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(54) A DEVICE FOR INSTALLATION OF A RADIATOR

VORRICHTUNG FÜR DIE INSTALLATION EINES HEIZKÖRPERS

DISPOSITIF D'INSTALLATION D'UN RADIATEUR

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DE-A- 3 245 555
DE-C- 2 308 199
DE-C- 2 839 355

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Description

TECHNICAL FIELD

The present invention relates to a combination of a radiator being composed of at lest two sections and a device for installation thereof according to the preamble of claim 1.

BACKGROUND ART

Anchorages for the free-standing floor installation of radiators are previously known in the art, for both single section radiators and double and multiple section radiators. As a rule, such anchorages have a footplate for securement to the floor. The footplate serves for anchoring a vertical bar or rail on which different types of fixing devices are then adjustably mounted for cooperation with the radiator proper.

Typical and mutually very similar examples of anchoring devices of the above type are disclosed in DE 2 801 121 and DE 3 245 555. In both documents are described devices having a foot plate from which upwardly extends a vertical bar, that in the case of double or multi section radiators is located between the sections. In both publications there is used a lower horizontal support on which the two sections are carried. In both cases this support is adjustable both vertically and horizontally. In DE 2 801 121 there is an upper hold down member for securing the radiator.

As a rule, the radiators which are installed in this manner are not standardized in respect of dimensions or design and construction. This implies that a radiator anchorage which is to be anything like universally applicable must be capable of adjustment in innumerable ways in order thereby to fit radiators of different heights, different spacing between included sections, radiators with and without convector plates, and so on.

According to prior art techniques, these problems have been overcome in such a manner that the radiator anchorage in question is composed of a number of standardized components, while still retaining generous adjustment possibilities. This entails that every radiator anchorage must include a large number of small parts, which will be expensive in manufacture, assembly and use as well.

Because of the numerous adjustment possibilities and compositions from a plurality of different small components, a radiator anchorage of this type will not be sufficiently stable. This lack of stability is extremely serious in modern construction engineering, given that the radiators' connection pipes are of flimsy dimensions and, for example, may consist of plastics and, as a result, by no means can contribute in the fixing and retention of the radiator in place.

PROBLEM STRUCTURE

The present invention has for its object to realise a device of the type mentioned by way of introduction, the device being designed in such a manner as to obviate the problems inherent in prior art designs and constructions. In particular, the present invention has for its object to realise a device which is versatile in its field of use so that, as a result, cooperation may be achieved with radiators of different makes and dimensions. The present invention further has for its object to realise a device which provides extremely good mechanical strength in the retention of the radiator. The present invention yet further has for its object to realise a device which is composed of but a small number of parts and which is simple and economical in both manufacture and use.

SOLUTION

These and other objects forming the basis of the present invention will be attained if the combination as disclosed by way of introduction is given the characterising features mentioned in claim 1.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

The present invention will now be described in greater detail hereinbelow, with particular reference to the accompanying Drawings. In the accompanying Drawings:

Fig. 1 is a vertical side elevation (seen in the longitudinal direction of a radiator) of the device according to the present invention in one embodiment intended for a double radiator;

Fig. 2 is a vertical side elevation of the device of Fig. 1 seen in the direction shown by the arrow A in this Figure;

Fig. 3 is a view corresponding to that of Fig. 1 at the commencement of the installation of a radiator;

Fig. 4 is a view corresponding to that of Fig. 3 when the installation of the radiator is completed;

DESCRIPTION OF PREFERRED EMBODIMENT

Figs. 1 - 4 show a first embodiment of the device according to the present invention which is intended for installing a double radiator which is composed of two radiator sections which are each designed as panel radiators and which are provided, along upper and lower edges, with channels outside of which there are located projecting edge portions. Between these upper and low-

er channels, there extend vertical flow passages or columns in the radiator, alternating with portions where the sheet material of the radiator is welded together and, thus, displays double material thickness in the same manner as the above-mentioned edge portions.

It will be apparent from Fig. 1 that the device according to the present invention includes a foot arrangement 1 and a bracket arrangement 2. In this embodiment, the bracket arrangement is designed to cooperate with a double radiator which may be provided with convector plates, but which may also lack such plates. The mutual spacing between the two radiator sections included in this double radiator may vary within certain limits so that thereby the device according to the present invention may cooperate with as good as any double radiator of the type under consideration here.

The foot arrangement 1 has a mounting plate 3 which has a number of apertures 4 for anchorage members by means of which the mounting plate can be anchored to a substrate such as a floor, a ceiling or the like.

While the device according to the present invention is principally intended to hold a radiator a distance above a floor by cooperation with a lower edge area of the radiator, the device according to the present invention may of course also be secured, in the inverted state, to the upper edge portion of the radiator and, for example, serve for suspending a shelf, window sill or the like.

