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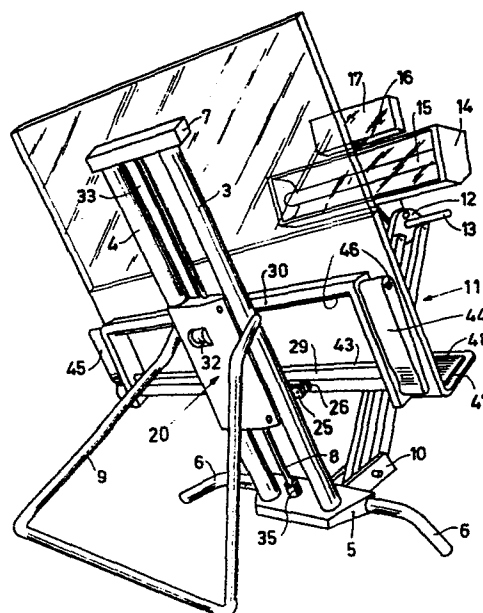
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54 **Reading apparatus.**

57 In a reading apparatus a work support (2), on which a record carrier such as a book or magazine can be placed, is supported by a stand (1). For the vertical adjustment of the work support (2) the stand comprises two upwardly directed longitudinal guides (3, 4) which extend parallel to one another. Moreover, the work support (2) is movable in a horizontal direction relative to the stand (1). Between the stand (1) and the work support (2) there is arranged a weight compensation means (33) and a latching device (37). The latching device (37) comprises a latching rod (8) arranged between the longitudinal guides (3, 4) and a latching lever (38) which extends transversely of said latching rod (18) and which is provided with a hole (39) through which the rod extends. The latching lever (38) is pivotally connected to the work support (2) and is urged into an oblique position relative to the rod (18) by a spring (41). Near the end of the latching lever (38) which is remote from the latching rod (18) the lever is connected to an elastic hook (42), which is coupled to an actuating rod (43) which is arranged on the work support (2) and which is slidable in a horizontal direction. The actuating rod (43) is connected to at least one control lever (44, 45) on the work support (2).



"Reading apparatus"

The invention relates to a reading apparatus comprising a work support, which is carried by a stand and on which a record carrier such as a book or magazine can be placed, and comprising a lens which is connected to the stand and whose distance from the work support is adjustable, which work support is vertically adjustable relative to the stand, which stand comprises two upwardly directed longitudinal guides which extend parallel to one another for the vertical adjustment of the work support, a weight-compensation means being arranged between the stand and the work support and a latching device being provided, which device comprises a latching rod, which is situated between the longitudinal guides, and a latching lever which extends transversely of said rod and which is provided with a hole through which the rod extends, which lever is pivotally connected to the work support and is urged in an oblique position relative to the rod by a spring.

A reading apparatus of this type is disclosed in United States Patent Specification 1,451,182 and serves to enable the visually handicapped to read books, newspapers, magazines etc. with the aid of a magnifying lens. For a smooth movement of the matter to be read and the lens while reading consecutive lines of text the work support of the known reading apparatus is adjustable in the vertical direction by the actuation of a stationarily arranged foot-pedal. This pedal imposes a critical sitting posture and prohibits the use of the work support on a table top. Moreover, in practice the construction of the known reading apparatus with a horizontally stationary work support generally requires a continual movement of the head of the reader.

It is the object of the invention to provide an easy-to-operate reading apparatus of simple construction, which yields optimum results, when used by a visually handicapped person.

To this end the invention is characterized in that the work support is also movable in a horizontal direction relative to the stand, and near the end which is remote from the latching rod the latching lever is connected to an elastic hook, which hook is coupled to an actuating rod so as to be horizontally slidable, which rod is arranged on the work

support and is connected to at least one control lever situated near one of the lateral sides of the work support.

