



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**25.09.2013 Bulletin 2013/39**

(51) Int Cl.:  
**F24D 19/02 (2006.01)**

(21) Application number: **12160440.9**

(22) Date of filing: **20.03.2012**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**

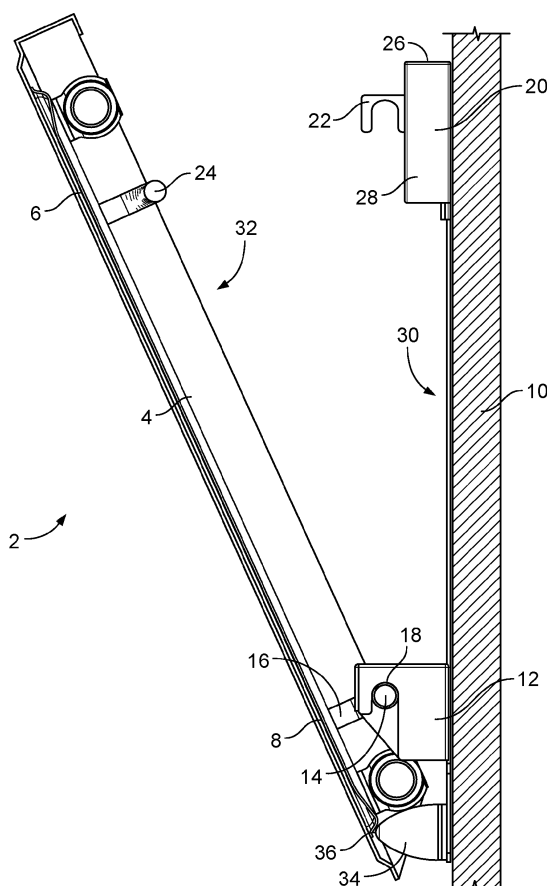
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(54) **Tilting radiator assembly**

(57) The present invention pertains to a radiator assembly 2 comprising: A radiator 4 having an upper portion 6 and a lower portion 8 when mounted in its intended use position, a lower mounting bracket 12 to be fixed relative to a wall 10 and defining a pivotal axis 14 for the radiator 4, the lower mounting bracket 12 being configured to be pivotably attached to the lower portion 8 of the radiator 4, an upper mounting bracket 20 to be fixed relative to said wall 10, the upper mounting bracket 20 being configured to be releasably attached to the upper portion 6 of the radiator 4, but can be released to permit the radiator 4 to pivot relative to the pivot axis 14, wherein the upper mounting bracket 20 comprises a release and locking mechanism 54, and a retention member 22 for releasably engaging a cooperating upper mounting member 24 placed at the upper portion 6 of the radiator 4, said retention member 22 being configured for releasing and locking the radiator 4 by a push on a push button 26, said release and locking mechanism 54 being enclosed inside a housing 28.



**FIG. 1**

## Description

### TECHNICAL FIELD

**[0001]** The present invention pertains to a wall hanged radiator of the kind that can be tilted away from the wall relative to a pivot point in order to allow access to the wall behind the radiator.

### BACKGROUND OF THE INVENTION

**[0002]** Radiators of the above kind are known within the art. Among these, a number of different radiators have been described.

**[0003]** For example in GB 2 374 405 is described a central heating radiator, which is mounted to a wall by an upper bracket and a lower bracket. The upper bracket can be released and the radiator tilted on a pivot to allow access to the wall behind the radiator. The movement of the radiator is restrained by a chain. The pivot can be extended with respect to the lower bracket in order to allow further movement of the radiator, thereby allowing better access to the wall behind the radiator. A flexible conduit connects the radiator to a central heating system so that it can be moved away from the wall without disconnection. The upper bracket comprises a deformable plastics clip, which may engage the radiator at the front and the back and may also be adjustable. The pivot is extendable with respect to the lower bracket by means of pins and grooves.

**[0004]** In GB 2 345 955 is described an arrangement for allowing radiators to be pivoted away from hanging brackets. The arrangement comprises a flexible water pipe, a lower bracket on which the radiator is pivotally mounted, and a chain to allow the radiator to be secured on the upper bracket, or released, the chain restraining the pivoting movement. The radiator is mounted on a split grommet on the lower bracket.