A tubular body 5 extends upwards from the mounting plate 3, and a substantially vertical bar 6 cooperates vertically adjustably with the body 5. In that the tubular body 5 extends upwards above floor level a considerable distance, and in that the vertical bar overlaps this upwardly extending portion in a vertical direction, possibilities will be created for vertical adjustment within a large adjustment range.

In order to achieve the above-described adjustment in the vertical direction, the upwardly directed tubular body 5 has an internal thread 7 which cooperates with a corresponding thread on the vertical bar. In that the mounting plate 3 is suitably circular in shape and provided with four apertures 4 of uniform spacing and distribution, this implies that a rotation of the mounting plate a quarter of a revolution corresponds to the minimum vertical adjustment which can be achieved with the adjustment arrangement. In practice, this means that the minimum adjustment step lies in the order of magnitude of half a millimeter.

For locking the selected vertical adjustment position, the vertical bar 6 has a locknut 8 which can be tightened against the upper end surface of the tubular body 5.

As is apparent from the Drawing, the bracket arrangement 2 is disposed on the upper end of the vertical bar 6 and comprises a fixed bracket which serves the function of backing portion 9 in order, via an installed radiator, to hold against that movement which is generated by a movable clamping portion 10. In the illustrated embodiment, the backing portion is, thus, rigidly connected to, or possibly of one piece manufacture with the vertical bar 6 and, in addition, serves for journalling and supporting the movable clamping portion 10.

The backing portion 9 has a lower, horizontal portion 11 which is secured in the upper end of the vertical bar 6 and which serves for journalling a pin 12 which pivotally supports the clamping portion 10. An arm 13 extends upwardly from the horizontal portion 11 and is provided at its upper end with a laterally, outwardly projecting engagement portion 14. Beneath engagement portion 14, the arm 13 has a recess 15 which serves to accommodate at least a part of the lower channel 16 of the radiator (see Figs. 3 and 4). The engagement portion 14 is intended to abut against the radiator above this channel and may be toothed or be of some other frictional material which prevents or at least impedes the radiator from being raised upwardly when the engagement portion 14 is urged laterally against the material of the radiator. That position on the radiator where the engagement portion 14 is located is disposed between two vertical columns in the radiator and, therefore, consists of a welded portion in the radiator where the sheet metal material of the radiator is of double thickness. Given that the recess 15 is larger than the channel 16 with some margin, the device according to the present invention may cooperate with radiators whose channel is of varying dimensions and designs.

At the right-hand end of the lower horizontal portion 11 of the backing portion 9 in Fig. 1, this is provided with a fixing device 18 in the form of an upwardly directed catch which is intended to engage laterally with the projecting edge portion 17 which the radiator displays beneath the channel 16 (see Figs. 3 and 4). Furthermore, the fixing device 18 is provided with a support surface 19 on which rests the lower edge surface of the edge portion 17.

If a line is drawn along the abutment surface of the engagement portion 14 and is extended downwardly to the region of the fixing devices, the distance between this line and the inside of the upwardly directed catch 18 will roughly correspond to twice the sheet metal thickness of the radiator, which is one of the few dimensions which is constant irrespective of the make and model of the radiator.

It will be apparent from the foregoing description that the backing portion engages with the radiator at such positions where the sheet metal material is of double thickness and is welded together, for which reason the mechanical strength in these portions is good. In addition, the engagement portion 14 and the catch 18 abut against the opposing sides of the double sheet metal material in the radiator.

The clamping portion 10 may be of a design which entails that it is approximately a mirror image of the above-described backing portion and has, thereby, in its upper end a laterally projecting abutment portion 20, a recess 21 located beneath this portion corresponding to the recess 15 on the backing portion, and an upwardly

directed catch 18 or a fixing device which, in respect of positioning and dimensioning, fully corresponds to that described above with reference to the fixing device of the backing portion 9.

As has been mentioned previously, the clamping portion 10 is pivotal about the pin 12 disposed in the backing portion 9 and, in addition, is displaceable in a direction which is transversely directed in relation to the plane of extent of the installed radiator, in that the clamping portion 10 has an elongate aperture 22 for accommodating the pin 12. Hereby, the device according to the present invention may readily be adapted to such radiators as display different distances between the included radiator sections, i.e. to radiators which are of varying widths.

