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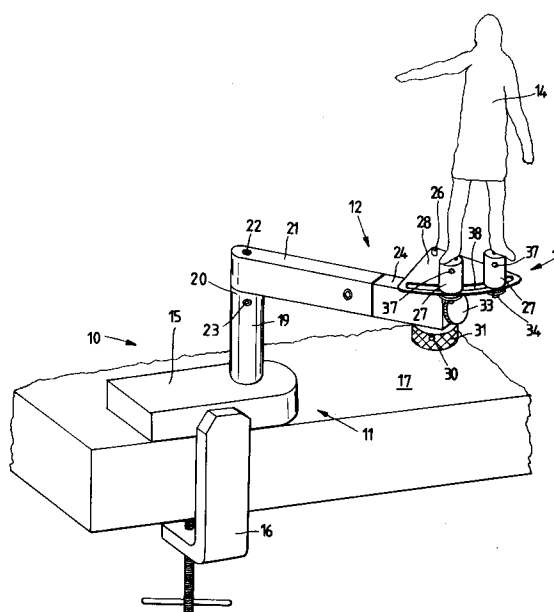
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I-20121 Milano (IT)(54) **Support means for model fastening.**

(57) A support means (10) for fastening models comprising a vertical carrier means (11) on which an arm (12) is arranged which is provided, at one of its ends, with a model support element (13), said arm being constituted by a first part (21) integral with said vertical carrier means, and a second part (24) axially aligned with said first arm part and rotatable relatively to it, with said second arm part carrying the model support element, which is provided with elements for stable model positioning.

Fig.2**EP 0 605 919 A1**

The present finding relates to a support means for fastening models to be processed.

In model making branch, various types of support means for models fastening are known, to be used when the surfaces of said models must be finished by colouring.

Most of said supports means are constituted by supporting planes or tables on whose surface small bores are provided. Inside said bores, pins or studs are slid which usually extend into, or are fastened to, the bottom side of the model, i.e., that side on which said model rests.

A drawback displayed by said model support means is that the operator has one of his hands always engaged in order to bear the support means, suitably rotate it, and consequently paint the model.

Other support means are of the clamp type, inside which an extremely small portion of the model gets engaged.

One of the drawbacks displayed by the latter types of support means is that said support element, i.e., its portion designed to fasten the model, covers a determined portion of the model to be painted. Consequently, the painting times increase, because the applied paint must be perfectly dried before moving the model, and then paint that portion of the model which was previously covered by the fastening means. Furthermore, this type of support means suffer from the main drawback that the model to be painted cannot be rotated, with some model portions being consequently difficult to be accessed.

A purpose of the present finding is of getting rid of, or, at least, reducing, the drawbacks displayed by the traditional support means.

Another purpose is of providing a support means for model fastening which is easy and simple to use, allows a firm and reliable model fastening to be achieved, and hence good painting results being anyway secured.

Another, not least, purpose is also of removing the drawback of instability of the working top used by the operator.

In order to achieve the purposes, a model fastening support means is provided, which is characterized in that said support means is constituted by a vertical carrier means on which an arm is provided which is provided, at one of its ends, with a model support element, said arm comprising a first arm part integral with said vertical carrier means and a second arm part axially aligned with first arm part and rotatable relatively to it, with said second arm part carrying the model support element, which is provided with elements for stable model positioning.

These structural and functional features and the advantages of a device according to the

present finding will be better understood from the following exemplifying, non-limitative disclosure in detail, made by referring to the accompanying schematic drawings, in which:

5 Figure 1 shows a sectional view of a support means for model fastening, according to the present finding;

Figure 2 shows a perspective view of the support means for model fastening of Figure 1;

10 Figure 3 shows a perspective view of the support means for model fastening displayed in Figure 1 and 2, with an intermediate arm being rotated at a certain angle;

15 Figure 4 shows a perspective view of a detail of Figures 1 or 2, displaying a second exemplifying embodiment of the support plate.

Referring to Figure 1, a sectional view is displayed of a support means for model fastening models according to the present finding, generally indicated with 10.