This results in a reading apparatus which enables the text to be read to be followed easily and which does not require a continual
5 movement of the head. When following the individual lines of text the work support is moved in a horizontal direction in such a way that the line-height setting is maintained by the horizontally slidable coupling between the actuating rod and the elastic hook. By means of the control levers on the work support the latching device can be released for moving the support in
10 the vertical direction, allowing the hand to remain at the same place on the support both during the height adjustment and the horizontal adjustment of the support. Thus, the reading apparatus in accordance with the invention is easy to operate during reading and can be placed on, for example, a table top.

A preferred embodiment of the invention is characterized in
15 that two control levers are situated on the work support, which control levers near an upright side of the work support are each pivotally connected thereto, the actuating rod extending between the control levers in a horizontal direction. These steps result in a convenient operation and, consequently, a smooth adjustment of the work support by means of the two
20 conveniently arranged control levers.

A further preferred embodiment of the invention is characterized in that the latching lever is situated at least partly in a housing which is connected to the work support and which is disposed between the two longitudinal guides, a wall of said housing being provided with slot
25 whose lower edge constitutes a pivot for the latching lever. This yields a simple and cheap but adequately shielded construction.

Another preferred embodiment of the invention is characterized in that the weight-compensation means comprise a length of strip steel which is coiled at least partly inside the housing, the non-coiled portion
30 between the housing and the stand being situated near the latching rod between the longitudinal guides. This results in a compact arrangement of the weight-compensation means, which is practically invisible from the front of the reading apparatus.

Still another preferred embodiment of the invention is characterized
35 in that for the vertical guidance of the work support the housing carries a plurality of bearings which are arranged in pairs below and above the latching lever and which co-operate with the longitudinal guides during the vertical adjustment of the work support. In this way a smooth height

adjustment of the work support is obtained.

Finally, another preferred embodiment of the invention, which is provided with an illuminating device whose distance from the work support is adjustable, is characterized in that the illuminating device
5 is adjustably connected to the lower surface of the stand by means of a pivotable parallelogram mechanism and the magnifying lens is connected to the upper side of the illuminating device. The parallelogram mechanism ensures that the parallel position of the work support and the lens is maintained without obstructing the field of view.

10 An embodiment of the invention will now be described in more detail, by way of example, with reference to the drawings. In the drawings:

Fig. 1 is a side view of a reading apparatus in accordance with the invention;

15 Fig. 2 is a perspective rear view of the reading apparatus shown in Fig. 1;

Fig. 3 is a cross-sectional view, on an enlarged scale, taken on the lines III-III in Fig. 1;

Fig. 4 is a cross-sectional view taken on the lines IV-IV in Fig. 3.

20 The reading apparatus shown in Figs. 1 and 2 comprises a stand 1 carrying a work support 2. For this purpose the stand 1 comprises two tubes 3 and 5 which function as longitudinal guides and which are preferably made of aluminium to minimize their weight. At the lower ends the tubes are interconnected by a member 5 which bears on a surface such as a table
25 top by means of legs 6. From the member 5 the tubes 3 and 4 extend parallel to one another in an upward direction, the tubes being interconnected at their upper ends by a connecting member 7. A latching rod 8 extends substantially midway between the tubes 3 and 4, the ends of the rod being connected to the members 5 and 7 respectively. Preferably, the rod 8 is
30 chrome-plated and has a diameter which is small relative to that of the tubes 3 and 4. Further, the stand 1 comprises a supporting bracket 9, which is pivotally connected to the tubes 3 and 4 which can be pivoted towards the work support 2 for easy storage of the reading apparatus.