For actuating the clamping portion 10, this is provided with an actuator portion 23 which may consist of a downwardly directed ramp or cam surface on a part of the clamping portion 10 which would approximately correspond to the lower horizontal portion of the backing portion 9. Furthermore, the vertical bar 6 is provided with a nut 24 which, by upward screwing, cooperates with the actuator portion 23 and thereby pivots the entire clamping portion 10 in counterclockwise (in Fig. 1) direction. On such tightening (screwing in an upward direction) of the nut 24, the abutment portion 20 and the engagement portion 14 will urge against the inner surfaces of the radiator interiorly and in directions away from one another in such positions where the inner surfaces consist of welded together double sheet metal portions.

Fig. 3 (mirror reversed in relation to Fig. 1) illustrates the commencement of the installation cycle when a double radiator is to be installed on the device according to the present invention. It will be apparent that the double radiator is, as mentioned above, composed of two radiator sections which are designed as mutual mirror images and which, as described above, have lower channels 16 from which downwardly extend projecting edge portions 17 consisting of double, welded sheet metal material.

In the illustrated position, the radiator is inclined somewhat in the lateral direction, and the clamping portion 10 is displaced in a direction towards the backing portion 9 and is pivoted partly in a counterclockwise direction, with the upper end in a direction towards the backing portion. It will further be apparent that both the recess 21 of the backing portion 9 and the recess 15 of the clamping portion 10, respectively, are sufficiently large to accommodate at least a part of the channels 16 of the radiator sections so that thereby the engagement portion 14 and the abutment portion 20 may come into engagement with the radiators on that side of the channel 16 facing away from the edge portion 17.

When the radiator which is in the process of being installed is pivoted in a clockwise direction, this entails that the clamping portion 10 will be pivoted in a clockwise direction until the abutment portion 20 comes into abutment against the inner side of the radiator, at the same time as the fixing device 18 comes into engagement against the outside of the edge portion 17. If, in this position, the nut 24 is screwed in an upward direction into abutment against the actuator portion 23, the clamping portion 10 will be subjected to a torque in a clockwise direction. This implies that the upper end of the clamping portion 10 urges the radiator in a direction to the right, for which reason it will be displaced in the same direction so that engagement thereby occurs between the backing portion and the inside of the opposing radiator section. Further, the radiator is prevented from being pivoted in a clockwise direction in that the fixing device of the backing portion is urged in the lateral direction against the outside of the edge portion 17. On tightening of the nut 24 in an upward direction, the backing portion and the clamping portion, therefore, urge, interiorly and in directions away from one another, against the insides of the double radiator, at the same time as the fixing devices grasp about the outsides of the downwardly directed edge portions 17. Fig. 4 shows this fully installed position.

By being both pivotal and displaceable in the lateral direction, the clamping portion 10 will adjust itself to a position where it abuts interiorly against the radiator with the abutment portion 20 and exteriorly with the catch 18. Corresponding engagement positions for the backing portion are symmetrically located (mirror-reversed). On tightening of the nut 24, the entire union will, therefore, be adjusted such that its loading becomes uniformly distributed; the two catches 18 will have equal but counter-directed loadings, which also applies to the abutment portion 20 and the engagement portion 14.

It will be apparent from Fig. 4 that the channels 16 do not follow the contours of the recesses 15 and 21 which the backing portion 9 and the clamping portion 10 have. However, as an alternative to the described design and construction, the recesses can be given a contour which is at least partly complementary to the form of the channels 16 so that the channels thereby engage against these contour portions and are prevented from being displaced in an upward direction when the radiator is installed. Hereby, improved safety will be afforded against the radiator being unintentionally lifted out of its installed position.

Claims

1. A combination of a radiator and a device for installation thereof, the radiator being composed of at least two radiator sections which have, along one edge, a channel (16) with a protruding edge portion (17), including a foot arrangement (1) for securement on the substrate or object, having one backing device (9) for laterally abutting a first radiator section and a fixing device (18) for engagement with the edge portion (17) thereof, **characterized** in that

the foot arrangement (1) comprises a second fixing device (18) for engagement with an edge portion (17) of a second radiator section, and a clamping device (10) which is applicable against the second radiator section in a direction away from the backing device (9) so that engagement is established between the backing device and the first radiator section.

2. The combination as claimed in claim 1, **characterized** in that, the backing device (9) is disposed to be stationary.

3. The combination as claimed in claim 1 or 2, **characterized** in that, one of the fixing devices (18) is provided on the clamping device (10).

4. The combination as claimed in any one of claims 1-3, **characterized** in that, the clamping device (10) is pivotal about a shaft (12) which is substantially parallel with the longitudinal direction of the edge portion (17).

5. The combination as claimed in any one of claims 1-4, **characterized** in that, the foot arrangement (1) is, at its end facing towards the clamping device (10), provided with locking means (24) movable into cooperation with an actuator portion (23) on the clamping device (10) for actuation thereof towards its abutment position and for locking thereof in said position.

