



US 20090199491A1

(19) **United States**(12) **Patent Application Publication**
Boldt(10) **Pub. No.: US 2009/0199491 A1**(43) **Pub. Date: Aug. 13, 2009**(54) **RAIL-MOUNTED MOBILE WALL ELEMENT**(30) **Foreign Application Priority Data**(76) Inventor: **Wilfried Boldt, Witten (DE)**

Jun. 14, 2005 (DE) 10 2005 027 585.0

Feb. 16, 2006 (DE) 10 2006 007 511.0

Publication Classification(51) **Int. Cl.**
E04B 2/82 (2006.01)(52) **U.S. Cl.** **52/64; 160/197; 160/192**(57) **ABSTRACT**

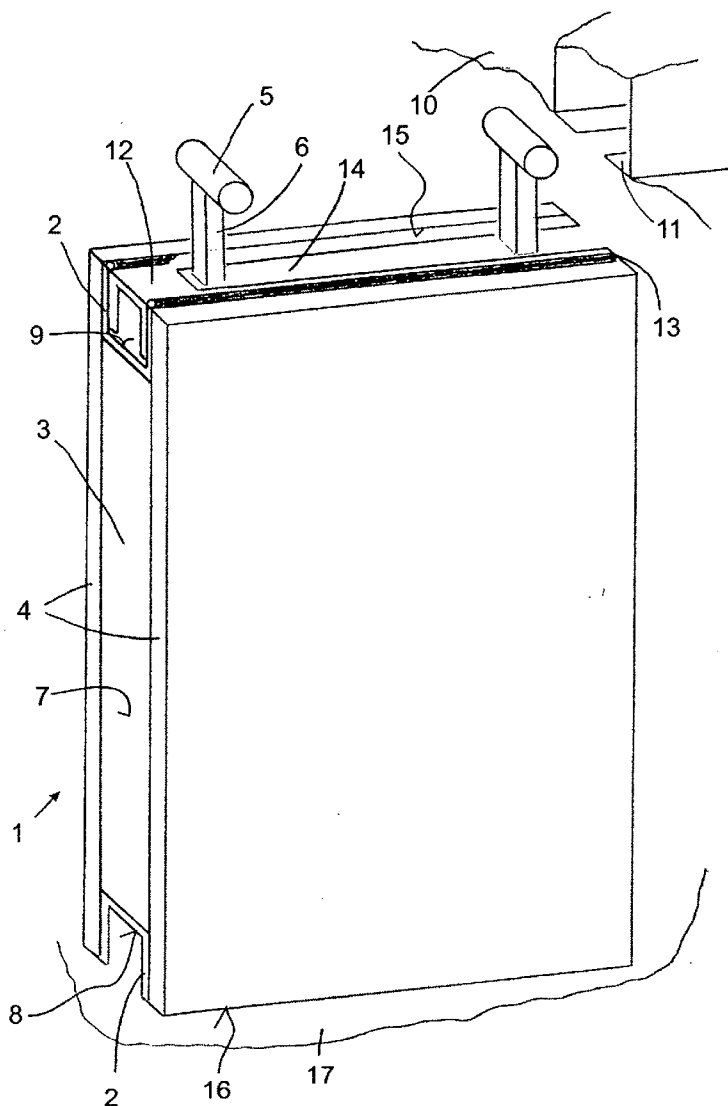
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§ 371 (c)(1),

(2), (4) Date: **Mar. 18, 2008**

A rail-mounted movable wall element comprises on the top and/or lower side thereof at least one sealing element displaceable between the traveling and operating positions of the movable wall element with the aid of a powered drive unit. The movable wall motor-driven element is provided with a sealing element. For this purpose, the drive unit is introducible into receiving openings arranged on the faces of the wall body on the top and/or lower side in such a way that it is detachably connected to the sealing element.



