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(54) **MINERAL MATERIAL PROCESSING PLANT**

MINERALSTOFFVERARBEITUNGSANLAGE

INSTALLATION DE TRAITEMENT DE MATIÈRE MINÉRALE

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(73) Proprietor: **Metso Outotec Finland Oy**

33900 Tampere (FI)

(72) Inventors:

• **LEINONEN, Timo**
33101 Tampere (FI)

• **MÄKINEN, Marko**

33101 Tampere (FI)

• **KEIHÄNEN, Osku**

33101 Tampere (FI)

(74) Representative: **Espatent Oy**

Kaivokatu 10 D

00100 Helsinki (FI)

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Description

FIELD OF INVENTION

[0001] The invention generally relates to mineral material processing. In particular, but not exclusively, the invention relates to screening mineral material.

BACKGROUND OF THE INVENTION

[0002] Mineral material, such as stone, is retrieved to be processed from the ground either by exploding or by digging. The mineral material may also comprise natural stone, gravel and construction waste. Both mobile and fixed plants are used for processing. The material to be processed is fed with e.g. an excavator or a wheel loader into a feeder of the processing plant, from where the material is forwarded to be processed.

[0003] In mineral material processing, the material processed or to be processed is commonly screened in order to remove unwanted fractions and/or to classify the material according to size into different fractions.

[0004] The document WO-A1-2013/102699 discloses a mineral material processing plant in accordance with the preamble of claim 1.

[0005] It is often desirable to pre-screen the material prior to the feeder of the processing, e.g. screening, plant in order to remove for example oversized material prior to further processing. For such purposes a scalping screen is used.

[0006] Previously a scalping screen has been provided as a separate processing unit, as the integration of a scalping screen into a feeder would cause the mineral material processing plant to become overly high thus hindering transportation and making feeding difficult.

[0007] The objective of the invention is to provide a screening arrangement that mitigates the problems of the prior art.

SUMMARY

[0008] According to an aspect of the invention there is provided a mineral material processing plant in accordance with claim 1, comprising

a frame ;
a first screen unit;
a feeder; and
a second screen unit positioned above the feeder ;
wherein the first screen unit is pivotably supported on the frame and connected at a first end thereof to the frame with a first support arm, the first support arm being configured to lower and raise the first end of the first screen unit;
the second end of the feeder is pivotably connected at a second end thereof to the first end of the first screen unit with a second support arm, the second support arm being configured to allow relative move-

ment of the first screen unit and the feeder;
the feeder is pivotably connected to the frame with a third support arm; and wherein
the third support arm comprises a telescopic support arm configured to allow the lowering of the feeder and the second screen unit into a transport position and to allow adjusting the angle of the of the feeder and the second screen unit.

[0009] The first support arm may comprise a telescopic support arm configured to allow the lowering of the first screen unit into a transport position and to adjust the angle of the of the first screen unit.

[0010] The mineral material processing plant may further comprise a first hydraulic actuator element operably connected with the first screen unit and configured to lower and raise the first end of the first screen unit.

[0011] The mineral material processing plant may further comprise a second hydraulic actuator element operably connected with the feeder and the second screen unit and configured to lower and raise the feeder and the second screen unit.

[0012] In accordance with the invention, the second screen unit comprises a sub-frame and the second screen unit is pivotably supported at a first end thereof on the sub-frame and connected at a second end thereof with a fourth support arm to the sub-frame; wherein the fourth support arm is configured to allow adjusting the angle of the second screen unit by allowing lowering and raising of the second end thereof.

[0013] The sub-frame may be supported on the feeder and the third support arm may be pivotably connected to the feeder.

[0014] The sub-frame may be connected to and supported on the third support arm.

[0015] The feeder may be connected to the sub-frame.

[0016] The third support arm may be configured to allow the lowering of the feeder and the second screen unit into the transport position in which the vertical position of the second screen unit is lower or the same as that of the first screen unit. The third support arm may be configured in the operating position to allow adjusting the angle of the feeder in such away that the second screen unit remains operational.

[0017] The mineral material processing plant may further comprise extendable and retractable support legs at the first end of the frame configured to support the mineral material processing plant at an operating position.

[0018] The mineral material processing plant may further comprise an actuator and control element.

[0019] The mineral material processing plant may comprise a mobile processing plant.

[0020] The mineral material processing plant may further comprise a track base.

[0021] Different embodiments of the present invention will be illustrated or have been illustrated only in connection with some aspects of the invention. A skilled person

appreciates that any embodiment of an aspect of the invention may apply to the same aspect of the invention and other aspects, whereby the scope of the invention is delimited by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 shows a schematic side view of a mineral material processing plant in transport position according to an embodiment not in accordance with the invention;

Fig. 2 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment not in accordance with the invention;

Fig. 3 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment of the invention;

Fig. 4 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment of the invention;

Fig. 5 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment not in accordance with the invention;

Fig. 6 shows a schematic view of a detail of a mineral material processing plant according to an embodiment of the invention; and

Fig. 7 shows a schematic view of a detail of a mineral material processing plant in an operation position according to an embodiment of the invention.

DETAILED DESCRIPTION

[0023] In the following description, like numbers denote like elements. It should be appreciated that the illustrated figures are not entirely in scale, and that the figures mainly serve the purpose of illustrating embodiments of the invention.

[0024] Fig. 1 shows a schematic side view of a mineral material processing plant in transport position according to an embodiment not in accordance with the invention. The mineral material processing plant comprises a frame 10 on which the further elements of the plant are supported directly or via other elements.

[0025] The mineral material processing plant further comprises a first screen unit 20. In an embodiment, the screen unit is a two stage screen unit, i.e. the screen has two stages and provides a reject and two accepted fractions. The first screen unit 20 is pivotably supported on the frame 10 so that the angle thereof is adjustable. In an embodiment, the angle of the first screen unit is adjustable between 10 and 17 degrees in operating position.

[0026] The first screen unit is connected at a first end thereof to the frame with a first support arm 12, wherein the first support arm 12 is configured to allow lowering and raising of the first end of the first screen unit 20 so that the angle of the screen is adjustable in operating position as a second end of the first screen unit 20 is pivotably supported on the frame 10. The first support arm is further configured to allow the first screen unit 20 to be lowered to a transport position in which the vertical position of the first screen unit is at its lowest. The first support arm 12 comprises a telescopic support arm, the length of which is adjustable.

