregate material can be located in known manner on the lateral conveyor 4. The conveyor 4 is mounted on a vertical turntable 20 mounted on the chassis 2 and rotation of the vertical turntable 20 drives the lateral conveyor from a first transport position as shown in solid lines to a second intermediate position as shown in shadow in Figure 1. A hydraulic ram 14 is mounted on the chassis 2 to drive the lateral conveyor 4 between the transport position and the intermediate position.

[0011] Figure 2 is a rear view of the processing plant of Figure 1 showing the lateral conveyor 4, in solid lines, in the operating position and in shadow in the intermediate position. A pair of hydraulic rams 16 are mounted on the chassis 2 to drive the lateral conveyor 4 between the intermediate and the travel position, about a pivot point 12 fixed on the vertical turntable 20.

[0012] The vertically mounted turntable 20 is shown in more detail in Figures 3 and 4. A turntable shown generally at 20 is mounted on the chassis 2 of the processing plant 10. The turntable 20 is secured on the chassis 2 by means of a headed pin 18 terminating in a threaded portion 22 adapted to receive a nut 24 and washer 26. The pin 18 comprises a first head portion 28, a first intermediate portion 30, a second intermediate portion 32 and the threaded portion 22. At the transitions between the first intermediate portion 30 and the second intermediate portion 32 and the second intermediate portion 32 and the threaded portion 22 respectively, shoulders 34, 36 are formed. A through aperture 38, sized to receive the second intermediate portion 32 of the pin 18 is provided in the chassis 2.

[0013] The turntable 20 comprises a rotating face 40 and two pairs of support plates 42,44 mounted on the

rotating face 40 and at right angles thereto. A through aperture 46, sized to receive the first intermediate portion 30 of the pin 18 is provided in the rotating face 40.

[0014] The support plates 42,44 are spaced apart in pairs and each pair is linked at pivot point 12 and pivot point 48 by means of rods 50,52. The two sides of the conveyor frame 8 engage the rods 50 and the two hydraulic rams 16 engage the rods 52.

[0015] A flat plate 54 is mounted on the lower edge faces 56 of the support plates 42 and 44, to provide additional strength and itself supports two spaced L-shaped brackets 58. A rod 60 links the L-shaped brackets 58 and provides an engagement point for the hydraulic ram 14.

[0016] A mechanical hook 62 is provided on the chassis 2, and provides a recess 64 in which the rotating face 40 of the turntable 20 can be received, thus providing a mechanical lock ensuring that the face 40 is locked in the vertical plane.

[0017] To secure the turntable 20 to the chassis 2, the pin 18 is inserted through the through apertures 38 and 46 and the nut 24 and associated washer 26 are located on the pin 18 and tightened until the shoulders 34 engage the rotating face 40 of the turntable 20.

[0018] In operation, and starting from the transport position as shown in solid lines in Figure 1, the vertical turntable 20 is driven in rotation in an anti clockwise direction by the hydraulic ram 14 until the lateral conveyor is in a position in which it extends substantially vertically upwards from the chassis, i.e. the intermediate position as shown in shadow in Figures 1 and 2.

[0019] The next stage of the operation can be seen more clearly from Figure 2. The lateral conveyor 4 is lowered from the intermediate position to the operating position by means of the pair of hydraulic rams 16.

[0020] The above operation is carried out in reverse in order to move the conveyor from the operating to the transport position.

[0021] As can be seen more clearly from Figure 2, the processing plant 10 comprises a second lateral conveyor 4' extending from the opposite side of the chassis 2.

[0022] The second conveyor 4' is longitudinally offset relative to the first conveyor 4 along the length of the vehicle.

[0023] The second conveyor 4' is similar to the first conveyor 4, but is mounted and rotates in the opposite hand to the first conveyor 4.

Claims

1. A mobile, road -hailed aggregate material processing plant comprising: a wheel mounted chassis; a plant support frame mounted on the plant support frame; a raw material input hopper mounted on the plant support frame and fed from the input hopper and having an outlet; processed

material outfeed delivery means mounted on the plant support frame and fed from the material processing means, said outfeed delivery means comprising a lateral conveyor having a conveyor frame, a plurality of rollers mounted on the conveyor frame, and an endless conveyor belt mounted on the rollers, said belt defining a conveyor plane; and articulation means for movement of the lateral conveyor from an operative position extending laterally of the chassis to a transport position characterised in that the articulation means is mounted on the chassis and comprises a vertically mounted turntable, upon which turntable one end of the lateral conveyor is pivotably mounted so that the lateral conveyor is pivotable relative to the turntable between an operating position in which the conveyor extends laterally from the chassis and an intermediate position in which the lateral conveyor extends substantially upright from the chassis and in which rotation of the turntable causes the lateral conveyor to be pivoted from the intermediate position to a transport position in which it extends along the length of and above the chassis.

2. A mobile, road -hauling aggregate material processing plant according to claim 1 characterised in that the vertically mounted turntable is provided with mechanical locking means operative to lock the lateral conveyor in the operating position.
3. A mobile, road -hauling aggregate material processing plant according to claim 1 or claim 2 characterised in that the plant is provided with two lateral conveyors, each of which extends from the chassis of the plant, the first from the right hand side and the second from the left hand side.