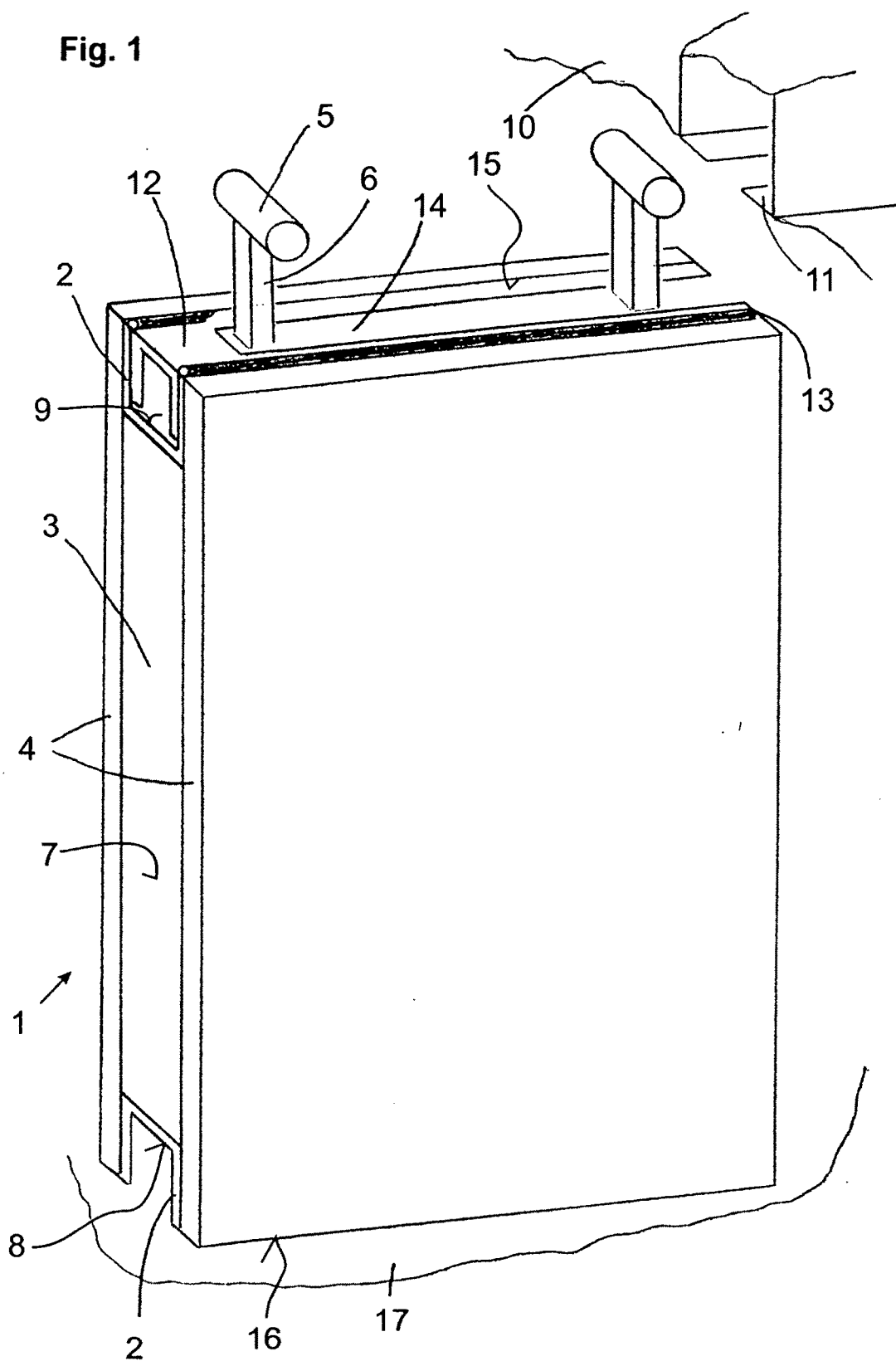
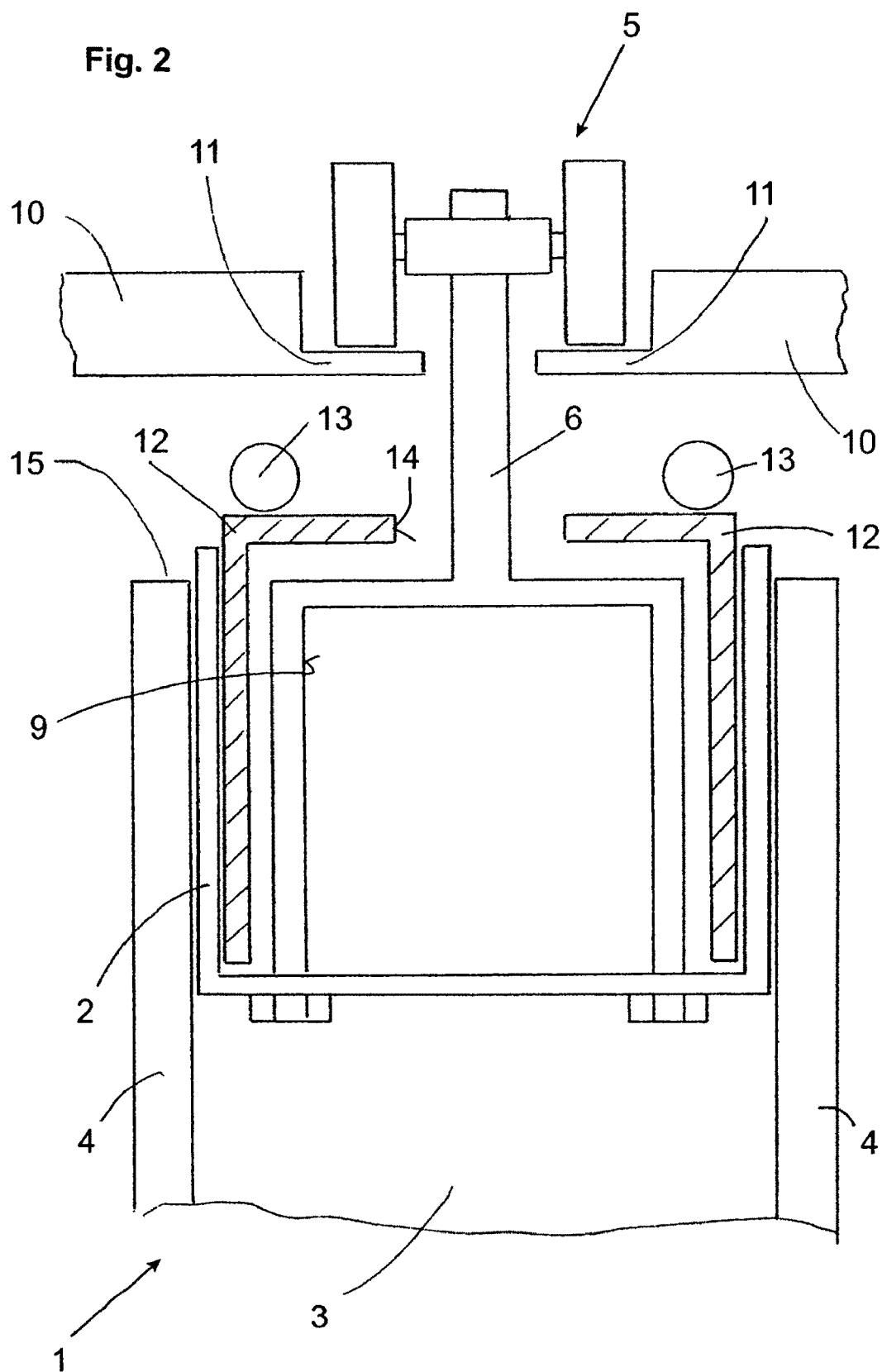


