

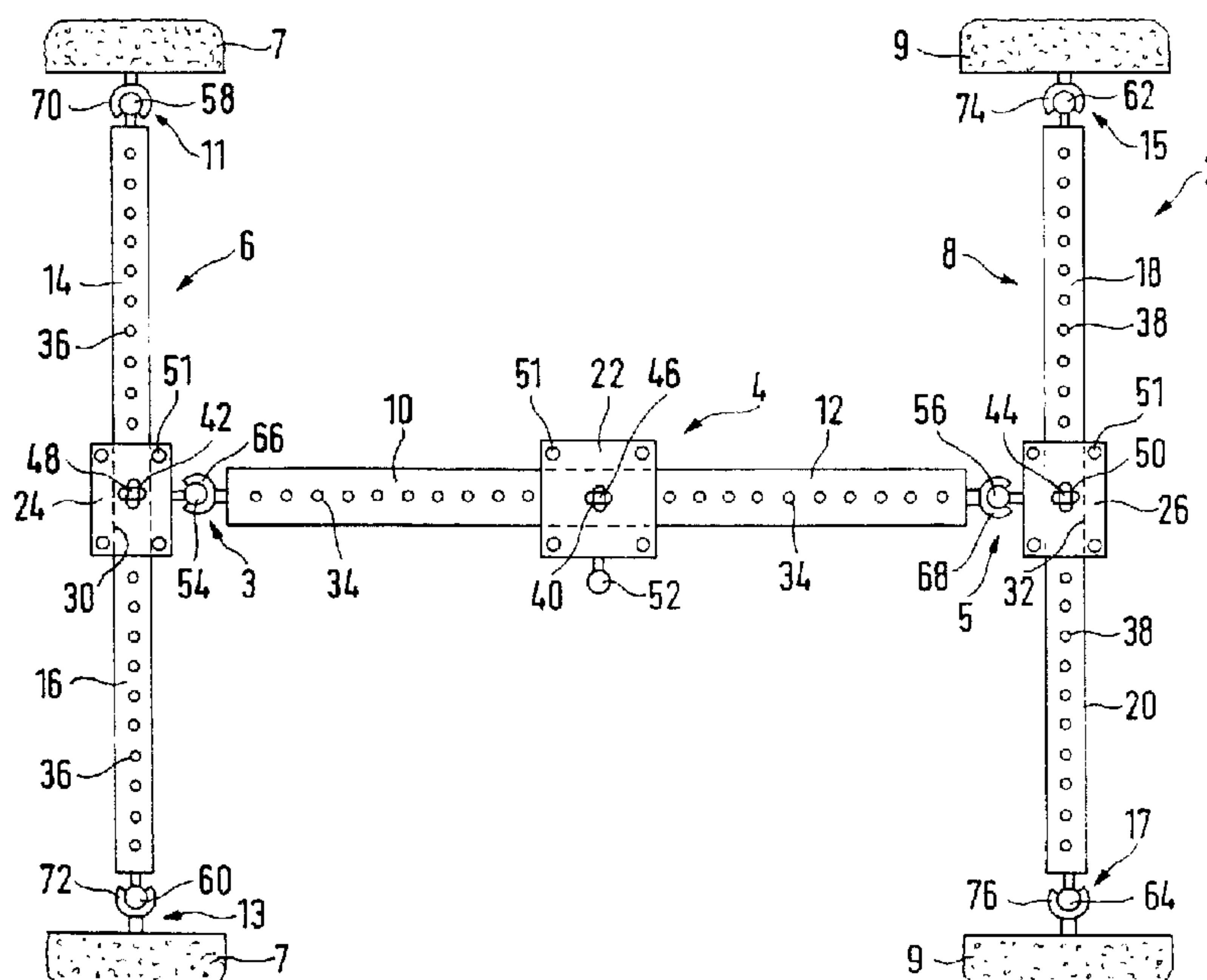


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(54) Titre : ORTHESE D'ABDUCTION

