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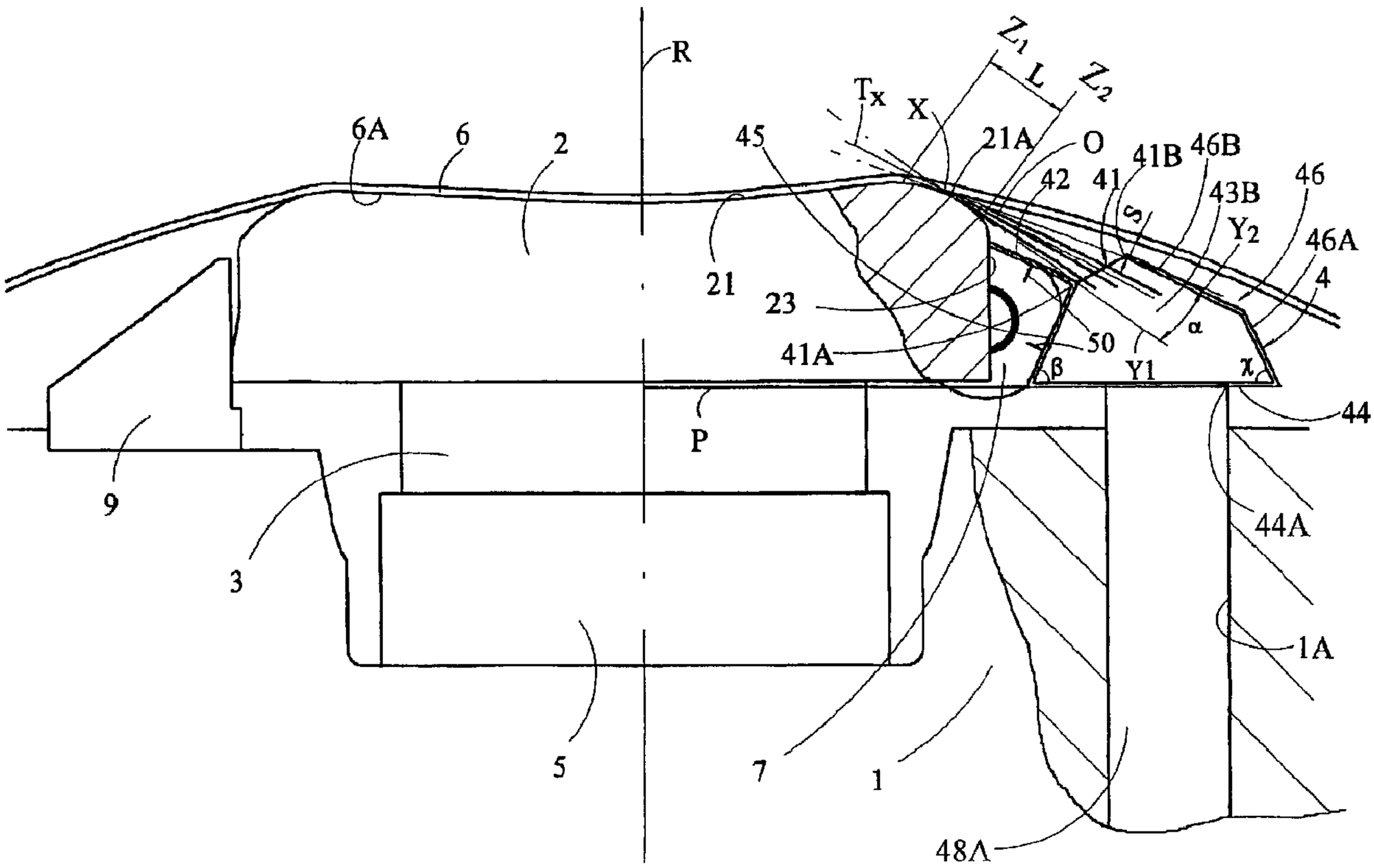
(72) Inventeurs/Inventors:
GUSTAVSSON, LARS, SE;
ANDERSSON, SVEN-OVE, SE;
ALSING, MATTIAS, SE

(73) Propriétaire/Owner:
METSO PAPER, INC., FI

(74) Agent: GOWLING LAFLEUR HENDERSON LLP

(54) Titre : PROCEDE ET DISPOSITIF D'EVACUATION DE L'HUILE D'UNE UNITE DE PRESSE A SABOT
(54) Title: METHOD AND DEVICE FOR OIL EVACUATION FROM A SHOE PRESS UNIT



(57) Abrégé/Abstract:
A shoe press unit comprises a support beam, a shoe element movably supported on the beam, a pressing unit arranged between the beam and the shoe element for urging the shoe element away from the beam and toward a counter element, and a flexible belt that is arranged to slide over the pressing surface of the shoe element. An oil evacuation arrangement is affixed to the shoe element proximate an upstream edge region thereof. The oil evacuation arrangement has an inlet opening located such that excess oil expelled from between the belt and the shoe element passes through the inlet opening. An evacuation duct is connected with the container for evacuating oil therefrom, and the duct is movably connected to an outlet pipe within the shoe press unit. In one embodiment, the duct is connected via a flexible bellows to a pipe fixed to the outlet pipe.

ABSTRACT

A shoe press unit comprises a support beam, a shoe element movably supported on the beam, a pressing unit arranged between the beam and the shoe element for urging the shoe element away from the beam and toward a counter element, and a flexible belt that is arranged to slide over the pressing surface of the shoe element. An oil evacuation arrangement is affixed to the shoe element proximate an upstream edge region thereof. The oil evacuation arrangement has an inlet opening located such that excess oil expelled from between the belt and the shoe element passes through the inlet opening. An evacuation duct is connected with the container for evacuating oil therefrom, and the duct is movably connected to an outlet pipe within the shoe press unit. In one embodiment, the duct is connected via a flexible bellows to a pipe fixed to the outlet pipe.

METHOD AND DEVICE FOR OIL EVACUATION FROM A SHOE PRESS UNIT

TECHNICAL FIELD

The invention relates to a method for oil evacuation from a shoe press unit, which shoe press unit comprises a beam, a shoe element arranged movably on said beam by means of a pressing unit and having a pressing surface, an oil evacuation arrangement with at least one inlet opening, a number of evacuation ducts and an outlet pipe, and also a flexible belt interacting with said shoe element, oil being supplied during operation to lubricate between said pressing surface and said belt, an oil excess with kinetic energy being pressed out at an upstream edge region of said pressing surface, and an oil excess being evacuated from said shoe press unit by said oil evacuation arrangement, at least part of said oil excess being squirted directly into said inlet opening. The invention also relates to a device for a shoe press unit.