Fig. 2



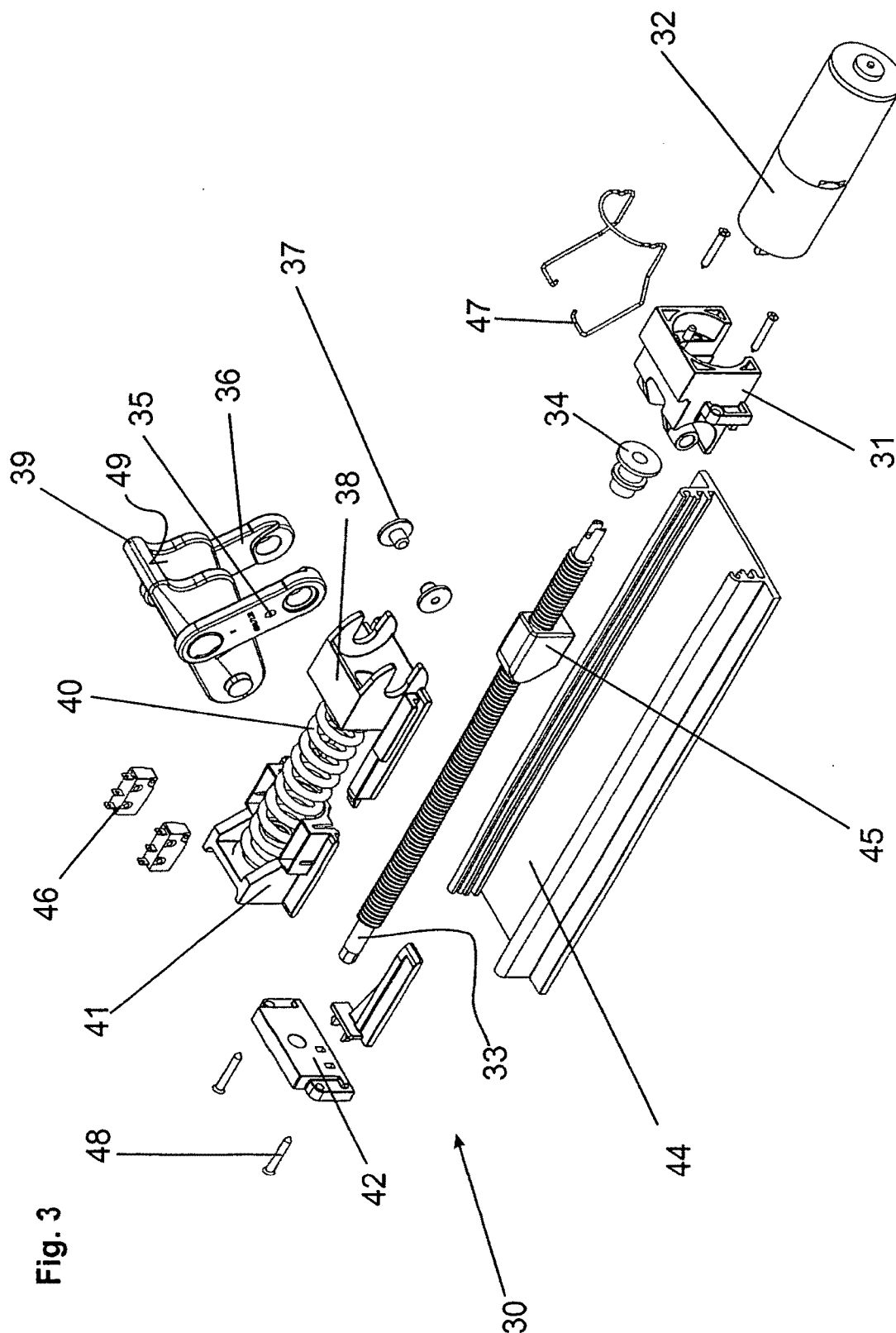


Fig. 3

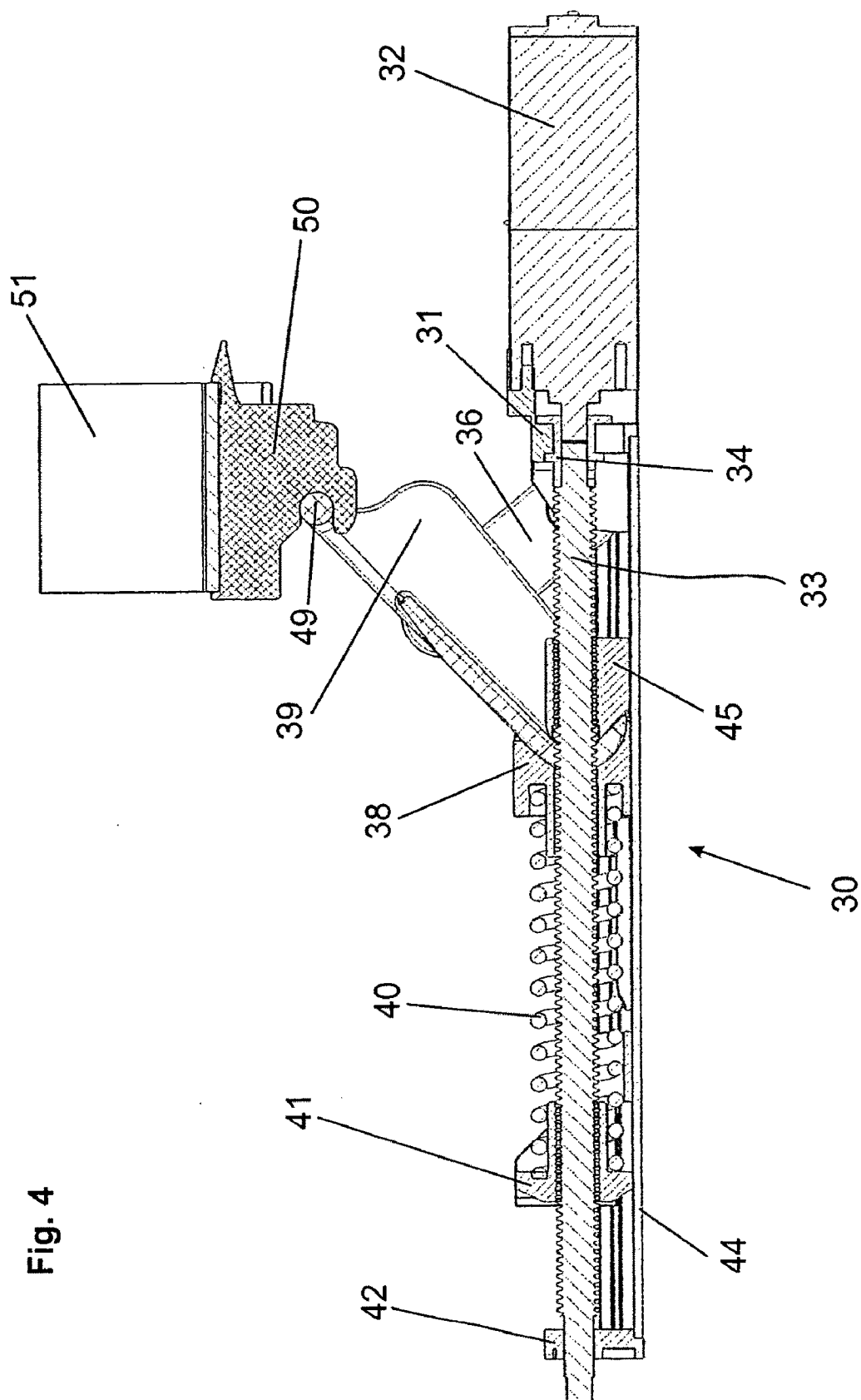
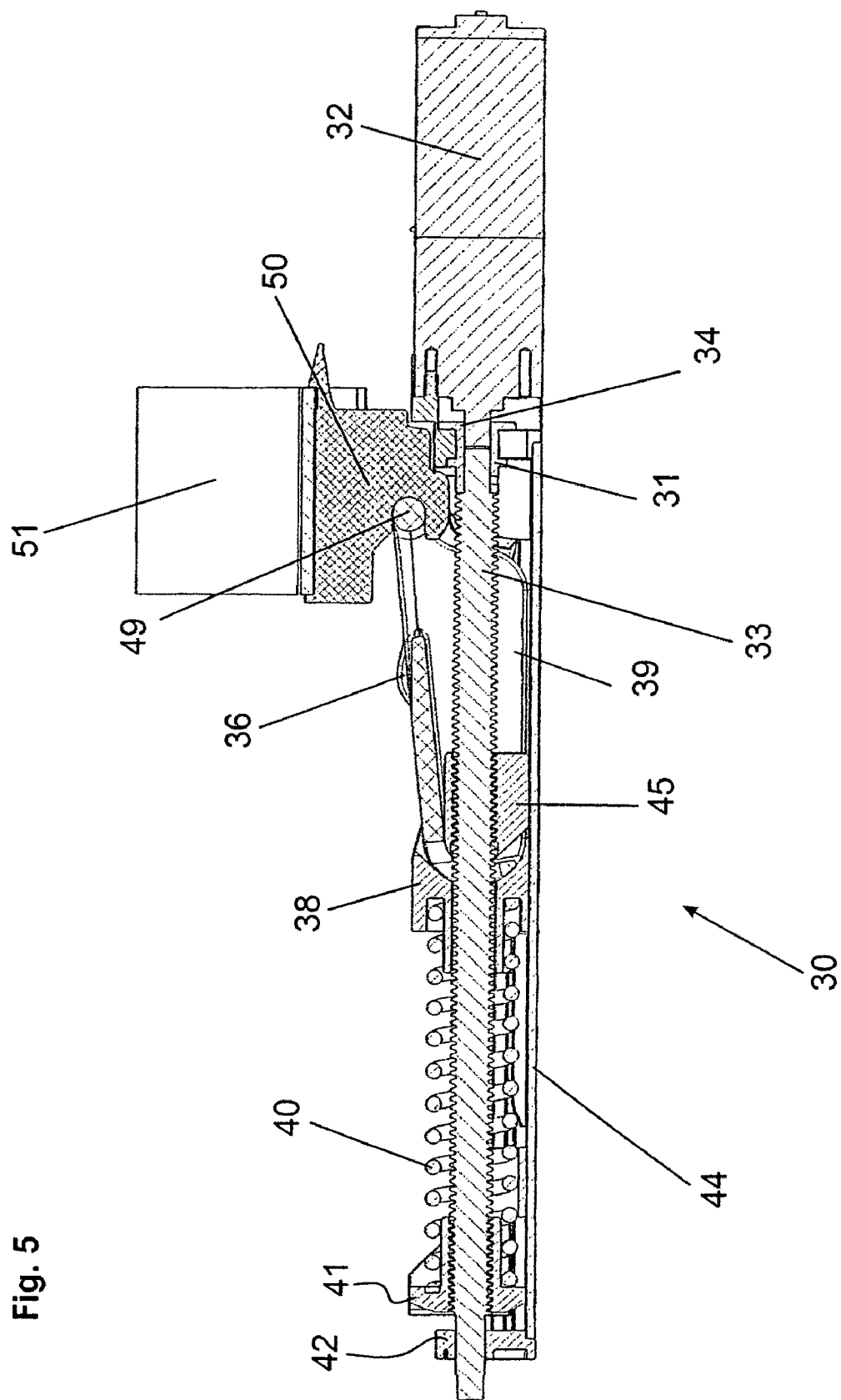


Fig. 5



RAIL-MOUNTED MOBILE WALL ELEMENT

BACKGROUND

[0001] (1) Field of the Invention

[0002] The present invention relates to a rail-mounted mobile wall element having a wall body comprising on the top and/or lower side thereof at least one sealing element displaceable between a traveling and an operating position of the moveable wall element with the aid of a powered drive unit.

[0003] (2) Prior Art

[0004] Several moveable wall elements of the above described type usually supported in a traversable manner in ceiling-mounted rails commonly form a partitioning system allowing the creation of a partitioning wall and therefore variable partitioning of hangers, halls or other rooms. For separating or partitioning individual rooms, the individual moveable wall elements are arranged in a row in the desired position with their end faces adjacent to each other. Extendable sealing profiles with sealing elements are displaced toward the ceiling and the floor and thus fix the individual moveable wall elements. They serve the purpose of sound insulation and prevent air exchange between the rooms separated by the moveable wall elements.

[0005] In the traveling position of the moveable wall elements, i.e. in the position in which they are moved in rails, if present, and transported to the position desired for partitioning or to their storage position, the sealing elements must be arranged on the wall body in such a manner that they do not rub against the ceiling or floor. The sealing elements, in the traveling position, are therefore in a position retracted from the ceiling and the floor. To fix the moveable wall elements and to achieve the above described sealing of the partitioned rooms, the seals are pressed against the ceiling or the floor. The end position of the sealing profiles, i.e. the position, in which the sealing profiles are fully extended, is also referred to as the functional position of the moveable wall elements.