(54) Title: ORTHOTIC DEVICE FOR ABDUCTION



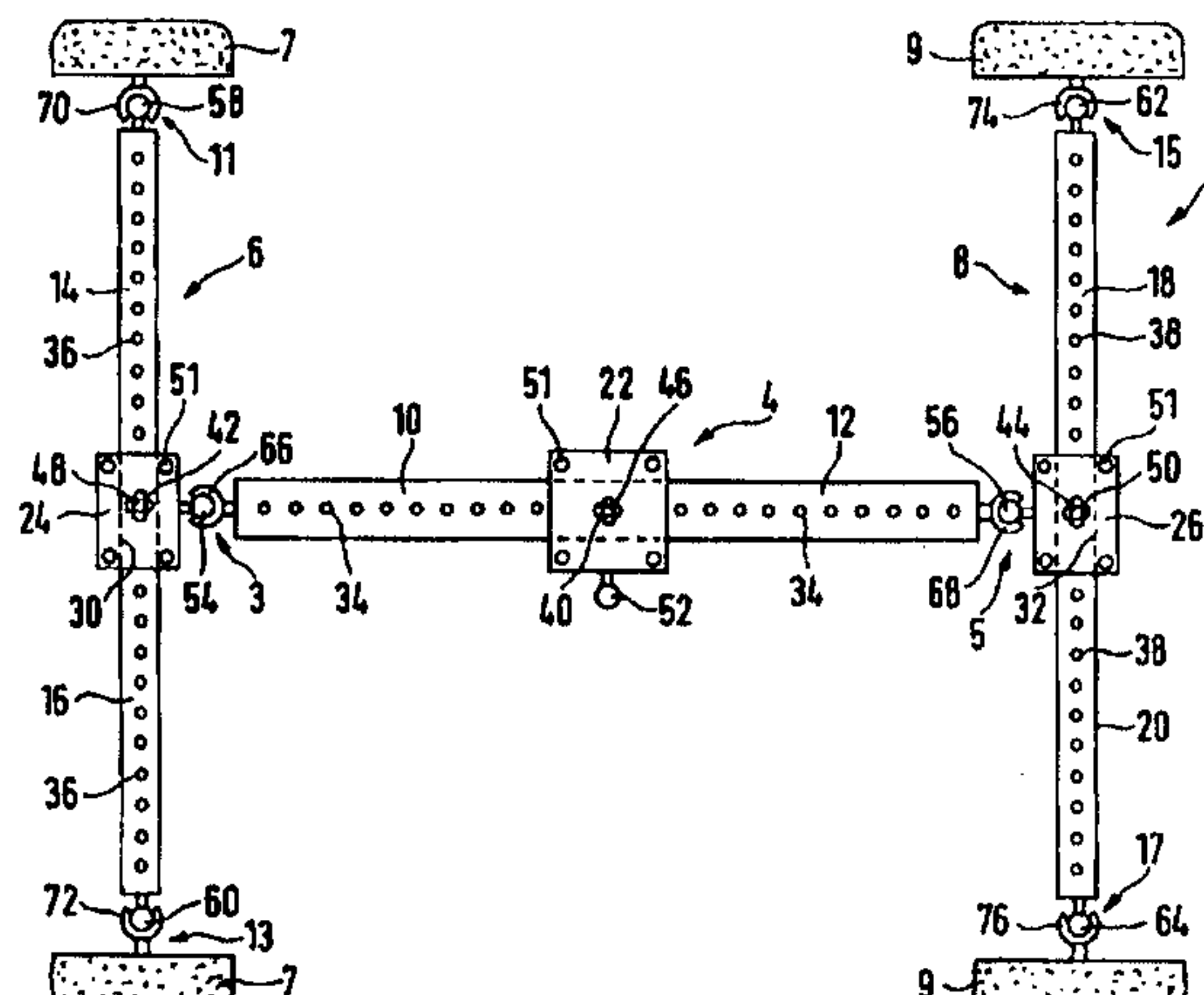
(57) Abrégé/Abstract:

This invention concerns a orthotic device for abduction for persons affected by spasticity for placing between the knees and/or feet of patients. Viewed from above, this orthotic device consists of an approximately H-shaped structure with a central element (4), the length of which can be adjusted, with cross-pieces (6 and 8) which can be movably attached by means of articulations (3, 5) at both ends of the central element (4). The length of the cross-pieces (6 and 8) can also be adjusted and serve to support the knees and/or feet. The cross-pieces (6 and 8) have supportelements (7, 9) movably mounted by means of articulations (11, 13 and 15, 17), which are provided with cushions in the form of foam, gel, or air pillows. The support elements can be constructed as unitary rectilinear pieces or as unitary angular pieces. Preferably these support elements (9) consist of parts (88, 90) which are connected to one another and to the cross-piece (8) in a pivoting or articulated fashion. It is possible to regulate the two support elements with respect to one another in a position which is rectilinear or angular to any degree to improve the wearing comfort for a wide array of different lying and sitting positions of the person affected by spasticity. The orthotic device for abduction is simple and economical to construct and simple and secure to install, and can be utilized in a wide variety of situations.



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(54) Title: ORTHOTIC DEVICE FOR ABDUCTION (54) Bezeichnung: ABSPREIZORTHESI (57) Abstract This invention concerns a orthotic device for abduction for persons affected by spasticity for placing between the knees and/or feet of patients. Viewed from above, this orthotic device consists of an approximately H-shaped structure with a central element (4), the length of which can be adjusted, with cross-pieces (6 and 8) which can be movably attached by means of articulations (3, 5) at both ends of the central element (4). The length of the cross-pieces (6 and 8) can also be adjusted and serve to support the knees and/or feet. The cross-pieces (6 and 8) have supportelements (7, 9) movably mounted by means of articulations (11, 13 and 15, 17), which are provided with cushions in the form of foam, gel, or air pillows. The support elements can be constructed as unitary rectilinear pieces or as unitary angular pieces. Preferably these support elements (9) consist of parts (88, 90) which are connected to one another and to the cross-piece (8) in a pivoting or articulated fashion. It is possible to regulate the two support elements with respect to one another in a position which is rectilinear or angular to any degree to improve the wearing comfort for a wide array of different lying and sitting positions of the person affected by spasticity. The orthotic device for abduction is simple and economical to construct and simple and secure to install, and can be utilized in a wide variety of situations.			
			

Orthotic device for abduction

The invention concerns an orthotic device for abduction for spastic persons.