[0027] The mineral material processing plant further comprises a feeder 30. In an embodiment, the feeder 30 comprises a feed conveyor. The feeder 30 is connected at a second end thereof to the first end of the first screen unit 20 with a second support arm 14. The second support arm 14 is configured to allow relative movement of the first screen unit 20 and the feeder 30 when the angle of the first screen unit 20 and/or the angle of the feeder 30 is adjusted.

[0028] The mineral material processing plant further comprises a first hydraulic actuator element operably connected with the first end of the first screen unit and configured to raise and lower the first end of the first screen unit and the second end of the feeder 30.

[0029] The mineral material processing plant further comprises a second screen unit 40 positioned above the feeder 30. In an embodiment, the second screen unit 40 comprises a vibrating grid scalping screen, the reject of which falls away in the direction of the first end thereof, and the accept falls on the feeder 30. In a further embodiment, the second screen unit 40 comprises a tipping grid screen, the reject of which falls away to the side of the second screen unit, and the accept falls on the feeder 30.

[0030] The feeder 30 is pivotably connected to the frame 10, either directly or via the second screen unit 40. In an embodiment, the feeder 30 is pivotably connected to the frame 10 with a third support arm 16 at a first end thereof or near the middle thereof. In an embodiment, the feeder 30 is connected to the second screen unit 40 which is connected to the frame 10 with the third support arm 16 as hereinafter described. The third support arm 16 comprises a telescopic support arm, the length of which is adjustable. The third support arm is configured to allow the lowering of the feeder 30 and the second screen unit 40 into a transport position and to allow adjusting the angle of the feeder 30 and consequently the second screen unit 40.

[0031] The mineral material processing plant, in an embodiment, further comprises a second hydraulic actuator element operably connected with the feeder 30 or the second screen unit 40 and configured to lower and raise the feeder 30 and the second screen unit 40. In an embodiment, the second hydraulic actuator element is not necessary, but the necessary adjustments are effected by the first hydraulic actuator element via the second support arm 14.

[0032] Fig. 1 shows the mineral material processing plant in a transport position. In the transport position the first screen unit as well as the feeder 30 and the second screen unit 40 supported thereon are lowered at their lowest possible vertical position so that the height of the second screen unit does not exceed that of the first screen unit 20 and thus enabling a transport height of the plant consistent with the transport height of a plant not comprising the second screen unit 40 above the feeder 30. Such a transport height is enabled by the third support arm 16 pulling the first end of the feeder 30 in the direction the first end thereof and consequently allowing a lower position.

[0033] The mineral material processing plant further comprises a power and control element comprising for example a motor and hydraulics for operating the plant as well as control arrangements for controlling the operations of the plant. The motor is for example a diesel motor or an electric motor that provides energy for process units and hydraulic circuits.

[0034] In an embodiment, the mineral material processing plant is a mobile processing plant as depicted in Fig. 1 and comprises in an embodiment a track base 60. In a further embodiment, instead of the track base 60, the mobile processing plant comprises wheels or skids. Although the processing plant has been depicted as a mobile processing plant in Fig. 1 and subsequent Figs., the embodiments of the invention are applicable in affixed processing plant as well e.g. for adjustment and lowering the transport height of such a plant for example when placed on flatbed truck for transportation.

[0035] It is to be noted that the mineral material processing plant in an embodiment comprises further elements that have not been depicted in Fig. 1 or subsequent Figs. Such elements comprise for example conveyors for reject and accept of the first screen unit 20.

[0036] Fig. 2 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment not in accordance with the invention. Fig. 2 shows the elements of the mineral material processing plant as hereinbefore described with reference to Fig. 1

[0037] In the operating position of Fig. 2 the first screen unit 20 has been raised to a large angle and accordingly the feeder 30 has been raised as well. In such a situation, the third support arm 16 is used to adjust the angle of the feeder 30 and that of the second screen unit 40 in such a way that the second screen unit remains operational, i.e. the angle thereof is not detrimental to the screening by the second screen unit 40.

[0038] Fig. 3 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment of the invention. Fig. 3 shows the elements of the mineral material processing plant as hereinbefore described with reference to Figs. 1 and 2.

[0039] In the operating position of Fig. 3 the first screen unit 20 has been raised to an operating angle and accordingly the feeder 30 has been raised as well. In such

a situation, the third support arm 16 is used to adjust, in the situation of Fig. 3 by shortening the third support arm 16, the angle of the feeder 30 and that of the second screen unit 40 in such a way that the second screen unit remains operational, i.e. the angle thereof is not detrimental to the screening by the second screen unit 40.

[0040] In accordance with the invention, as shown in Fig. 3, the second screen unit 40 comprises a sub-frame 42 which is in an embodiment supported on the feeder 30, for example on the frame of the feeder 30 or on the side structure of the feeder 30. In a further embodiment, the sub frame 42 is positioned above and/or on the side of the feeder 30 and supported on the frame 10 and connected thereto with the third support arm 16 as herein-after described. The second screen unit 40 is pivotably supported at the first end thereof on the sub-frame 42 and connected at the second end thereto to the sub-frame 42 with a fourth support arm 44. The fourth support arm 44 is configured to allow adjusting the angle of the second screen unit 40 by allowing lowering and raising of the second end thereof. In an embodiment, a third hydraulic actuator element is operably connected with the second end of the second screen unit in order to raise and lower the second end. In an embodiment in which the second screen unit comprises a tipping grid screen, the fourth support arm 44 is configured to allow a side of the second screen unit to be raised and lowered.

[0041] Fig. 4 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment of the invention. Fig. 4 shows the elements of the mineral material processing plant as hereinbefore described with reference to Figs. 1 to 3.

[0042] Fig. 4 shows the second screen unit 40 in an operating position in which it has been raised to an operating angle, in an embodiment between 0 and 20 degrees, by the fourth support arm 44.

[0043] Fig. 4 shows an embodiment with the third support arm being pivotably connected to the sub frame 42 of the second screen unit 40 and the feeder 30 being supported by the sub-frame 42, i.e. being connected thereto in a such a way that the feeder 30 hangs on the sub-frame 42.