[0006] As a matter of principle, the creation of a partitioning wall with prior art moveable wall elements without motor drive is very time consuming since the sealing profiles are adjusted by means of a crank, i.e. are extended against the ceiling and floor during assembly. The pressing force which is essential for the stability of the partitioning wall thus created is solely dependent on the crank force, i.e. on each operating person. In particular with large rooms, where long partitioning walls can result and a great number of moveable wall elements have to be used, the installation of a partitioning wall is very time consuming, and due to the manual operation it is moreover fixed with a varying degree of reliability.

[0007] With prior art moveable wall elements of the initially mentioned type, which are additionally equipped with an electric motor drive, the latter is arranged in the center of the wall body due to its size and linked to the top and bottom sides of the wall body by an expensive and complicated drive mechanism which is also prone to failure. The creation of openings, in particular door or window openings, in these wall elements is not possible. Moreover, the centrally arranged drive mechanism prevents adequate sound and heat insulation of the moveable wall elements.

SUMMARY OF THE INVENTION

[0008] It is therefore an object of the present invention to provide a moveable wall element having a sealing element

able to be driven by a motor, wherein the motor drive does not limit the design options of the wall element body.

[0009] The present invention achieves this object by a rail-mounted moveable wall element in combination with the features according to claim 1. Advantageous embodiments of the invention are defined in the dependent claims.

[0010] In principle, there is a possibility to equip the moveable wall elements according to the present invention with a displaceable sealing element only on one side, i.e. at the top or bottom in the mounted position, and to arrange the opposite sealing element either fixed or displaceable against a spring force, so that sealing on this side is indirectly achieved by the opposite drive and the movement of the moveable wall element caused thereby. Nevertheless a moveable wall element having top and bottom motor-driven sealing elements will be assumed in the description below. The present invention is not thus limited, however.

[0011] The moveable wall element according to the present invention is characterized in that the drive unit is insertable in receiving openings arranged on the end side of the wall element body in the area of the top and/or bottom side to be releasably engageable with the sealing element.

[0012] The arrangement of the drive unit according to the present invention enables the wall element body to be formed in any desired manner in the area between the top and bottom sides since it is free of functional parts for operating the moveable wall element or the sealing elements.

[0013] Moreover, the inventive form of the moveable wall elements, according to which the drive unit is insertable in the wall body and the accessibility of the drive unit is maintained, allows easy insertion and extraction of the drive unit. In particular the easy extraction in the case of the presence of a failure of the moveable wall element resulting from a defective drive unit allows the latter to be easily exchanged so that the moveable wall element is usable again within a very short period of time. Complete dismantling of the moveable wall element, which is required with failures of the drive unit of prior art moveable wall elements, can be completely eliminated. Apart from the excellent exchangeability of defective drive units, the modular structure of the moveable wall element according to the present invention also allows it to be simply and cheaply manufactured.

[0014] The structure of the wall body of the moveable wall element can be basically achieved in any desired manner. According to a particularly advantageous embodiment of the invention, the wall body, however, comprises at least one frame element and plate elements on either side of the frame element. The use of frame elements, such as of various hollow profiles, apart from the excellent arrangement of the plate elements visible to the outside, also allows a receiving opening for the drive unit to be particularly simply formed, and the wall body to be particularly simply manufactured.

[0015] Moreover, due to the essentially free choice for the structure of the frame element, the latter can be formed in such a way that also assembly and disassembly of the sealing elements of the fully mounted moveable wall element is possible. Assembly of the moveable wall element is thus additionally simplified. Furthermore, the use of such frame elements also allows the sealing elements to be particularly simply exchanged, if needed.

[0016] The use of frame elements also enables the free space formed between the plate elements to be completely filled with insulating material, so that the insulating properties, in particular the sound insulating properties of the parti-

tioning walls created with the use of the thus further developed moveable wall elements are thereby substantially improved over and above the conventional partitioning walls. The use of an insulating material between the plate elements is still possible even if the moveable wall element is provided with closeable openings, such as windows or doors, which can be arranged in any desired position due to the inventive structure of the moveable wall element.

[0017] The rails for guiding the moveable wall element, and the corresponding structure of the moveable wall elements can be in any particular desired form. According to an advantageous embodiment of the invention, the wall body is connected, however, for traversable support in a rail arranged in a ceiling, at its top, however, with at least one, preferably two, carrying elements, particularly preferably formed as a trolley, pivotably connected with the wall body, such as via a connecting rod. When partitioning a room by a partitioning system using the moveable wall elements according to the present invention, guiding of the moveable wall elements in a rail arranged in the ceiling makes it possible to form the floor of said room without interruptions, such as floor rails for guiding the moveable wall elements, which would be visually disruptive and might even involve the risk of tripping. The use of trolleys has the advantage that it achieves particularly easy traversability of the moveable wall elements in the ceiling rails. In particular, the use of two trolleys for carrying ensures particularly stable and safe arrangement of the moveable wall element in the rail.

[0018] The receiving openings arranged on the end sides of the wall body and particularly easily accessible according to the present invention for receiving the drive units, can principally be formed in any desired manner. For instance, the drive unit can be arranged in a receiving opening simply u-shaped in cross section, for example, achieved by a corresponding frame element, since due to its effective connection with the sealing element it is ensured in a sufficiently reliable manner that the drive unit is fixed in its position on the moveable wall element. According to a particular embodiment of the invention, the receiving opening comprises guides, however, and the drive unit comprises guiding elements engageable with the guides. The guides, such as rail-like longitudinal channels, interacting with webs on the drive unit as guiding elements, ensure in an advantageous manner both the positioning of the drive unit and positional fixing of the drive unit in the operation of the moveable wall element.

[0019] The connection of the drive unit and the sealing elements can also be principally achieved in any particular manner. Advantageously it is provided that the drive unit has a coupling element, preferably a hook-shaped receiving opening, releasably engageable with a control element connected to a sealing profile, wherein one or more sealing elements are arranged on the sealing profile.