STATE OF THE ART

A method and a device for a shoe press unit as described above under technical field are previously known from, for example, US 5,935,385. In order to reduce the friction and thus also the heat generation between the belt and the shoe, oil is supplied during operation in order to lubricate and cool between said pressing surface and said belt. The oil is supplied in an excess which is pressed out at an upstream edge region (on the belt entry side) of said pressing surface. The oil excess is then evacuated from said shoe press unit by an oil evacuation arrangement. According to US 5,935,385, the inlet opening to said oil evacuation arrangement is arranged on the beam and at a distance from the shoe element. Therefore, the evacuation arrangement does not move together with the shoe.

During operation of a shoe press, an oil excess is pressed out from the converging zone which is formed between the edge region of the pressing surface and the belt. If the shoe press then has an oil evacuation arrangement with an inlet opening which is located in a region outside the region of the direct oil squirting which is brought about during operation, the kinetic energy present in the oil cannot always be utilized. If the oil evacuation arrangement is not provided with means which can prevent the oil from flowing in different directions, oil may also accumulate inside the shoe press unit. This in turn leads to the oil which accumulates inside the shoe press being mixed with air, which makes evacuation of the oil more difficult and also means that extra subsequent measures have to be taken in order to separate the air from the oil before re-use. In addition, heat may be given off from the pressed-out excess oil before it is evacuated,

which results in an undesirable temperature increase inside the shoe press unit. From the point of view of operation economy also, it is disadvantageous to have an accumulation of oil inside the shoe press unit because this requires an increased power input.

BRIEF DESCRIPTION OF THE INVENTION

It is one object of the present invention to eliminate or at least to minimize at least one of the abovementioned disadvantages, which is achieved by means of a method for oil evacuation from a shoe press unit, which shoe press unit comprises a beam, a shoe element arranged movably on said beam by means of a pressing unit and having a pressing surface, an oil evacuation arrangement with at least one inlet opening which is moved with the shoe element, a number of evacuation ducts and an outlet pipe, and also a flexible belt interacting with said shoe element, oil being supplied during operation to lubricate between said pressing surface and said belt, an oil excess with kinetic energy being pressed out at an upstream edge region of said pressing surface, and an oil excess being evacuated from said shoe press unit by said oil evacuation arrangement, characterized in that said inlet opening is arranged in such a manner in a container connected firmly to the shoe element that a large part of said oil excess is squirted directly into said inlet opening, in that said outlet pipe is firmly connected to said beam, and in that at least a first part of said evacuation duct is arranged movably in relation to said outlet pipe.

The invention affords many advantages. In the first place, the positioning and arrangement of the inlet opening means that a large part of the kinetic energy from the pressed-out oil is useful for evacuation of excess oil. Furthermore, the construction of the oil evacuation arrangement results in efficient evacuation being brought about. Moreover, the invention makes it possible for the temperature in the shoe press unit to be kept at a lower level because a large part of the hot oil is evacuated without having time to give off its heat inside the shoe press unit. Furthermore, the efficient evacuation results in a reduction in the energy consumption for operation of the shoe press unit because no or only an insignificant quantity of excess oil accumulates inside the shoe press unit.

According to further aspects of the method according to the invention:

- said evacuation duct comprises a first, preferably essentially rigid, tubular part which is firmly connected to said device with inlet opening,
- said tubular part is arranged movably inside a through-hole in the beam and is of sufficient length to project on the other side of said through-hole,

- the end of said movable tubular part is arranged movably in a sealing manner in relation to said outlet pipe,
- a flexible means, preferably a rubber bellows, is used in order to provide said seal,
- said flexible means is connected by its one end to said movable tubular duct and by its other end to a second tubular duct which is arranged firmly on said outlet pipe,
- said shoe press unit consists of a closed shoe press which is provided with an inner overpressure, said overpressure lying between 10-500 mbar, preferably below 200 mbar, and more preferably below 50 mbar,
- said outlet pipe is connected to an underpressure acting from outside the shoe press for the purpose of making it easier to evacuate said oil excess.

The invention also relates to a device for a shoe press unit, which shoe press unit comprises a beam, a shoe element arranged movably on said beam by means of a pressing unit and having a pressing surface comprising an upstream edge region, an oil evacuation arrangement with an inlet opening, said inlet opening being arranged firmly in relation to said shoe element, a number of evacuation ducts and an outlet pipe, and also a flexible belt interacting with said shoe element, characterized in that said inlet opening is arranged in such a manner in a container connected firmly to the shoe element that a large part of said oil excess is squirted directly into said inlet opening, in that said outlet pipe is connected firmly to said beam, and in that at least a part of one evacuation duct is arranged movably in relation to said outlet pipe.
According to further aspects of a device according to the invention:
- said device with inlet arrangement is in the form of a container, to which said movable part of said evacuation duct is connected firmly in a sealing manner and which preferably comprises enclosing wall elements on all sides and a bottom,
- said movable part of said evacuation duct interacts with a sealing means which forms an essentially sealed connection between said inlet opening and said outlet pipe,
- said sealing means consists of a flexible tubular device, preferably a rubber bellows, which is connected by its one end sealingly around said movable part of the evacuation duct and by its other end to an attachment which is connected firmly to said outlet pipe,
- said attachment consists of a tubular connection piece, preferably a metal pipe, which is connected to said outlet pipe in a sealing manner,
- said movable part of the evacuation duct interacts, at its end by means of its outer surface, directly with a sealing means, preferably containing at least one O-ring, arranged at the inlet opening of the evacuation duct,
- said sealing means comprises two tubular, telescopically arranged part elements which interact in a sealing manner,

- the region between a lower delimiting surface of the inlet opening and the shoe element is provided with shielding means, which means preferably extends essentially rectilinearly,
- the shortest distance between the upper delimiting surface of said inlet opening and the inner surface of the belt is between 0-10 mm, and is preferably less than 5 mm,
- the longitudinal extent of said container is between 500-1500 mm,
- said first evacuation duct has a diameter of between 30-100 mm, preferably 50-70 mm,
- at least two such containers are arranged next to one another inside said shoe press unit.

