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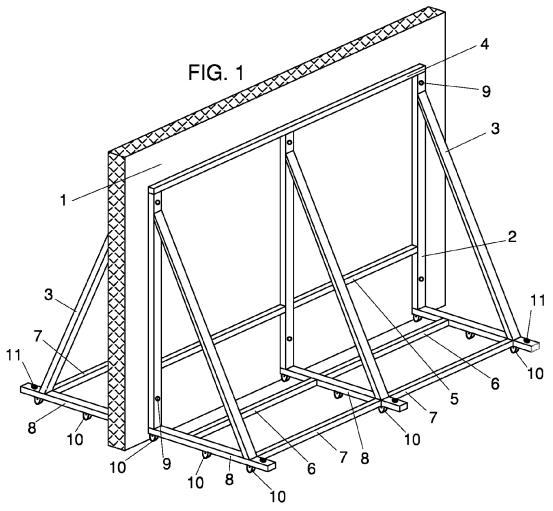
(54) Equipment aimed at moving walls of immovable property

(57) Equipment aiming at allowing the shifting of a wall or a part of it of whatever shape, dimension and constitutive material, from a position to another within a real estate unit avoiding the whole demolition of the same wall and its rebuilding in the new position, wherein said equipment is made up of two structures mounted as a frame, of which one is placed on one side of the wall and the other symmetrically sheltered by the opposite one, made joint between them and to the wall through means of conjunction and made up of rods or parts of them linked and made joint, and that each of the two structures presents at least two upright rods pushed against the wall and placed in a predetermined reciprocal distance, with the upper limb of each upright rod situated a little below the top of the wall and the lower limb a little upon the floor, and that in correspondence with each of the above-mentioned lower limbs it is present a horizontal rod, having an end pushed against the wall and the other end placed in a predetermined distance from the same wall and containing a means of regulation of the wall verticality by the micrometric type of screw aimed at reinstating the verticality of the wall in the new position after the shifting.

FIG. 1



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Description

Technical area the invention belongs to

[0001] The present invention relates to the equipment and the method aimed at moving, from one position to another, one or more walls, preferably internal, of an immovable property.

Pre-existing technique

[0002] In the building trade industry, above all in cases of renovation of existent immovable properties unities requiring different organizations of the environments with new positions assigned to the partition walls, we usually have recourse to the demolition of the existent walls to build, then, them again according to the new positions established by the project. The present invention avoids to pull down and rebuild the existent walls, letting move them along whatever direction, and even checking and restoring their verticality in the new position after the shifting. In this way they're substantially reduced the working times and the damages to the environment, with sensitive economies also in the materials and the labour.

[0003] In the current state of art they exist systems aimed at moving walls without having to demolish them. US1742475 is one of these systems, which is made up of rods placed on both wall's sides and joined by bolts. The wall's movement occurs on rails and the wall is pushed with screw jacks, but such a system does not allow movements in directions different from the rails' one. Moreover, the system described in US1742475 does not consent the re-establishment of the wall's verticality after the shifting.

[0004] The present invention intends to pass over such limits and difficulties and this purpose is achieved, as better explained after, through the use of framed structures placed from one side to the other of the wall, having on each face of the same at least two vertical rods set against the wall, having each vertical rod the upper extremity a bit below the wall's top and the lower extremity a bit above the floor, having, furthermore, an horizontal rod solidly connected to it, in correspondence of each lower extremity.

[0005] The above-mentioned horizontal rods, in a number of at least two for each face of the wall, contribute to maintain the wall vertical and steady. Moreover, such horizontal rods contain means of regulation of the verticality of the wall after this one has reached the new position.

[0006] For all the above-mentioned reasons the present invention is not suggested nor it could be considered a direct consequence of the teaching contained in US1742475 so, it can be certainly thought that it possesses not only the requirement of newness and industrial application, but also the requirement of inventive activity.

Description of the invention and the drawings

[0007] The operational methodology and the equipment proposed are described in detail in the annex Fig 4 which represent a preferential example of realization of the invention.

[0008] In Fig. 1 it is represented, in axonometric view, the wall (1) to be moved already connected to the equipment and ready to be moved in the new position.

[0009] The equipment is made up of two framed structures made up in whatever suitable material (preferably metallic), each one placed on a face of the wall and symmetric respect the said wall, and it is composed of rods each one eventually made up of modular parts made joint through pins, screws, washers, flanges, slots etc. or whatever method at disposal in the current building practice.