[0020] According to this embodiment of the invention, the drive unit in the state fully inserted in the receiving opening is not directly connected with the sealing elements, but is connected with a sealing profile via a usually centrally arranged control element, the sealing element usually having two parallel sealing elements extending over the width of the wall body. The sealing profile is formed in such a way that it encloses the connection rods for connecting the wall body with the trolley. In the functional position of the wall body, the rail, and the trolley arranged therein, are essentially completely covered due to the advantageously provided use of the sealing profile.

[0021] The connection of the drive unit with the sealing elements via a control element centrally arranged on the sealing profile also has the advantage that jamming of the sealing elements or the sealing profile is effectively avoided. Also in the case where a movement of the sealing profile from the traversing position into the functional position is not carried out in parallel to the top side of the wall body, after a point-wise contact of the sealing elements on the ceiling or the floor full contact of the sealing elements on the ceiling or the floor is achieved after further traversal.

[0022] The functioning of the moveable wall element is ensured even after the sealing profile fully contacts the ceiling and the floor. According to an advantageous embodiment of the invention, the drive unit is formed in such a way, however, that the sealing profile with the sealing elements arranged thereon is biased in the functional position by means of a spring element. The spring bias causes particularly reliable contact of the sealing elements on the ceiling and the floor. Due to the spring bias it is also achieved that the structural components of the drive unit are unstressed in the functional position so that they are not subject to destructive permanent stress.

[0023] The spring element also compensates for sagging of the ceiling due to load changes in the area of the mounted moveable wall element without loss of the sealing action. The spring element both allows a movement of the ceiling towards the wall element and furthermore compensates increases in the distance between the ceiling and the wall element by having the sealing elements follow the movement. Moreover, damage on the functional parts of the drive unit due to the forces acting from the ceiling on the sealing elements is effectively avoided.

[0024] According to another advantageous embodiment of the present invention, the drive unit has an apparatus for manual operation. This enables the moveable wall elements to be used to create a partitioning wall even if the drive unit fails. This may be necessary in particular when it is necessary to insert a partitioning wall, but no exchange drive unit is available. Moreover, manual operation also enables the partitioning wall to be dismantled in the case of a failure of the drive unit.

[0025] According to a particularly advantageous embodiment of the drive unit, the latter has end switches. These ensure in an advantageous manner that the drive unit is only adjustable between the maximally allowable positions corresponding to the functional position and the traveling position of the wall element.

[0026] The drive unit can principally be structured in any particular manner so long as it may be inserted and extracted by insertion and extraction into and out of the receiving openings, respectively. According to an embodiment of the invention, the drive unit is formed as a lifting module, which raises or lowers the sealing elements. The lifting action can be achieved by means of any suitable drive elements, such as a piston-cylinder unit or the like. According to an embodiment of the invention, the lifting movement is achieved by converting a rotating movement into a translating movement.

[0027] For this, according to an embodiment of the invention, the lifting module has a spindle rotatably supported at both ends and driven by a motor, and a spindle nut arranged on the spindle, traversable along the spindle axis by means of rotating the spindle, wherein a toggle joint is supported at its one end displaceable in the area of the spindle nut and at its other end fixedly and pivotably supported in the area of one of

the spindle bearings. Driving of the spindle is carried out according to the present embodiment of the invention, preferably via an electric motor, rotatably driving the spindle. Due to the rotation of the spindle, depending on the sense of rotation, the distance between the spindle nut and the fixed spindle bearing is reduced or increased, resulting in the toggle joint being flexed and stretched, respectively. To achieve a lifting movement of the sealing elements towards the functional position, the distance between the spindle nut and the fixed spindle bearing is reduced, which causes the toggle joint to be erected. To transmit the movement of the toggle joint to the sealing elements, the former is connectable, in the area of its pivot point, with the control element of the sealing profile, so that the lifting movement is directly transferred to the control element and the sealing elements connected therewith.

[0028] Particularly advantageously, one end of a first lever of the toggle joint extends beyond the pivot point with the second lever of the toggle joint and is formed for connection with the control element. As a result, the lifting distance of the drive unit is additionally increased while the traversal path of the spindle nut on the spindle remains the same. Moreover, the end of the first lever essentially performs a linear movement rather than a pivotal movement, so that the end of the first lever can be coupled to the control element in a particularly simple manner. The end of the first lever is formed for this purpose.

[0029] According to a particularly advantageous embodiment of the present invention, a spring element is provided contacting with its one end a thrust support axially displaceable on the spindle and with its other end a threaded bearing, which is traversable along the spindle axis by means of rotating the spindle, and wherein the toggle joint is linked with its end opposite the spindle bearing on the thrust support, which contacts the spindle nut on its side opposite the spring element.

[0030] According to this embodiment of the present invention, the spindle nut and the threaded bearing are displaced to the same degree by displacing the drive unit, wherein the distance between both of these remains the same. The pivotably linked support of the toggle joint on the thrust support displaceable against the spring force makes it possible to press the sealing elements against the floor or the ceiling with constant spring force. The spring force is adjustable by determining the distance between the thrust support and the threaded bearing when the lifting module is assembled. The drive unit itself does not generate any pressure force of the sealing profile. The latter is solely achieved by means of the spring element. The position of the spindle nut determines the pivotal adjustment of the toggle joint achieved by the spring force.

[0031] Any suitable component can principally be used as the spring element. According to an advantageous embodiment, it is formed, however, by a helical pressure spring coaxially arranged on the spindle. According to this embodiment of the invention, the structural size of the lifting module can be kept particularly small, which results in only a very small structural size being taken up in the wall body.

[0032] The assembly of the lifting module can be realized in a simple manner with conventional structural components. A particularly simple assembly of the toggle joint is achieved according to an embodiment of the invention by realizing the link between the first and the second lever by means of a pin in the manner of a bayonet lock, formed in such a way that

assembling it to the toggle joint can only be carried out when the levers are oriented in parallel. This orientation is only achieved during assembly. In the assembled state of the lifting module, the toggle joint is always flexed at least by a small amount due to its coupling with the control element, so that the first and second levers are not oriented in parallel. This embodiment is a particularly reliable type of link.