[0044] Fig. 5 shows a schematic side view of a mineral material processing plant in an operation position according to an embodiment not in accordance with the invention. Fig. 5 shows the elements of the mineral material processing plant as hereinbefore described with reference to Figs. 1 to 4.

[0045] In the operating position of Fig. 5 the first screen unit 20 has been raised to a large angle and accordingly the feeder 30 has been raised as well. In such a situation, the third support arm 16 is used to adjust the angle of the feeder 30 and that of the second screen unit 40 in such a way that the second screen unit remains operational, i.e. the angle thereof is not detrimental to the screening by the second screen unit 40. In such an operating situation, depending on the weight of the units and the material to be processed, additional support

might sometimes be needed. Accordingly, the mineral material processing plant comprises, in an embodiment, extendable and retractable support legs 70. In an embodiment, the support legs 70 are hydraulically actuated. In an embodiment in which the third support arm 16 is pivotably connected to the sub-frame 42 and to the frame 10, the connection together with the support legs 70 is configured to channel the forces and vibrations caused by the second screen unit 40 so that the feeder is less affected by the forces and vibrations.

[0046] Fig. 6 shows a schematic view of a detail of a mineral material processing plant according to an embodiment of the invention, i.e. Fig. 6 shows the first end of the mineral material processing plant with the feeder 30 and the second screen unit 40.

[0047] Fig. 6 shows the frame 10, the second screen unit 40 and the feeder 30. The second screen unit 40 is showing comprising the sub-frame 42 and the fourth support arm 44 as hereinbefore described. In the embodiment of Fig. 6, the third support arm 16, having the structure and functionality as hereinbefore described, is pivotably connected to the frame 10 and to the sub-frame 42 at a connection point 36.

[0048] The feeder 30 is attached to the sub-frame 42 at attachment points 32 and 34 so that the feeder 30 in effect hangs inside the sub-frame 42 and below the second screen unit 40.

[0049] Fig. 6 further shows the support legs 70 in a retracted position. In an embodiment, the mineral material processing plant further comprises a back plate 46 configured to protect the structures from the reject of the second screen unit 40. In a further embodiment, depending on the type of the second screen unit 40, the mineral material processing plant comprises a protective plate on the side of the second screen unit.

[0050] Fig. 7 shows a schematic view of a detail of a mineral material processing plant according to an embodiment of the invention, i.e. Fig. 7 shows the feeder 30 attached to the sub-frame 42 at points 32, 34. The connection point 36 for the third support arm has been depicted as well.

[0051] In an embodiment, the mineral material processing plant comprises feeder side walls 80a, 80b. The sidewalls are in an embodiment attached to the sub-frame 42.

[0052] Without in any way limiting the scope of protection, interpretation or possible applications of the invention, a technical advantage of different embodiments of the invention may be considered to be the provision of a scalping screen integrated into the single processing plant. Further, a technical advantage of different embodiments of the invention may be considered to be the provision of extra screening capacity without compromising transportability. Still further, a technical advantage of different embodiments of the invention may be considered to be improved adjustability of the feeder. Still further, a technical advantage of different embodiments of the invention may be considered to be improved control of forc-

es caused by screening.

[0053] The foregoing description provides non-limiting examples of some embodiments of the invention. It is clear to a person skilled in the art that the invention is not restricted to details presented, but that the invention can be implemented in other equivalent means insofar this is within the scope of the appended claims. Some of the features of the above-disclosed embodiments may be used to advantage without the use of other features.

[0054] As such, the foregoing description shall be considered as merely illustrative of the principles of the invention, and not in limitation thereof. Hence, the scope of the invention is only restricted by the appended patent claims.

Claims

1. A mineral material processing plant, comprising

a frame (10);
a first screen unit (20);
a feeder (30);

wherein

the first screen unit (20) is pivotably supported on the frame (10) and connected at a first end thereof to the frame with a first support arm (12), the first support arm being configured to lower and raise the first end of the first screen unit; the second end of the feeder (30) is pivotably connected at a second end thereof to the first end of the first screen unit (20) with a second support arm (14), the second support arm being configured to allow relative movement of the first screen unit (20) and the feeder (30); and wherein the feeder (30) is pivotably connected to the frame (10) with a third support arm (16); the third support arm (16) comprises a telescopic support arm configured to allow the lowering of the feeder (30) into a transport position and to allow adjusting the angle of the of the feeder (30);

characterized in that

the mineral material processing plant comprises a second screen unit (40) positioned above the feeder (30);

and in that:

the telescopic support arm is configured to allow the lowering of the feeder (30) and the second screen unit (40) into a transport position and to allow adjusting the angle of the of the feeder (30) and the second screen unit (40);

the second screen unit (40) comprises a sub-frame (42);

the second screen unit (40) is pivotably supported at a first end thereof on the sub-frame

- (42) and connected at a second end thereof with a fourth support arm (44) to the sub-frame (42); and
the fourth support arm (44) is configured to allow decreasing and increasing adjustment of the angle of the second screen unit by allowing respectively lowering and raising of the second end thereof.
2. The mineral material processing plant of claim 1, wherein the first support arm (12) comprises a telescopic support arm configured to allow the lowering of the first screen unit (20) into a transport position and to adjust the angle of the of the first screen unit (20). 10
 3. The mineral material processing plant of claim 1 or 2, further comprising a first hydraulic actuator element operably connected with the first screen unit (20) and configured to lower and raise the first end of the first screen unit (20). 20
 4. The mineral material processing plant of any preceding claim, further comprising a second hydraulic actuator element operably connected with the feeder (30) and the second screen unit (40) and configured to lower and raise the feeder (30) and the second screen unit (40). 25
 5. The mineral material processing plant of any preceding claim, wherein the sub-frame (42) is supported on the feeder (30) and the third support arm (16) is pivotably connected to the feeder (30). 30
 6. The mineral material processing plant of any preceding claim, wherein the sub-frame (42) is connected to and supported on the third support arm (16). 35
 7. The mineral material processing plant of claim 6, wherein the feeder (30) is connected to the sub-frame (42). 40
 8. The mineral material processing plant of any preceding claim, wherein the third support arm (16) is configured to allow the lowering of the feeder (30) and the second screen unit (40) into the transport position in which the vertical position of the second screen unit (40) is lower or the same as that of the first screen unit (20). 45
 9. The mineral material processing plant of any preceding claim, wherein the third support arm (16) is configured in the operating position to allow adjusting the angle of the feeder (30) in such a way that the second screen unit (40) remains operational. 50
 10. The mineral material processing plant of any preceding claim, further comprising extendable and retract-

able support legs (70) at a first end of the frame (10) configured to support the mineral material processing plant at an operating position.