DESCRIPTION OF THE FIGURES

The invention will be described in greater detail below with reference to the appended drawings, in which:

Fig. 1 shows a preferred embodiment of the invention in cross section,

Fig. 2 shows a preferred embodiment of the invention partly in cross section, installed in a closed shoe press unit,

Fig. 3 shows a perspective view of a preferred component according to the invention, and

Fig. 4 shows in cross section an alternative embodiment of an evacuation duct according to the invention.

DETAILED DESCRIPTION

Fig. 1 shows in cross section the principles of a shoe press unit according to the invention. According to principles known per se, the shoe press unit comprises a support beam 1, in which a recess is arranged for a pressing unit 3, 5 for a shoe element 2. The pressing unit 3, 5 consists in a manner known per se of a hydraulic piston which is arranged in a sealing manner inside a hydraulic cylinder 5, so that the shoe element 2 can be moved hydraulically to and fro in a direction which is at right angles in relation to the extent of the shoe element 2 in the longitudinal direction. A support heel 9 is arranged at one short end of the shoe element 2. An endless, flexible belt/jacket 6 is arranged in a manner known per se so as to interact, by means of its one surface 6A, with a pressing surface 21 of the shoe element 2 and, by means of its other surface 6B, with a counter-roll 10. The endless belt 6 rotates anti-clockwise, as illustrated in the diagram. The heel 9 is therefore arranged at the downstream end of the shoe element 2. Arranged to the left in the diagram of the upstream end of the shoe element is a distribution chamber 7 which in a known manner supplies the pressing surface 21 with oil via ducts 71. Also shown is an oil evacuation arrangement 4 which comprises an

inlet opening 41 arranged in a trough-shaped container (see Fig. 3), a first evacuation duct 48A, a rubber bellows 48C, an upper connection duct 48B and an outlet pipe 49. It is clear that the rubber bellows 48C can offer good flexibility in many directions, not only for vertical movement between the two ducts 48A, 48B but also with regard to angular deviations and also displacements in the transverse direction which may occur under certain operating conditions. The two ducts 48A, 48B are suitably made from a dimensionally stable material, for example metal, so that they cannot be compressed by outer overpressure. Fig. 1 also shows that the shoe press unit is provided with a secondary oil evacuation arrangement 11 which is suitably used as an oil evacuation system when at a standstill. The figure also shows that the shoe press unit is provided with belt guides 12 which are arranged on a support plate 13 and the purpose of which is to make possible installation/removal of the belt/jacket 6.

Fig. 2 shows in greater detail certain parts of a shoe press unit according to the invention. It can be seen that the shoe element 2 is of symmetrical design, according to the preferred embodiment shown, in each edge region of said pressing surface 21. At the upstream end of the shoe element 2, an edge region Z_1-Z_2 is marked, which constitutes a region with a positively curved surface 21A. As can be seen, the extent L of this edge region 21A is considerably shorter than the concave part 21 of the pressing surface. Within this edge region 21A is a line X at which contact first takes place between the belt 6 and the pressing surface 21 of the shoe element.

Arranged on the distribution chamber 7 is the lower part of the oil evacuation arrangement 4. The latter comprises a guide plate 42, a container 45, 44, 46, 43A, 43B, an evacuation duct 48 and the inlet opening 41 which is slot-shaped. The container consists of a first longitudinal wall element 45, a plane bottom 44, a second longitudinal wall element 46 and two end walls 43A, 43B. The upstream longitudinal wall 46 is divided into a lower section 46A and an upper section 46B. The lower wall section 46A is arranged at an acute angle in relation to the bottom 44 and a plane P which contains the plane bottom 44. According to the preferred embodiment, the angle χ is approximately 60-70°. The upper section 46B is arranged at a smaller acute angle in relation to said plane P. In this way, the upper section 46B is imparted an inclination which differs only by a few degrees from the tangent of the belt 6 in the region of said upper section 46B. The upper section therefore converges slightly towards the inner surface of the belt. The end 41B of the upper section forms the upper delimiting surface of the inlet opening 41. It is advantageous if this upper delimiting surface 41B is positioned close to, or in certain cases even in contact with, the inner surface of the belt

6, so that as small a gap as possible is formed between them. The downstream wall element 45 is also arranged at an acute angle in relation to said plane P. According to the preferred embodiment, it forms an angle β which is essentially the same as the angle χ of the other wall element 46A. End walls 43A, 43B are arranged at either short end of the container. The lower delimiting surface 41A of the inlet opening 41 is formed by the upper edge of the downstream longitudinal wall element 45. All the components forming part of the container are made of thin sheet metal. In the preferred case, the sheet is 2 mm thick. Extending at right angles from said lower delimiting surface 41A in the direction of and up to the shoe element 2 is a guide plate 42. The guide plate 42 is also made from thin sheet metal and it and the container are suitably made from one and the same piece of sheet metal which is suitably first stamped out and then bent into the desired final shape, after which the end walls 43A, 43B are connected in a sealing manner, suitably by means of welding, to the parts which have been bent up to form the container. Arranged in the bottom of the container is a circular hole 44A, in which an evacuation pipe 48A is arranged, suitably welded, in a sealing manner. The container is fixed by means of screw connections 50 to the distribution chamber 7 which is in turn connected (usually screwed) to one longitudinal side wall 23 of the shoe element. The evacuation arrangement 4 is therefore firmly anchored on the shoe element 2, so that these are movable as a unit. For the purpose of enabling movement of the shoe element and the evacuation arrangement 4, there is in the support beam 1 a recess 1A, inside which the evacuation pipe 48A can move freely upwards and downwards.