[0033] The manual operating member can also be in any suitable manner. According to a particularly advantageous embodiment of the invention, it is formed, however, by a spindle extension arranged with its one end on the spindle in an anti-twist manner and with its other end in the area of the end-side receiving openings. This is how a rotation of the spindle can be achieved by simple means with a suitable tool, such as by means of an inside hexagonal wrench or the like so that the lifting module can be adjusted between the traveling position and the functional position even if the motor unit, such as an electric motor, has failed. The freely accessible end of the spindle extension is formed to receive the operating tool.

BRIEF DESCRIPTION OF THE DRAWINGS

[0034] Exemplary embodiments of the invention will be described in more detail in the following with reference to the accompanying drawings, in which

[0035] FIG. 1 is a perspective view of a schematic representation of a moveable wall element guided in a ceiling rail;

[0036] FIG. 2 is a schematic representation of a cross-section of the moveable wall element of FIG. 1;

[0037] FIG. 3 is an exploded view of a drive unit formed as a lifting module;

[0038] FIG. 4 is a sectional view of the lifting module of FIG. 3 in a functional position of the moveable wall element;

[0039] FIG. 5 is a sectional view of the lifting module of FIG. 3 in a traveling position of the moveable wall element; and

[0040] FIG. 6 is a perspective view of a moveable wall element in the area of an upper-sided arranged frame element.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

[0041] FIG. 1 is a schematic representation of a moveable wall element 1. A wall body 3 of moveable wall element 1 is formed by two plate elements 4, each connected with the webs, extending in parallel, of a frame element 2 having a u-shaped configuration in cross section. Frame elements 2 are arranged in the area of the top and bottom 15, 16 of wall body 3. Plate elements 4 have their top and bottom edges essentially flush with the free ends of the webs of frame elements 2.

[0042] A plurality of moveable wall elements 1 form a room partitioning system, by means of which the construction of variable partitioning walls is possible. To create a partitioning wall (not shown) moveable wall elements 1 are arranged in such a way that their end sides 7 are adjacent to each other. Usually, moveable wall elements 1 are guided in a rail 11 arranged in a ceiling 10 and may therefore be particularly easily positioned. To this end, wall body 3 has a connection rod 6 at its top 15 connected with a carrying element 5 arrangeable in rail 11.

[0043] To fix moveable wall element 1 in its functional position, i.e. in the position in which it forms a partitioning wall together with further moveable wall elements 1, moveable wall element 1 has sealing elements 13 arranged on a

sealing profile 12 in the area of the top and/or bottom 15, 16 of wall body 3. Sealing profile 12 is displaced in the functional position in such a way that sealing elements 13 contact ceiling 10 or floor 17. In the schematic representation of moveable wall element 1 in FIG. 1, sealing profile 12 is not shown in the area of bottom 16 for clarity. To make it possible to arrange sealing profile 12 in the area of top 15 of moveable wall element 1, the latter has a longitudinal channel 14 surrounding connection rods 6. Sealing profile 12, and sealing elements 13 arranged on it, in the functional position in which they clamp moveable wall element 1 between ceiling 10 and floor 17, are for securing the position of wall element 1 and for sound and air insulation.

[0044] FIG. 2 shows a schematic representation of a cross section of moveable wall element 1, wherein the sectional plane is parallel to its end face 7. To support moveable wall element 1 in rail 11 arranged in ceiling 10, the carrying element is formed as a trolley 5 connected to the former via connection rod 6 having a forked configuration in the area of wall body 3. The forked configuration leads to a receiving opening 9 in the area of top 15 of wall body 3, which is accessible from end face 7 of wall body 3. Receiving opening 9 makes it possible to arrange a drive unit 30 usable for adjusting sealing profile 12 between the traveling position, i.e. the position in which sealing elements 13 do not contact floor 17 and ceiling 10 and moveable wall element 1 is traversable, and the functional position, wherein drive unit 30 is mechanically coupled with sealing profile 12 (see FIGS. 3-6). The drive unit shown in FIGS. 3-6 is formed as a lifting module 30 and is insertable in the receiving openings 9, 8 of wall body 3, where it is for driving, i.e. lowering or raising the sealing profiles 12 arranged there.

[0045] Lifting module 30 has a spindle 33, rotatably supported in an end bearing 42 at one end and by use of a bearing bushing 34 arranged at a motor bearing 31 at the other end. End bearing 42 and motor bearing 31 are attached to a continuous receiving rail 44 by means of screws 48. To drive spindle 33, the latter is coupled to an electric motor 32 in the area of motor bearing 31 arranged on the side of motor bearing 31 facing away from spindle 33, wherein a securing bracket 47 additionally secures the position of electric motor 32 on motor bearing 31.

[0046] A spindle nut 45 and a threaded bearing 41 are rotatably arranged on spindle 33 in such a way that they are engaged with the thread of spindle 33 so that a rotation of spindle 33 causes a displacement of spindle nut 45 and threaded bearing 41 along the spindle axis.

[0047] A thrust support 38 axially displaceable on spindle 33 abuts spindle nut 45 on the side of spindle nut 45 facing away from motor bearing 31. Thrust support 38 in turn is biased toward spindle nut 45 by a helical pressure spring 40 on the side facing away from spindle nut 45, the spring being supported on threaded bearing 41 at its other side. Helical pressure spring 40 is arranged coaxially with spindle 33. In the assembled state of lifting module 30, the distance between threaded bearing 41 and thrust support 38 is invariable. Driving spindle 33 causes common displacement of thrust support 38 and threaded bearing 41 along spindle 33, while the distance remains constant. The distance between threaded bearing 41 and thrust support 38, and therefore the spring force applied by helical pressure spring 40 is freely adjustable during assembly, wherein thrust support 38 is threaded onto spindle 33 during assembly more or less toward threaded bearing 41.

[0048] To transform the rotary movement of spindle 33 into a lifting movement of sealing profile 12, a toggle joint formed of two levers 35, 36 and a second lever 39 is used, being pivotally supported on thrust support 38 on the one end and pivotally supported on motor bearing 31 on the other end.