35 At the front side of the member 5 a U-shaped bracket 10 is arranged which carries the pivots of a parallelogram mechanism 11. At the side which is remote from the bracket 10 said parallelogram mechanism comprises a substantially triangular plate 12, which on both sides carries a pin 13, which pins function as handles. In this way the

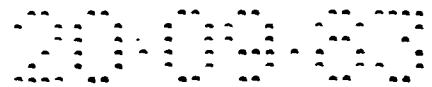
parallelogram mechanism 11 can be adjusted relative to the work support. On the plate 12 an illuminating device 14 is arranged, which device comprises a tubular lamp 15 which extends substantially horizontally. At the upper side the illuminating device quick-connect coupling enabling
5 a magnifying lens 17 to be mounted and, if required, to be replaced rapidly and easily. Preferably, the plate 12, the illuminating device 14 and the magnifying lens 17 are arranged in such a way that the lens 17 extends substantially parallel to the work support 2. The parallelogram mechanism 11 ensures also during its adjustment when the distance of the
10 lens 17 relative to the work support 2 is adjusted, the lens remains in a parallel position relative to the work support 2. For this purpose the parallelogram mechanism 11 comprises a tension spring 18 which maintains the lens setting. One end portion of a bolt 19 to which the spring 18 is secured limits the pivotal movement of the parallelogram mechanism 11 in
15 the clockwise direction.

Between the tubes 3 and 4 a housing 20 is arranged, which housing comprises walls 21 and 22 which extend parallel to the tubes 3 and 4 (see Figs. 3 and 4). On both sides of their major portions each of the two walls comprises a side portion 21b, 21c and 22b, 22c, respectively
20 which is bent through substantially 45° . As shown in Fig. 3 the side portions 21b and 21c are disposed so that bearings 23 on the inner sides of these side portions extend substantially in radial directions of the tubes 3 and 4. On the outer sides of the side portions 22b and 22c bearings 24 also extend in substantially radial directions of the tubes 3 and 4.
25 Thus, the bearings 23 are situated inside the housing 20 and the bearings 24 are disposed outside the housing in the space between the housing and the work support 2. The bearings 23 and 24 are arranged pairwise at an angle of substantially 90° relative to each other near the tubes 3 and 4 respectively, so that both on the lower side and the upper side of the
30 housing four bearings are present (see Fig. 4). This arrangement of the bearings relative to each other and the construction of the housing 20 provide a satisfactory compensation of forces and a smooth guidance during the vertical adjustment of the housing 20.

Near the lower side the wall 22 carries a substantially horizontal
35 bearing support 25, on which bearings 26 are mounted near the two ends. Near the upper side the wall 22 carries a bearing support 27 on which a bearing 28 is mounted. In this way a three-point mounting for the work support 2 is obtained, the lower surface of a horizontal ledge 29 engaging

with the bearings 26 and the lower surface of a ledge 30, which extends parallel to the ledge 29, engaging with the bearing 28. The lower bearings 26 and the upper bearing 28 together ensure that the work support 2 is guided horizontally relative to the stand 1. On the inner side the wall 21 carries a pair of projections 31 between which a roller 32 is mounted for rotation. A length of steel strip 33 is coiled on the roller 32 at least partly inside the housing. The steel strip 33 extends from the roller 32 substantially parallel to the latching rod 8 through a slot in an upper wall 34 of the housing towards the member 7, to which the upper end of the steel strip 33 is anchored. The steel strip 33 compensates for the weight of the work support 2.