20 The support means for model fastening 10 is essentially constituted by a carrier means 11, on which an arm 12 is installed, which, at one of its ends, is further provided with a support element 13 for supporting a model 14. In the example, the carrier means 11 is vertical, and the arm 12 is horizontal.

Said carrier means 11 is constituted by a base plate 15, which, by means of a clamp 16, can be fastened onto a whatever supporting top 17, as displayed, e.g., in Figure 2. Onto the base plate 15, by means of a first pin 18, an upright 19 is constrained at one of its ends (i.e., at its lower end), also bearing, at its second end (i.e., its upper end) 20, a first part 21 of the whole arm 12. The latter is axially constrained to said upright 19 by means of a second pin 22, which can be clamped by means of a side clamping element 23, as a so-said first grub screw housed inside a hollow provided in a portion of the side surface of the upright 19. The presence of the side clamping means 23 makes it possible a pivoted fastening with adjustable friction to be realized.

45 According to a further embodiment of the model fastening support means according to the present finding, the arm 12 is freely rotatable around the upright 19 which is integral with the base plate 15.

50 According to a further embodiment, on the contrary, the arm 12, i.e., its first arm part 21, extends as an enblock piece from the upper side of the upright 19, which, in its turn, is axially constrained by means of a friction pivoted fastening onto the base plate 15, and is freely rotatable.

55 Both of the above said embodiments make it possible the same result to be achieved, i.e., a free rotation of the arm 12.

A second part 24 of said arm 12 is axially aligned with the first part 21 of said arm and it too is freely rotatable relatively to it.

In fact, said first and second arm parts, 21 and 24, respectively, are mutually constrained by means of an adjustable-friction pivoted fastening means 25. In fact, a grub screw is provided which can be engaged and tightened inside the side surface of the first part 21 of the arm 12, and makes it possible the engagement friction between both parts of said arm 12, to be adjusted.

The support element 13 is axially constrained by means of a second pivoted fastening means 26 onto the second part 24 of the arm 12. In this way, the support element 13 can be positioned around said pivoted fastening means 26, according to any desired mutual orientation.

Said support element 13 is furthermore provided with elements 27 for stably positioning the model 14.

According to a preferred embodiment, the support element 13 is constituted by a support plate 28. Said support plate 28 is constrained by means of the pivoted fastening means 26 onto a screw-threaded pin 29 and consequently to the second part 24 of the arm 12. The screw-threaded pin 29 is furthermore fastened, by means of a second grub screw 30, to a knob 31, thus realizing a adjustable-friction pivoted fastening means onto the second part 24 of the arm 12. In this way, the operator can freely rotate and orientate at willing said support element 13 around the above said pivoted fastening means 29, by acting on the knob 31.

A hollow 32 provided inside the second part 24 of the arm 12, inside which the friction pivoted fastening means 25 is housed, can be closed by means of an external, freely removable, element 33, acting as a cap.

The elements 27 for stabilizing positioning the model 14 are preferably, and for exemplifying purposes, made with a cylindrical shape. However, an element having a cross section with a rectangular shape, or with any other shape, is not excluded. Said stable positioning elements 27 are fastened onto the support plate 28 by means of a pivoted fastening means 34 which make them integral with said plate 28.

The stable positioning element 27 is furthermore provided with a bore 35 inside the interior of which a stud 36, the model 14 is equipped with, is slid. Said stud 36 is then fastened inside the interior of the bore 35 by means of a third grub screw 37, acting as a locking element. The so fastened model 14 results hence to be integrally fastened to said element 27, and consequently to the support plate 28.

After fastening the support elements 27, the model can be turned, as shown, e.g., in Figure 3, i.e., the previously disclosed parts of the model support means which allow such a movement can be rotated, with no risk that the model may fall down from the support means 10.

Referring to Figure 2, said support means for model fastening 10 is displayed with a first embodiment of the support plate 28, in which said support plate 28 is given the shape of a circle sector.