Children with cerebral damages often develop tetraspasticity. This results in the contracture of the extremities. A contraction of the abduction of the legs results in considerable difficulties with regard to the hygiene of the genital area and may bring about a luxation of the hip joints.

Orthotic devices known to date are expensive and, as a rule, have to be tailor-made to suit the patient. Furthermore, they are elaborate in its application.

From US-A-2 815 021 an orthotic device is known for abduction for patients after a hip joint operation, by which the healing process and the restoration of the joint is supposed to be facilitated. The orthotic device for abduction is attached to the feet or the lower legs and comprises an extendable rigid element of the turnscrew type, at both end of the element support elements are articulately provided for the feet or the lower leg.

From DE-A-44 38 068 an orthotic device is known for abduction to be used for children, whose hip joint has developed abnormally. This orthotic device for abduction comprises two ushaped upper leg mountings which can be enclosed by a strap, which mountings are joined via ball joints to an adjustable spacer.

The object of this present invention is therefore to produce an orthotic device for abduction for spastic persons which can be manufactured simply and cost-effectively as well as is simple and reliable in their application and can be modified.

The present invention is directed to orthotic device for abduction for spastic persons with support elements which can be attached to the legs. The support elements are moveably connected with a longitudinally adjustable cross-piece, characterised in that the support elements are provided for the knee and/or foot joints, wherein the support elements for the knee comprise two support element parts which are joined pivotably or articulately with each other and with the cross-piece.

In an aspect of the invention two cross-pieces are provided for the knee and foot joints, which are joined essentially centrally by means of articulated joints in a moveable manner with a long, rod-shaped central piece ;

In another aspect of the invention the central piece and the cross-pieces have a longitudinally adjustable construction.

In a further aspect of the invention the central piece and the cross-pieces consist of at least two rods which can be moved relative each other in the longitudinal direction and are provided in a moveable and fastenable manner in adjusting and guide blocks having guide channels corresponding to the cross-section of the rods.

In a further aspect of the invention the support elements for the knee joints have an integrated, straight construction and have end regions to guide the upper leg and the lower leg in the region of the knee.

In yet another aspect of the invention the support elements for the knee joints have an integrated angular construction, wherein one side is intended to guide the upper leg in the region of the knee and the other side to guide the lower leg in the region of the knee.

In another aspect of the invention the support element parts are pivotably provided by means of a pivoting bearing in the direction of the cross-piece.

In a further aspect of the invention the support elements and the support element parts have means for the fastening on the upper and lower legs in the region of the knee as well as means for fastening on the leg in the region of the foot joint.

Other aspects of the invention will be described herein below.

The orthotic device for abduction has a simple construction, can be reliably applied, can be cost-effectively manufactured and offered. It has a modular construction by virtue of which it can be stored and packaged in a compact manner. The orthotic device for abduction is preferably adjustable, so that practically it "grows with" still growing patients, e.g. spastic children. The use of the orthotic device for abduction according to the invention limits only the bringing together of the knees and legs of the patients and leads to a reduction of tensions. The risk of luxation of the hip joints is reduced. The hygiene of the genital area will be facilitated.

In the following the invention is explained in detail based on an embodiment illustrated in the attached drawing. It shows in:

Fig.1 - a schematic illustration of an orthotic device for abduction, in top view,

Fig.2 - a schematic perspective view illustrating a part of the orthotic device for abduction according to Fig.1,

Figs.3 and 4 - two different support elements used for the orthotic device for abduction for the regions of the knee and/or foot joint, schematically illustrated,

Fig.5 - schematically illustrated a further embodiment of a support element for the regions of the knee and/or foot joint used in the orthotic device for abduction.

The same components in the figures are designated with the same reference numerals.

Fig.1 illustrates an orthotic device 2 for abduction for spastic persons to be placed between the knees and/or feet of the patients. The orthotic device 2 for abduction comprises, when viewed from above, an approximately H-shaped structure with a longitudinally adjustable central piece 4 and with cross-pieces 6 and 8 moveably attached to the ends of the central piece by means of articulated joints 3, 5, which cross-pieces can also be adjusted longitudinally and serve the purpose of supporting the knee and/or foot joints.

The cross-pieces 6 and 8 have at both ends support elements 7, 9, moveably attached by means of articulated joints 11, 13 and 15, 17 in the shape of, for example, cushions filled with foam, gel or air.

The central piece 4 and the cross-pieces 6 and 8 each comprise two rods 10, 12; 14, 16; 18, 20, which can be adjusted relative

each other in the longitudinal direction and are mounted

moveably in adjusting and guide blocks 22, 24, 26, whose cross-section corresponds to the cross-section of the rods. The rods and the guide channels have preferably a rectangular, trapezoidal, semi-elliptic, triangular or dovetail-shaped cross-section, thus preventing a rotation of the rods in the adjusting and guide blocks. Each central piece and the cross-pieces may consist of two half-round rods positioned against each other with their flat sides, which may have, however, the disadvantage that the alignment of the holes in the rods and in the adjusting and guide blocks will be difficult due to their rotation in the adjusting and guide block.

The rods 10, 12, 14, 16, 18, 20 have spaced holes 34, 36, 38 which can be aligned with each other and with at least one hole 40, 42, 44 of the adjusting and guide blocks, into which lockable adjusting pins 46, 48 50 can be introduced to fix the respective adjusted length of the central piece and cross-pieces.