**[0005]** In GB 2 308 882 is described a system of flexible pipes and brackets allowing a radiator to be swung away from a wall without disconnecting it from a central heating system. A set of top brackets holds the radiator vertical when locked. The radiator can be released from the top brackets and pivoted about a set of bottom brackets away from a wall, and can be held by a chain, the chain restraining the tilting movement.

**[0006]** GB 2 297 828 relates to a heating assembly and installation means therefore, in which a standard central heating radiator, provided with conventional fittings for convenience, is secured to a bracket portion pivotally mounted to a fixed bracket portion for ease of tilting the bracket portion outwardly from a wall on release of a latch. The supply of heated water to the radiator is through flexible pipe portions, permitting the radiator to undertake the pivotal movement. Excess movement is restrained by a sliding rod or strut. The radiator assembly permits access to the wall area behind the radiator, for example for re-decoration purposes.

**[0007]** In GB 2 446 465 is described a radiator bracket, which comprises a lower wall member mounted on a wall that engages with a lower section of the radiator. The lower member is provided with a pivot point, permitting the radiator to move from a first vertical position with the top of the radiator adjacent the wall to a second inclined position with the top of the radiator away from the wall. An upper wall member engages the radiator in order to secure it in the vertical position. A chain has one end secured to the wall and a second end secured to the radiator to secure the radiator in the second position and prevent the top of the radiator to move away from the wall more than a predetermined distance. The lower wall member comprises of a pair of U-shaped brackets receiving a horizontal bar extending between a pair of projections extending from the radiator. The upper wall member may comprise a pair of catches in the form of clips, which may be locked in position and engage with apertures in a pair of cooperating projections. The chain is secured to the radiator and a wall plate. The bracket permits the wall behind the radiator to be decorated. The radiator is connected to flexible pipes.

**[0008]** In US 2011/0108687 is disclosed a system for pivotally mounting a radiator on a wall such that the radiator may be swung away from the wall at the top to facilitate cleaning and the like. The system comprises: An upper bracket to releasably hold an upper portion of the radiator adjacent a wall, and at least one adjustable lower bracket fastened to the wall in order to support a lower portion of the radiator at a support location spaced away from the wall such that the radiator is able to pivot on the lower bracket and swing away from the wall at the top when released. The lower bracket also includes an adjustment mechanism to adjust the spacing between the support location and the wall.

**[0009]** In sterile environments and places, where the requirements for hygiene are very strict, such as in hospitals, it is of great importance to be able to clean behind radiators because such surfaces, which are not cleaned regularly, can provide a breeding ground for malicious bacteria, which poses a greater health hazard for hospitalized people weakened by illness than for the general public. It is also of great importance that cleaning behind radiators can be facilitated quickly and easily without undue effort because the cost of cleaning otherwise may be so large that some hospitals would not have sufficient funds to ensure sufficient cleaning. It is a problem with all of the above-mentioned radiator assemblies that chains are used to restrain the pivotal movement, because a chain is notoriously difficult to clean properly, and it is furthermore a problem that the brackets and retaining and releasing mechanisms of the above-mentioned radiator assemblies are difficult to clean. It is additionally a problem that it is not directly obvious how these retaining and releasing mechanisms are used, which may lead to sloppiness in the cleaning behind the radiators, because janitors usually are required to work at a very high pace in order to finish their work as sched-

uled.

## SUMMARY OF THE INVENTION

**[0010]** It is thus an object of the present invention to provide a tilting radiator assembly which is easy and quickly to release for gaining access to the wall behind the radiator, and which is easy to clean.

**[0011]** According to the present invention, the above-mentioned and other objects are fulfilled by a radiator assembly comprising: A radiator having an upper portion and a lower portion when mounted in its intended use position, a lower mounting bracket to be fixed relative to a wall and defining a pivotal axis for the radiator, the lower mounting bracket being configured to be pivotably attached to the lower portion of the radiator, an upper mounting bracket to be fixed relative to said wall, the upper mounting bracket being configured to be releasably attached to the upper portion of the radiator, but can be released to permit the radiator to pivot relative to the pivot axis. Said upper mounting bracket comprises a release and locking mechanism, and a retention member for releasably engaging a cooperating upper mounting member placed at the upper portion of the radiator, said retention member being configured for releasing and locking the radiator by a push on a push button, said release and locking mechanism being enclosed inside a housing.