6. The combination as claimed in claim 5, **characterized** in that, the locking means (24) is provided with a thread in engagement with a corresponding thread on the foot arrangement (1).

7. The combination as claimed in any one of claims 4-6, **characterized** in that, the clamping device (10) is, at its pivot axis (12), displacable in a direction which is transversely directed to the plane of extent of the radiator.

8. The combination as claimed in any one of claims 1-7, **characterized** in that, the clamping device (10) has a clamping portion (20) and the backing device (9) has a backing portion (14) that the clamping portion (20) and the backing portion (14) are provided on the insides of the first and second radiator sections and that the fixing device (18) is in engagement with the outer sides of edge portions (17) of the radiator sections.

9. The combination as claimed in any one of claims 1-8, **characterized** in that, the clamping device (10) and the backing device (9) are provided, between their portions (20;14 resp.) disposed for abutment against the radiator sections, and the fixing device (18), with a recess (21;15 resp.) for accomodating at least a part of the channel (16).

10. The combination as claimed in claim 9, **characterized** in that, the recesses (15,21) are, at least along a part of their contours, of a configuration which is complementary to the configuration of an adjacent portion of the channel (16).

Patentansprüche

1. Kombination aus einem Heizkörper und einer Vorrichtung zu seiner Installation, wobei der Heizkörper aus wenigstens zwei Heizkörperprofilen besteht, die längs einer Kante einen Kanal (16) mit einem vorstehenden Kantenabschnitt (17) aufweisen, wobei die Vorrichtung eine Fußanordnung (1) zum Sichern an dem Substrat oder Gegenstand umfaßt, eine Trägereinrichtung (9) zur seitlichen Anlage an einem ersten Heizkörperprofil sowie eine Befestigungseinrichtung (18) zum Eingriff mit dem Kantenabschnitt (17) aufweist,
dadurch gekennzeichnet, daß die Fußanordnung (1) eine zweite Befestigungseinrichtung (18) zum Eingriff an einem Kantenabschnitt (17) eines zweiten Heizkörperabschnitts sowie eine Klemmeinrichtung (10) aufweist, die in einer von der Trägereinrichtung (9) abgewandten Richtung gegen das zweite Heizkörperprofil gedrückt werden kann, so daß zwischen der Trägereinrichtung und dem ersten Heizkörperprofil ein Eingriff hergestellt ist.

2. Kombination nach Anspruch 1,
dadurch gekennzeichnet, daß die Trägereinrichtung (9) stationär angeordnet ist.

3. Kombination nach Anspruch 1 oder 2,
dadurch gekennzeichnet, daß eine der Befestigungseinrichtungen (18) an der Klemmeinrichtung (10) vorgesehen ist.

4. Kombination nach einem der Ansprüche 1 - 3,
dadurch gekennzeichnet, daß die Klemmeinrichtung (10) um einen Schaft (12) verschwenkbar ist, der im wesentlichen parallel zur Längsrichtung des Kantenabschnitts (17) ist.

5. Kombination nach einem der Ansprüche 1 - 4,
dadurch gekennzeichnet, daß die Fußanordnung (1) an ihrem der Klemmeinrichtung (10) zugewandten Ende mit einem Verriegelungsmittel (24) versehen ist, das in Zusammenwirken mit einem Betätigungsabschnitt (23) an der Klemmeinrichtung (10) bewegbar ist, so daß es in die Anlageposition gelangen und dort verriegelt werden kann.

6. Kombination nach Anspruch 5,

dadurch gekennzeichnet, daß das Verriegelungsmittel (24) mit einem Gewinde in Eingriff mit einem entsprechenden Gewinde an der Fußanordnung (1) versehen ist.

7. Kombination nach einem der Ansprüche 4 - 6, **dadurch gekennzeichnet**, daß die Klemmeinrichtung (10) an ihrer Schwenkachse (12) in einer Richtung verschiebbar ist, die quer zur Ausdehnungsebene des Heizkörpers gerichtet ist.

8. Kombination nach einem der Ansprüche 1 - 7, **dadurch gekennzeichnet**, daß die Klemmeinrichtung (10) einen Klemmabschnitt (20) und die Trägereinrichtung (9) einen Trägerabschnitt (14) aufweist, daß der Klemmabschnitt (20) und der Trägerabschnitt (14) an den Innenseiten des ersten und des zweiten Heizkörperprofils vorgesehen sind und die Befestigungseinrichtung (18) in Eingriff mit den Außenseiten der Kantenabschnitte (17) der Heizkörperprofile steht.