- 5 11. The mineral material processing plant of any preceding claim, further comprising an actuator and control element (50).
12. The mineral material processing plant of any preceding claim, wherein the mineral material processing plant comprises a mobile processing plant. 10
13. The mineral material processing plant of claim 12, further comprising a track base (60). 15

Patentansprüche

1. Mineralstoffverarbeitungsanlage, umfassend

einen Rahmen (10);
eine erste Bildschirmeinheit (20);
einen Beschicker (30); wobei
die erste Bildschirmeinheit (20) schwenkbar an dem Rahmen (10) gelagert und an einem ersten Ende davon mit dem Rahmen mit einem ersten Lagerarm (12) verbunden ist, wobei der erste Lagerarm konfiguriert ist, um das erste Ende der ersten Bildschirmeinheit zu senken und zu heben;
das zweite Ende des Beschickers (30) an einem zweiten Ende davon schwenkbar mit dem ersten Ende der ersten Bildschirmeinheit (20) mit einem zweiten Lagerarm (14) verbunden ist, wobei der zweite Lagerarm konfiguriert ist, um Relativbewegung der ersten Bildschirmeinheit (20) und des Beschickers (30) zu ermöglichen; und wobei
der Beschicker (30) schwenkbar mit dem Rahmen (10) mit einem dritten Lagerarm (16) verbunden ist;
der dritte Lagerarm (16) einen teleskopischen Lagerarm umfasst, der konfiguriert ist, um das Senken des Beschickers (30) in eine Transportposition zu ermöglichen und um Einstellen des Winkels des Beschickers (30) zu ermöglichen;
gekennzeichnet dadurch, dass
die Mineralstoffverarbeitungsanlage eine zweite Bildschirmeinheit (40) umfasst, die oberhalb des Beschickers (30) angeordnet ist;
und dadurch, dass
der teleskopische Lagerarm konfiguriert ist, um Senken des Beschickers (30) und der zweiten Bildschirmeinheit (40) in eine Transportposition zu ermöglichen und um Einstellen des Winkels des Beschickers (30) und der zweiten Bildschirmeinheit (40) zu ermöglichen;
die zweite Bildschirmeinheit (40) einen Hilfsrah-

- men (42) umfasst;
 die zweite Bildschirmeinheit (40) schwenkbar an einem ersten Ende davon an dem Hilfsrahmen (42) gelagert ist und an einem zweiten Ende davon mit einem vierten Lagerarm (44) mit dem Hilfsrahmen (42) verbunden ist; und
 wobei der vierte Lagerarm (44) konfiguriert ist, dass er Verkleinern und Vergrößern von Einstellung des Winkels der zweiten Bildschirmeinheit ermöglicht, indem entsprechendes Senken und Heben des zweiten Endes davon ermöglicht wird.
2. Mineralstoffverarbeitungsanlage nach Anspruch 1, wobei der erste Lagerarm (12) einen teleskopischen Lagerarm umfasst, der konfiguriert ist, um das Senken der ersten Bildschirmeinheit (20) in eine Transportposition zu ermöglichen und um den Winkel der ersten Bildschirmeinheit (20) einzustellen.
3. Mineralstoffverarbeitungsanlage nach Anspruch 1 oder 2, ferner umfassend ein erstes hydraulisches Betätigungselement, das betriebsfähig mit der ersten Bildschirmeinheit (20) verbunden ist und konfiguriert ist, um das erste Ende der ersten Bildschirmeinheit (20) zu senken und zu heben.
4. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, ferner umfassend ein zweites hydraulisches Betätigungselement, das betriebsfähig mit dem Beschicker (30) und der zweiten Bildschirmeinheit (40) verbunden ist und konfiguriert ist, um den Beschicker (30) und die zweite Bildschirmeinheit (40) zu senken und zu heben.
5. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, wobei der Hilfsrahmen (42) an dem Beschicker (30) gelagert ist und der dritte Lagerarm (16) schwenkbar mit dem Beschicker (30) verbunden ist.
6. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, wobei der Hilfsrahmen (42) mit dem dritten Lagerarm (16) verbunden ist und an diesem gelagert ist.
7. Mineralstoffverarbeitungsanlage nach Anspruch 6, wobei der Beschicker (30) mit dem Hilfsrahmen (42) verbunden ist.
8. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, wobei der dritte Lagerarm (16) konfiguriert ist, um das Senken des Beschickers (30) und der zweiten Bildschirmeinheit (40) in die Transportposition zu ermöglichen, in der die vertikale Position der zweiten Bildschirmeinheit (40) niedriger oder die gleiche ist als die der ersten Bildschirmeinheit (20).
9. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, wobei der dritte Lagerarm (16) in der Betriebsposition konfiguriert ist, um Einstellen des Winkels des Beschickers (30) derart zu ermöglichen, dass die zweite Bildschirmeinheit (40) betriebsfähig bleibt.
10. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, ferner umfassend ausfahrbare und einfahrbare Lagerbeine (70) an einem ersten Ende des Rahmens (10), die konfiguriert sind, um die Mineralstoffverarbeitungsanlage in einer betriebsfähigen Position zu lagern.
11. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, ferner umfassend ein Betätigungs- und Steuerelement (50).
12. Mineralstoffverarbeitungsanlage nach einem vorhergehenden Anspruch, wobei die Mineralstoffverarbeitungsanlage eine mobile Verarbeitungsanlage umfasst.
13. Mineralstoffverarbeitungsanlage nach Anspruch 12, ferner umfassend eine Führungsbasis (60).