[0049] For easy assembly of the toggle joint, a pin for pivotable linking of second lever 39 to levers 35, 36, and the associated opening on levers 35, 36 to receive the pin, is formed in the manner of a bayonet lock which allows assembly only in the parallel oriented state of levers 35, 36, 39. Levers 35, 36 are pivotally supported by means of bearing pins 37 on motor bearing 31.

[0050] To establish the connection with sealing profile 12, second lever 39 has a coupling element 49 at its free end in the form of a pin, circular in cross section, engaging a corresponding receiving opening of a control element 50 rigidly connected with sealing profile 12 via an unshaped profile 51.

[0051] In the traveling position of lifting module shown in FIG. 5, i.e. the position in which sealing profile 12 is essentially completely retracted in wall body 3, the toggle joint is only slightly flexed. Turning spindle 33 by electric motor 32, taking this position as a starting position, causes simultaneous displacement of threaded bearing 41 and thrust support 38 towards electric motor 32. Due to the decreasing distance between thrust support 38 and motor bearing 31 caused hereby, the toggle joint is flexed by the spring force of helical pressure spring 40, causing coupling element 49 to be raised, starting from the position shown in FIG. 5. Upon arrival at the functional position shown in FIG. 4, sealing profile 12, with sealing elements 13 arranged thereon, contacts floor 17 or ceiling 10. The pressing force is determined by helical pressure spring 40 which, due to the axial displaceability of thrust support 38, can also compensate movements of ceiling 10 relative to moveable wall element 1. The functional position as well as the traveling position of lifting module 30 is defined by end switches 46 arranged in corresponding recesses on threaded bearing 41.

[0052] FIG. 6 shows a section of a frame element 2 in the area of top 15 of moveable wall element 1. Lifting module 30 has been inserted in frame element 2 from its end face 7, wherein coupling element 49 is in engagement with a corresponding support on control element 50. Control element 50 is rigidly connected with sealing profile 12 having sealing elements 13 on its top side, of which only one is shown as an example in FIG. 6.

[0053] An axial extension 53 arranged on the end of spindle 33 facing away from electric motor 32 ends in the area of end face 7 at its end facing away from spindle 33 and therefore enables the manual rotation of spindle 33 in the case of a failure of electric motor 32. Axial extension 53 is formed to receive a tool, such as an internal hexagonal wrench.

[0054] Trolley 5, by means of which moveable element 1 is guided in rail 11, in turn is attached by means of connecting rod 6 and a carrier 19 fixed on frame element 2.

1-18. (canceled)

19. A rail-mounted movable wall element having a wall body, comprising at least one sealing element at least one of a top side and a bottom side, said at least one sealing element being adjustable between a traveling position and a functional position of said movable wall element by means of a motor-driven drive unit, said drive unit being releasably engageable with said at least one sealing element, and said drive unit

being insertable in an area of at least one of the top side and the bottom side in receiving openings arranged on end faces of the wall body.

20. The rail-mounted movable wall element according to claim **19**, wherein the wall body is formed of at least one frame element and plate elements arranged on either side of the frame element.

21. The rail-mounted movable wall element according to claim **20**, further comprising an insulating material is arranged between the plate elements.

22. The rail-mounted movable wall element according to claim **19**, wherein the wall body is connected with at least one carrying element at said top side for traversable support in a rail arranged in a ceiling.

23. The rail-mounted movable wall element according to claim **22**, wherein the wall body is connected by two carrying elements at said top side.

24. The rail-mounted movable wall element according to claim **23**, wherein the carrying elements are formed by trolleys arrangeable in the rail and pivotably linked with the wall body by a connecting rod.

25. The rail-mounted movable wall element according to claim **19**, wherein the receiving opening comprises guides and the drive unit comprises guide elements interacting with the guides.

26. The rail-mounted movable wall element according to claim **19**, wherein the drive unit comprises a coupling element releasably engageable with a control element connected with a sealing profile, and wherein the at least one sealing element is arranged on the sealing profile.

27. The rail-mounted movable wall element according to claim **26**, wherein the coupling element comprises a hook-shaped receiving opening.

28. The rail-mounted movable wall element according to claim **26**, wherein the drive unit is formed in such a way that a sealing profile with the at least one sealing element arranged thereon is biased in a functional position by a spring element.

29. The rail-mounted movable wall element according to claim **26**, wherein the drive unit comprises an apparatus for manual operation.

30. The rail-mounted movable wall element according to claim **26**, wherein the drive unit comprises end switches.

31. The rail-mounted movable wall element according to claim **26**, wherein the drive unit is formed as a lifting module to adjust a sealing profile.

32. The rail-mounted movable wall element according to claim **31**, wherein the lifting module comprises a motor-driven, rotatably mounted spindle and a spindle nut arranged on the spindle and displaceable along a spindle axis by rotating the spindle, and wherein a toggle joint is supported at one end in an area of the spindle nut to be displaced along the spindle axis, and with another end fixedly and pivotably arranged in an area of a spindle bearing.

33. The rail-mounted movable wall element according to claim **32**, further comprising one end of a first lever of the toggle joint extending beyond a pivot point with a second lever of the toggle joint and being formed for connection with the control element.

34. The rail-mounted movable wall element according to claim **32**, further comprising a spring element contacting with one end a thrust support axially displaceable on the spindle and with another end a threaded bearing, the threaded bearing being displaceable along the spindle axis by rotating the spindle, the toggle joint being pivotably supported on the thrust support with an end facing away from the spindle bearing, and the thrust support abutting on the spindle nut on a side facing away from the spring element.

35. The rail-mounted movable wall element according to claim **34**, wherein the spring element is formed by a helical pressure spring coaxially arranged on the spindle.

36. The rail-mounted movable wall element according to claim **33**, wherein the connection of the first lever and the second lever is realized by a pin, and is in the manner of a bayonet lock which is formed such that assembly to form the toggle joint can only be carried out during a parallel orientation of the first and second levers.

37. The rail-mounted movable wall element according to claim **29**, wherein the apparatus for manual operation is formed by a spindle extension.

38. The rail-mounted movable wall element according to claim **29**, wherein the spindle bearing is formed to receive an electric motor on a side facing away from the spindle, and wherein the electric motor is connected with the spindle in an anti-twist manner.

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