On the latching rod 8 near the member 5 an elastic, preferably rubber, buffer 35 is arranged, which buffer limits the downward travel of the housing 20 by abutment against a lower wall 36 of the housing. For retaining the housing 20 and the work support 2 carried by said housing after vertical adjustment there is provided a latching device 37, which comprises the latching rod 8 and a latching lever 38 which extends transversely of the latching rod. Preferably, the latching lever 38 is made of a metal which is soft in comparison with the material of the rod 8. The latching lever 38 has a hole 39 through which the rod 8 extends, the lever extending from the rod 8 through a slot 40 in an outward direction relative to the housing 20. The lower edge of the slot 40 constitutes a fulcrum for the lever 38. Outside the housing 20 the lever 38 is bent obliquely downwards, a leaf spring 41 ensuring that in the retaining position the lever 38 is urged into an oblique position relative to the rod 8. The oblique portion of the lever 38 is connected to an elastic hook 42, the hook engaging with an actuating rod 43, which rod is thus coupled to the hook 42 so as to be slidable in a horizontal direction. As is shown in Fig. 2, the actuating rod 43 extends to a point near the upright sides of the work support 2, where the control levers 44 and 45 are located. Relative to the upright sides of the work support said control levers are arranged in such a manner that each individual control lever can be operated without special attention. The control levers 44 and 45 are mounted so as to be pivotable about spindles 46, the rod 43 extending through portions of the lever which are situated at some distance from the spindle 46. By means of the leaf spring 41 each lever is urged away from the work support 2 via the hook 42 and the actuating rod 43. This ensures that after release of the control levers 44 and 45 the rod 43 is



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pivoted in the direction indicated by the arrow A, so that the latching lever occupies the oblique position relative to the rod 8 as described hereinbefore. However, if the ends of the control levers 44 and/or 45 are moved towards the work support 2, the rod 43 is pivoted against spring force in a direction opposite to that indicated by the arrow A, so that inside the housing 20 the latching lever 38 occupies a substantially perpendicular position relative to the rod 8. As a result of this unlatching is effected, because the diameter of the hole 39 is slightly greater than the outer diameter of the rod 8, which enables the housing 20 and consequently the work support 2 connected thereto, to be positioned in an easy manner.

Near the lower edge the work support 2 is provided with a supporting bracket 47 which extends substantially perpendicularly relative to the major surface of the work support 2. Preferably this bracket is provided with elastic material with a high surface-friction. A part of the work support 2 which covers approximately 40 % of its height reckoned from the support bracket 47 is preferably made of a non-transparent plastics material and an upper part of the work support is made of a transparent plastics material such as perspex. On this upper part two magnetic strips 49 are arranged parallel to one another, the side of a bracket 50 which faces the work support being attracted against the magnetic strips. The side of the bracket 50 which faces the supporting bracket 47 is also provided with an elastic material 51 with a high surface-friction. This bracket 50 in combination with the bracket 47 serves as a flattening means for keeping pages of an open book in a flat condition. For the description of such a flattening device reference is made to the Applicant's non-prepublished Netherlands Patent Application no. 8200327 filed on 29 January 1982. The bracket 47 is formed with a slot, not shown, in which the parallelogram mechanism 11 can move up to the end of the slot upon a pivotal movement towards the work support 2. This limits pivotal movements of the parallelogram mechanism 11 in an anticlockwise direction and moreover it provides a compact storage position of the parallelogram mechanism and the parts connected thereto.

After the stand 9 has been swung out the reading apparatus is placed on a surface such as a table top, desk or bed. The quick-connect coupling 16 enables the rectangular lens 17 to be readily interchanged by one which provides the required degree of magnification. The parallelogram mechanism 11 enables the magnifying lens 17 to be adjusted

