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(54) A support for saws for rails

(57) A support for saws for rails comprises a rigid structure (5) with a main direction of extension and an upper surface (6) and a lower surface (7), it being possible to at least partly attach the support to a rail (2) which has a base (3) and a head (4). The main direction of extension is transversal to the direction in which the rail (2) extends when the support (1) is coupled to the rail (2). There being coupling means fitted on the rigid struc-

ture (5) for coupling the support (1) to the rail (2). There also being fixing means (20) integral with the rigid structure (5), for connecting a saw to the support (1). The coupling means (8) are operatively attached to the lower surface (7) of the rigid structure (5) which can in turn be at least partly attached to the upper part of the rail (2) head (4), so that once fitted the support (1) is positioned across the rail (2).

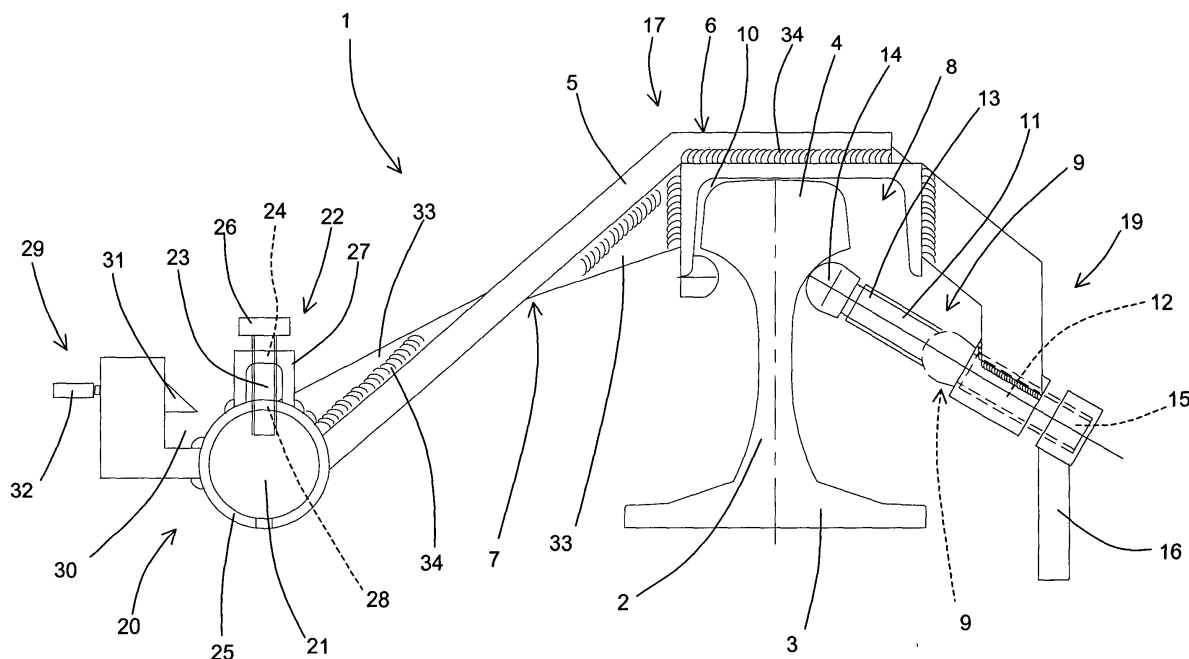


FIG. 1

Description

[0001] The present invention relates to a support for saws for rails, of the type which can be coupled directly to the rail.

[0002] The sector for application of the present invention is that of cutting rails which constitute railway lines.

[0003] According to conventional technology, rails are cut using a torch (normally of the oxy-propane type).

[0004] In this way cutting creates a gap which can then be used for welding.

[0005] However, said technology has a significant disadvantage because cutting with a torch weakens the rails.

[0006] The use of a torch of the above-mentioned type causes a deterioration of the material used to make the rails (such as manganese steel), which results in the formation of fissures in the rail.

[0007] Subsequently, when trains pass on the rail, the fissures extend and cause the rail to break, both longitudinally and transversally. To overcome these disadvantages, Italian patent application VR2001A000083 by the same Applicant proposes a support, which can be applied directly to the base of a rail, to which a cold saw can be fixed.