As already mentioned, the evacuation arrangement 4 is positioned with its upper delimiting surface 41B of the inlet opening 41 relatively close to the surface of the belt, so that the distance S between them during operation is sufficiently small to prevent any significant quantity of oil escaping between the inlet opening 41 and the belt 6. The distance S should preferably not be permitted to exceed 10 mm. The inlet opening 41 should moreover be positioned in such a manner that the quantity of excess oil which is pressed out can squirt directly into the inlet opening 41. According to the preferred embodiment, this is brought about by virtue of the fact that the tangent Tx of the positively curved surface at the contact line X between the belt 6 and the shoe element 2 extends between the lower delimiting surface 41A and the upper delimiting surface 41B. In this case, the geometries between said edge region 21A and the inlet opening should be arranged so that the tangent Tx (which can be considered to represent a kind of median vector for the oil excess which normally squirts out in a divergent manner) of said contact line X deviates by a maximum of 15° from at least one of the imaginary straight lines Y1 and Y2 which extend between said contact line X and the lower

delimiting surface 41A and, respectively, the upper delimiting surface 41B of the inlet opening 41. Furthermore, the inlet opening 41 should be positioned close to the upstream edge region 21A, suitably between 10-150 mm, but more preferably at a maximum of 100 mm, from the edge region 21A.

The device according to Figs 1 and 2 functions in the following manner. When the machine is started up for operation, the inner surface of the belt is provided with an oil film in order to lubricate between the belt 6 and the pressing surface 21 of the shoe element 2 but also in order to cool the shoe press unit. Oil supply usually takes place in a number of different positions, inter alia through the distribution chamber 7 which lubricates in the central zone of said pressing surface 21 (see Fig. 1) and also usually at least somewhere else directly on the inner surface of the belt. In other respects, the shoe press unit is operated in a manner known per se, the shoe element 2 exerting, by means of the pressing unit 3, 5, a pressure against the counter-roll 10 so that a fibre web lying in between is subjected to the desired treatment, for example dewatering. In this connection, the oil excess which accompanies the belt 6 to the upstream end of the shoe element will be pressed out of the converging zone formed between the inner surface 6A of the belt and the upstream edge region 21A of the shoe element. The excess oil O is in this way imparted kinetic energy and will squirt backwards, counter to the direction of movement of the belt, into the inlet opening 41 to be collected inside the container 43A, 43B, 44, 45, 46. By virtue of a slight overpressure inside the shoe press unit (when a closed shoe press unit is used), the oil collected in the container will be pressed out through the first part 48A of the evacuation duct, on through the rubber bellows 48C and then, via the connection pipe 48B, into the outlet pipe 49, to arrive finally in a collecting vessel (not shown). In certain applications, the outlet pipe 49 is connected to an underpressure in order to ensure adequate oil evacuation. It is usual to try to operate a closed shoe press unit with an inner overpressure of less than 50 mbar.

A certain quantity of oil will not be removed but will instead follow the surface in the edge region 21A of the shoe element down towards the end wall 23 of the shoe element. By virtue of the guide plate 42, however, which bears against the end wall 23 of the shoe element, this quantity of oil will also be guided towards the inlet opening 41. In the embodiment shown in Fig. 1, gravity assists in this connection in bringing about this extra oil inflow to the container. It should be pointed out, however, that this is not a necessity because a certain underpressure can be brought about in the region adjacent to the inlet opening 41 so that this inflow of excess oil can take place even without the influence of gravity. The fact that the evacuation arrangement is arranged with the

evacuation pipe 48A vertical does not therefore constitute a limitation of the invention shown.

Fig. 3 shows in perspective the abovementioned container 43A, 43B, 44, 45, 46 in the form of a unit with a guide plate 42 and an evacuation pipe 48A. It can also be seen that the guide plate 42 is provided with a number of holes 47 for arranging fixing screws 50. By virtue of the fact that the evacuation arrangement in the preferred case is sectioned, in such a manner that a number of containers of limited length are arranged next to one another on the shoe element 2, the inlet opening 41, which preferably extends along the entire width of the container, of each container will always be optimally positioned in relation to the squirting oil irrespective of deflection of the beam 1. According to the preferred embodiment, the length of each container is approximately 1 metre. The length of a container should suitably not be less than 500 mm or more than 1500 mm, so that optimum evacuation can be achieved. For the same reason, the diameter of the evacuation duct/pipe should not be too small; suitably it is approximately 60 mm. The diameter should preferably not be less than 10 mm and should suitably not exceed 50 mm.

Fig. 4 shows a first alternative embodiment according to the invention, the evacuation duct 48 being provided with two telescopically arranged parts 48A, 48B. The first part 48A of the evacuation duct is in this connection provided with a relatively large diameter D1, while the second part 48B of the evacuation duct is provided with a considerably smaller diameter D2. The two duct parts are arranged so that, in the rest position, they overlap over a considerable length l which is preferably at least the same as the diameter of the first duct part 48A. Arranged in the annular gap 60 formed between the overlapping pipe parts is a seal 61 which, according to the preferred embodiment, is fixed to the end of the second duct part 48B. Movement is therefore possible between the seal 61 and the first duct part 48A, a sliding movement taking place in the cylindrical contact region 62 between the seal 61 and the inner surface of the first duct part 48A.

According to another alternative embodiment according to the invention, the evacuation pipe 48A which is fixed to the container is sufficiently long to be capable of entering the outlet pipe 49 through its opening 49A. In this case, a seal, for example one or more O-rings, is arranged directly in the opening 49A on the outlet pipe 49, these seals interacting directly with the outer surface of the evacuation pipe 48A. By virtue of the fact that the outlet pipe 49 can be made with a large diameter, suitably between 100-200

mm, the end of the evacuation pipe 48A can move freely inside the outlet pipe 49 because the maximum stroke length of a shoe element 2 does not normally ever exceed 50 mm, usually lying between 20-35 mm.

In many applications, it is advantageous if the sealing connection between the first duct part 48A and the adjacent part of the oil evacuation arrangement is flexible in more than one direction so that the connection is flexible in the lateral direction also, because the shoe element can during operation be caused (by lateral forces and/or heat) to make certain lateral movements, which movements the first duct part 48A has to be capable of following without the risk of complications.