Revendications

1. Une installation de traitement de matières minérales, comprenant
- un châssis (10) ;
 une première unité de tamisage (20) ;
 un dispositif d'alimentation (30) ;
 la première unité de tamisage (20) est supportée de manière pivotante sur le châssis (10) et est reliée au châssis au niveau d'une première extrémité d'elle-même au moyen d'un premier bras de support (12), le premier bras de support étant configuré pour abaisser et relever la première extrémité de la première unité de tamisage ;
 la deuxième extrémité du dispositif d'alimentation (30) est reliée de manière pivotante à la première extrémité de la première unité de tamisage (20) au niveau d'une deuxième extrémité de ce dispositif au moyen d'un deuxième bras de support (14), le deuxième bras de support étant configuré pour permettre un mouvement relatif de la première unité de tamisage (20) et du dispositif d'alimentation (30) ; et
 le dispositif d'alimentation (30) est relié de manière pivotante au châssis (10) au moyen d'un troisième bras de support (16) ;
 le troisième bras de support (16) comprend un bras de support télescopique configuré pour permettre l'abaissement du dispositif d'alimen-

tation (30) dans une position de transport et pour permettre de régler l'angle du dispositif d'alimentation (30) ;

caractérisée en ce que

l'installation de traitement de matières minérales comprend une deuxième unité de tamisage (40) positionnée au-dessus du dispositif d'alimentation (30) ;

et en ce que :

le bras de support télescopique est configuré pour permettre l'abaissement du dispositif d'alimentation (30) et de la deuxième unité de tamisage (40) dans une position de transport et pour permettre de régler l'angle du dispositif d'alimentation (30) et de la deuxième unité de tamisage (40) ;

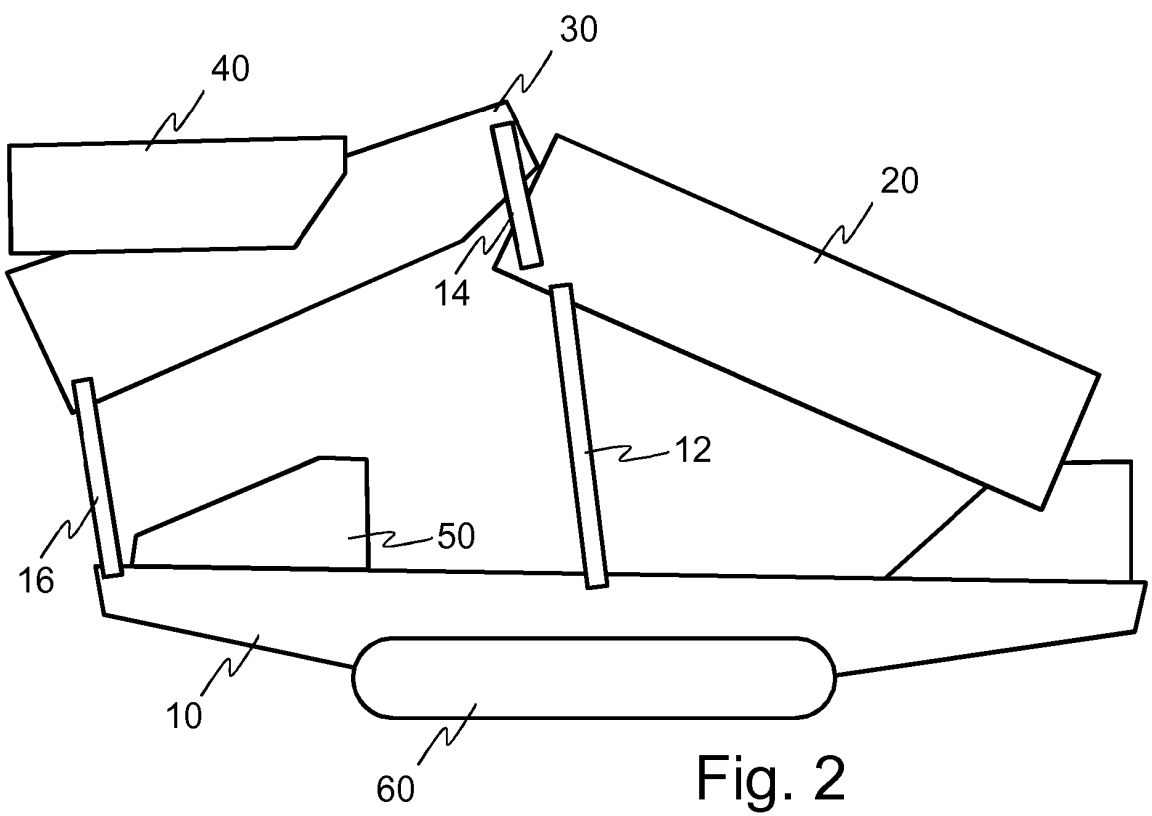
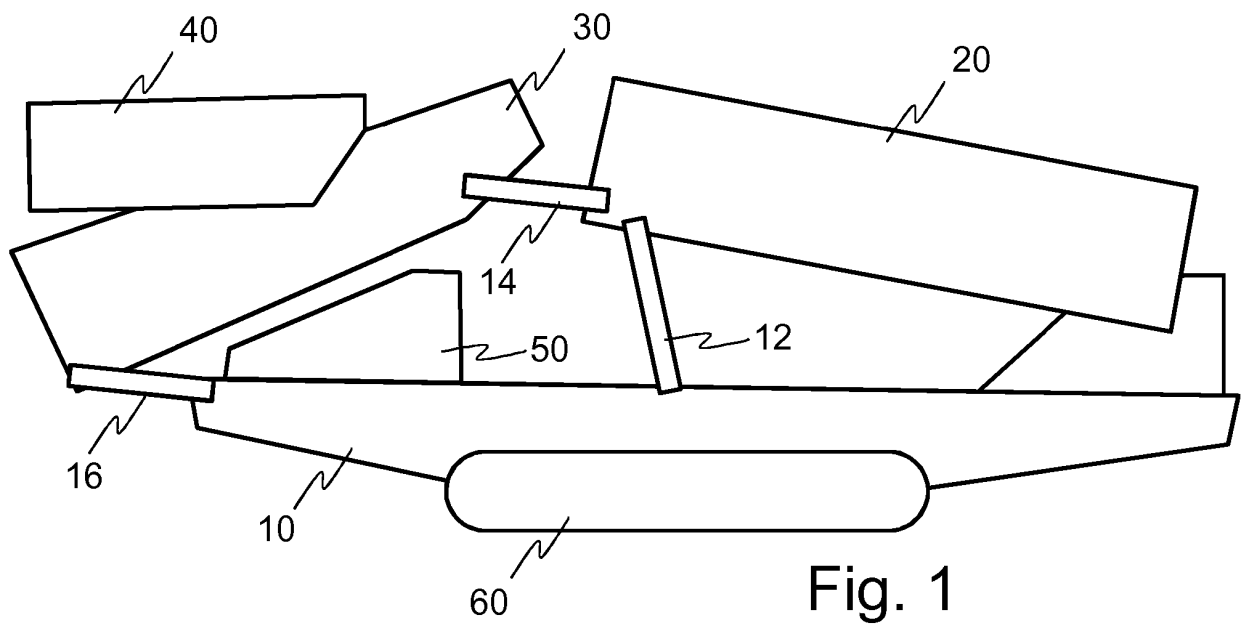
la deuxième unité de tamisage (40) comprend un sous-châssis (42) ;

