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(54) **A gate and a method of producing a carrier for a gate**

Schiebetor und Verfahren zur Herstellung eines Trägers für ein Tor

Portail et procédé de fabrication d'un longeron pour portail

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Description

The invention relates to a method of manufacturing a movable gate intended for closing a passage, wherein an elongated carrier functions to support railings or the like closing means forming part of the gate as well as to connect said gate to a support anchored with respect to the ground, relative to which the gate is movable. From European Patent No. 0 128 248 a gate is known which is provided with a carrier, which is made up of a single beam, in which pretensioned wires are provided, by means of which a pressure load is applied to the beam in order to prevent vertically downward deflection of the beam.

Generally this construction is satisfactory per se, but one drawback is inter alia the fact that tensioning of said wires usually has to take place on the site where the gate is to be placed, which involves extra cost and which furthermore implies the risk that the pretension is not optimally set up.

Furthermore there is always the risk of breaking of the pre-tensioned wires. A further drawback is that an eccentric arrangement of the rollers will lead to a disadvantageous loading of the carrier.

According to the invention a gate is manufactured in which the carrier is built up of two vertically spaced-apart beams extending substantially horizontal and parallel to each other, whereby a stress is first set up in at least one of the beams, whereupon the stressed beam is fixedly connected to the other beam by means of plate-shaped parts symmetrically positioned on either side of the beams, said plate-shaped parts being spaced-apart in horizontal direction, at least over part of their height, by a distance which is larger than the width of the beams, after which the stress of the stressed beam(s) is released.

When at least one of the beams is correctly stressed the carrier thus obtained will be slightly concave after the stress is released. Upon assembly of the gate it is then possible to arrange that the carrier is positioned in such a manner that the centre of curvature of the slightly concave carrier is located vertically above the carrier. If the carrier should slightly sag under the influence of the weight of the gate, the carrier will take up an at least substantially horizontal position, so that a light-weight an yet easily operated gate has been obtained. It is thereby possible to manufacture the carrier under optimal circumstances, for example in an air-conditioned room, so that the carrier is capable of optimally meeting the requirements made. Furthermore the completed carrier does not contain any pretensioned wires or the like, whilst the work which needs to be carried out on the site where the gate is to be placed is reduced to a minimum. The plate-shaped parts of the carrier thereby provide the required stiffness in horizontal direction as well as a good torsional stiffness.

A further aspect of the invention relates to a gate for closing a passage manufactured by carrying out the above described method as claimed in claim 5.

The invention will be explained in more detail hereafter with reference to parts of the gate according to the invention diagrammatically illustrated in the accompanying Figures.

Figure 1 is a perspective view of a part of a carrier for a gate according to the invention, with a few railings connected thereto and a few rollers guiding the carrier.

Figure 2 is a larger-scale cross-sectional view of Figure 1.

Figure 1 shows part of a carrier 1 arranged horizontally in use, said carrier together with the vertical railings 2 connected thereto forming a gate, in a similar manner as described in the aforesaid European Patent No. 0 128 248. When used as a gate which can be opened and closed the carrier is guided by a plurality of rollers 3 secured to supports anchored in the ground, a few of said rollers being shown in Figures 1 and 2. Also with regard to a support of the movable gate of this type reference may be made to the aforesaid European Patent No. 0 128 248, which is why it is not considered necessary to discuss this in more detail herein.

As is apparent from Figures 1 and 2 the carrier is provided with two beams 4 and 5, one being positioned directly above the other, which are of rectangular section in the illustrated embodiment and which are arranged in such a manner that their long sides extend vertically.

The two beams 4 and 5 are interconnected by two plate-shaped parts 6 and 7 positioned on either side of said beams. As appears in particular from Figure 2, each of said plate-shaped parts 6 and 7 is built up of a vertically extending plate portion 8, which is joined at its upper edge by a plate portion 9 sloping upwards in the direction of the beam 4, whilst each plate portion is joined at its lower edge by a plate portion 10 sloping downwards in the direction of the beam 5.