The invention is not limited by what has been disclosed above but can be varied within the scope of the patent claims below. Therefore, it is clear, for example, that the evacuation arrangement can be made of many other materials than thin sheet metal, for example a polymer material. It is also clear that the inlet opening 41 of the evacuation arrangement can be divided (for example for reasons of strength) so that a number of to a greater or lesser extent elongate openings next to one another is formed. It is also clear that the component parts of the evacuation arrangement do not necessarily have to made of/from one and the same material, but can be made from a number of different components/materials, which can be arranged with/connected to one another in many alternative ways which will be self-evident to the person skilled in the art. It is also clear that it is only for the purpose of exemplification that the evacuation arrangement is arranged on a distribution chamber. The evacuation arrangement can of course be arranged directly on the shoe element 2 for example, along its side surface 23 for example. Furthermore, it is clear that the container can consist of a device of very different design from that shown above, for example with a considerably smaller "container space" and/or with a cross-sectional shape which is entirely different (for example oval), according to the space available in the shoe press for which it is intended to be used. It is also clear that devices other than a rubber bellows 48C can be provided for making the flexible, sealing connection between two part pipes in the evacuation arrangement, for example a fibre-reinforced flexible and impermeable polymer material other than rubber, or a liquidtight fabric material.

CLAIMS

1. A method for operating a shoe press unit having a beam, a shoe element movably supported on the beam and having a pressing surface, a flexible belt arranged to slide over the pressing surface of the shoe element, and a pressing unit operable to urge the shoe element in a pressing direction away from the beam, the method comprising:

supplying oil between the belt and the pressing surface of the shoe element for lubricating therebetween, excess oil being expelled under pressure from between the belt and the shoe element at an upstream edge region of the shoe element such that the excess oil exits from between the belt and shoe element with an initial kinetic energy;

capturing the excess oil expelled from between the belt and the shoe element with an oil evacuation arrangement formed separately from the shoe element and affixed to the shoe element such that the shoe element and oil evacuation arrangement move together as a unit, the oil evacuation arrangement including an evacuation duct fixed relative to the shoe element for evacuating excess oil expelled from between the belt and shoe element; and

passing the oil evacuated through the duct into an outlet pipe fixed relative to the beam, and providing a movable coupling between the duct and the outlet pipe such that the duct can move in at least the pressing direction relative to the outlet pipe as the shoe element is moved back and forth by the pressing unit.

2. The method of claim 1, wherein the evacuation duct includes a first tubular member that is substantially rigid and extends through a through-hole formed in the beam so as to be movable within the through-hole.

3. The method of claim 2, wherein the oil evacuated through the evacuation duct is passed through the first tubular member of the duct into the outlet pipe arranged in an interior of the beam.

4. The method of claim 1, wherein the evacuation duct includes a first tubular member that is substantially rigid and is firmly affixed to the shoe element, and wherein the oil evacuated through the first tubular member is passed to the outlet pipe via a flexible sealing member arranged between the first tubular member and the outlet pipe.

5. The method of claim 1, further comprising pressurizing an interior of the shoe press unit with an overpressure of about 10 mbar - 500 mbar.

6. The method of claim 1, further comprising exerting a vacuum on the outlet pipe for facilitating evacuating the excess oil from the shoe press unit.

7. A shoe press unit, comprising:

a beam;

a shoe element movably supported on the beam and having a pressing surface and an upstream edge region;

a pressing unit for urging the shoe element in a pressing direction away from the beam;

a flexible belt arranged to slide over the pressing surface of the shoe element, oil being supplied between the belt and the pressing surface for lubricating the belt, an excess oil being expelled under pressure from between the belt and the shoe element at the upstream edge region of the shoe element such that the excess oil exits from between the belt and shoe element with an initial kinetic energy;

an oil evacuation arrangement formed separately from the shoe element and affixed to the shoe element proximate the upstream edge region thereof such that the shoe element and oil evacuation arrangement move together as a unit, the oil evacuation arrangement including an evacuation duct fixed relative to the shoe element for evacuating excess oil expelled from between the belt and shoe element; and

an outlet pipe fixed relative to the beam, the duct being movably connected to the outlet pipe such that the duct can move in at least the pressing direction relative to the outlet pipe as the shoe element is moved back and forth by the pressing unit.

8. The shoe press unit of claim 7, wherein the evacuation duct includes a first tubular member that is substantially rigid and extends through a through-hole formed in the beam so as to be movable within the through-hole.

9. The shoe press unit of claim 7, wherein the evacuation arrangement includes a container having an inlet opening through which the excess oil is received, and the evacuation duct includes a first tubular member that is substantially rigid and is fixed to the container for evacuating oil therefrom.

10. The shoe press unit of claim 9, wherein the first tubular member is connected to the outlet pipe via a flexible sealing member.

11. The shoe press unit of claim 10, wherein the sealing member comprises a flexible tubular device having one end sealingly connected to an end of the first tubular member and an opposite end sealingly connected to an attachment that is fixedly attached to the outlet pipe.

12. The shoe press unit of claim 11, wherein the flexible tubular device comprises an elastomeric bellows.

13. The shoe press unit of claim 11, wherein the attachment comprises a pipe connected to the outlet pipe in a sealing manner.

14. The shoe press unit of claim 7, wherein the duct is connected to the outlet pipe via a sealing device comprising two tubular members one of which is slidably received inside the other.