la deuxième unité de tamisage (40) est supportée de manière pivotante à une première extrémité d'elle-même sur le sous-châssis (42) et est reliée à une deuxième extrémité d'elle-même au sous-châssis (42) au moyen d'un quatrième bras de support (44) ; et

le quatrième bras de support (44) est configuré pour permettre un réglage décroissant et croissant de l'angle de la deuxième unité de tamisage en permettant respectivement l'abaissement et le relèvement de la deuxième extrémité de celle-ci.

2. L'installation de traitement de matières minérales selon la revendication 1, dans laquelle le premier bras de support (12) comprend un bras de support télescopique configuré pour permettre l'abaissement de la première unité de tamisage (20) dans une position de transport et pour régler l'angle de la de la première unité de tamisage (20).
3. L'installation de traitement de matières minérales selon la revendication 1 ou la revendication 2, comprenant en outre un premier élément d'actionneur hydraulique relié de manière fonctionnelle à la première unité de tamisage (20) et configuré pour abaisser et relever la première extrémité de la première unité de tamisage (20).
4. L'installation de traitement de matières minérales selon une quelconque revendication précédente, comprenant en outre un deuxième élément d'actionnement hydraulique relié de manière opérationnelle au dispositif d'alimentation (30) et à la deuxième unité de tamisage (40) et configuré pour abaisser et relever le dispositif d'alimentation (30) et la deuxième unité de tamisage (40).

5. L'installation de traitement de matières minérales selon une quelconque revendication précédente, dans laquelle le sous-châssis (42) est supporté sur le dispositif d'alimentation (30) et le troisième bras de support (16) est relié de manière pivotante au dispositif d'alimentation (30).
6. L'installation de traitement de matières minérales selon une quelconque revendication précédente, dans laquelle le sous-châssis (42) est relié et supporté sur le troisième bras de support (16).
7. L'installation de traitement de matières minérales selon la revendication 6, dans laquelle le dispositif d'alimentation (30) est relié au sous-châssis (42).
8. L'installation de traitement de matières minérales selon une quelconque revendication précédente, dans laquelle le troisième bras de support (16) est configuré pour permettre l'abaissement du dispositif d'alimentation (30) et de la deuxième unité de tamisage (40) dans la position de transport dans laquelle la position verticale de la deuxième unité de tamisage (40) est inférieure ou identique à celle de la première unité de tamisage (20).
9. L'installation de traitement de matières minérales selon une quelconque revendication précédente, dans laquelle le troisième bras de support (16) est, dans la position de fonctionnement, configuré pour permettre de régler l'angle du dispositif d'alimentation (30) de telle manière que la deuxième unité de tamisage (40) reste opérationnelle.
10. L'installation de traitement de matières minérales selon une quelconque revendication précédente, comprenant en outre des pieds de support (70) extensibles et rétractables à une première extrémité du châssis (10), configurés pour supporter l'installation de traitement de matières minérales dans une position de fonctionnement.
11. L'installation de traitement de matières minérales selon une quelconque revendication précédente, comprenant en outre un actionneur et un élément de commande (50).
12. L'installation de traitement de matière minérale selon une quelconque revendication précédente, dans laquelle l'installation de traitement de matière minérale comprend une installation de traitement mobile.
13. L'installation de traitement de matières minérales selon la revendication 12, comprenant en outre une base (60) formant rail.