**[0012]** Hereby is achieved a radiator assembly, where the radiator may be tilted away from the wall whereon it is mounted, thus allowing the side of it facing the wall to be cleaned as well as the wall itself behind the radiator. Since the radiator can be released and locked by a rather simple push on a push button, it is furthermore quickly and easy for cleaning personnel to gain access to the surfaces behind the radiator (these surfaces being for example the back side of the radiator itself, the wall behind the radiator, and the brackets for hinging the radiator to the wall). The push button release and locking operation is also rather intuitive to use, and would not require specialized training or instruction of for example cleaning personnel. Furthermore, since the release and locking mechanism is enclosed inside a housing, it is easier to clean and keep clean.

**[0013]** In a preferred embodiment according to the invention, the housing comprises plain and smooth surfaces, which thereby are easy to clean.

**[0014]** Preferably, the radiator assembly comprises a pair of said upper mounting brackets, and a pair of said lower mounting brackets. Hereby is achieved that the radiator can be mounted by the use of smaller brackets, since the load is divided between the two lower mounting brackets. Furthermore, it is easier to balance the fixation of the radiator relative to the wall.

**[0015]** In a further embodiment according to the invention, the radiator tilts slightly backwards, i.e. towards the wall, when it is mounted in its intended use position. Hereby it is avoided that the radiator may tilt outwards by ac-

cident when released from the retention member, for which reason the tilting movement needs to be initiated - and controlled - by a human operator, e.g. cleaning personnel.

**[0016]** In a further embodiment according to the invention, the radiator assembly may further comprise at least one stop block to be fixed relative to said wall, the at least one stop block being so arranged relative to the radiator that it restricts the tilting movement by engaging a part of the lower portion of the radiator. Hereby is achieved that in-excessive tilting of the radiator is precluded. Furthermore, the chains and tethers known in the prior art are avoided altogether, which again gives an assembly that is easier to clean and maintain than the assemblies known in the prior art.

**[0017]** In order to facilitate the tilting movement of the radiator, when mounted and connected to a central heating system, the radiator assembly may according to a further embodiment comprise flexible pipes for fluidly connecting the radiator to the central heating system. Hereby the radiator can be filled with a heating fluid, which is preferably water. In a further embodiment of the radiator assembly, the upper mounting bracket and the lower mounting bracket may be fixed to a rail. Hereby is achieved a solution, which is easy to mount because the relative positioning of the upper mounting bracket and the lower mounting bracket may be done at the manufacturing facility. Furthermore, this also leads to a quicker and easier mounting of the radiator assembly because said brackets are readily mounted by fixing the rail to a wall.

**[0018]** In a further embodiment of the radiator assembly, the upper mounting bracket, the lower mounting bracket and the stop block may be fixed to a rail, whereby the time and effort needed for mounting the radiator assembly is further decreased.

**[0019]** In a preferred embodiment of the radiator assembly, the rail may be equipped with means for adjusting the distance which the radiator is to be mounted relative to said wall. Hereby is achieved that the front surface of the radiator may be aligned with for example cable channels.

**[0020]** In a further embodiment of the radiator assembly, the lower mounting bracket is attached to the lower portion of the radiator via a lower mounting member placed at the lower portion of the radiator, said lower mounting member having a cylinder shaped portion to be received in an opening of the lower mounting bracket having a corresponding shape, said cylindrical portion of said lower mounting member forming a pivotal shaft for the radiator.

**[0021]** In a further embodiment of the radiator assembly according to the invention, the stop block comprises a resilient material, for example rubber. Herby is achieved that shock and noise is reduced when the radiator is tilted.

**[0022]** In a further embodiment of the radiator assembly according to the invention, said release and locking

mechanism has an open position and a locked position, said locking mechanism being operatively connected to the retention member, so that the retention member releases the radiator when the release and locking mechanism is in the open position, and so that the retention member engages upper mounting member of the radiator when the release and locking mechanism is in the locked position.

**[0023]** In a preferred embodiment of the radiator assembly according to the invention, the release and locking mechanism comprises a plunger slidably received inside a barrel, intermittently operable latch means engageable between the plunger and the barrel to hold them in contracted condition at the end of one push or stroke and to permit relative extension of the barrel and plunger during the next push or stroke. Hereby is achieved a very compact release and locking mechanism, which may be activated and deactivated by a single push or stroke.