[0008] Thanks to the insertion of this support, and the relative saw, it was possible to cut the rail according to a precisely vertical plane, so that two cuts side-by-side are always perfectly parallel, as required for the subsequent welding.

[0009] The support has a rigid structure which can be coupled, using coupling means, directly under the base of the rail. The support also has a seat designed to receive an engagement element integral with the saw.

[0010] However, this solution also proved not entirely satisfactory.

[0011] In particular, this solution is unsuitable when the rail needs to be cut precisely at either a sleeper or points.

[0012] In such cases, for obvious structural reasons it is impossible to insert the structure of the support under the rail.

[0013] In these conditions the only way to make the cut is to use the most conventional technologies.

[0014] The same disadvantage is also present when, for any reason, the ballast cannot be removed from under the rail.

[0015] In this situation the technical need which forms the basis of the present invention is to provide a support for saws for rails which overcomes the above-mentioned disadvantages.

[0016] In particular the technical need of the present invention is to provide a support for saws for rails which can be fitted in any operating conditions.

[0017] The technical need specified and the aims indicated are substantially achieved by a support for saws for rails as described in the claims herein.

[0018] Other characteristics and the advantages of the

present invention are more clearly illustrated in the detailed description which follows, with reference to the accompanying drawings, which illustrate a preferred embodiment of a support for saws for rails without limiting the scope of the inventive concept, and in which:

- Figure 1 is a schematic front view of a support for saws for rails made in accordance with the present invention fitted on a rail;
- Figure 2 is a top view of the support illustrated in Figure 1 without some moving parts.

[0019] With reference to the accompanying drawings the numeral 1 denotes as a whole a support for saws for rails made in accordance with the present invention.

[0020] In Figure 1 the support 1 is illustrated applied to a conventional rail 2 which has a base 3 and a head 4.

[0021] The support 1 comprises first a rigid structure 5 with a main direction of extension which, when the support 1 is coupled to the rail 2, is transversal (perpendicular in the accompanying drawings) to the direction in which the rail 2 extends.

[0022] The rigid structure 5 has an upper surface 6 and a lower surface 7 and can be at least partly attached to the rail 2. In particular, as illustrated in Figure 1, the lower surface 7 of the rigid structure 5 can be attached to the rail 2 head 4.

[0023] The support 1 also has coupling means 8 mounted on the rigid structure 5, which are designed to couple the support 1 to the rail 2.

[0024] As shown in the accompanying drawings, the coupling means 8 are operatively attached to the lower surface 7 of the rigid structure 5.

[0025] Thanks to this configuration, once fitted, the support 1, is positioned across the rail 2.

[0026] In the embodiment illustrated, the coupling means 8 comprise at least one coupling element 9 mobile from an engage position in which it locks the support 1 to the rail 2 (illustrated with a continuous line in Figure 1), to a release position in which the support 1 can either be attached to or removed from the rail 2 (illustrated with a dashed line in Figure 1).

[0027] Moreover, the rigid structure 5 has a first seat 10 designed to receive one side of the rail 2 head 4.

[0028] The coupling element 9, when in the engage position, can hold the head 4 clamped in the first seat 10.

[0029] The coupling element 9 comprises a screw 11 tightened in a first threaded through-hole 12 made in the rigid structure 5 and having a first end 13 with a clamping head 14 designed to press against the rail head 4 to keep it clamped in the first seat 10, and a second end 15 with means 16 for tightening the screw 11 (a conventional handle in the accompanying drawings).

[0030] Advantageously, to guarantee more secure clamping, the coupling element 9 is mobile along a direction in a vertical plane and angled upwards (Figure 1).

[0031] In the preferred embodiment, the rigid structure 5 has a central portion 17 for connection to the rail 2 and

a first and a second end portions 18, 19 which, in practice, are positioned lower than the central portion 17.

[0032] Whilst the coupling means (more precisely the screw 11) are attached to the second end portion 19, there are fixing means 20 designed to allow the connection of a saw to the support 1 attached to the first end portion 18.