The adjusting and guide blocks 22, 24, 26 may consist of two parts bolted together with bolts 51 or be made of one piece.

The adjusting and guide blocks 22, 24, 26 and the support elements 7, 9 may have for the articulate joints 3, 5 and 11, 13, 15, 17 similarly constructed first joint parts 52, 54, 56, 58, 60, 62, 64 and the rods 10, 12, 14, 16, 18, 20 of the central piece 4 and of the cross-pieces 6, 8 at their free ends may be similarly constructed second joint parts 66, 68, 70, 72, 74, 76 associated with the first joint parts and interacting with them.

By virtue of the above described modular construction the adjusting and guide blocks, the rods and the cushions can be interchanged and due to this modular construction only a minimum of components need to be manufactured and held in storage.

The central piece and the cross-pieces are made preferably of plastic material, e.g. polycarbonate.

5 The support elements 9, particularly for the knee region, may have an integrated, straight construction, in particular for the stretched position of the legs or an integrated angular construction for the bent position of the knee, see Figs.3 and 4, wherein one end 80 or the side 82 of the support element is intended to guide the upper leg and the other end 84 or the
10 other side 86 of the support element to guide the lower leg.

The support elements 9 comprise preferably two parts 88, 90, which are joined with each other and the cross-piece 8 pivotably or articulately and are provided preferably with
15 cushions, see Fig.5, wherein preferably both parts 88, 90 can be pivoted individually in a plane extending perpendicularly to the longitudinal axis of the cross-piece 8, see arrows 92 and 94 in Fig.5, preferably about a common pivoting axis 96. By virtue of this the two support elements 88, 90 can be set
20 relative each other in one straight line up to any angular position to improve the comfort of a spastic person in the most diverse lying and sitting positions.

In addition, a certain mobility of the support element parts
25 88, 90 in the direction of the cross-piece 8 may be provided to suit better the relevant anatomical situations, see arrows 98, 100, while the cushions provided allow already a certain mobility in this respect.

30 The support element parts 80, 82 have preferably a shell-shaped construction and have means for fastening on the upper and lower legs in the form of, for example, VELCRO-type straps.

The orthotic device for abduction is used as follows:

35 First of all the length of the central piece 4 is adjusted to suit the distance between the knee and the foot joints. Afterwards the cross-pieces are placed with their support

elements between the legs against the inside of the region of the knee and the region of the foot joint and fixed there, by means of VELCRO-type straps (not illustrated), for example. The extent of the abduction of the knees and feet can be adjusted by adjusting the length of the cross-pieces 6 and 8.

By means of the modular construction of the orthotic device for abduction it is feasible to use the cross-pieces also without the central piece to abduct the knees only, in particular for small children, and/or only the feet.

Claims:

1. An orthotic device for abduction for spastic persons, comprising:
 - a) a pair of support elements, each of said support elements being connectable to a leg of a person;
 - b) a cross-piece extending between and connecting said pair of support elements, said cross-piece being longitudinally adjustable;
 - c) each said pair of support elements including at least a knee support element connectable in the region of a knee joint of a person;
 - d) said knee support element including a first part and a second part, said second part being movable relative to said first part; and
 - e) each said first and second parts being movable relative to said cross-piece.
2. An orthotic device according to claim 1, wherein:
 - a) said pair of support elements includes at least a foot support element;
 - b) a rod-like central piece joins said foot support element and said knee support element;
 - c) a further cross-piece extends between and connects said pair of support elements; and
 - d) an articulated joint is provided between said rod-like central piece, and a further articulated joint is provided between said rod-like central piece and said further cross-piece.
3. An orthotic device according to claim 1 or 2, wherein said central piece, said cross-piece, and said further cross-piece are longitudinally adjustable.
4. An orthotic device for abduction according to claim 1, 2 or 3, characterized in that the central piece and the cross-pieces consist of at least two rods which can be displaced relative to each other in the longitudinal direction and are provided in a displaceable and fastenable manner in adjusting and guide blocks having guide channels corresponding to the cross-section of the rods.
5. An orthotic device for abduction according to claim 4, characterized in that the rods have spaced holes which can be aligned with each other and can be aligned with at least one hole of the adjusting and guide blocks into which locking pins can be introduced to fix the respective adjusted length of the central piece and the cross-pieces.

6. An orthotic device for abduction according to claim 4 or 5, characterized in that the adjusting and guide blocks comprise two parts which can be bolted together by bolts or are made from one piece.
7. An orthotic device for abduction according to claim 4 or 5, characterized in that the rods are half-round rods positioned against each other with their flat sides.
8. An orthotic device for abduction according to claim 4 or 5, characterized in that the rods and the guide channels have a cross-section which prevents the rotation of the rods in the adjusting and guide blocks.
9. An orthotic device for abduction according to claim 8, characterized in that the respective cross-sections of the rods and the guide blocks are one of rectangular, trapezoidal, semi-elliptic, triangular, and dovetail-shaped.
10. An orthotic device for abduction according to claim 1, characterized in that the support elements have an integrated, straight construction and have end regions to guide the upper leg and the lower leg in the region of the knee.
11. An orthotic device for abduction according to claim 1, characterized in that the support elements have an integrated angular construction, wherein one side is intended to guide the upper leg in the region of the knee, and the other side to guide the lower leg in the region of the knee.
12. An orthotic device for abduction according to claim 1, characterized in that the support elements comprise two support element parts which are joined pivotably or articulately with each other and with the cross-piece.
13. An orthotic device for abduction according to claim 12, characterized in that the support element parts are constructed pivotably in a plane extending perpendicularly to the longitudinal axis of the cross-piece.
14. An orthotic device for abduction according to claim 13, characterized in that the support element parts have a common pivoting axis.
15. An orthotic device for abduction according to any one of the claims 12 to 14, characterized in that the support element parts are pivotably provided by means of a pivoting bearing in the direction of the cross-piece.