**[0024]** In one embodiment of the radiator assembly according to the invention, the intermittently operable latch means may comprise indexing projections and notches to effect a relative rotation of a tubular latch element incrementally first to a position in which the tubular element engages the barrel to hold a compression spring in contracted condition, and then to a position in which the tubular latch element is released for movement lengthwise of the barrel by the spring, which simultaneously moves the plunger into extended relationship relative to the barrel. Due to the rotation of the tubular latch element, it is hereby achieved that the compression spring is interchangeably held and released from its contracted position upon successive pushes or strokes of the plunger.

**[0025]** In an alternative embodiment of the radiator assembly according to the invention, the release and locking mechanism comprises a compression spring engaging the plunger and barrel so to effect a relative extension of said two parts, the compression spring having a contracted condition when the plunger and barrel is in said contracted condition, and wherein the intermittently operable latch means includes a magnetic element operable to hold said compression spring in the contracted condition at the end of one push or stroke and to permit an extension of said compression spring during the next push or stroke, thereby effecting a relative extension of the barrel and plunger. Hereby is essentially achieved the same effect as mentioned above, but without the need of a rotating latch element. Thus, a mechanically simpler solution is achieved, which again leads to a longer product life time because there are fewer moving parts which may wear down.

**[0026]** In a preferred embodiment of the radiator assembly according to the invention, the push button forms an integrated part of the housing. Hereby is achieved an upper bracket which is easier to keep clean.

**[0027]** In a preferred embodiment of the radiator assembly according to the invention, the retention member forms an integral part of the housing. Again this leads to a simpler construction, which is easier to keep clean than

those known in the art.

## BREIF DESCRIPTION OF THE DRAWINGS

**[0028]** A further understanding of the nature and advantages of the present invention may be realized by reference to the remaining portions of the specification and the drawings. In the following, preferred embodiments of the invention are explained in more detail with reference to the drawings, wherein

Fig. 1 shows a side view of an embodiment of a radiator assembly, wherein the radiator is tilted relative to a wall;

Fig. 2 shows a side view of the radiator assembly, wherein the radiator is in its upright position, but released from the upper mounting bracket;

Fig. 3 shows a side view of the radiator assembly, wherein the radiator is in its upright position, but locked to the upper mounting bracket;

Fig. 4 shows a side view and a front view of a rail with the upper and lower mounting brackets, and the stop block;

Fig. 5 shows a perspective view of the same rail as illustrated in Fig. 4;

Fig. 6 shows a side view and a front view of a rail with means for adjusting the distance to the wall;

Fig. 7 shows a perspective view of the same rail as illustrated in Fig. 6;

Fig. 8 shows an explosive view of the rail illustrated in Fig. 4 and 5;

Fig. 9 shows a close-up view of an upper mounting bracket, wherein the release and locking mechanism is in its extended condition;

Fig. 10 shows a close-up view of an upper mounting bracket, wherein the release and locking mechanism is in its contracted condition, and

Fig. 11 shows an embodiment of a radiator assembly, wherein the radiator is mounted on a wall and is illustrated in its tilted position.

## DETAILED DESCRIPTION

**[0029]** The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which exemplary embodiments of the invention are shown. The invention may however be embodied in different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like reference numerals refer to like elements throughout. Like elements will thus not be described in detail with respect to the description of each figure.

**[0030]** Fig. 1 shows a side view of an embodiment of a radiator assembly 2. The radiator assembly 2 compris-

es: A radiator 4 having an upper portion 6 and a lower portion 8 when mounted in its intended use position on a wall 10. The radiator assembly 2 also comprises a lower mounting bracket 12 to be fixed relative to a wall 10 and defining a pivotal axis 14 for the radiator 4. The lower mounting bracket 12 is configured to be pivotably attached to the lower portion 8 of the radiator.

**[0031]** The lower mounting bracket 12 is attached to the lower portion 8 of the radiator 4 via a lower mounting member 16 placed at the lower portion 8 of the radiator 4. The illustrated lower mounting member 16 has a cylinder shaped portion 18 to be received in an opening of the lower mounting bracket 12 having a corresponding shape, said cylindrical portion 18 of said lower mounting member 16 forming a pivotal shaft for the radiator 4.

**[0032]** The radiator assembly 2 further comprises an upper mounting bracket 20 to be fixed relative to said wall 10. The upper mounting bracket 20 is configured to be releasably attached to the upper portion 6 of the radiator 4, but can be released to permit the radiator 4 to pivot relative to the pivot axis 14.