A double-folded plate portion 11 joins the upper edge of the plate portion 9 remote from the plate portion 8, said plate portion 11 abutting against one side of the upper beam 4.

Similarly a double-folded plate portion 12 joins the lower edge of the plate portion 10 remote from the plate portion 8, said plate portion 12 abutting against one side of the lower beam 5.

The plate-shaped parts 6 and 7 are fixed to the upper beam 4 by securing the double-folded plate portions 11 to the beam 4 by means of rivets or the like. Similarly the lower double-folded plate portions 12 are fixed to the lower beam 5 by means of rivets or the like.

As is furthermore shown in the Figures regularly spaced-apart bars 13 are provided between the beams 4 and 5 in order to keep the beams 4 and 5 the desired distance apart, in particular during assembly of the carrier 1. For this purpose the ends of the bars 13 may for example be threaded and be screwed into corresponding threaded holes provided in the beams 4 and 5. Furthermore it is possible to provide the bars 13 with shoulders (not shown), which abut against the boundary sur-

faces of the beams 4 and 5 facing each other, whilst the ends of the bars 13 extending beyond said shoulders are inserted into corresponding holes provided in the beams 4 and 5.

Furthermore vertically aligned holes are provided in the plate-shaped part 7, more in particular in the plate portions 9 and 10 of the plate-shaped part 7, through which bars 2 forming the railings of the gate are passed, which are secured against shifting in their longitudinal direction by means not shown.

When the carrier 1 is to be assembled a stress will be set up in at least one of the beams 4 and 5, preferably a tensile stress in the upper beam 4. Then the beam 5 will be mounted at the desired distance from the beam 4 by interposing the bars 4, whereupon the beams 4 and 5 are interconnected by securing the plate-shaped parts 6 and 7 to the beams 4 and 5. Then the tensile stress on the beam 4 may be released. Upon releasing of the tensile stress on the beam 4 the carrier thus formed will tend to become slightly concave, in such a manner that the centre of curvature of said hollow carrier, seen in Figures 1 and 2, will be located above the carrier. During normal use the carrier, which is only supported near one end, at least in certain positions, will tend to deflect slightly under the influence of the weight of the gate, which will eventually result in a substantially straight position of the carrier. Another possibility to achieve a similar effect is to apply a pressure load to the beam 5 prior to assembling the beam 5 and the beam 4 into a carrier in the above-described manner. A third possibility is to apply a tensile load to the beam 4 as well as a pressure load to the beam 5 before interconnecting the two beams 4 and 5 in the above-described manner in order to form the carrier 1.

As is apparent from the Figures a symmetric construction of the carrier has been obtained, which carrier is supported in its central longitudinal plane by means of rollers 3 rolling on the upper side of the beam 4 and on the bottom side of the beam 5 respectively, as a result of which good running qualities of the beam are obtained.

Both the beams 4 and 5 and the plate-shaped parts 6 and 7 may be made of steel. It is possible thereby to use zinc-plated sheet material for producing the plate-shaped parts 6 and 7, which sheet material is coated with a coating of a desired colour.

For the beams 4 and 5 zinc-plated sections may be used, on which the rollers 3 roll. Wear-resistant running surfaces for the runners are thereby obtained, namely shining borders formed by the parts of the beams 4 and 5 extending beyond the plate-shaped parts 6 and 7, which in combination with the coloured plate-shaped parts 6 and 7 may lead to a beautiful aesthetic effect.

By using the construction according to the invention it is thus possible to obtain an inexpensive gate having good running qualities and a beautiful appearance, which is retained also after prolonged use.

In addition to that the construction of the carrier is such that it is very strong and readily made of steel, as a result of which an economical manufacture of the carrier can be realized.

Claims

1. A method of manufacturing a movable gate intended for closing a passage, wherein an elongated carrier (1) functions to support railings (2) or the like closing means forming part of the gate as well as to connect said gate to a support anchored with respect to the ground, relative to which the gate is movable, characterized in that the carrier (1) is built up of two vertically spaced-apart beams (4, 5) extending substantially horizontal and parallel to each other, whereby a stress is first set up in at least one of the beams (4, 5), whereupon the stressed beam is fixedly connected to the other beam by means of plate-shaped parts (6, 7) symmetrically positioned on either side of the beams (4, 5), said parts (6, 7) being spaced-apart in horizontal direction, at least over part of their height, by a distance which is larger than the width of the beams (4, 5), after which the stress of the stressed beam(s) is released.