[0033] In the embodiment illustrated, the fixing means 20 comprise a seat 21 and a locking part 22 operating in the seat 21.

[0034] The seat 21 is designed to receive a first engagement element (not illustrated) shaped to match it, located on the saw.

[0035] Whatever the case, for details of the saw and the first engagement element, consult Italian patent application VR2001A000083, referred to herein.

[0036] The locking part 22 can in turn be moved between a free insertion position in which the first engagement element can be inserted in and removed from the seat 21, and a retaining position in which insertion of the first engagement element in the seat 21 and its removal from the latter are inhibited.

[0037] In the embodiment illustrated, the seat 21 consists of a cylindrical compartment extending, in practice, substantially parallel with the direction in which the rail 2 extends.

[0038] Thanks to their configuration, the seat 21 and the locking part 22 allow the first engagement element to be locked in a plurality of separate positions, each moved relative to the others along the direction in which the axis of the seat 21 extends. For this purpose it is sufficient to change the insertion of the engagement element in the seat 21. Advantageously, the locking part 22 consists of a threaded element 23 which extends in a straight line, fitted in a second through-hole 24 made in a side wall 25 of the seat 21, and having a first end 13 which can be inserted in the seat 21 to lock the first engagement element, and a second end 15 to which a tightening head 26 is attached 26.

[0039] In the embodiment in Figure 1, at the second through-hole 24, the seat 21 has a projecting U-shaped flange 27, also with a hole in it. In this case, the second, threaded through-hole 24 is made in the U-shaped flange 27, whilst there is a smooth hole 28 in the side wall 25 of the seat 21.

[0040] This avoids the risk of the threaded element 23 accidentally coming out of the seat 21 when in the free insertion position.

[0041] In the preferred embodiment, the fixing means 20 also comprise a safety element 29 for securely holding the saw away from the rail 2 to be cut.

[0042] As illustrated in Figure 1, the safety element 29 comprises a second seat 30 designed to receive a second engagement element integral with the saw, and a coupler 31 mobile from a locking position, in which it can act on the second engagement element to lock it in the second seat 30, to a release position, in which it allows the second engagement element to be inserted in and

removed from the second seat 30.

[0043] There are also elastic thrust means (not visible) attached to the coupler 31 to hold it in the locking position.

[0044] Advantageously, the coupler 31 has, towards the outside of the second seat (towards the top in Figure 1), a tapered configuration, so that a downward pressure exerted by the second engagement element causes the coupler 31 to move from the locking position to the release position with consequent insertion of the second engagement element in the second seat 30.

[0045] Moreover, the coupler 31 has a grip 32 which allows it to be moved manually from the locking position to the release position when the saw has to be released.

[0046] The accompanying drawings also show the support 1 stiffening walls 33 and the welds 34 connecting the various parts (the accompanying drawings illustrate a metal support 1).

[0047] The present invention refers not just to the support 1 as such, but also to a saw for rails which comprises it.

[0048] Generally speaking, the saw for rails comprises a main body with a cutting blade, which can operate in a vertical cutting plane, and a least a first engagement element extending transversally to the blade operating plane. Depending on requirements, the body may also comprise at least a second engagement element.

[0049] Once attached to the support 1, the body is, in practice, mobile from an operating position in which the blade is at the rail 2 and can cut the rail 2, and a position outside the dimensions, turned about the axis of rotation defined by the fixing means 20.

[0050] Depending on the embodiments, the engagement element may be rigidly fixed to the body and rotatably attached to the support 1, or the engagement element may be rotatably fixed to the body and rigidly attached to the support 1.

[0051] Operation of the support 1 disclosed, as well as of the saw fitted with the support 1 are directly derived from what is described above from a structural viewpoint.

[0052] The present invention brings important advantages.

[0053] Thanks to the support disclosed, the saw can be fitted in any operating conditions, in particular at sections of rail where the saw cannot be fixed to the base of the rail.

[0054] It should also be noticed that the present invention is relatively easy to produce and that even the cost linked to implementation of the invention is not very high.