In a region spaced apart from pivoted fastening means 26 and 29, e.g., nearly at the center of said circle sector, a slot having a circle arc shape 38 is provided, which acts as a guide in order to position said stable positioning elements 27, according to any desired configuration. Before being fastened and made integral with the above said support plate 28 by means of the pivoted fastening means 34, said stable positioning elements 27 are moved along the slot 38 to any desired position, i.e., in that position which is aligned with and corresponding to, the studs 36 extending from the model 14. In fact, the stable positioning elements 27 can slide inside the interior of the slot 38 and can be locked at a whatever point thereof.

In Figure 4, a second embodiment of the support plate is shown as indicated with 28'. According to this latter embodiment, the stable positioning element 27 can be only placed at one point on the surface of the plate, i.e., in a fixed, previously selected, position.

The selection of either from both support plates 28 and 28' exclusively depends on the shape of model 14, because not all models can have more than one supporting point, such as the extending stud 36.

The above said pivoted fastening means 18, 22, 25, 26, 29 and 34 can be realized, e.g., as displayed in the exemplifying figures, by means of socket head screws. However, further embodiments realized by means of simple screw-threaded pins where necessary, and having contoured actuation heads, such as knobs, like the one shown in 31, are not excluded.

Furthermore, the friction pivoted fastening means essentially comprise a screw acting as a pivot between both support portions to be mutually linked, and a clamping grub screw destined to lock said pivot screw in a more or less tightened position thereof. In such a way, the friction force can be regulated and calibrated according to the requirements of mutual engagements of the implied parts.

In the model fastening support means according to the present invention, in order to accomplish an always correct alignment between the parts under mutual friction engagement, mutual truing elements are provided, which are positioned at the

mutually facing ends of both coupled parts. For example, such a structure is provided between the first part 21 and the second part 24 of the arm 12, thanks to the presence of mutual trueing elements 39 provided at the mutually facing ends of both parts 21, 24; in such an example, these elements are constituted by a recessed portion of the one part which enters a complementary seat provided on the other part.

One of the most important advantages offered by the support means for model fastening according to the present invention is that, once that the model is fastened onto said support cylinders, as disclosed hereinabove, the operator no longer needs touching it until his work is finished.

In fact, every part of the model can be accessed by acting on the various pivoted fastening means in order to rotate the model 14, i.e., its support plate 28, 28', around a horizontal axis, a vertical axis, or according to a direction which is the resultant of both movements.

Another, very important, advantage is also that the operator has his hands completely free during the painting or finishing work.

A further, not less important, advantage, derives from the possibility of rotating individual parts of the above said support means. In fact, by rotating these parts, the model, integrally fastened onto the support plate, will be always available in any desired orientations and angles, thus allowing the operator to easily reach also the most difficult-to-paint points. And all the above without any risks that the model, once turned, may fall down from its support means.

Claims

1. Support means for model fastening characterized in that said support means is constituted by a vertical carrier means on which an arm is arranged which is provided, at one of its ends, with a model support element, said arm comprising a first arm part integral with said vertical carrier means and a second arm part axially aligned with said first arm part and rotatable relatively to it, with said second arm part carrying the model support element, which is provided with elements for stable model positioning.
2. Support means for model fastening according to claim 1, characterized in that said first and said second arm parts are constrained to each other by means of an adjustable-friction pivoted fastening means.
3. Support means for model fastening according to claim 1, characterized in that said carrier

means is constituted by a base plate suitable for being fastened, by means of a clamp means, to a whatever supporting top, and a small-size upright constrained, at its bottom end, to said base plate and bearing, at its top end, the first part of said arm.

4. Support means for model fastening according to claim 1, characterized in that said upright is constrained to said base plate by means of a pivoted fastening means.
5. Support means for model fastening according to claim 1, characterized in that said arm is axially constrained to said vertical carrier means through a second friction pivoted fastening means.
6. Support means for model fastening according to any of preceding claims, characterized in that said support element is constrained to said second part of said arm through a further adjustable friction pivoted fastening means, and can freely rotate around said pivoted fastening means.
7. Support means for model fastening according to any of preceding claims, characterized in that said support element is constituted by a support plate.
8. Support means for model fastening according to any of preceding claims, characterized in that on said support element, a slot is provided along which said stable positioning elements can be moved and fastened.
9. Support means for model fastening according to claim 1, characterized in that said fastening elements for stable model positioning are given a cylindrical shape.
10. Support means for model fastening according to claim 1, characterized in that said fastening elements for stable model positioning are fastened onto said support element by means of a pivoted fastening means.
11. Support means for model fastening according to claim 1, characterized in that said stable positioning elements are provided with a bore which is destined to house a small stud extending from the model, with, associated with said bore, clamping means being provided, which make it possible said stud to be locked.
12. Support means for model fastening according to any of preceding claims, characterized in

that said friction pivoted fastening means comprise a pivot-like acting screw between both support parts to be mutually connected, and a grub screw for locking said pivot-like acting screw in a more or less tightened position thereof. 5