9. Kombination nach einem der Ansprüche 1 - 8, **dadurch gekennzeichnet**, daß die Klemmeinrichtung (10) und die Trägereinrichtung (9) zwischen ihren Abschnitten (20 bzw. 14), die zur Anlage gegen die Heizkörperprofile angeordnet sind, und der Befestigungseinrichtung (18) mit einer Ausnehmung (21 bzw. 15) zur Aufnahme wenigstens eines Teils des Kanals (16) versehen sind.

10. Kombination nach Anspruch 9, **dadurch gekennzeichnet**, daß die Ausnehmungen (15, 21) wenigstens längs eines Teils ihres Umrisses eine Gestaltung aufweisen, die zu der Gestaltung eines angrenzenden Abschnitts des Kanals (16) komplementär ist.

Revendications

1. Combinaison d'un radiateur et d'un dispositif pour son installation, le radiateur étant composé d'au moins deux éléments de radiateur qui comportent, le long d'un bord, un canal(16) avec une région de bord en saillie (17), ledit dispositif comprenant un pied (1) pour fixation sur le substrat ou un objet, et comportant un dispositif d'appui (9) pour venir latéralement en butée contre un premier élément de radiateur et un dispositif de fixation (18) pour venir en prise avec sa région de bord (17), caractérisée en ce que le pied (1) comprend un deuxième dispositif de fixation (18) pour venir en prise avec une région de bord (17) d'un deuxième élément de radiateur, et un dispositif de blocage (10) qui est applicable contre le deuxième élément de radiateur dans une direction opposée au dispositif d'appui (9) de sorte qu'un contact est établi entre le dispositif d'appui et le premier élément de radiateur.

2. Combinaison suivant la revendication 1, caractérisée en ce que le dispositif d'appui (9) est prévu fixe.

3. Combinaison suivant la revendication 1 ou 2, caractérisée en ce qu'un des dispositifs de fixation (18) est prévu sur le dispositif de blocage (10).

4. Combinaison suivant une quelconque des revendications 1 à 3, caractérisée en ce que le dispositif de blocage (10) peut pivoter autour d'un axe (12) qui est sensiblement parallèle à la direction longitudinale de la région de bord (17).

5. Combinaison suivant une quelconque des revendications 1 à 4, caractérisée en ce que le pied (1) comporte, à son extrémité tournée vers le dispositif de blocage (10), un moyen de verrouillage (24) déplaçable en coopération avec une partie de manoeuvre (23) du dispositif de blocage (10) pour amener ce dernier vers sa position de butée et pour le verrouiller dans ladite position.

6. Combinaison suivant la revendication 5, caractérisée en ce que le moyen de verrouillage (24) comporte un filetage en prise avec un filetage correspondant prévu sur le pied (1).

7. Combinaison suivant une quelconque des revendications 4 à 6, caractérisée en ce que le dispositif de blocage (10) est déplaçable, à l'endroit de son axe de pivotement (12), dans une direction qui est transversale au plan d'extension du radiateur.

8. Combinaison suivant une quelconque des revendications 1 à 7, caractérisée en ce que le dispositif de blocage (10) comporte une partie de blocage (20) et le dispositif d'appui (9) comporte une partie d'appui (14), la partie de blocage (20) et la partie d'appui (14) sont prévues sur les côtés intérieurs des premier et deuxième éléments de radiateur, et le dispositif de fixation (18) est en prise avec lescôtés extérieurs des régions de bord (17) des éléments de radiateur.

9. Combinaison suivant une quelconque des revendications 1 à 8, caractérisée ence que le dispositif de blocage (10) et le dispositif d'appui (9) comportent entre leurs parties (20;14 respectivement), situées pour venir en butée contre les éléments de radiateur, et le dispositif de fixation (18), un évidement (21;15 respectivement) pour recevoir au moins une partie du canal (16).

10. Combinaison suivant la revendication 9, caractérisée en ce que les évidements (15,21) sont, au moins le long d'une partie de leurs contours, d'une

configuration qui est complémentaire de la configuration d'une partie adjacente du canal (16).