[0055] The invention described may be subject to modifications and variations without thereby departing from the scope of the inventive concept.

[0056] All details may be substituted by other technically equivalent elements and in practice all materials used, as well as the shapes and dimensions of the various components, may be any according to requirements.

Claims

1. A support for saws for rails comprising:

- a rigid structure (5) with a main direction of extension and an upper surface (6) and a lower surface (7), it being possible to at least partly attach the structure to a rail (2) which has a base (3) and a head (4), the main direction of extension being transversal to the direction in which the rail (2) extends when the support (1) is coupled to the rail (2);
- coupling means (8) fitted on the rigid structure (5) for coupling the support (1) to the rail (2);
- and fixing means (20), integral with the rigid structure (5), for connecting a saw to the support (1);

the support being **characterised in that** the coupling means (8) are operatively attached to the lower surface (7) of the rigid structure (5) which can in turn be at least partly attached to the upper part of the rail (2) head (4), so that once fitted the support (1) is positioned across the rail (2).

2. The support according to claim 1, **characterised in that** the coupling means (8) comprise at least one coupling element (9) mobile from an engage position in which it locks the support (1) to the rail (2), to a release position in which the support (1) may be either attached to or removed from the rail (2).

3. The support according to claim 2, **characterised in that** the rigid structure (5) also has a first seat (10) designed to receive a side of the rail (2) head (4), the coupling element (9) in the engage position being able to hold the head (4) clamped in the first seat (10).

4. The support according to claim 2 or 3, **characterised in that** the coupling element (9) comprises a screw (11) tightened in a first threaded through-hole (12) made in the rigid structure (5), the screw having a first end (13) with a clamping head (14) designed to press against the rail head (4) to hold it in the first seat (10), and a second end (15) with screw (11) tightening means (16).

5. The support according to claim 2, 3, or 4, **characterised in that** the coupling element (9) is mobile in a direction in a vertical plane and angled upwards.

6. The support according to any of the foregoing claims, **characterised in that** the fixing means (20) comprise a seat (21) designed to receive a first engagement element shaped to match it and attached to the saw, and a locking part (22) operating in the seat (21), the latter being operated between a free insertion position in which the first engagement element

can be inserted in the seat (21) and removed from it, and a retaining position in which first engagement element insertion in and removal from the seat (21) are inhibited.

7. The support according to claim 6, **characterised in that** the seat (21) consists of a cylindrical compartment with an axis substantially parallel with the direction in which the rail (2) extends.

8. The support according to claim 7, **characterised in that** the seat (21) and the locking part (22) allow the first engagement element to be locked in a plurality of separate positions, each moved relative to the others according to the direction of the axis of the seat (21).

9. The support according to claim 6, 7 or 8, **characterised in that** the locking part (22) comprises a threaded element (23) extending in a straight line, fitted in a second through-hole (24) made in a side wall (25) of the seat (21), and having a first end (13) which can be inserted in the seat (21) to lock the first engagement element, and a second end (15), the threaded element (23) also comprising a tightening head (26) mounted on the second end (15).

10. The support according to any of the foregoing claims, **characterised in that** the fixing means (20) also comprise a safety element (29) for holding the saw away from the rail (2) to be cut.

11. The support according to claim 10, **characterised in that** the safety element (29) comprises a second seat (30), a coupler (31) mobile from a locking position, in which it can act on a second engagement element integral with the saw to lock it in the second seat (30), to a release position, in which it allows the second engagement element to be inserted in and removed from the second seat (30), and elastic thrust means attached to the coupler (31) to hold it in the locking position.

12. The support according to any of the foregoing claims, **characterised in that** the rigid structure (5) has a central portion (17) for connection to the rail (2), a first end portion (18) fitted with the fixing means (20), and at least a second end portion (19) fitted with the coupling means (8).

13. The support according to claim 12, **characterised in that** the end portions, in practice, are positioned lower than the central portion (17).