[0010] On each face of the wall they're mounted vertical (2) and horizontal rods of stiffening (4) and (5); each vertical rod (2) is connected to an horizontal rod (8) perpendicular to the 3 wall, to increase the whole stability; both the rods are connected to a third sidelong rod (3) so to constitute a body with a shape similar to a rectangle triangle.

[0011] The triangular bodies obtained this way are placed in an appropriate distance between them and are steadily connected by the lower horizontal rods (6) and (7) orthogonal to them and to the said rods of walls (4) and (5).

[0012] Under each rod (8) two or more wheels (10) are present, some of which or all are eventually steering, to allow the shifting in each direction after that the wall is steadily connected to the structures, and after that it is put away the connection of the same wall with the other elements present around it (that is the wall, the ceiling and the other lateral walls); a wheel is placed in line with each vertical rod (2) near the wall, another one towards the extremity of the farther rod (8) than the wall and in correspondence of the point of contact with the rod (3); other wheels can be placed in the intermediate points of the rod (8) to better also the weights' sharing out during the shifting.

[0013] Of course, to make easier the equipment moving they can be applied also one or more motors which, for simplicity, are not represented in the drawings.

[0014] In the extremity of the furthest rod (8) from the wall it is placed a mean (11) of regulation of the verticality of the wall, of micrometric screw type, used to re-establish the verticality of the wall in the new location at the end of the shifting.

[0015] On each couple of corresponding vertical rods (2) placed on the two faces of the wall they're inserted, in pre-determined positions, at least two gudgeon pins (9) passing through the wall; the screwed dice at the extremity of each gudgeon pin lock the couple of rods (2) against the wall, so to guarantee the steady connection of the wall with said rods, and so with the whole equipment. The number, the mutual distance of all the rods,

and all the elements of the equipment depend on the form and the constitution of the wall, and have to guarantee the stability both of the wall and the whole equipment during the moving.

[0016] To avoid useless graphical complications they're not represented in the drawing particular accessories like dice, slots, flanges, hubs, screws, washers, etc.

[0017] In Fig. 2 it is indicated in layout the wall (1) to be moved, eventually set against other two generic walls (12) and (13). With the two broken lines it is indicated the wall fixed in the new position (14) after the shifting. In the drawing, the positions (1) and (14) of the wall before and after the shifting are represented in parallel, but the equipment allows to position the wall in whatever direction, even not parallel to the original one.

[0018] In Fig. 3 it is reported a vertical section made in axis to the rods (2), (8), (3) forming rectangle triangles according to what said before. The wall (1) is contained between the two symmetrical structures, each one set against a face of the same wall. They're represented the sections of the rods of stiffening (4), (5), (6) and (7), the wheels (10), the means of regulation of the verticality of the wall (11) and the gudgeon pins (9).

[0019] In Fig. 4 it is represented in prospectus the wall (1) with the framework already mounted. They're indicated in section the other two walls (12) and (13) to which it is connected the wall (1); they're also reported the horizontal rods (4), (5) and (7), the sidelong rods (3), the wheels (10), the rods (8) in section and the gudgeon pins of connection (9).

[0020] After the framed structures have been fixed through the gudgeon pins (9) on both the faces of the wall, they are put away the connections between wall (1) and ceiling, floor and side walls (12) and (13), removing the bands delimited by the broken lines and indicated respectively with the numbers (15), (16) and (17); in this way, the wall (1), supported by 5 the gudgeon pins (9) and the two framed structures, is released from the walls around and it can be moved into the new position (14) of Fig. 2.

[0021] In Fig. 2 the position (14) is parallel to the original one (1) but, as already said, the wall can be shifted along whatever not parallel direction through the eventually steering wheels (10) or with alternately differentiated pushing operations.

[0022] Reached the new position (14), using means of regulation (11) it is re-established the verticality of the wall (1) and then it is connected to the ceiling, the floor and the walls around resetting the bands (15), (16), (17) put away before the shifting.

[0023] In this way, we've obtained the new positioning of the wall without having recourse to its whole demolition and rebuilding, main purpose pursued by the present essay.

[0024] The newness and the usefulness of such an invention are clear, because it fills in a gap of the productive system in course of the building industry, guaranteeing noteworthy cost and works duration reductions with undeniable advantages also for the environment.