**[0033]** The illustrated upper mounting bracket 20 comprises a release and locking mechanism (not shown in this figure, but can be seen more clearly in Fig. 8, 9 and 10), and a retention member 22 for releasably engaging a cooperating upper mounting member 24 placed at the upper portion 6 of the radiator 4, said retention member 22 being configured for releasing and locking the radiator 4 by a push on a push button 26. The release and locking mechanism is enclosed inside a housing 28. In the illustrated embodiment, the push button 26 forms an integral part of the housing 28. The illustrated retention member 22 is hook shaped.

**[0034]** The illustrated radiator 4 is shown tilted away from the wall 10. This will for example give cleaning personnel access to the part 30 of the wall 10 which is behind the radiator 4, as well as the back side 32 of the radiator 4 itself.

**[0035]** The illustrated radiator assembly 2 further comprising at least one stop block 34 fixed relative to the wall 10, the at least one stop block 34 being so arranged relative to the radiator 4 that it restricts the tilting movement by engaging a part 36 of the lower portion 8 of the radiator 4 when the radiator is tilted to a certain extent.

**[0036]** In Fig. 2 is illustrated a side view of the same embodiment of a radiator assembly 2 as illustrated in Fig. 1, but now where the radiator 4 is not tilted relative to the wall 10. As illustrated, the radiator 4 is released from the upper mounting bracket 20 because the retention member 22 does not engage cooperating upper mounting member 24 placed at the upper portion 6 of the radiator 4. In this position the radiator 4 is vertical, and the stop block 34 does not engage the part 36 of the lower portion 8 of the radiator 4.

**[0037]** In Fig. 3 is illustrated a side view of an embodiment of a radiator assembly 2, wherein the radiator 4 is in the same position as illustrated in Fig. 2, but now where the retention member 22 engages the cooperating upper

mounting member 24 placed at the upper portion 6 of the radiator 4. In this position of the retention member 22, the radiator is locked in its vertical position.

**[0038]** In Fig. 4 is illustrated a front view and a side view of a rail 38. As illustrated, the upper mounting bracket 20, the lower mounting bracket 12 and the stop block 34 are fixed to said rail 38. This facilitates a much easier mounting of the radiator assembly 2 because the relative distance between the upper mounting bracket 20, the lower mounting bracket 12 and the stop block 34 can be adjusted and fixed at the manufacturing plant, and wherein all these three elements can be mounted in one operation at the site, wherein the radiator 4 has to be mounted. In this illustration, the cylindrical opening 40 in the lower mounting bracket 12 is clearly visible. In Fig. 5 is illustrated a perspective view of the same elements as illustrated in Fig. 4.

**[0039]** In Fig. 6 is illustrated a front view and a side view of a rail 38, whereon an upper mounting bracket 20, a lower mounting bracket 12 and a stop block 34 are fixed as illustrated in Fig. 4 and 5. To the illustrated rail 38 are fixed means (42, 44, 46) for adjusting the distance, which the radiator 4 is to be mounted relative to said wall 10.

**[0040]** These means comprise a main rail 42, for example made from a 2 mm steel plate bent to match the rail 38, which is mounted on the main rail 42 by suitable means, such as bolts and nuts. The means for adjusting the distance and fixing the radiator (not shown) also include an upper and lower expansion bolt 44 and 46, respectively. The illustrated expansion bolts 44 and 46 are identical and are mounted in two holes in a wall - one for each bolt. The extension, and thereby the distance with which the radiator is to be mounted with respect to the wall, can thereafter be adjusted. In Fig. 7 is illustrated a perspective view of the same elements as illustrated in Fig. 6.

**[0041]** In Fig. 8 is illustrated an explosive view of the elements shown in Fig. 4 and 5. As illustrated, the lower mounting bracket 12 comprises two parts, one support structure 48 and a cover part 50. When the cover part 50 is mounted on the support structure 48, then a substantially cylindrical opening 40 is formed. The cover part 50 has straight and smooth surfaces, thus facilitating an easier cleaning as compared to the constructions known in the art.