16. An orthotic device for abduction according to any one of the claims 1 and 10 to 15, characterized in that the support elements and the support element parts have a shell-shaped construction.

17. An orthotic device for abduction according to any one of the claims 1 and 10 to 16, characterized in that the support elements and the support element parts have means for fastening on the upper and lower legs in the region of the knees as well as means for fastening on the leg in the region of the foot joint.

18. An orthotic device for abduction according to any one of the claims 1 and 10 to 17, characterized in that the support elements and the support element parts have cushions.

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FIG. 1

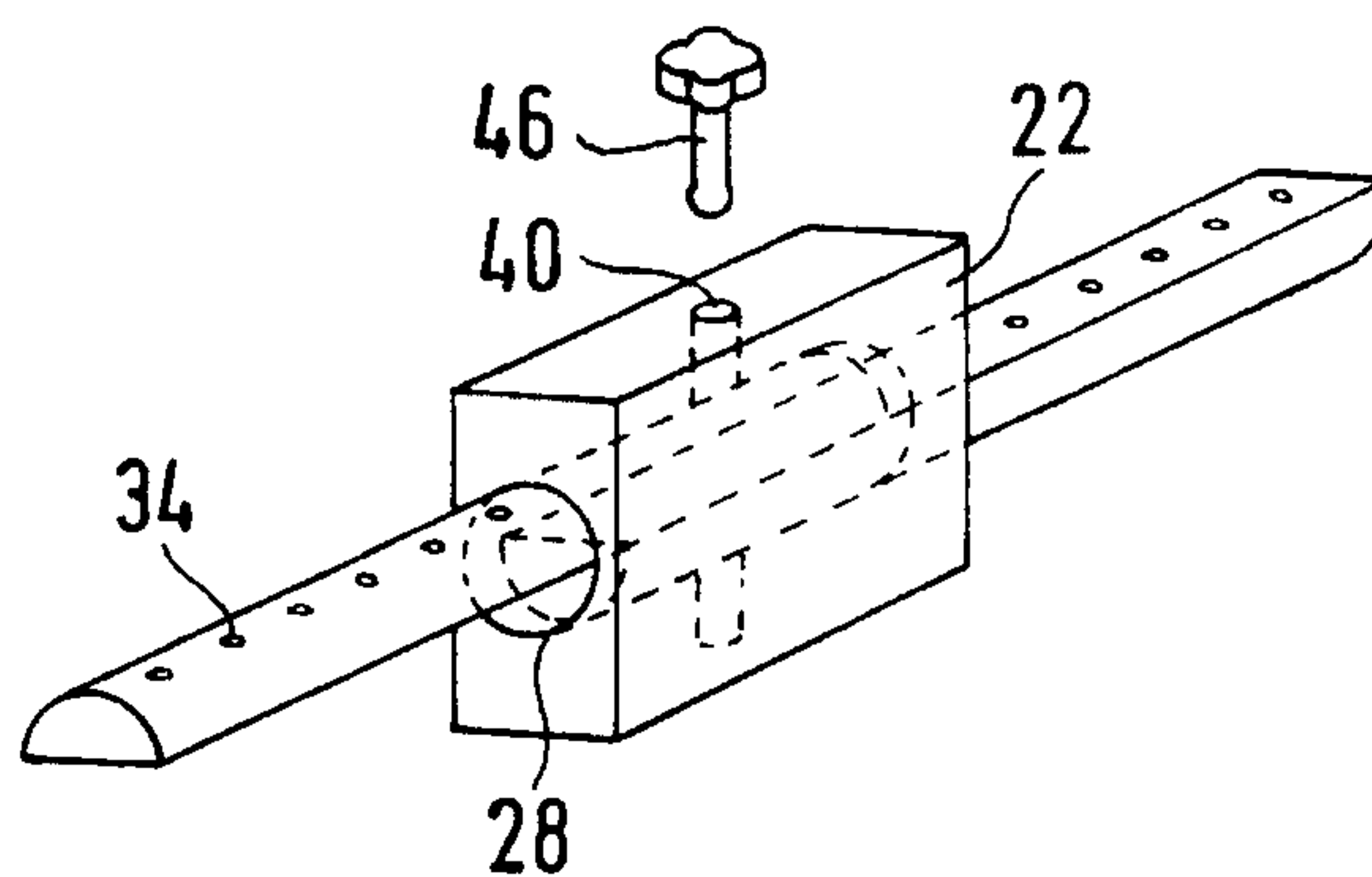