as regards the distance from the work support, the lens being constantly maintained in a position parallel relative to the work support. This results in an easy adjustment of the focal distance of the loop relative to a record carrier placed on the work support, such as a book, a magazine or a newspaper. This focal distance must be adjusted in conformity with the thickness of the record carrier. The pages of a book are kept in a flat condition between the brackets 47 and 50, the elastic material on the brackets ensuring that the pages cannot bulge. Thus, the entire page area remains free, enabling the entire page to be followed unimpededly with the lens 17. As the work support 2 is movable both in the vertical direction and in the horizontal direction. A user who is sitting on a chair with his eyes before the lens 17 can move the work support 2 to the desired position without having to move his head. Since the user is generally visually handicapped, it is important that the work support 2 can be moved as easily as possible without tiring and intricate manipulations. The horizontal displacement, i.e. when following the lines of text, is effected very smoothly owing to the presence of the bearings 26 and 28. When following the individual lines the horizontally slidable coupling between the actuating rod 43 and the hook 42 ensures that the line-height setting is maintained. The latching device 37 ensures that the housing 20 and the work support 2 carried by this housing cannot be lowered unintentionally, for example if the work support is subject to a shock. When adjusting the line-height of the book or the like present on the work support the weight-compensation means comprising the steel strip 33 ensures that a smooth movement is obtained. For this the user only has to pull one of the two control levers 44 or 45 slightly towards himself against spring force, the spring force itself being an indication to the user that the line height may change. The special bearing arrangement of the housing 20 on the two tubes 3 and 4 guarantees that height adjustment proceeds very gradually yet smoothly. When the correct line-height is reached the lever 44 or 45 must be released after which the line-height setting will be maintained. The actuation by means of the levers 44, 45 near the upright sides of the work support enables the user to keep his hand constantly at the same place on the work support both during the horizontal and the vertical adjustment of this support. In this way a reading apparatus is obtained which enables a visually handicapped user to read texts, drawings and the like magnified, without the user being fatigued by the operation of the reading apparatus.

It is to be noted that the perspex upper part of the work support 2 ensures a minimal isolation of the user from his surrounding. Moreover, it is to be noted that in the swung-in condition the reading apparatus occupies a minimal space.

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1. A reading apparatus comprising a work support, which is carried by a stand and on which a record carrier such as a book or magazine can be placed, and comprising a lens which is connected to the stand and whose distance from the work support is adjustable, which work support
5 is vertically adjustable relative to the stand, which stand comprises two upwardly directed longitudinal guides which extend parallel to one another for the vertical adjustment of the work support, a weight-compensation means being arranged between the stand and the work support and a latching device being provided, which device comprises a latching rod, which is
10 situated between the longitudinal guides, and a latching lever which extends transversely of said rod and which is provided with a hole through which the rod extends, which lever is pivotally connected to the work support and is urged in an oblique position relative to the rod by a spring, characterized in that the work support is also movable in a horizontal
15 direction relative to the stand, and near the end which is remote from the latching rod the latching lever is connected to an elastic hook, which hook is coupled to an actuating rod so as to be horizontally slidable, which rod is arranged on the work support and is connected to at least one control lever situated near one of the lateral sides of the work support.
- 20 2. A reading apparatus as claimed in Claim 1, characterized in that two control levers are situated on the work support, which control levers near an upright side of the work support are each pivotally connected thereto, the actuating rod extending between the control levers in a horizontal direction.
- 25 3. A reading apparatus as claimed in Claim 1, characterized in that the latching lever is situated at least partly in a housing which is connected to the work support and which is disposed between the two longitudinal guides, a wall of said housing being provided with a slot whose lower edge constitutes a pivot for the latching lever.
- 30 4. A reading apparatus as claimed in Claim 3, characterized in that the weight-compensation means comprise a length of strip steel which is coiled at least partly inside the housing, the non-coiled portion between the housing and the stand being situated near the latching rod between

the longitudinal guides.

5. A reading apparatus as claimed in Claim 3 or 4, characterized in that for the vertical guidance of the work support the housing carries a plurality of bearings which are arranged in pairs below and above the
5 latching lever and which cooperate with the longitudinal guides during the vertical adjustment of the work support.

6. A reading apparatus as claimed in any one of the Claims 3 to 5, characterized in that the housing carries lower and upper bearings for horizontally guiding the work support relative to the stand,
10 the lever being situated between the lower and the upper bearings inside the housing.

7. A reading apparatus as claimed in any one of the preceding Claims, provided with an illuminating device whose distance from the work support is adjustable, characterized in that the illuminating
15 device is adjustable connected to the lower surface of the stand by means of a pivotable parallelogram mechanism and the magnifying lens is connected to the upper side of the illuminating device.