**[0042]** As illustrated, the upper mounting bracket 20 comprises two main parts: One support structure 52 and a housing 28. The upper mounting bracket 20 further comprises a release and locking mechanism 54, which has an open position and a locked position, said locking mechanism being operatively connected to the retention member 22 via abutment to the housing 28, so that the retention member 22 releases the radiator 4 (not illustrated) when the release and locking mechanism 54 is in the open position, and so that the retention member 22 engages upper mounting member 24 of the radiator 4 when the release and locking mechanism 54 is in the locked position. The release and locking mechanism 54

is activated by a push on the push button 26, which push button 26 forms an integral part of the top of the housing 28. Since the support structure 52 and the release and locking mechanism 54 is enclosed inside the housing 28, it is rather easy to clean the upper mounting bracket 20 as compared to the ones known in the art.

**[0043]** The stop block 34 is fastened to the rail by a screw 58. As illustrated, a washer 60 is provided between the rail and the stop block 34.

**[0044]** In Fig. 9 is illustrated a close-up view of an upper mounting bracket 20, wherein the housing 28 is illustrated as transparent. In this close-up view, the release and locking mechanism 54 is shown in more detail. The release and locking mechanism 54 comprises a plunger 62 slidably received inside a barrel 64, intermittently operable latch means (not shown) engageable between the plunger 62 and the barrel 64 to hold them in contracted condition at the end of one push or stroke and to permit relative extension of the barrel 64 and plunger 62 during the next push or stroke. The top part 66 of the plunger 62 is in abutting contact with the push button 26, which in this embodiment is the same as the top part of the housing 28, whereby a push or stroke of on the push button 26 is directly transferred to a push or stroke on the plunger 62. In Fig. 9 the plunger 62 and barrel 64 are in a condition of relative extension, corresponding to a position of the retention member 22 wherein the radiator 4 is released from the upper mounting bracket 20 and is free to tilt relative to the wall 10 onto which it is mounted. Fig. 10 essentially illustrates the same elements as shown in Fig. 9, but now where the plunger 62 and barrel 64 are in a condition of relative contraction, corresponding to a position of the retention member 22 wherein the radiator 4 is locked to the upper mounting bracket 20.

**[0045]** In Fig. 11 is illustrated an embodiment of a radiator assembly 2 according the invention, wherein the radiator 4 of the assembly 2 is mounted on a wall 10 in the proximity of a channel for electrical wires (electrical wire channel 68). The radiator 4 is illustrated in its tilted position, wherein it is tilted relative to the wall 10. This way access to the part 30 of the wall 10, which is behind the radiator 4, is provided. Accordingly, a radiator assembly 2 is provided, wherein it is possible to clean behind the radiator 4 without having to disconnect and dismantle the radiator 4. Furthermore, the mounting brackets 12, 20 according to the invention are easier to clean than those known in the art.

**[0046]** The illustrated radiator 4 may be an electrical radiator 4. However the radiator 4 is in a preferred embodiment a radiator of the conventional type, which is fluidly connected to a central heating system. The radiator 4 is in a preferred embodiment connected to flexible pipes for fluidly connecting the radiator 4 to a central heating system.

#### LIST OF REFERENCE NUMBERS

**[0047]** In the following is given a list of reference num-

bers which are used in the detailed description of the invention.

2	radiator assembly,
4	radiator,
6	upper portion of radiator,
8	lower portion of radiator,
10	wall,
12	lower mounting bracket,
14	pivotal axis,
16	lower mounting member,
18	cylinder shaped portion of lower mounting member,
20	upper mounting bracket,
22	retention member,
24	upper mounting member,
26	push button,
28	housing of upper mounting bracket,
30	wall portion behind the radiator,
32	back side of the radiator,
34	stop block,
36	part of the lower portion of the radiator,
38	rail,
40	cylindrical opening in lower mounting bracket,
42, 44, 46	means for adjusting the distance of the rail to the wall,
48	support structure of lower mounting bracket,
50	cover part of lower mounting bracket,
52	support structure of upper mounting bracket,
54	release and locking mechanism,
58	screw for stop block,
60	stop block,
62	plunger,
64	barrel,
66	top of plunger, and
68	channel for electrical wires.