2. Method according to claim 1, characterized in that a stress is set up in the upper one (4) of said two beams by applying a tensile load to said beam (4).

3. Method according to claim 1 or 2, characterized in that a stress is set up in the lower one (5) of said two beams by applying a pressure load to said beam (5).

4. Method according to any one of the preceding claims, characterized in that spacing means (13) are provided between said beams (4, 5) in order to keep the beams (4, 5) correctly spaced-apart when said plate-shaped parts (6, 7) are being provided.

5. A gate for closing a passage manufactured by carrying out the method according any one of the preceding claims, whereby said gate is provided with an elongate carrier (1) and with railings (2) or the like closing means connected to said carrier (1), and the carrier (1) movably couples the gate to a support anchored with respect to the ground by means of rollers (3) connected to said support, in such a manner that the gate can be opened and closed by moving the carrier (1) relative to the support, characterized in that said carrier is built up of two vertically spaced-apart beams (4, 5) extending substantially horizontal and parallel to each other, and being interconnected by means of plate-shaped parts (6, 7) symmetrically positioned on either side of said beams (4, 5), said plate-shaped parts (6, 7) being spaced-apart in horizontal direction, at least over

part of their height, by a distance which is larger than the width of the beams (4, 5), whereby a stress has been set up in one of said beams prior to connecting said pre-stressed beam to the other beam.

6. Gate according to claim 5, characterized in that said plate-shaped parts (4, 5) comprise vertically extending plate portions (8), which are connected to the upper beam (4) by means of upwardly sloping plate portions (9) joining their upper edges, and which are connected to the lower beam (5) by means of downwardly sloping plate portions (10) joining their bottom edges.

7. Gate according to any one of the claims 5 or 6, characterized in that the ends of said plate-shaped parts (6, 7) are provided with double-folded plate portions (11), which abut against the beams (4, 5) and which are fixed to said beams (4, 5).

8. Gate according to any one of the claims 5-7, characterized in that said beams are zinc-plated.

9. Gate according to any one of the claims 5-8, characterized in that the railings (2) of said gate are secured to one of said plate-shaped parts (7).

10. Gate according to any one of the preceding claims 5-9, characterized in that the beams (4, 5) extend over a part of their height beyond said plate-shaped parts (6, 7) at the upper and lower sides of the carrier (1).

11. Gate according to any of the preceding claims 5-10, characterized in that the rollers (3) are mounted on the support in such a manner, that said rollers (3) roll on the upper side of the upper beam (4) and on the bottom side of the lower beam (5) respectively.

Patentansprüche

1. Verfahren zur Herstellung eines zum Schließen eines Durchgangs bestimmten beweglichen Tors, in welchem ein langgestreckter Träger (1) die Funktion hat, Gitterstäbe (2) oder ähnliche ein Teil des Tores bildende Absperrmittel zu tragen sowie besagtes Tor mit einer bezüglich des Bodens verankerten Abstützung zu verbinden, in Bezug zu welcher das Tor bewegbar ist, dadurch gekennzeichnet, daß der Träger (1) aus zwei vertikal beabstandeten Tragholmen (4,5) aufgebaut wird, die sich im wesentlichen horizontal und parallel zueinander erstrecken, wobei zuerst eine Spannung in zumindest einem der Tragholme (4,5) eingestellt wird, worauf der gespannte Tragholm fest mit dem anderen Tragholm mittels plattenförmiger Teile (6,7) verbunden wird, die symmetrisch auf jeder Seite der Tragholme (4,5) positioniert und in horizontaler Richtung zumindest über einen Teil ihrer Höhe mit einem Abstand beabstandet sind, der größer als die Breite der Tragholme (4,5) ist, wonach die Spannung des bzw. der gespannten Tragholme aufgehoben wird.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß eine Spannung in dem oberen (4) der beiden Tragholme durch Anwendung einer Zuglast auf besagten Tragholm (4) eingestellt wird.

3. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß eine Spannung in dem unteren (5) der beiden Tragholme durch Anwendung einer Drucklast auf besagten Tragholm (5) eingestellt wird.

4. Verfahren nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß zwischen den Tragholmen (4,5) Abstandsmittel (13) vorgesehen werden, um die Tragholme (4,5) mit korrektem Zwischenraum beabstandet zu halten, wenn besagte plattenförmige Teile (6,7) vorgesehen werden.

5. Tor zum Schließen eines Durchgangs, das durch Ausführung des Verfahrens gemäß eines der vorangehenden Ansprüche hergestellt ist, wobei besagtes Tor mit einem langgestreckten Träger (1) und mit Gitterstäben (2) oder ähnlichen mit besagtem Träger (1) verbundenen Absperrmitteln versehen ist und der Träger (1) das Tor mit einer Abstützung, die bezüglich des Bodens verankert ist mittels mit besagter Abstützung verbundenen Rollen (3), in solch einer Weise bewegbar koppelt, daß das Tor durch Bewegen des Trägers (1) in Bezug zu der Abstützung geöffnet und geschlossen werden kann, dadurch gekennzeichnet, daß besagter Träger aus zwei vertikal mit Zwischenraum angeordneten Tragholmen (4,5) aufgebaut ist, die sich im wesentlichen horizontal und parallel zueinander erstrekken und mittels plattenförmiger Teile (6,7) verbunden sind, die symmetrisch auf jeder Seite der Tragholme (4,5) positioniert sind, wobei besagte plattenförmige Teile (6,7) zumindest über einen Teil ihrer Höhe in horizontaler Richtung durch einen Abstand beabstandet sind, der größer als die Breite der Tragholme (4,5) ist, wobei eine Spannung in einem der Tragholme vor dem Verbinden des vorgespannten Tragholms mit dem anderen Tragholm eingestellt wurde.

6. Tor nach Anspruch 5, dadurch gekennzeichnet, daß die plattenförmigen Teile (6,7) sich vertikal erstrekkende Plattenabschnitte (8) umfassen, die mittels dan ihre oberen Kanten anschliessender nach oben geneigter Plattenabschnitte (9) mit dem oberen Tragholm (4) verbunden sind, und die mittels nach unten geneigter dan ihre unteren Kanten anschlies-

sender Plattenabschnitte (10) mit dem unteren Tragholm (5) verbunden sind.

7. Tor nach einem der Ansprüche 5 oder 6, dadurch gekennzeichnet, daß die Enden der plattenförmigen Teile (6,7) mit doppelt-gefalzten Plattenabschnitten (11) versehen sind, die gegen die Tragholme (4,5) stoßen und an besagten Tragholmen (4,5) befestigt sind.

8. Tor nach einem der Ansprüche 5-7, dadurch gekennzeichnet, daß die Tragholme verzinkt sind.

9. Tor nach einem der Ansprüche 5-8, dadurch gekennzeichnet, daß die Gitterstäbe (2) des Tores an besagten plattenförmigen Teilen (6,7) befestigt sind.

10. Tor nach einem der vorangehenden Ansprüche 5-9, dadurch gekennzeichnet, daß die Tragholme (4,5) sich über einen Teil ihrer Höhe an der oberen und der unteren Seite des Trägers (1) über die plattenförmigen Teile (6,7) hinaus erstrecken.

11. Tor nach einem der vorangehenden Ansprüche 5-10, dadurch gekennzeichnet, daß die Rollen (3) auf der Abstützung in der Weise montiert sind, daß die Rollen (3) auf der Oberseite des oberen Tragholms (4) bzw. auf der Unterseite des unteren Tragholms (5) rollen.