13. Support means for model fastening according, to claim 12, characterized in that associated with said friction pivoted fastening means, mutual trueing elements are provided at both of the mutually facing ends of the parts to be connected with each other. 10

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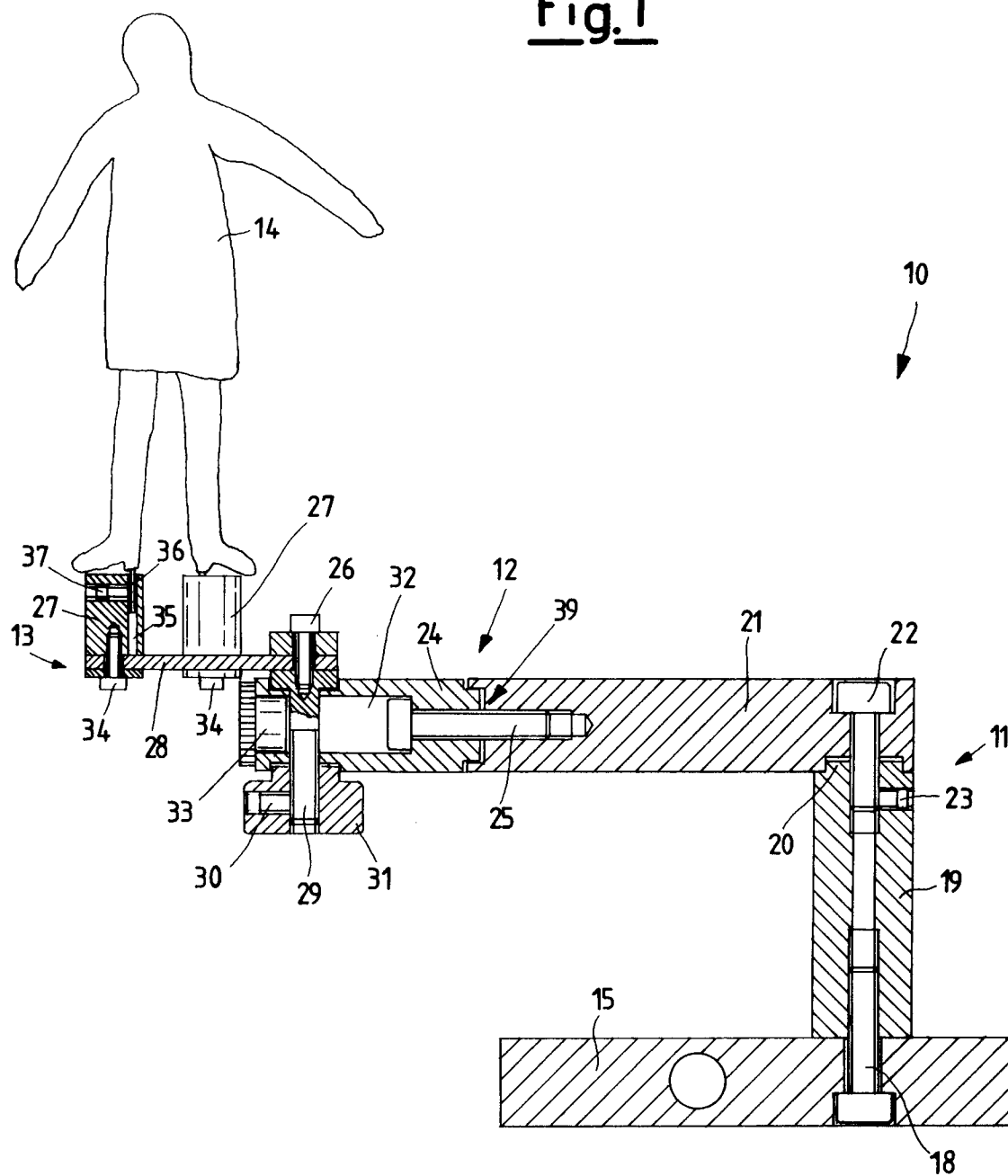
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Fig.1