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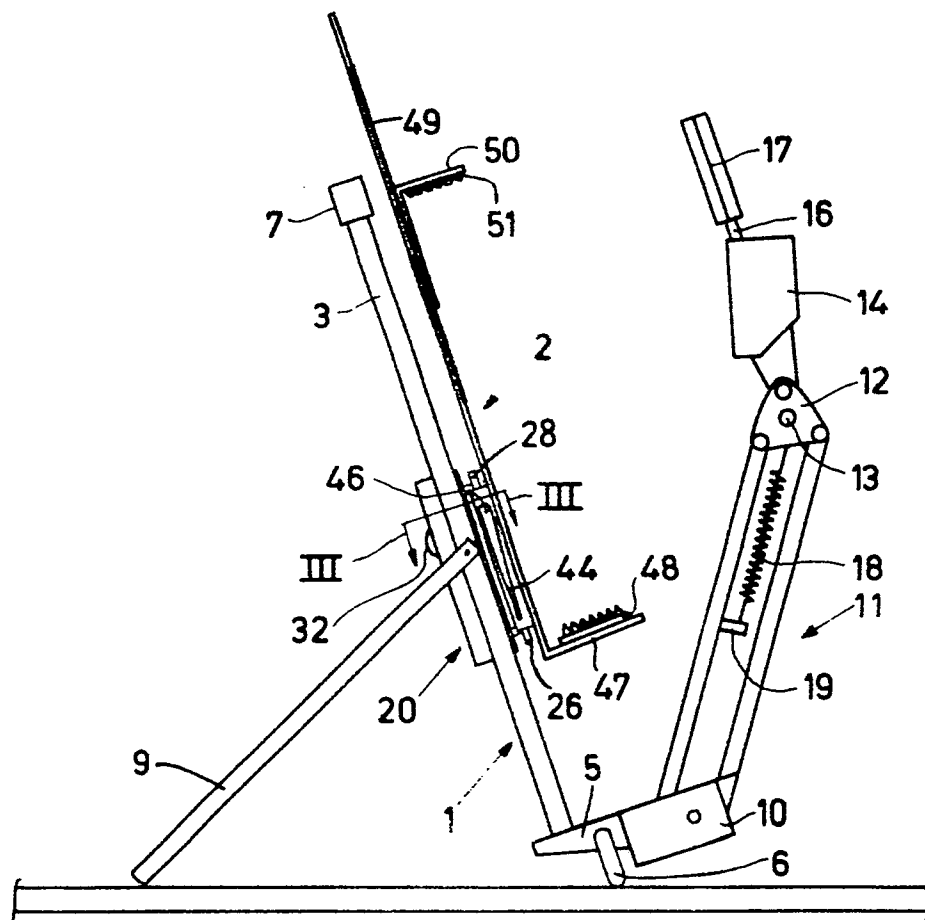