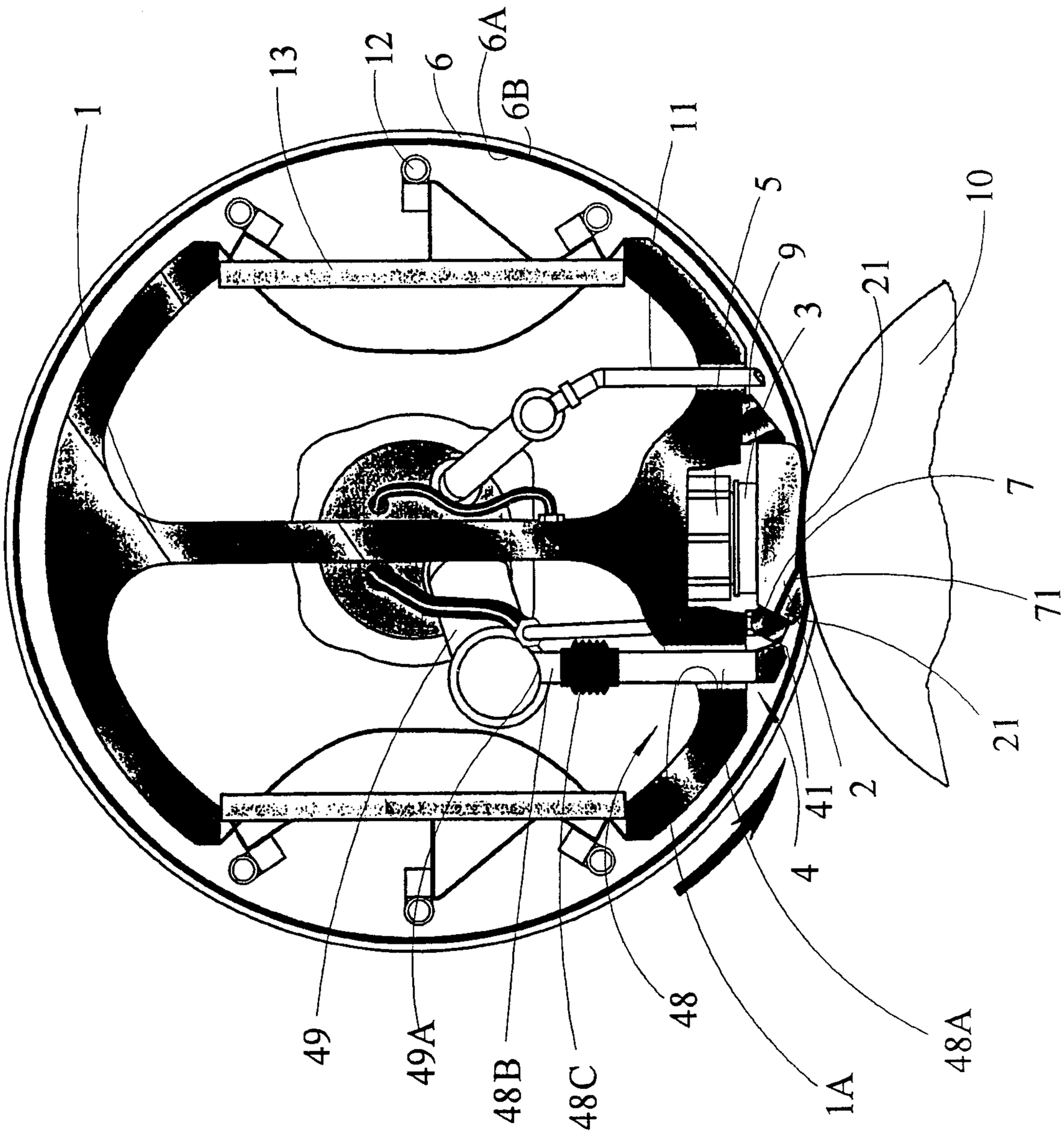
15. The shoe press unit of claim 7, wherein the oil evacuation duct includes a substantially rigid tubular member that is slidably and sealingly received through an opening in a wall of the outlet pipe.

16. The shoe press unit of claim 15, wherein at least one seal is arranged at the opening in the outlet pipe for sealing against an outer surface of the tubular member of the evacuation duct.

17. The shoe press unit of claim 15, wherein the tubular member of the evacuation duct has a diameter of about 30 mm -100 mm.

18. The shoe press unit of claim 7, wherein the evacuation arrangement comprises at least two containers arranged end-to-end and extending lengthwise along the shoe element in a cross-machine direction, each container having an inlet opening arranged for receiving excess oil expelled from between the belt and pressing surface, and each container having an evacuation duct movably connected to the outlet pipe.