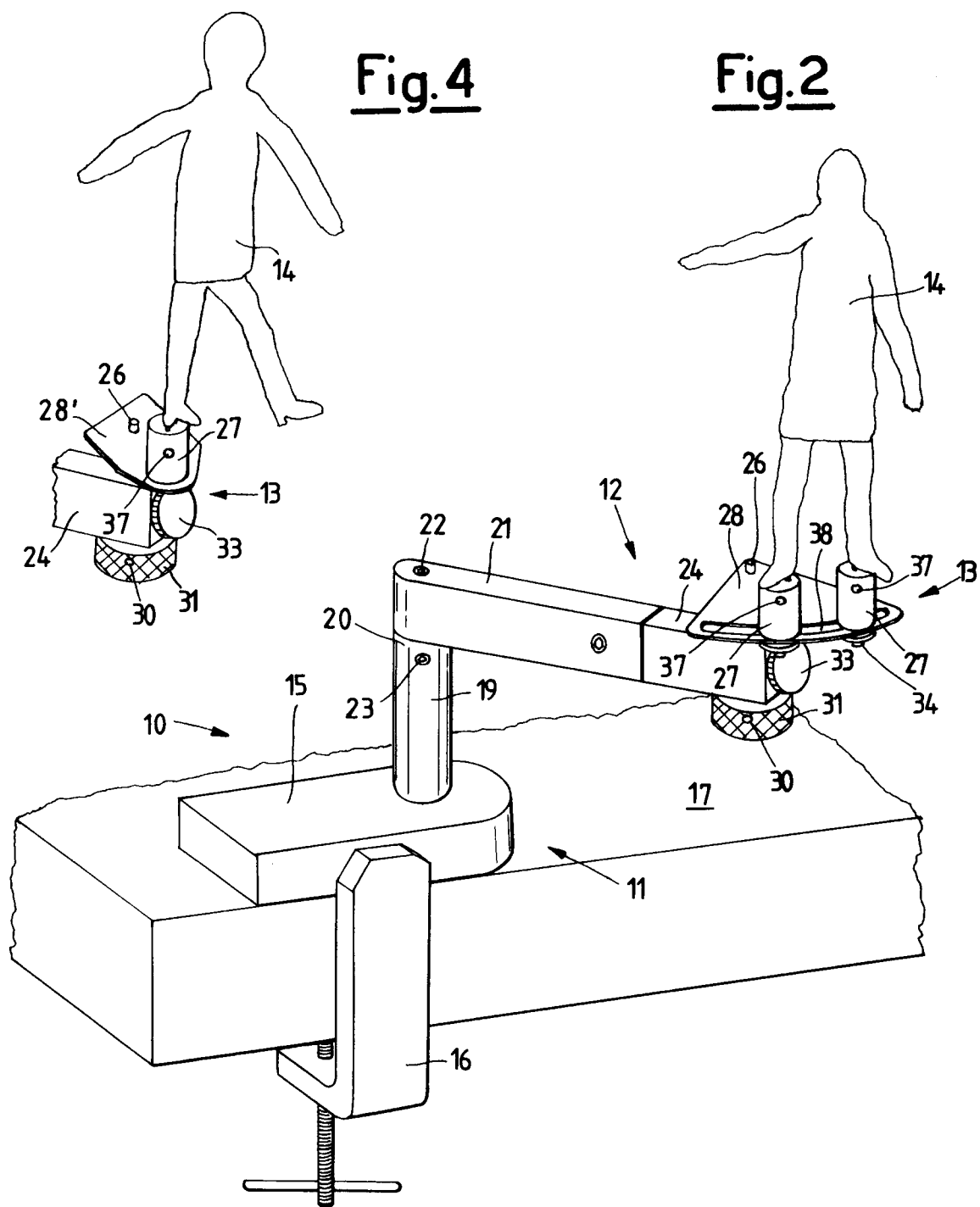
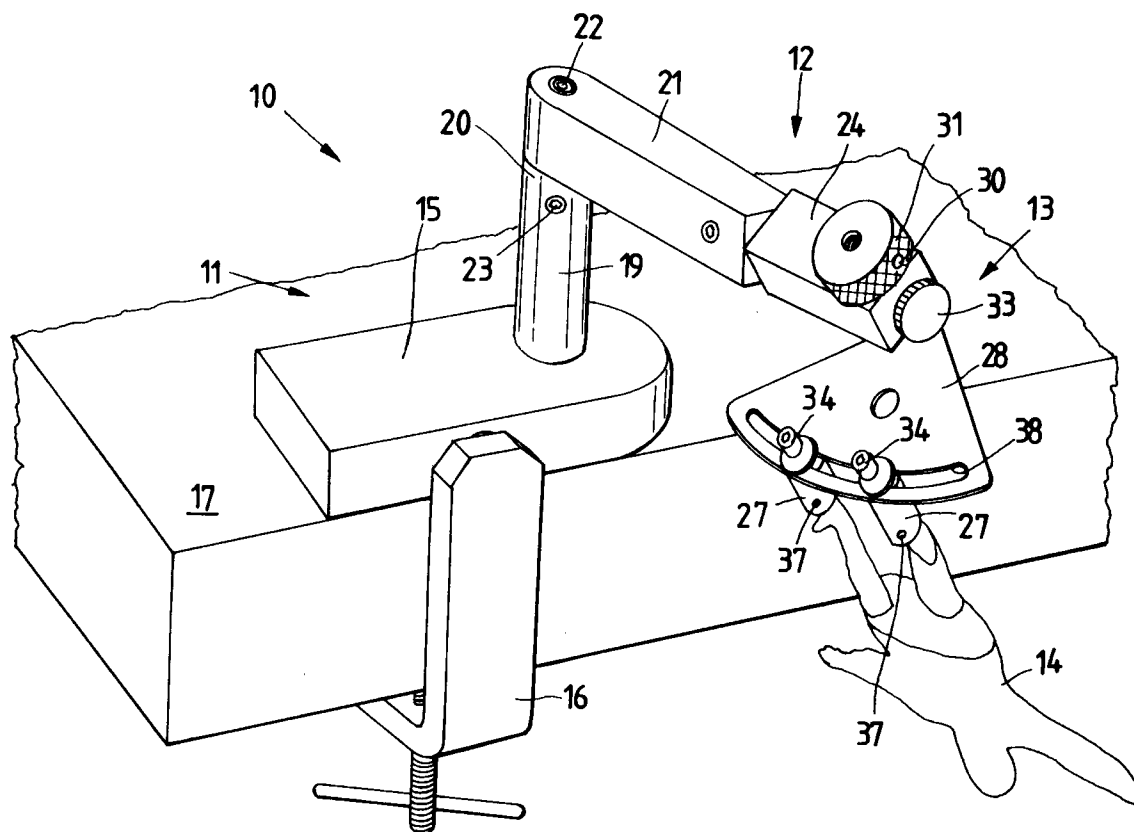


Fig.3





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EUROPEAN SEARCH REPORT

Application Number
EP 93 20 3610

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.5)
A	FR-A-2 602 449 (E. OCHSNER ET. AL.) * page 1, line 1 - page 5, line 26 * ---	1,2,4-7, 10	B05C13/00 B05B13/02 B44D3/00
A	DE-C-629 175 (DR. E. ZIEHL) * the whole document * ---	1-5,7,11	
A	DE-U-86 28 425 (M. FREIER) * page 2, paragraph 2 - page 5, paragraph 2 * ---	1,3,6,7	
A	EP-A-0 410 833 (RENAULT AUTOMATION) * column 1, line 23 - column 3, line 55 * -----	1,2,4,5, 7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B44D B05C B05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 April 1994	Examiner Doolan, G
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