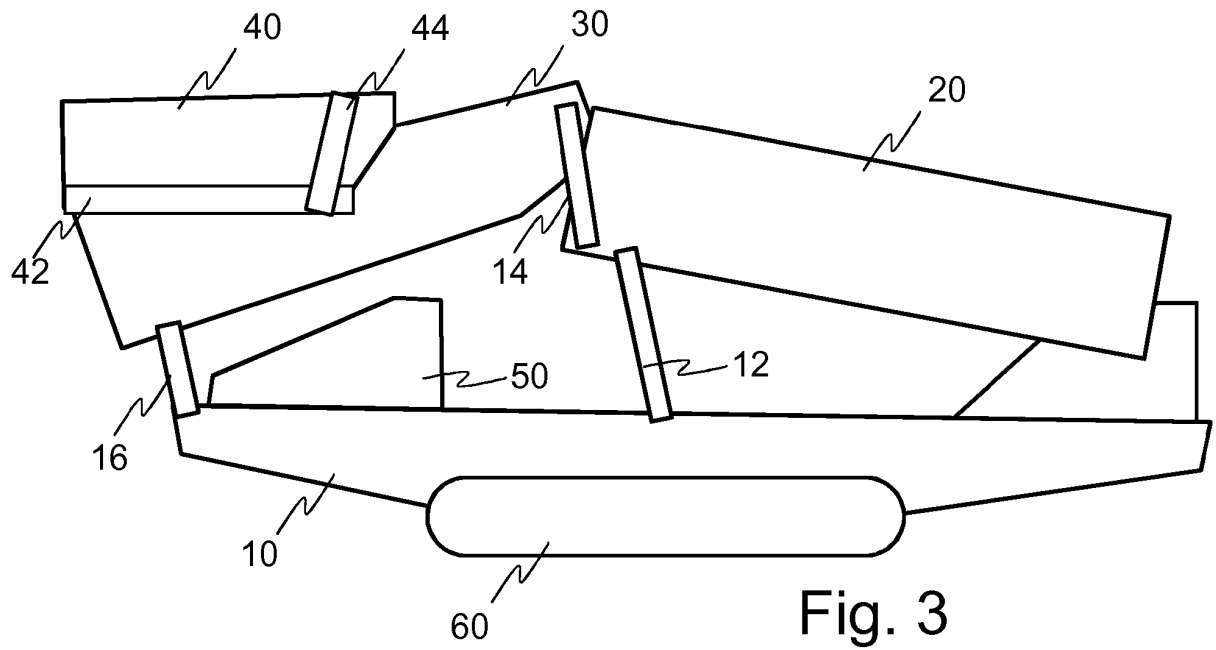


Fig. 3

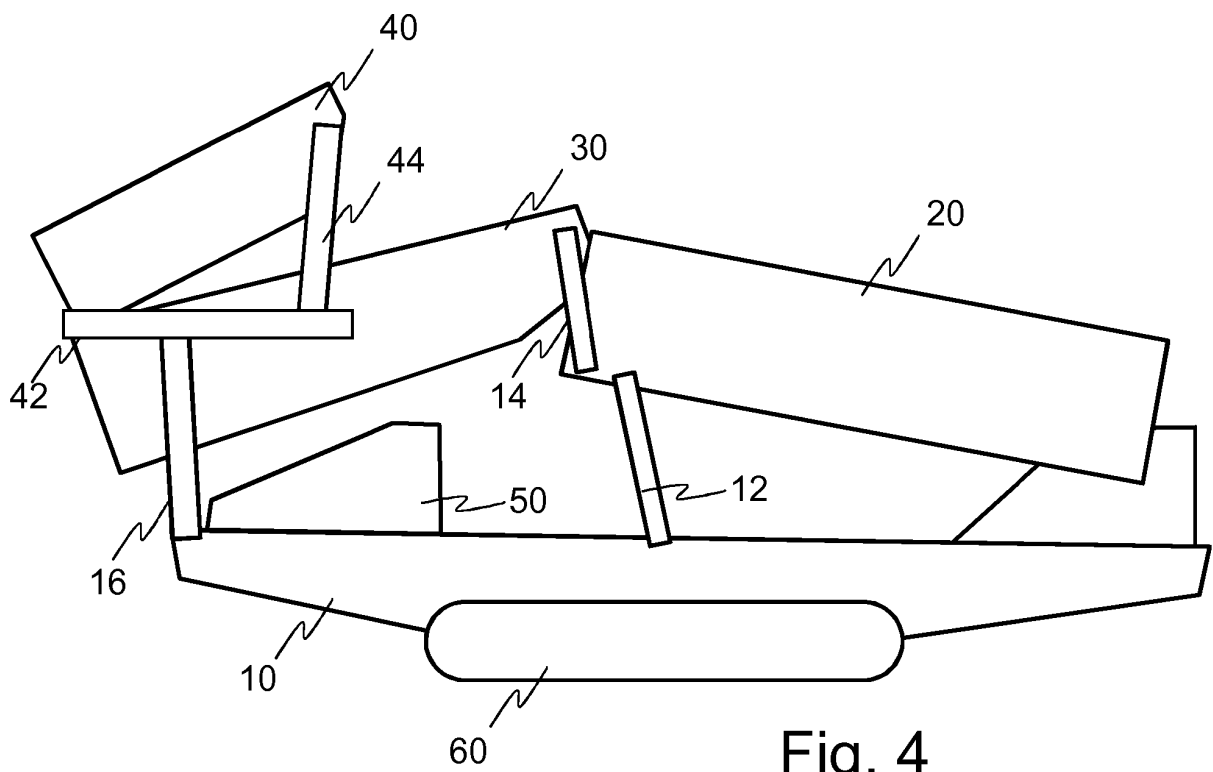
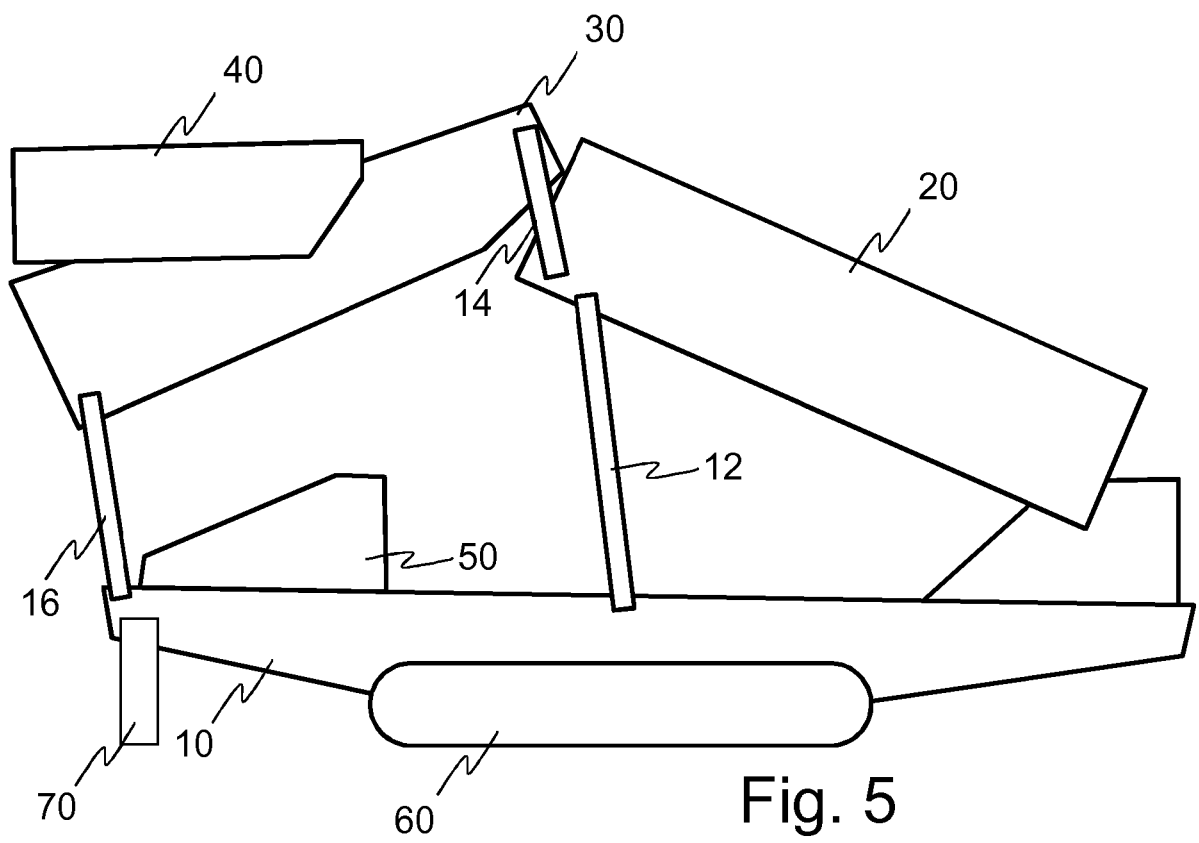
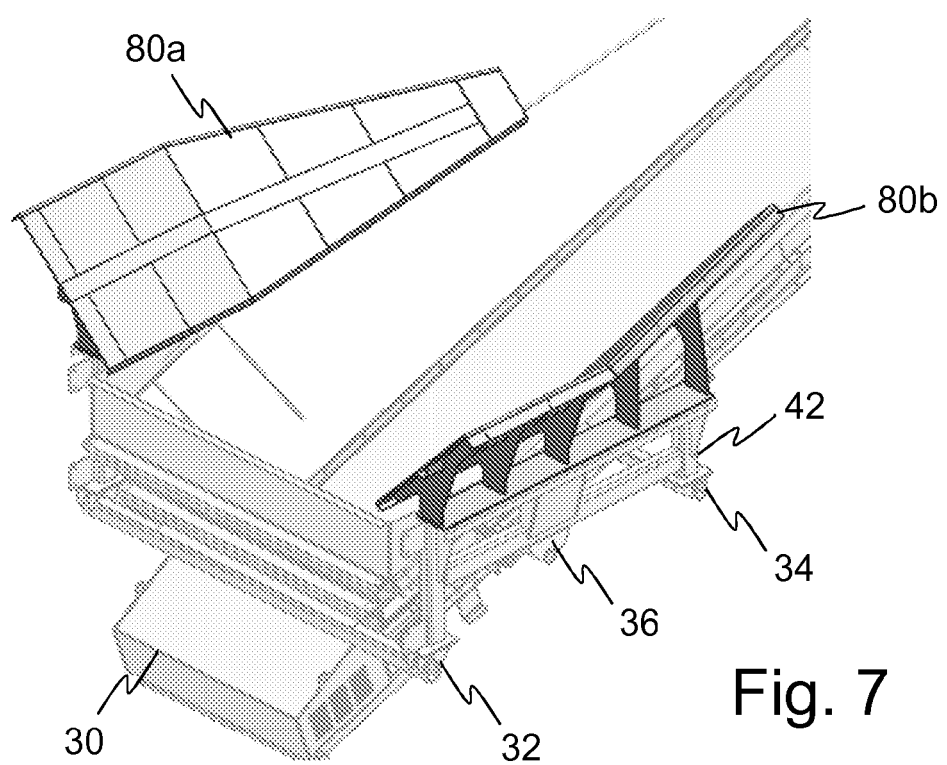