[0025] As it is known, in fact, in case of restructuring of immovable unities, the current state of the technique requires the partial or whole demolition of some walls, the collection and the transfer of the rubbles out of the building and, after, their transportation towards sites of disposal with the payment of the related fee; as for the reconstruction, then, we have the inverse process, even more onerous, because it requires the purchase and the shifting of the new materials in the building yard, their lifting to the working level, and the building of new walls in other positions.

[0026] Besides the environmental usefulness to dispose of a quantity of rubbles notably lower than the case of demolition and rebuilding of the wall in the new position, the advantage the present invention assures in costs and working time is as big as, respect the external ways of access, the height of the floor of the building where we're intervening.

[0027] If we operate in the historic centres of the cities, at last, they're notably reduced the access to lorries for the transportation of materials and, as a consequence, the discomforts too to the resident population.

Invention's carrying out and industrial applicability

[0028] The industrial production does not require any particular device, since the drawings already represent a valid base for the following executive planning of the equipment, object of such invention. For the modular adaptability of its elements, the equipment can be used over and over again in the building yards, allowing each time great economies in costs and working times.

[0029] As for what already said, the present invention assures undeniable and multiple advantages the current building systems are not able to provide.

[0030] We precise, at last, that the idea is not limited to the specific representation given by the drawings and the present description, but it can get improvements and modifications by the craft man without moving away from the patent frame.

Claims

1. Equipment aiming at allowing the shifting of a wall or a part of it of whatever shape, dimension and constitutive material, from a position to another within a real estate unit avoiding the whole demolition of the same wall and its rebuilding in the new position, **characterized by** the fact it's made up of two structures mounted as a frame, of which one is placed on one side of the wall and the other symmetrically sheltered by the opposite one, made joint between them and to the wall through means of conjunction and made up of rods or parts of them linked and made joint, and that each of the two structures presents at

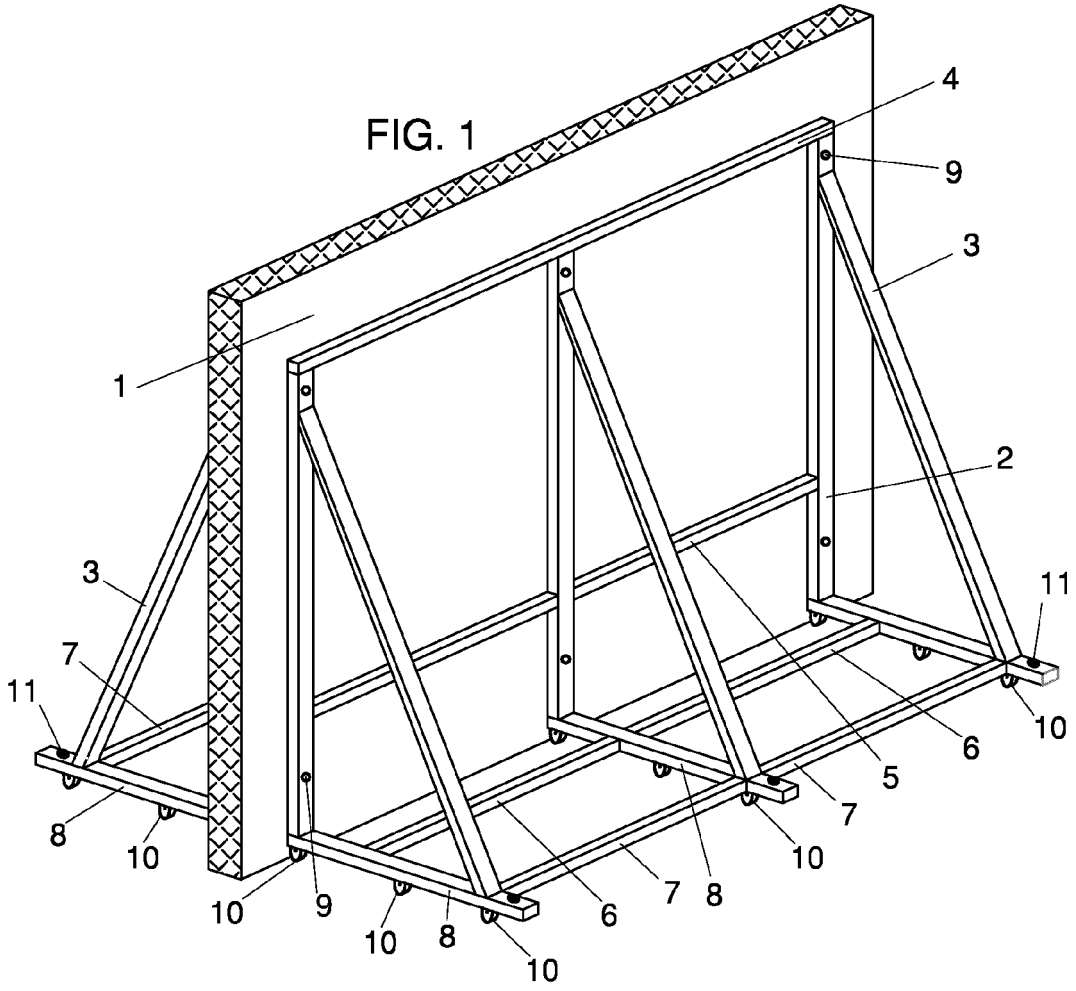
least two upright rods pushed against the wall and placed in a predetermined reciprocal distance, with the upper limb of each upright rod situated a little below the top of the wall and the lower limb a little upon the floor, and that in correspondence with each of the above-mentioned lower limbs it is present a horizontal rod, having an end pushed against the wall and the other end placed in a predetermined distance from the same wall and containing a means of regulation of the wall verticality by the micrometric type of screw aimed at reinstating the verticality of the wall in the new position after the shifting.