14. A saw for rails **characterised in that** it comprises a main body with a cutting blade which can operate in a vertical cutting plane and at least a first engagement element extending transversally to the saw

blade operating plane, and a support (1) for fixing the saw to a rail (2) according to any of the foregoing claims, the body, in practice, being mobile from an operating position in which the blade is at the rail (2) and can cut the rail (2), to a position outside the dimensions, rotated about an axis of rotation defined by the fixing means (20). 5

15. The saw according to claim 14, **characterised in that** the engagement element is rigidly fixed to the body and rotatably attached to the support (1). 10

16. The saw according to claim 14, **characterised in that** the engagement element is rotatably fixed to the body and rigidly attached to the support (1). 15

17. The saw according to claim 14, 15 or 16, **characterised in that** the body also comprises at least a second engagement element. 20

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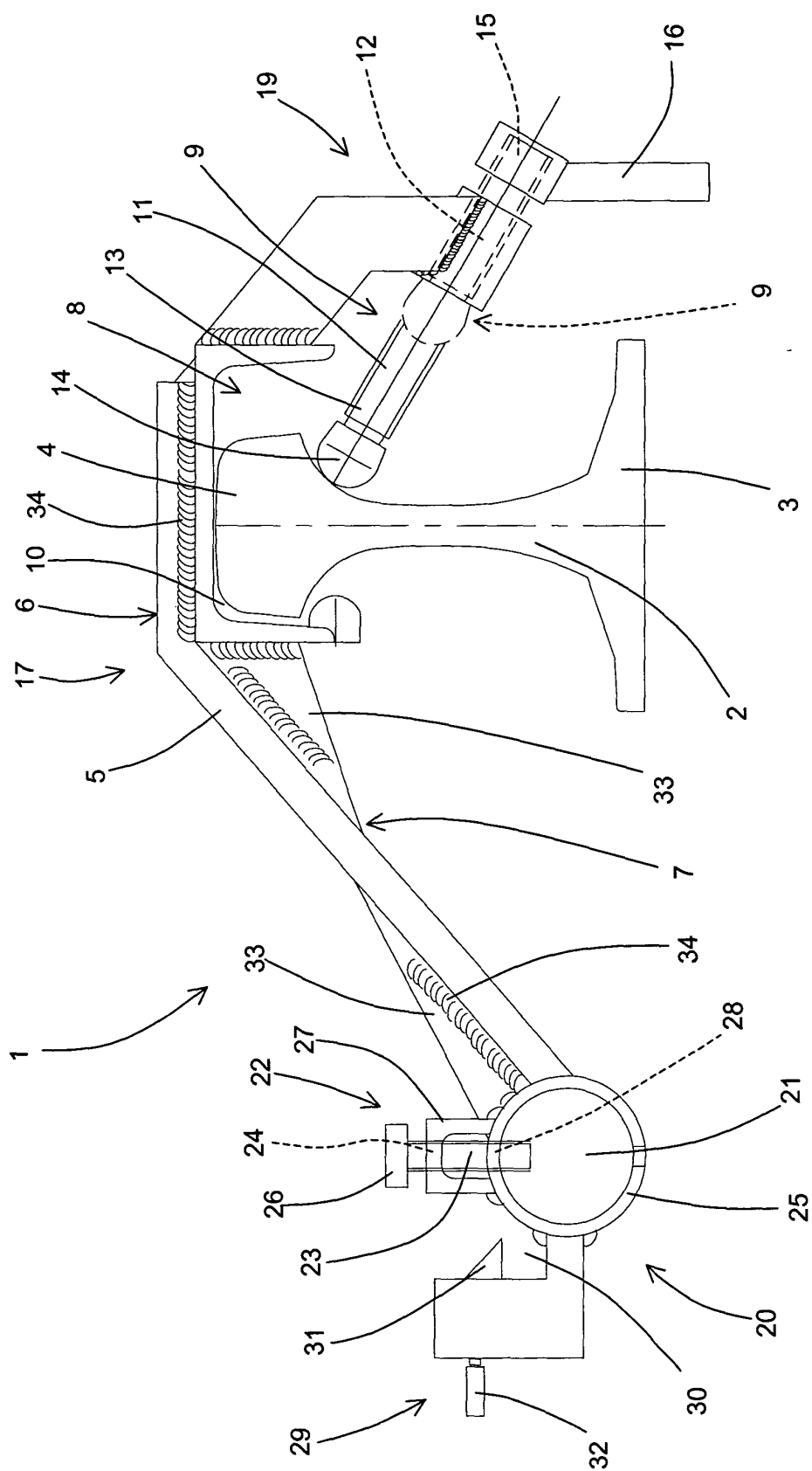