Fig 1



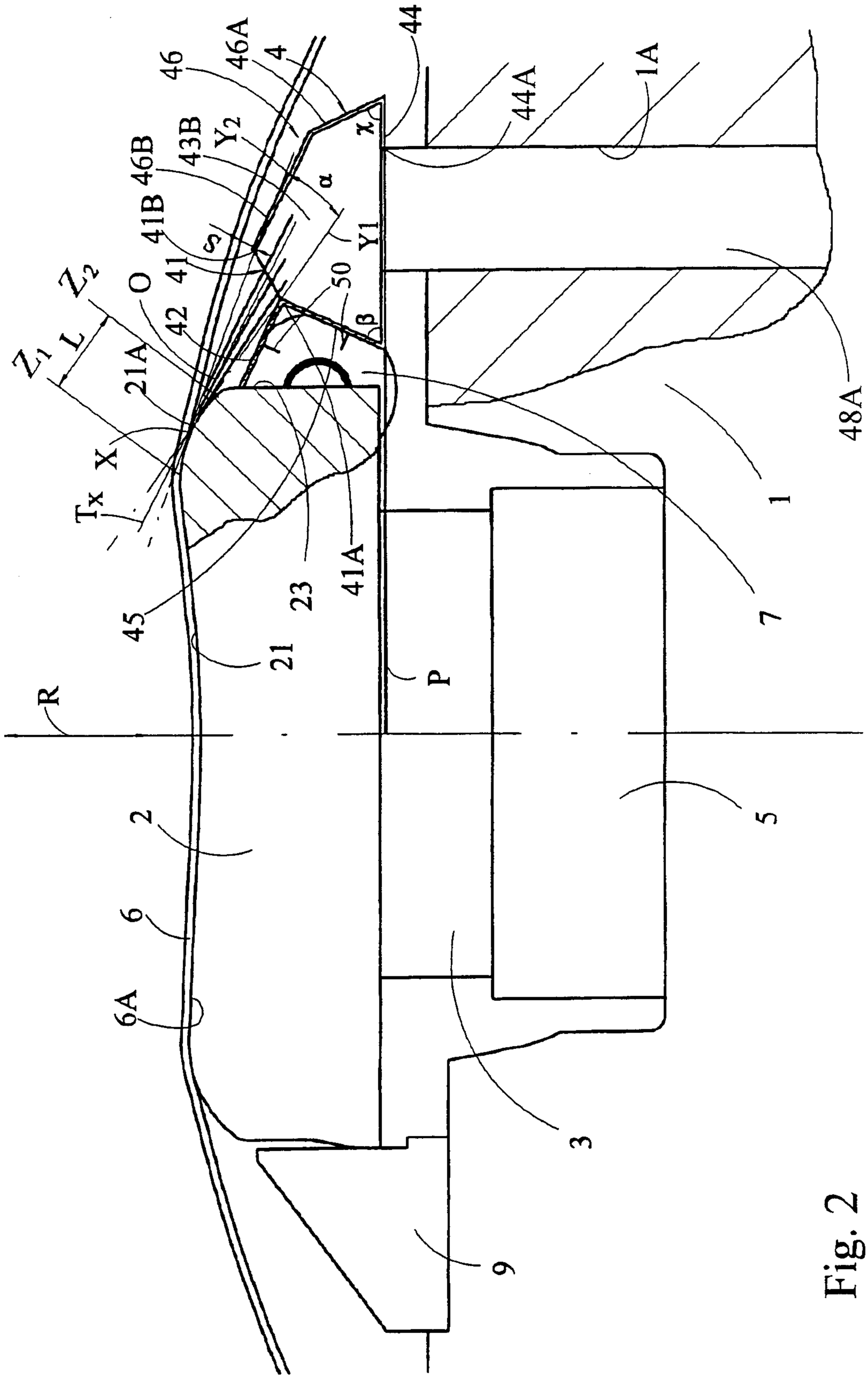

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Fig. 2

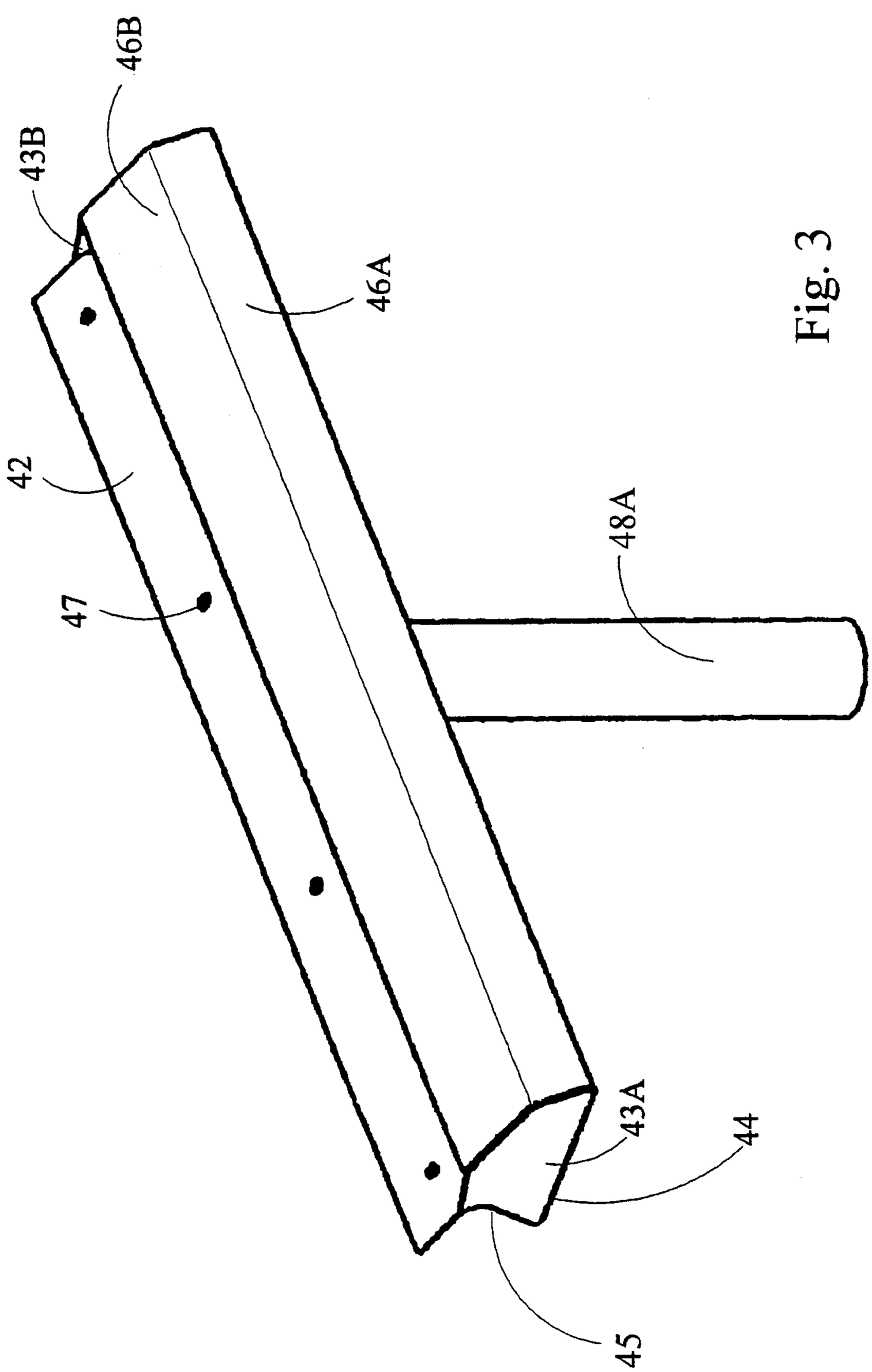