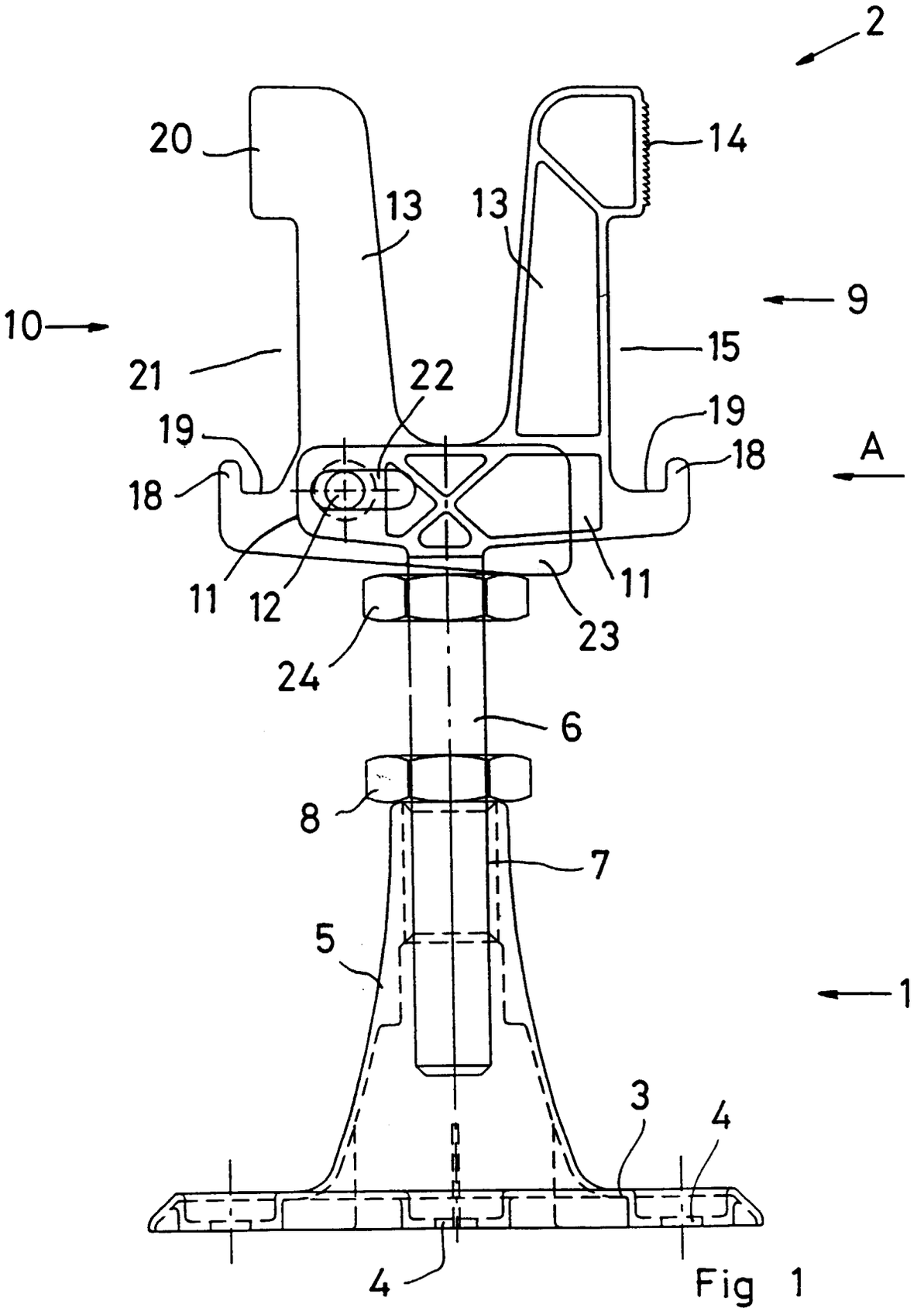


Fig 1