Revendications

1. Procédé de fabrication d'une porte mobile, destinée à fermer un passage, dans lequel un organe porteur allongé (1) assure le support de rails (2) ou d'un dispositif analogue de fermeture faisant partie de la porte, ainsi que le raccordement de la porte à un support fixé par rapport au sol et par rapport auquel la porte est mobile, caractérisé en ce que l'organe porteur (1) est constitué de deux poutres espacées verticalement (4, 5) disposées en direction pratiquement horizontale et parallèles l'une à l'autre, de manière qu'une contrainte soit d'abord établie dans l'une au moins des poutres (4, 5), puis que la poutre sous contrainte soit raccordée de manière fixe à l'autre poutre par des parties en forme de plaques (6, 7) placées symétriquement de part et d'autre des poutres (4, 5), ces parties (6, 7) étant séparées en direction horizontale, au moins sur une partie de leur hauteur, par une distance supérieure à la largeur des poutres (4, 5) et la contrainte de la poutre ou des poutres sous contrainte est ensuite relaxée.

2. Procédé selon la revendication 1, caractérisé en ce qu'une contrainte est établie dans la poutre supérieure (4) des deux poutres par application d'une charge de traction à la poutre (4).

3. Procédé selon la revendication 1 ou 2, caractérisé en ce qu'une contrainte est établie dans la poutre inférieure (5) des deux poutres par application d'une force de pression à la poutre (5).

4. Procédé selon l'une quelconque des revendications précédentes, caractérisé en ce qu'un dispositif d'entretoise (13) est placé entre les poutres (4, 5) afin que ces poutres (4, 5) soient maintenues en position convenablement espacée lorsque les parties en forme de plaques (6, 7) sont disposées.

5. Porte destinée à fermer un passage, fabriquée par mise en oeuvre du procédé selon l'une des revendications précédentes, dans laquelle la porte comporte un organe porteur allongé (1) et des rails (2) ou un dispositif analogue de fermeture, raccordé à l'organe porteur (1), et l'organe porteur (1) couple de façon mobile la porte à un support fixé par rapport au sol par des rouleaux (3) raccordés au support de manière que la porte puisse être ouverte et fermée par déplacement de l'organe porteur (1) par rapport au support, caractérisé en ce que l'organe porteur est construit à partir de deux poutres espacées verticalement (4, 5) qui sont pratiquement horizontales et parallèles l'une à l'autre, et sont interconnectées par des parties en forme de plaques (6, 7) placées symétriquement de part et d'autre des poutres (4, 5), les parties en forme de plaques (6, 7) étant séparées en direction horizontale, sur une partie au moins de leur hauteur, par une distance supérieure à la largeur des poutres (4, 5), d'une manière telle qu'une contrainte a été établie dans l'une des poutres avant le raccordement à l'autre poutre de la poutre soumise à la contrainte préalable.

6. Porte selon la revendication 5, caractérisée en ce que les parties en forme de plaques (4, 5) comprennent des parties (8) de plaques disposées verticalement, raccordées à la poutre supérieure (4) par des parties (9) de plaques qui sont inclinées vers le haut et se raccordent à leurs bords supérieurs, et qui sont raccordées à la poutre inférieure (5) par des parties (10) de plaques inclinées vers le bas et raccordant leurs bords inférieurs.

7. Porte selon l'une des revendications 5 et 6, caractérisée en ce que les extrémités des parties en forme de plaques (6, 7) ont des parties (11) de plaques à pli double qui sont en butée contre les poutres (4, 5) et qui sont fixées aux poutres (4, 5).

8. Porte selon l'une des revendications 5 à 7, caractérisée en ce que les poutres sont revêtues de zinc.

9. Porte selon l'une quelconque des revendications 5

à 8, caractérisée en ce que les rails (2) de la porte sont fixés à l'une des parties en forme de plaques (7).

10. Porte selon l'une quelconque des revendications 5 à 9, caractérisée en ce que les poutres (4, 5) sont disposées, sur une partie de leur hauteur, au-delà des parties en forme de plaques (6, 7) aux côtés supérieur et inférieur de l'organe porteur (1).