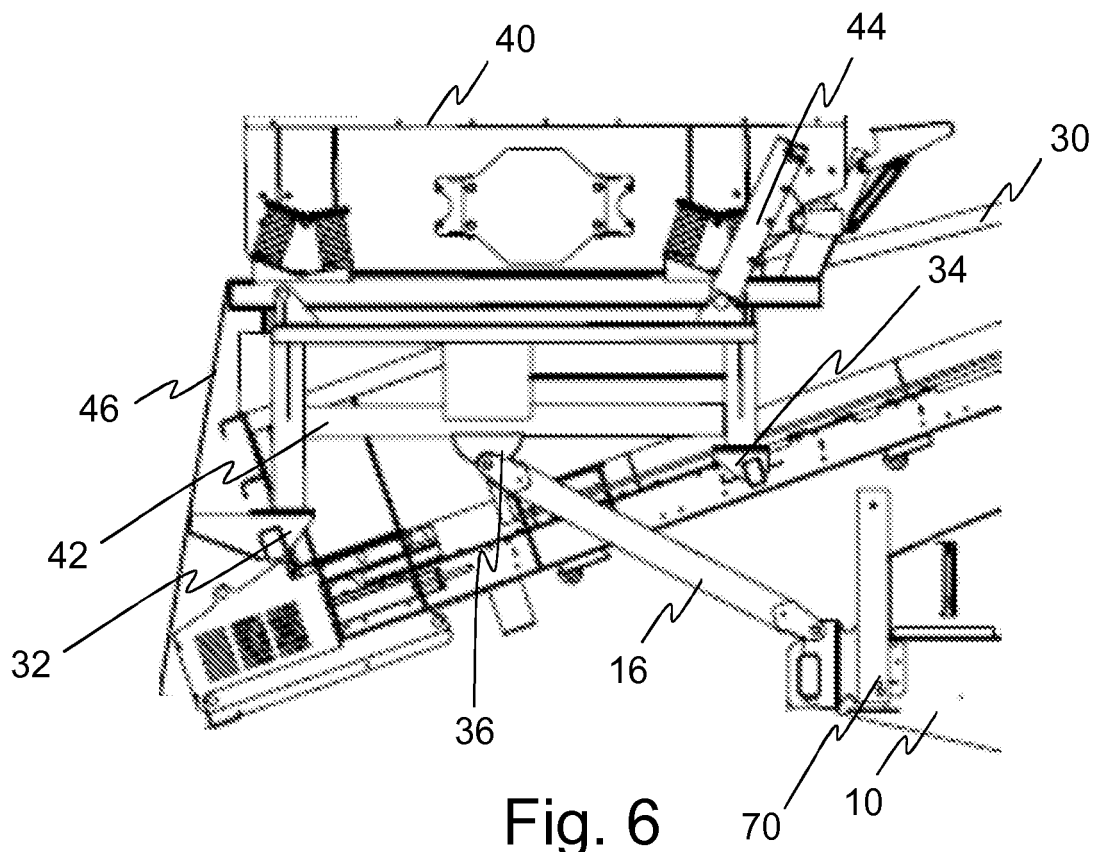


Fig. 4





REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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