Fig. 3

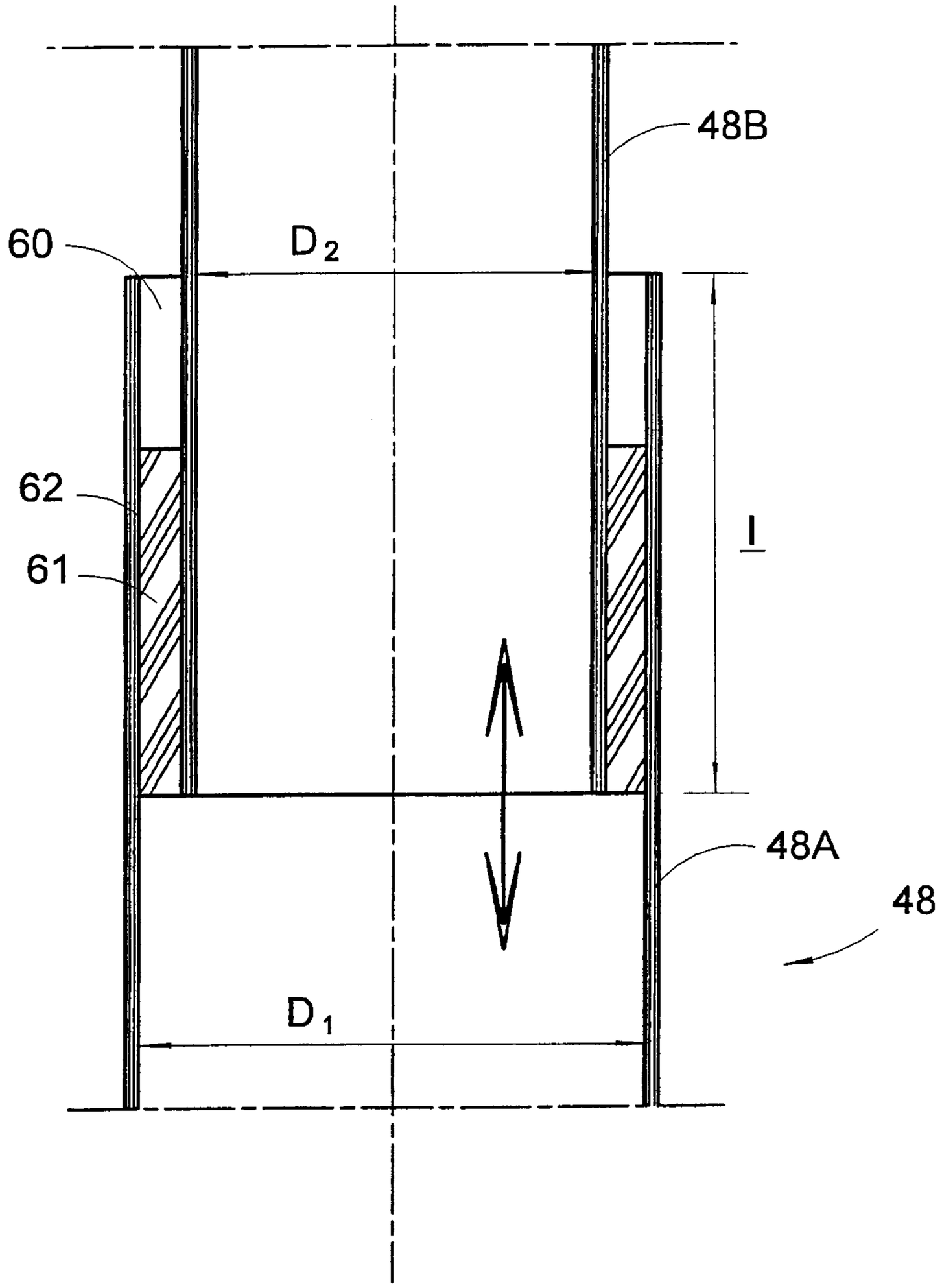
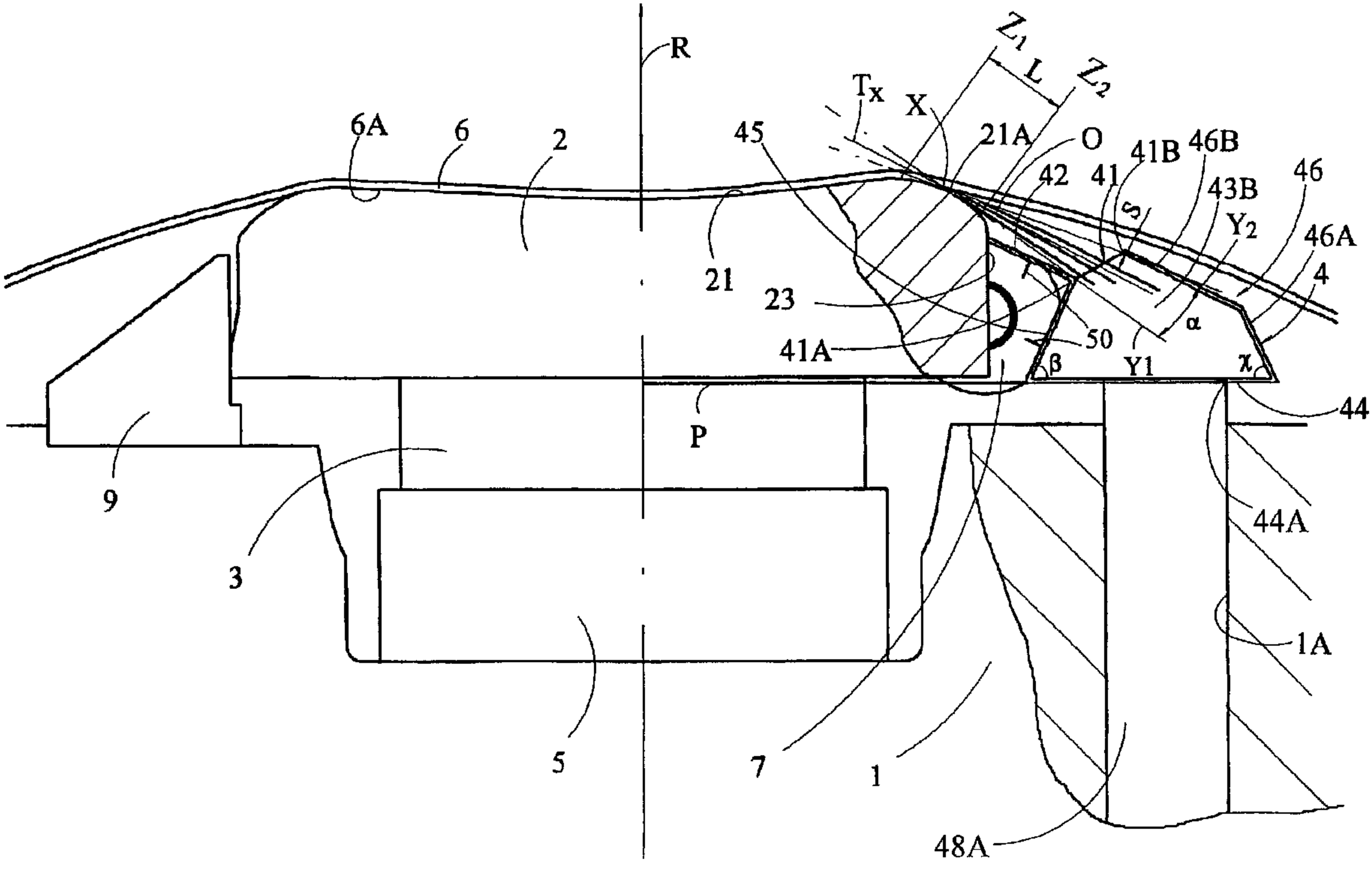


Fig. 4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