FIG.1

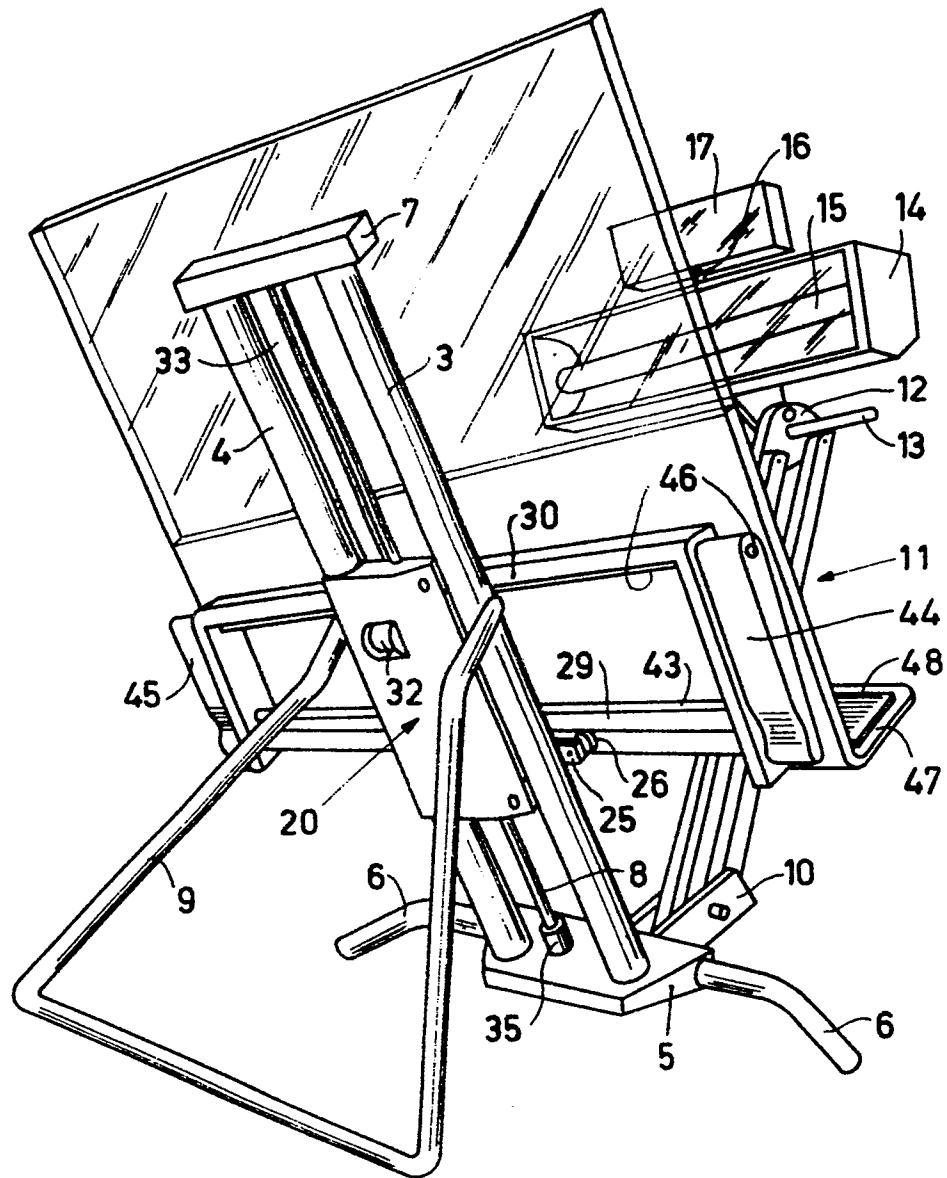


FIG. 2

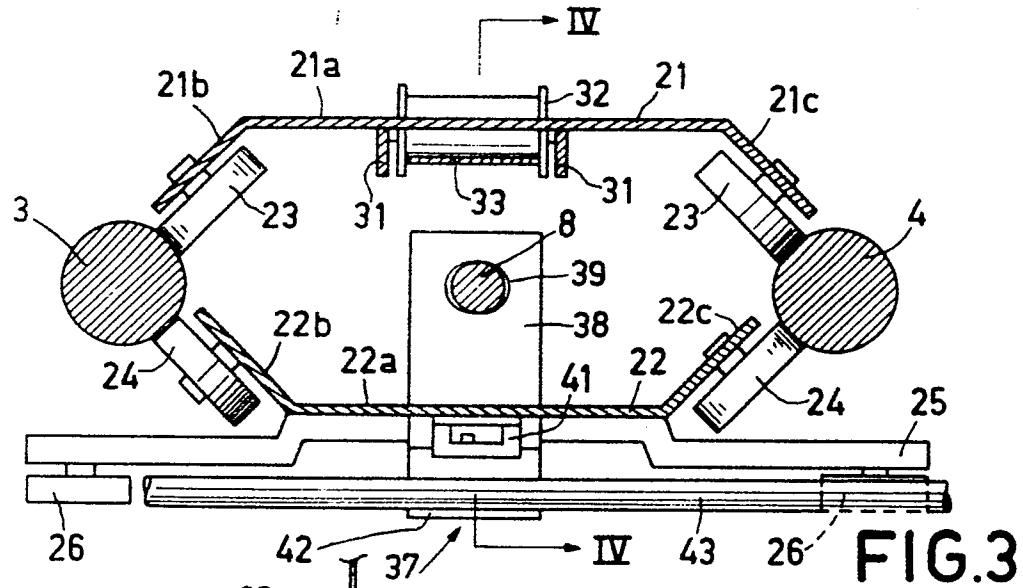


FIG. 3

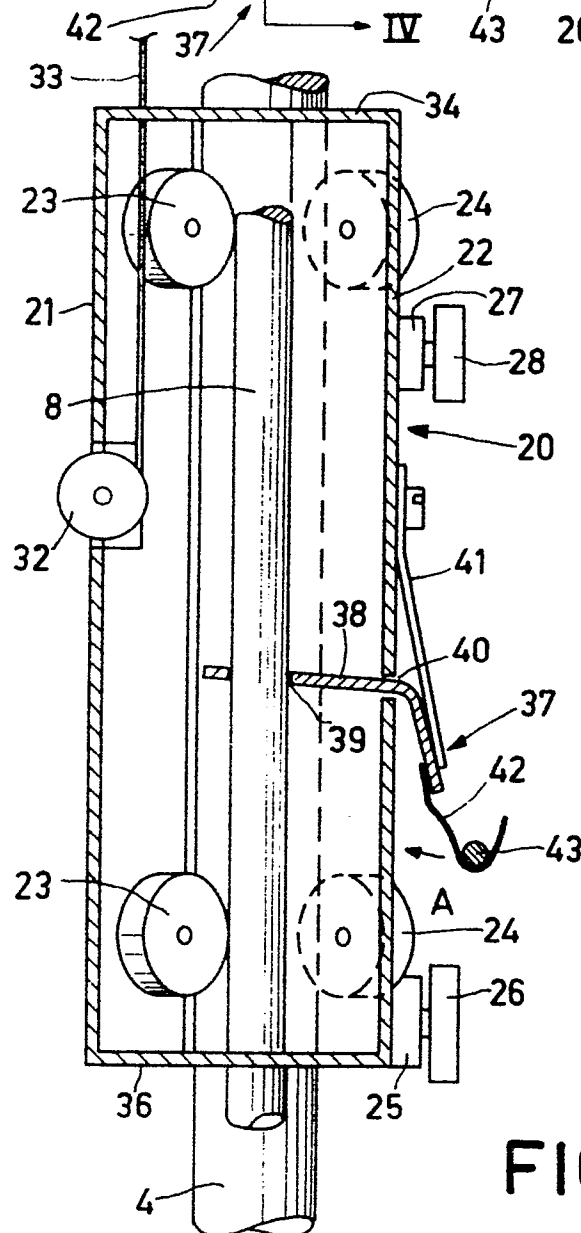


FIG. 4



European Patent
Office

EUROPEAN SEARCH REPORT

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Application number

EP 83 20 1305

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A,D	US-A-1 451 182 (SEARLE) * Page 1, lines 60-68; page 2, lines 6-48; page 3, lines 50-100; page 4, lines 72-75; figures 1,5,6,9 *	1	A 47 B 19/10
A	--- DE-C- 143 193 (FRÖHLICH) * Whole document *	2,3	
A	--- GB-A- 2 330 (KAUFMANN) (A.D. 1914) * Page 1, line 42 - page 2, line 37; figures 1,2 *	1,7	

			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			A 47 B B 42 D B 41 J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12-12-1983	Examiner SCHMITTER BERNARD
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	