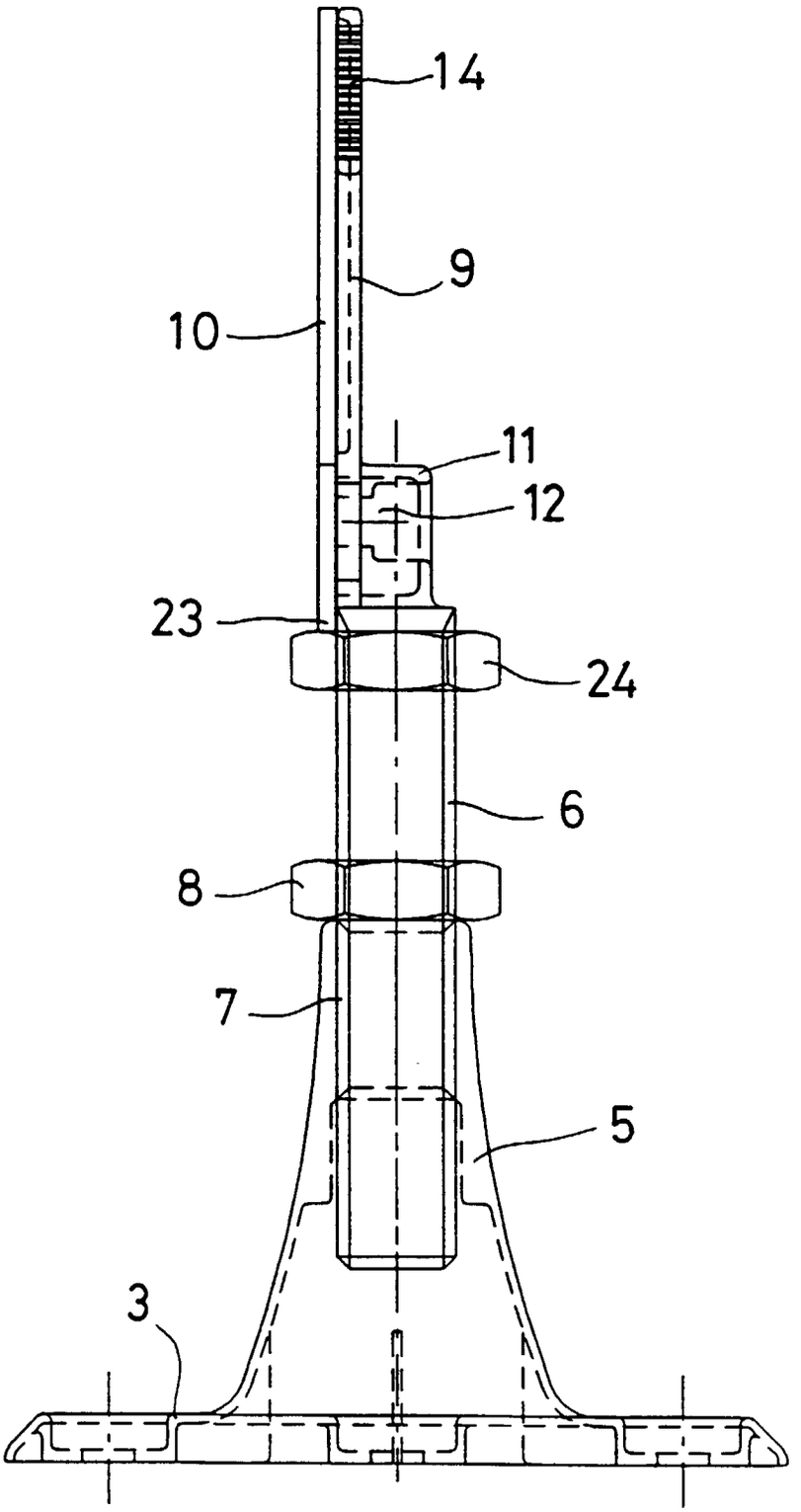


Fig 2

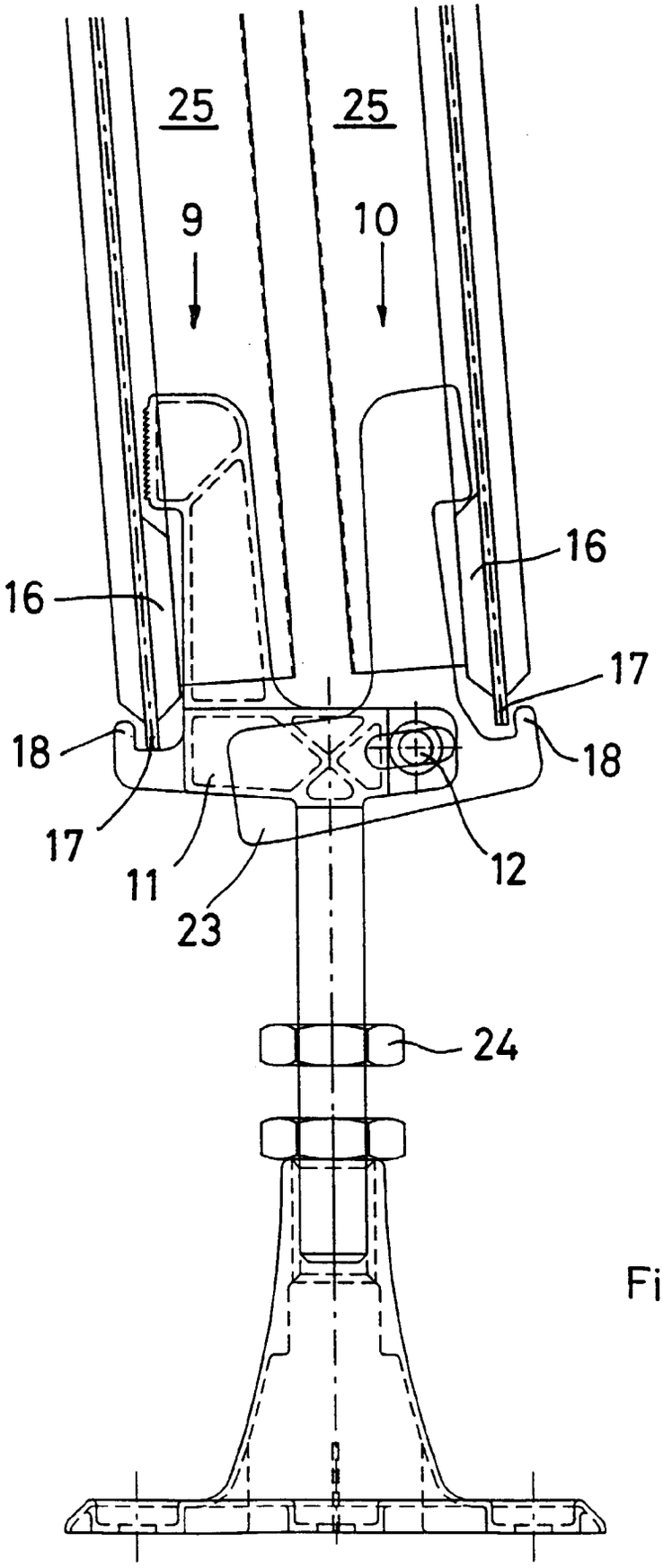