11. Porte selon l'une quelconque des revendications précédentes 5 à 10, caractérisée en ce que les rouleaux (3) sont montés sur le support de manière que les rouleaux (3) roulent sur la face supérieure de la poutre supérieure (4) et la face inférieure de la poutre inférieure (5) respectivement.

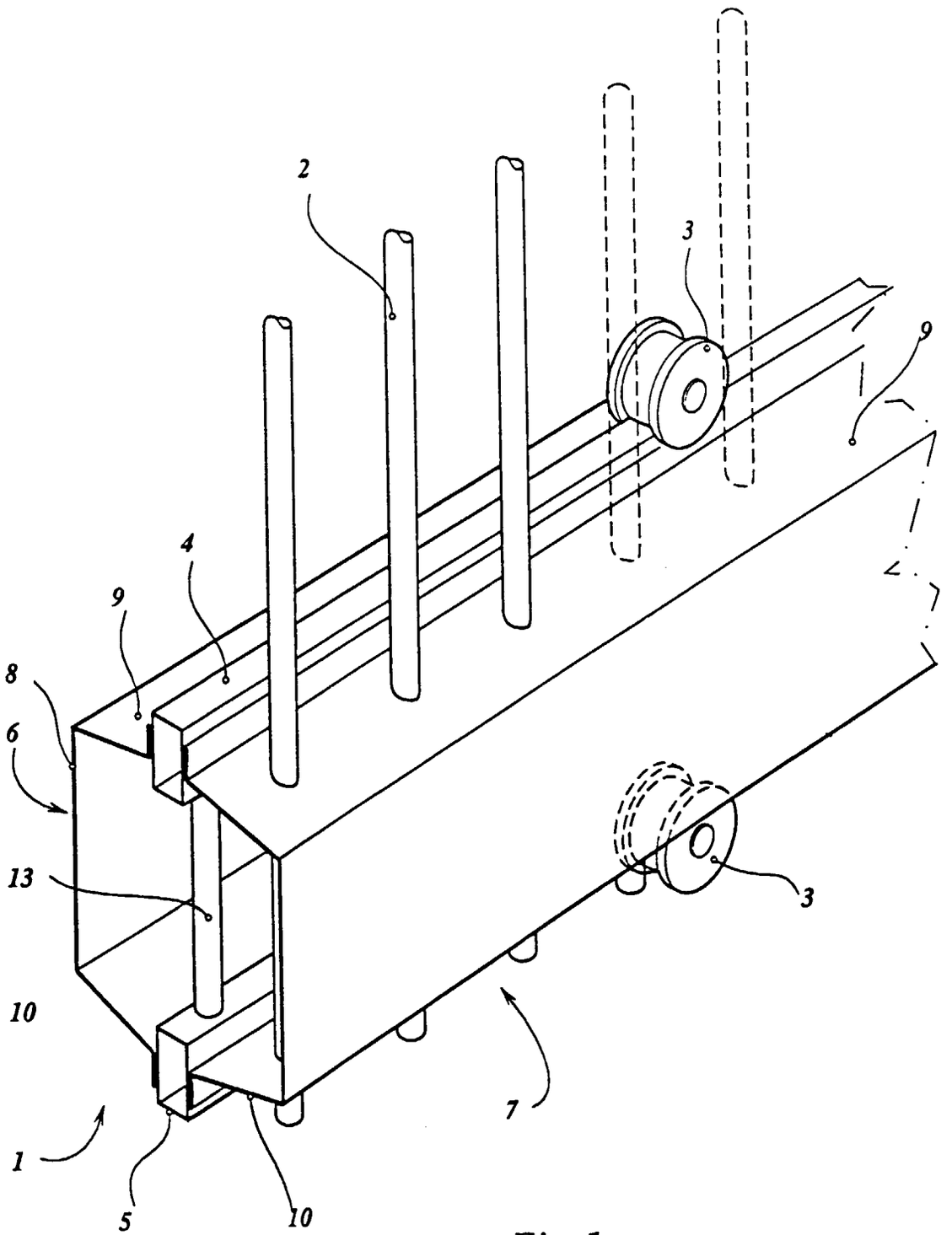

Fig. 1

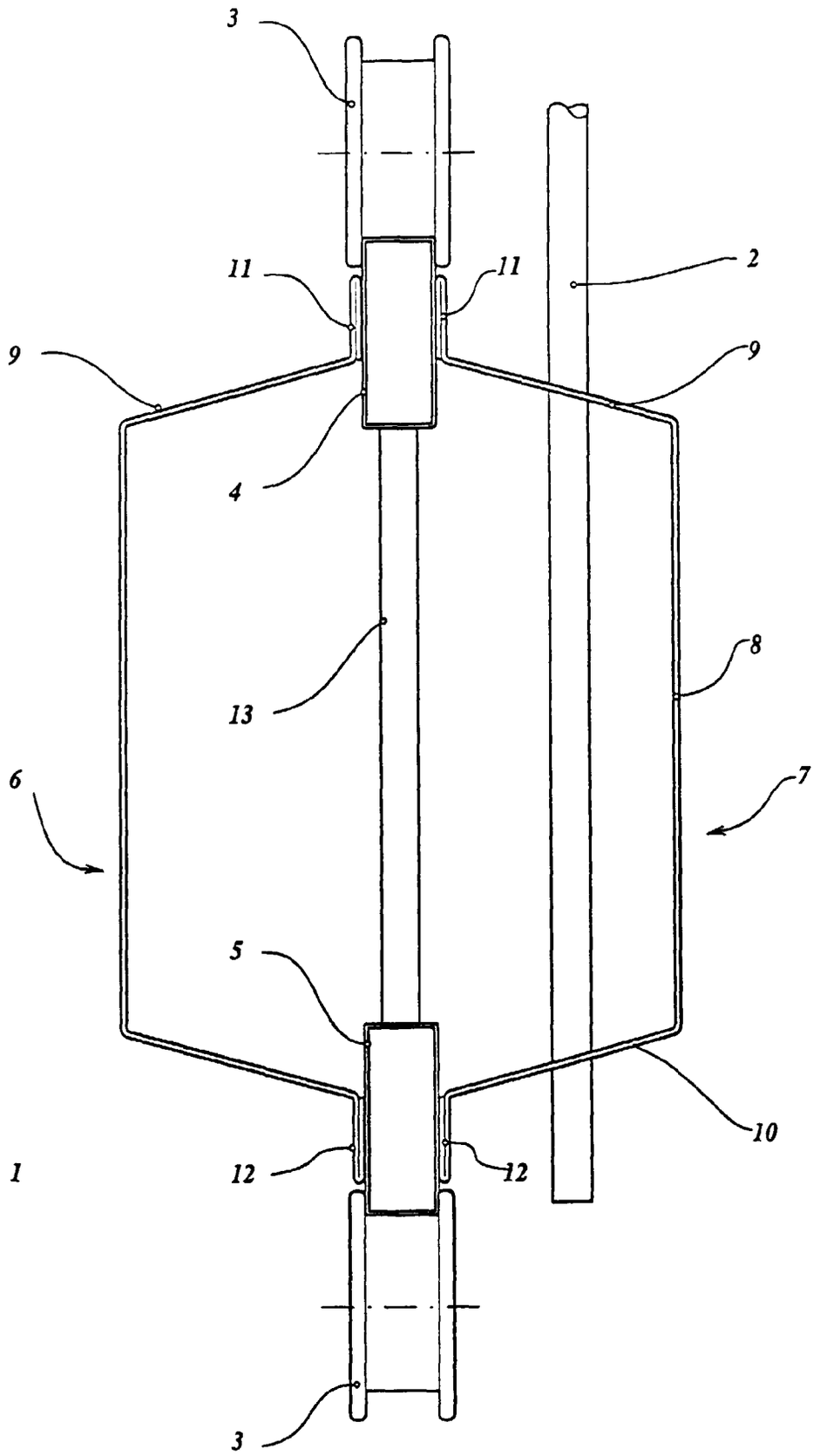

Fig. 2