FIG. 1

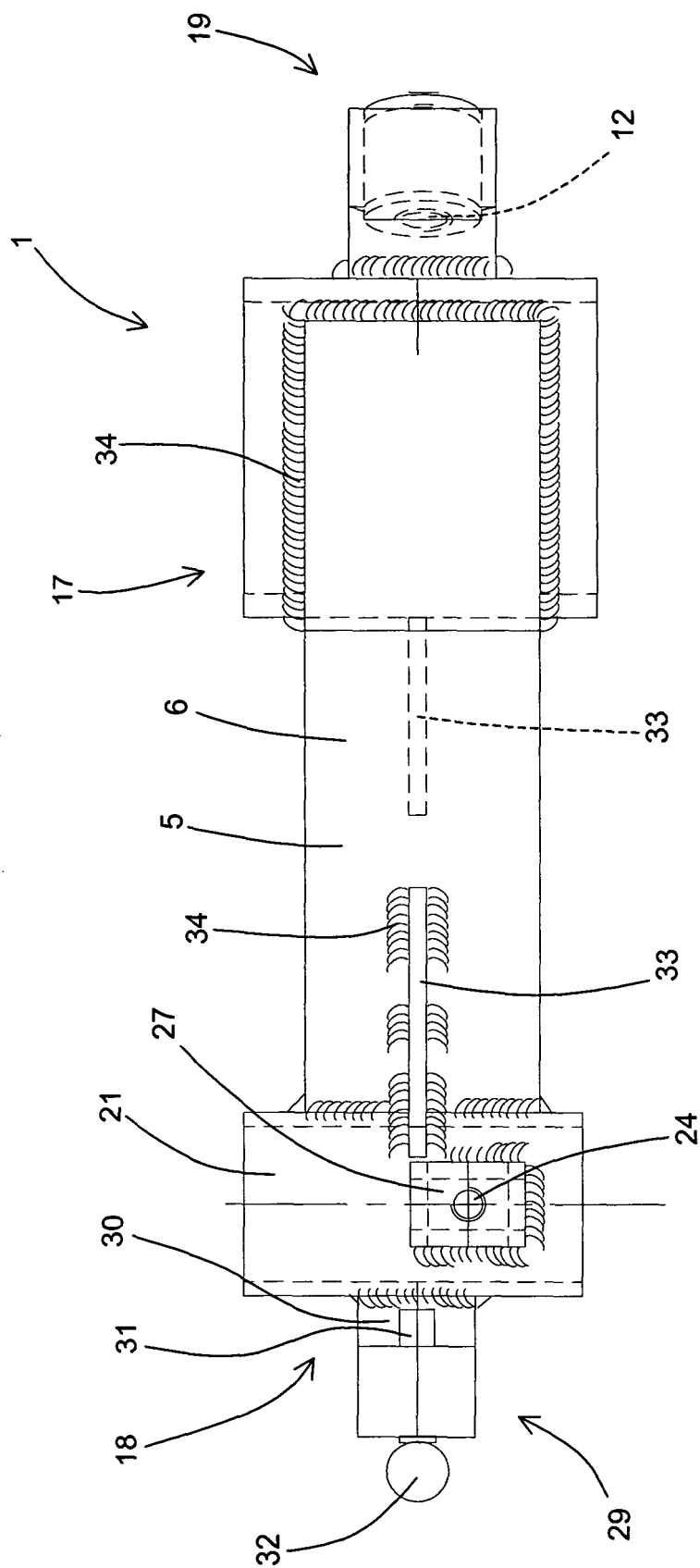


FIG. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5552

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E01B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 December 2004	Examiner Fernandez, E
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			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 42 5552

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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