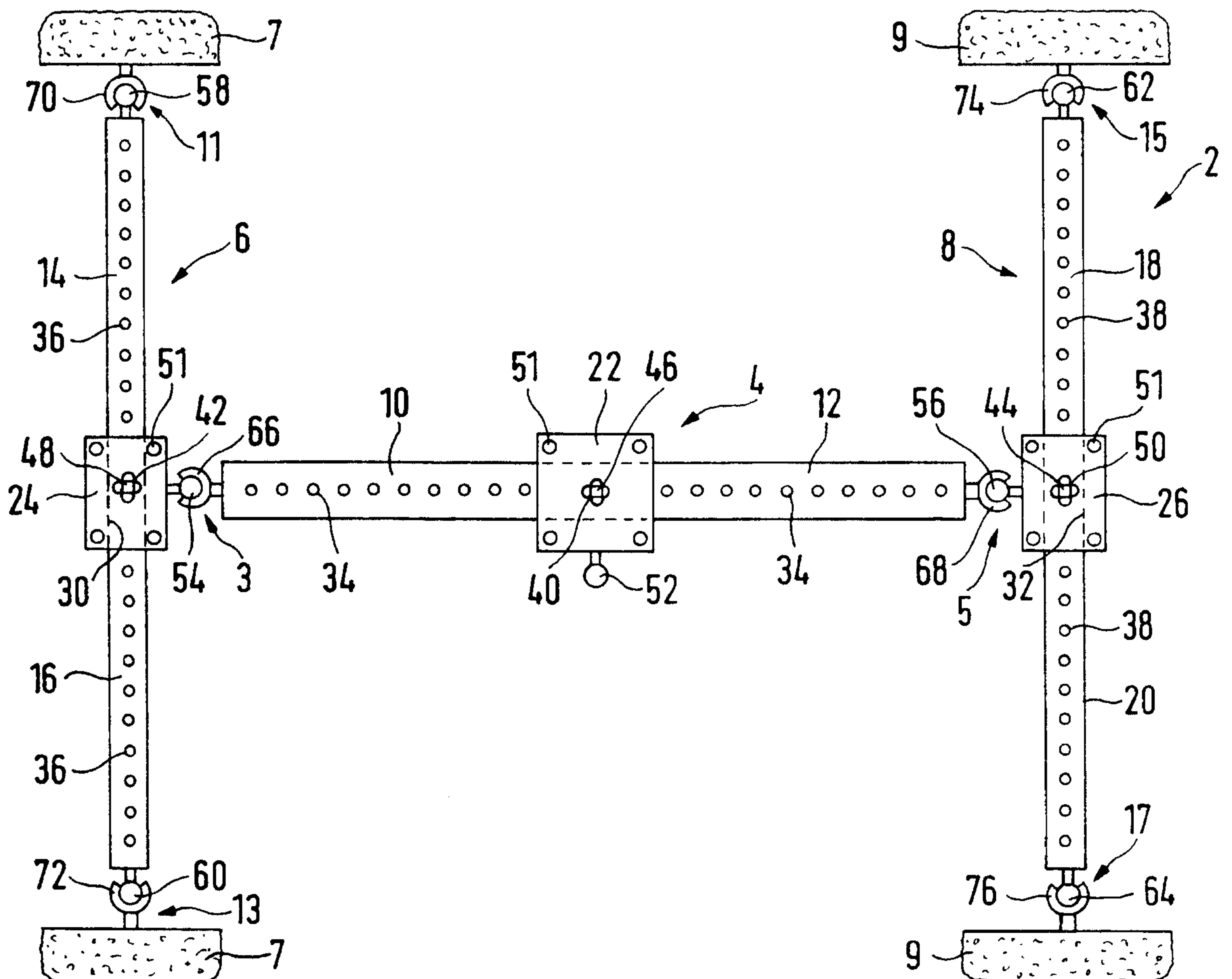
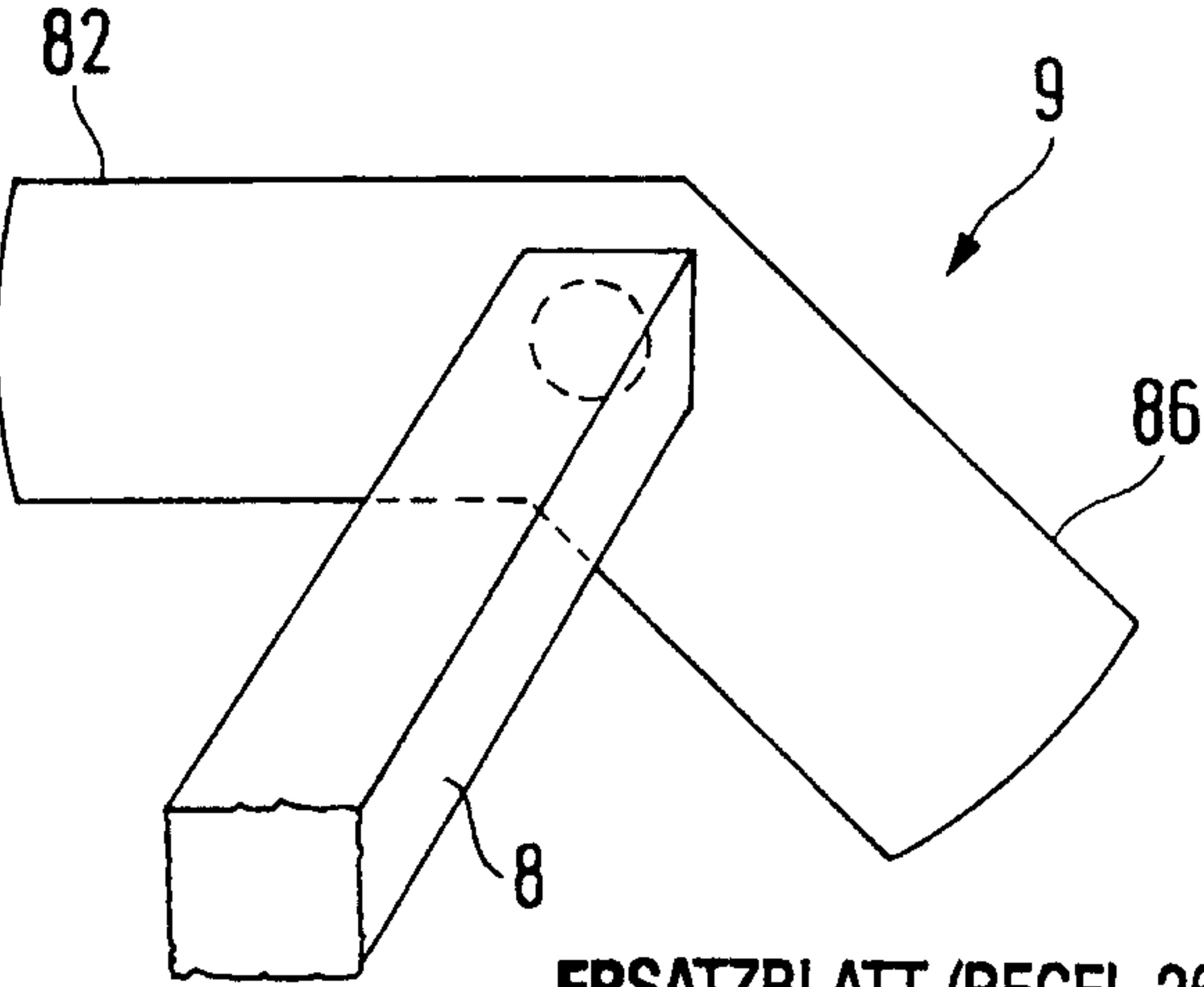
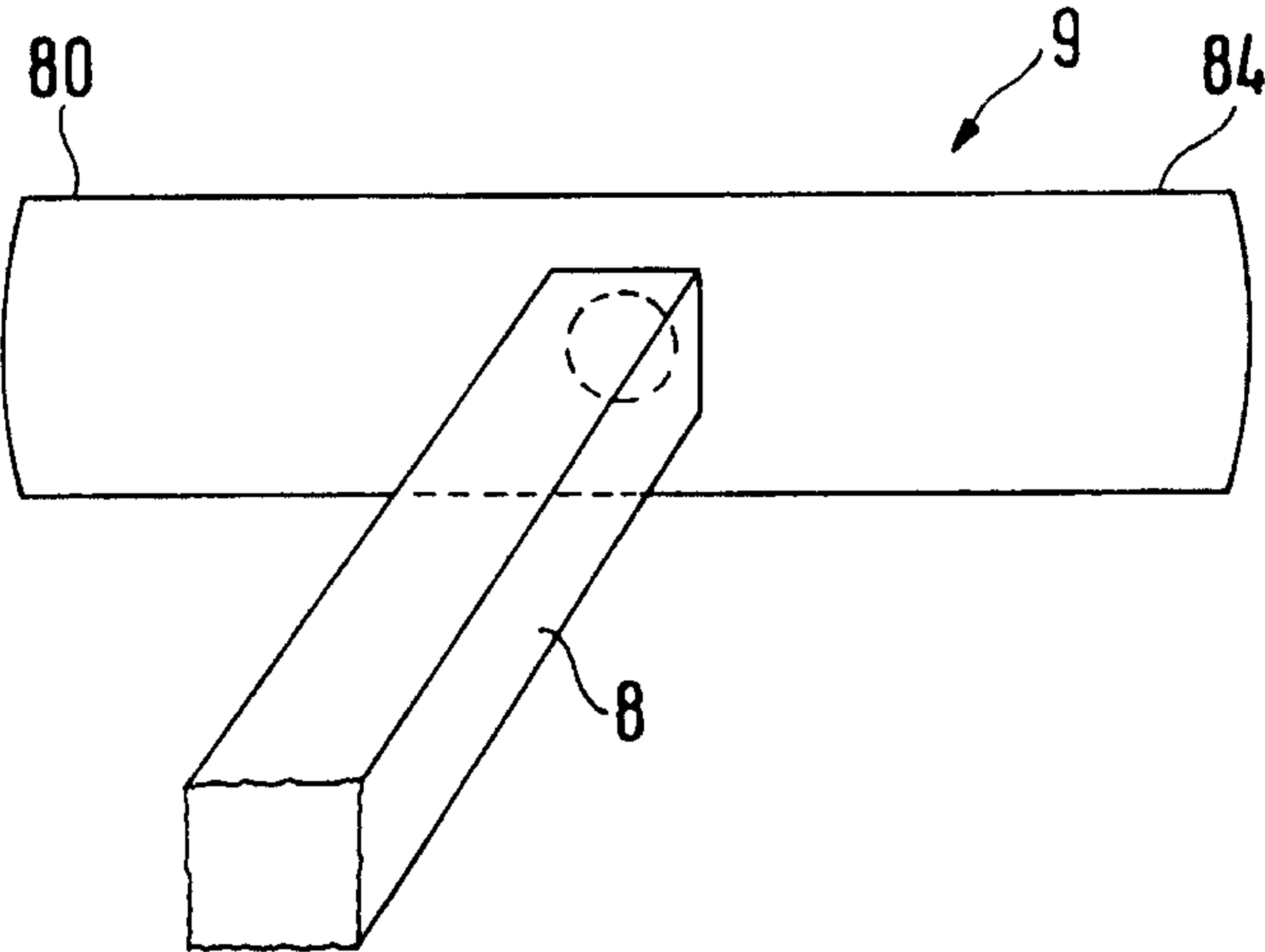
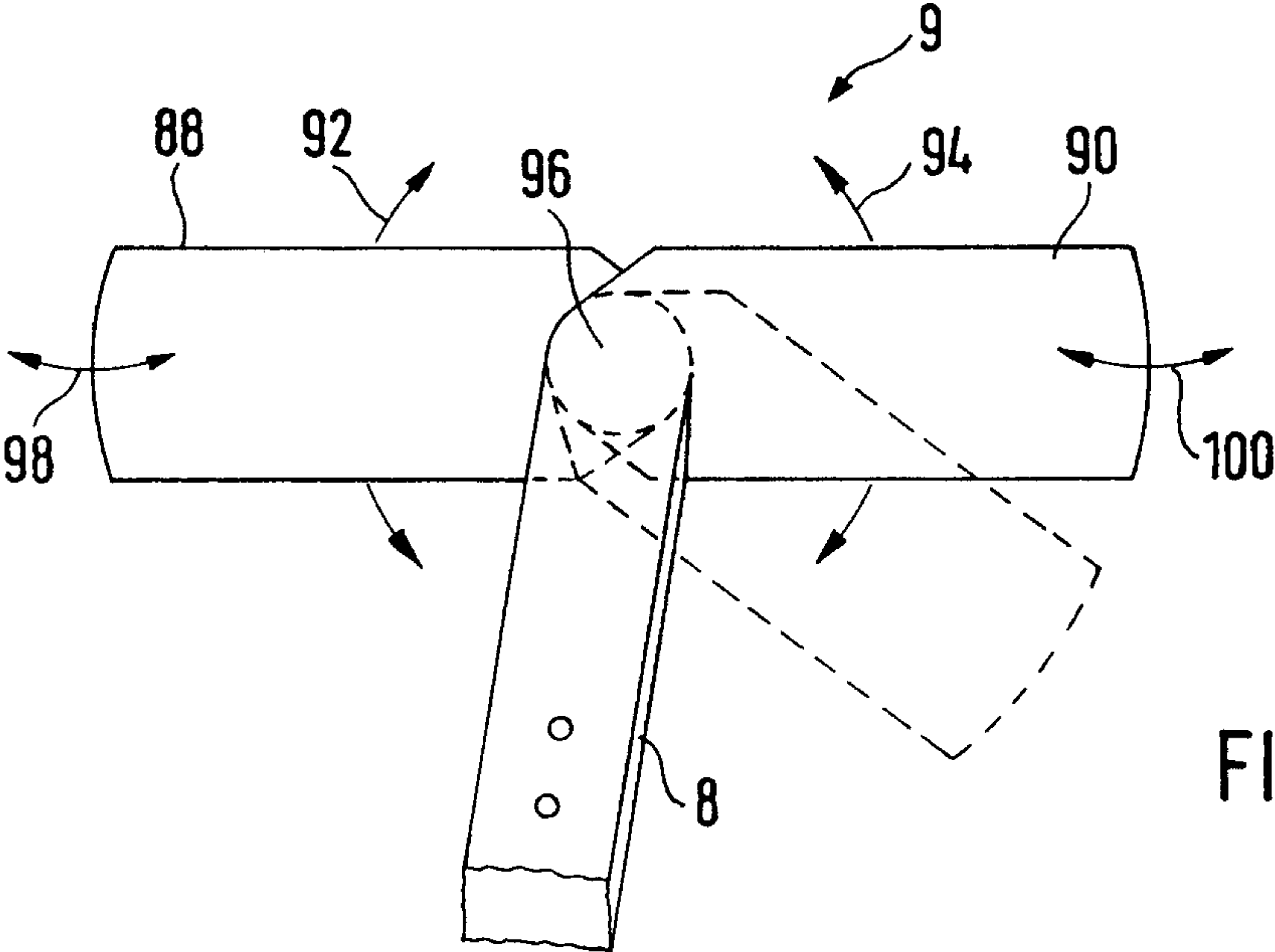


FIG. 2

ERSATZBLATT (REGEL 26)

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ERSATZBLATT (REGEL 26)