2. Equipment according to the claim 1, **characterized by** the fact that each vertical rod is firmly connected to a slanting rod, so that an extremity of such a slanting rod is placed near the upper extremity of the vertical one, and the other extremity is firmly connected, near the means of regulation of the verticality, to the horizontal rod placed in correspondence with the lower extremity of the vertical rod.

3. Equipment according to the claim 2, **characterized by** the fact that the means of conjunction are made up of at least two gudgeon pins with their nuts, placed in fixed positions on each couple of upright symmetrically rods on the opposite sides of the wall, so that each gudgeon pin crosses the wall and connects it firmly, through the nuts, to each of the two corresponding vertical rods disposed one on one side of the wall and the other one on the opposite one, with a gudgeon pin placed a little under the upper extremity of each vertical rod and another gudgeon pin a bit above the lower extremity.

4. Equipment according to the claim 3 **characterized by** the fact that at the bottom of each horizontal rod (8) of the structures mounted as a frame they are present in predetermined positions two or more wheels, in case all or some of them steering so to consent the handy shifting of the wall in every direction.

FIG. 1



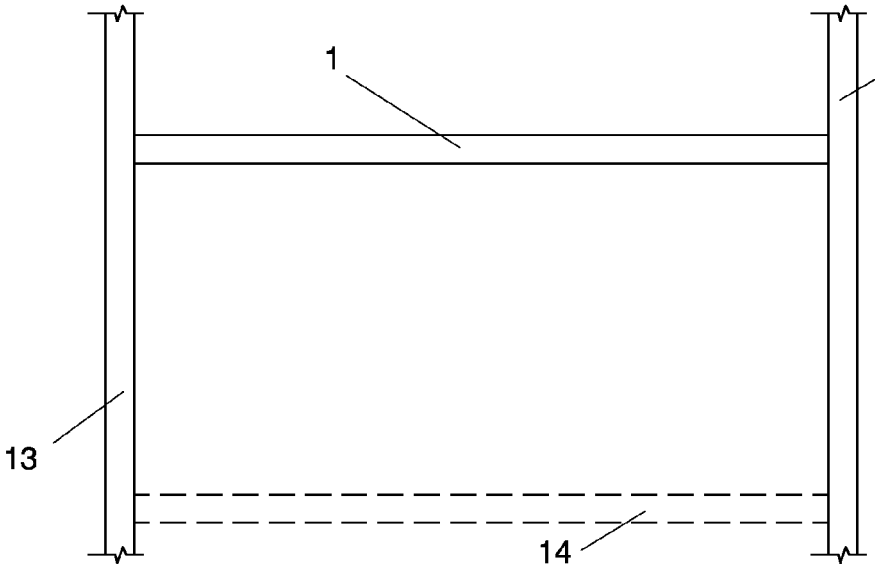


FIG. 2

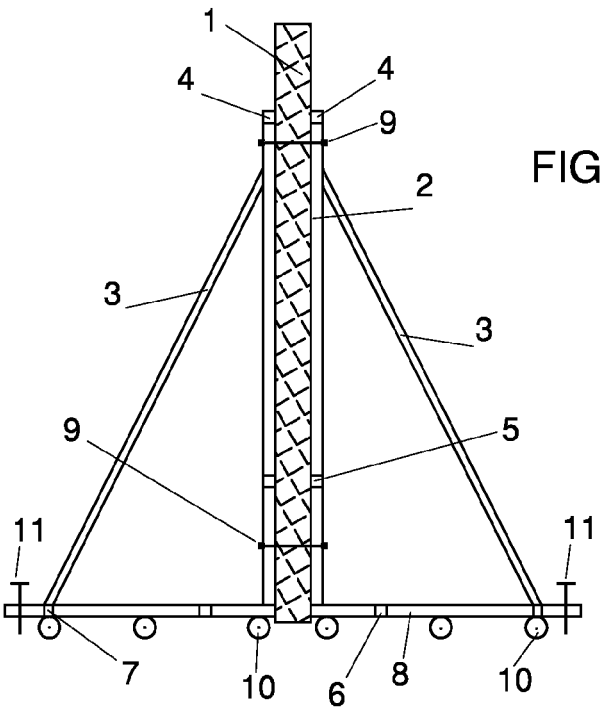


FIG. 3

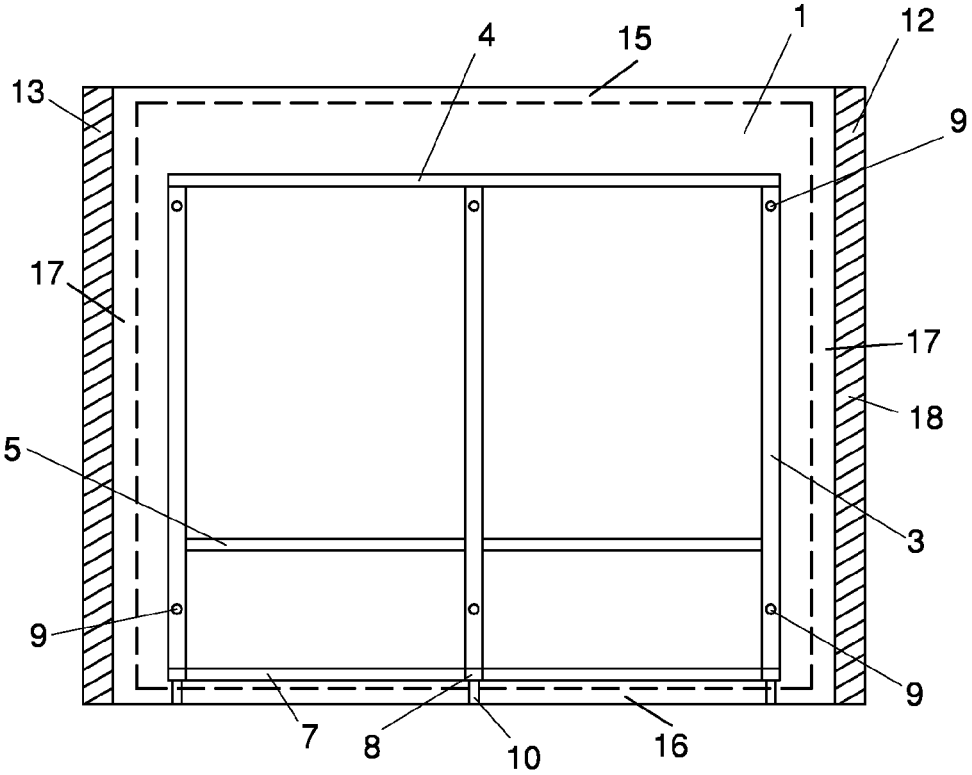


FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 13 17 3123

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y,D	US 1 742 475 A (KRESS GEORGE R) 7 January 1930 (1930-01-07) * figures *	1-4	INV. E04G21/16 E04G23/06
A	US 3 817 006 A (WILLIAMS J) 18 June 1974 (1974-06-18) * figures *	1-4	
Y	US 2005/072059 A1 (HODSDON EDWIN R [US] ET AL) 7 April 2005 (2005-04-07) * figures 2,5 *	1-4	

TECHNICAL FIELDS SEARCHED (IPC)

E04G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 January 2014	Andlauer, Dominique

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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13-01-2014

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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