Fig 3

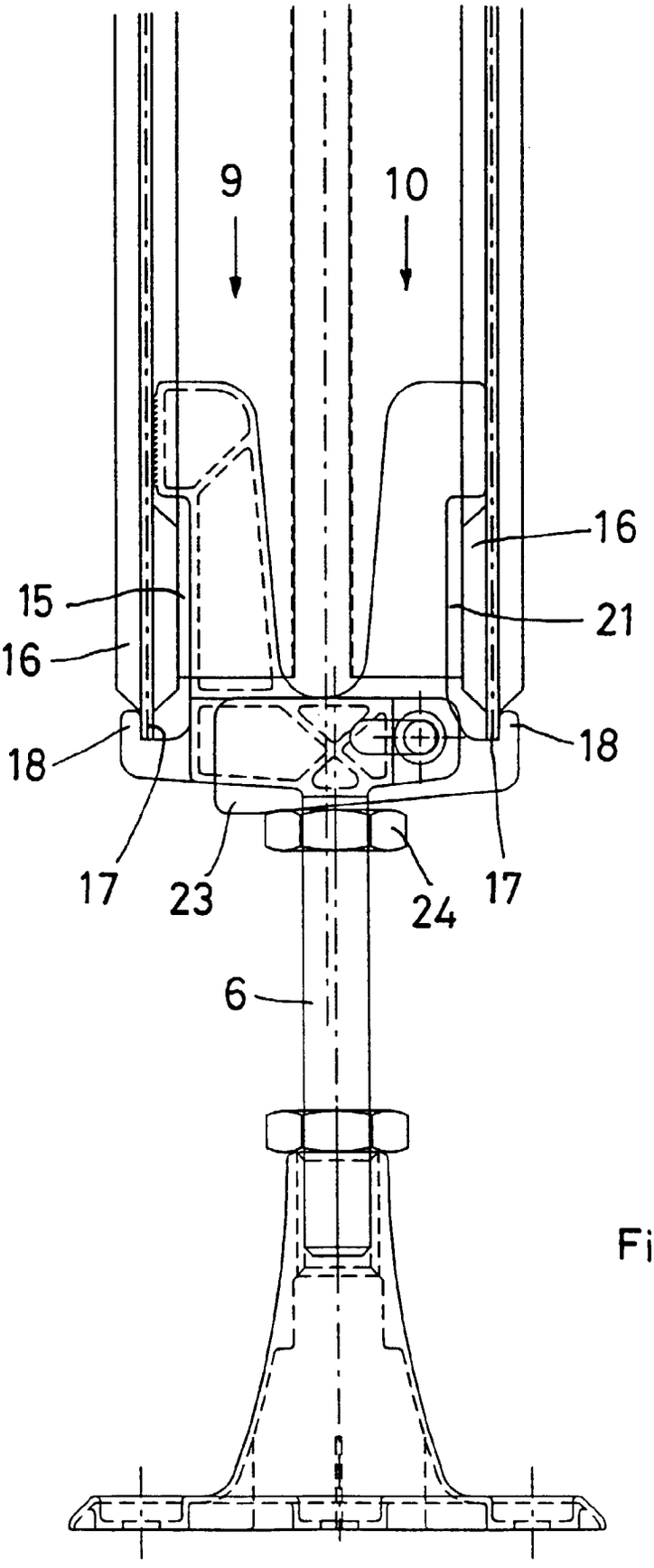


Fig 4