#### Claims

1. A radiator assembly (2) comprising:

a radiator (4) having an upper portion (6) and a lower portion (8) when mounted in its intended use position,  
a lower mounting bracket (12) to be fixed relative to a wall (10) and defining a pivotal axis (14) for the radiator (4), the lower mounting bracket (12) being configured to be pivotably attached to the lower portion (8) of the radiator (4),  
an upper mounting bracket (20) to be fixed relative to said wall (10), the upper mounting bracket (20) being configured to be releasably attached to the upper portion (6) of the radiator (4), but can be released to permit the radiator

- (4) to pivot relative to the pivot axis (14),
- said upper mounting bracket (20) comprising a release and locking mechanism (54) and a retention member (22) for releasably engaging a cooperating upper mounting member (24) placed at the upper portion (6) of the radiator (4), said retention member (22) being configured for releasing and locking the radiator (4) by a push on a push button (26), said release and locking mechanism (54) being enclosed inside a housing (28).
2. A radiator assembly (2) according to claim 1, comprising a pair of said upper mounting brackets (20), and a pair of said lower mounting brackets (12).
  3. A radiator assembly (2) according to claim 1 or 2, further comprising at least one stop block (34) to be fixed relative to said wall (10), the at least one stop block (10) being so arranged relative to the radiator (4) that it restricts the tilting movement by engaging a part (36) of the lower portion (8) of the radiator (4).
  4. A radiator assembly (2) according to claim 1, 2 or 3, further comprising flexible pipes for fluidly connecting the radiator (4) to a central heating system.
  5. A radiator assembly (2) according to any of the claims 1 - 4, wherein the upper mounting bracket (20) and the lower mounting bracket (12) are fixed to a rail (38).
  6. A radiator assembly (2) according to claim 3 or 4, wherein the upper mounting bracket (20), the lower mounting bracket (12) and the stop block (34) are fixed to a rail (38).
  7. A radiator assembly (2) according to claim 4 or 5, wherein the rail (38) is equipped with means (42, 44, 46) for adjusting the distance with which the radiator (4) is to be mounted relative to said wall (10).
  8. A radiator assembly (2) according to any of the preceding claims, wherein the lower mounting bracket (12) is attached to the lower portion (8) of the radiator (4) via a lower mounting member (16) placed at the lower portion (8) of the radiator (4), said lower mounting member (16) having a cylinder shaped portion (18) to be received in an opening (40) of the lower mounting bracket (12) having a corresponding shape, said cylindrical portion (18) of said lower mounting member (16) forming a pivotal shaft for the radiator (4).
  9. A radiator assembly (2) according to any of the claims 3 - 8, wherein the stop block (34) comprises a resilient material.
  10. A radiator assembly (2) according to any of the preceding claims, wherein said release and locking mechanism (54) has an open position and a locked position, said locking mechanism (54) being operatively connected to the retention member (22), so that the retention member (22) releases the radiator (4) when the release and locking mechanism (54) is in the open position, and so that the retention member (22) engages upper mounting member (24) of the radiator (4) when the release and locking mechanism (54) is in the locked position.
  11. A radiator assembly (2) according to any of the preceding claims, wherein the release and locking mechanism (54) comprises a plunger (62) slidably received inside a barrel (64), intermittently operable latch means engageable between the plunger (62) and the barrel (64) to hold them in contracted condition at the end of one push or stroke and to permit relative extension of the barrel (64) and plunger (62) during the next push or stroke.
  12. A radiator assembly (2) according to claim 11, wherein the intermittently operable latch means comprises indexing projections and notches to effect a relative rotation of a tubular latch element incrementally first to a position in which the tubular element engages the barrel (64) to hold a compression spring in contracted condition, and then to a position in which the tubular latch element is released for movement lengthwise of the barrel (64) by the spring, which simultaneously moves the plunger (62) into extended relationship relative to the barrel (64).
  13. A radiator assembly (2) according to claim 11, wherein the release and locking mechanism (54) comprises a compression spring engaging the plunger (62) and barrel (64) so to effect a relative extension of said two parts (62, 64), the compression spring having a contracted condition when the plunger (62) and barrel (64) are in said contracted condition, and wherein the intermittently operable latch means includes a magnetic element operable to hold said compression spring in the contracted condition at the end of one push or stroke and to permit an extension of said compression spring during the next push or stroke, thereby effecting a relative extension of the barrel (64) and plunger (62).
  14. A radiator assembly (2) according to any of the preceding claims, wherein the push button (26) forms an integrated part of the housing (28).
  15. A radiator assembly (2) according to any of the preceding claims, wherein the retention member (22) forms an integral part of the housing (28).

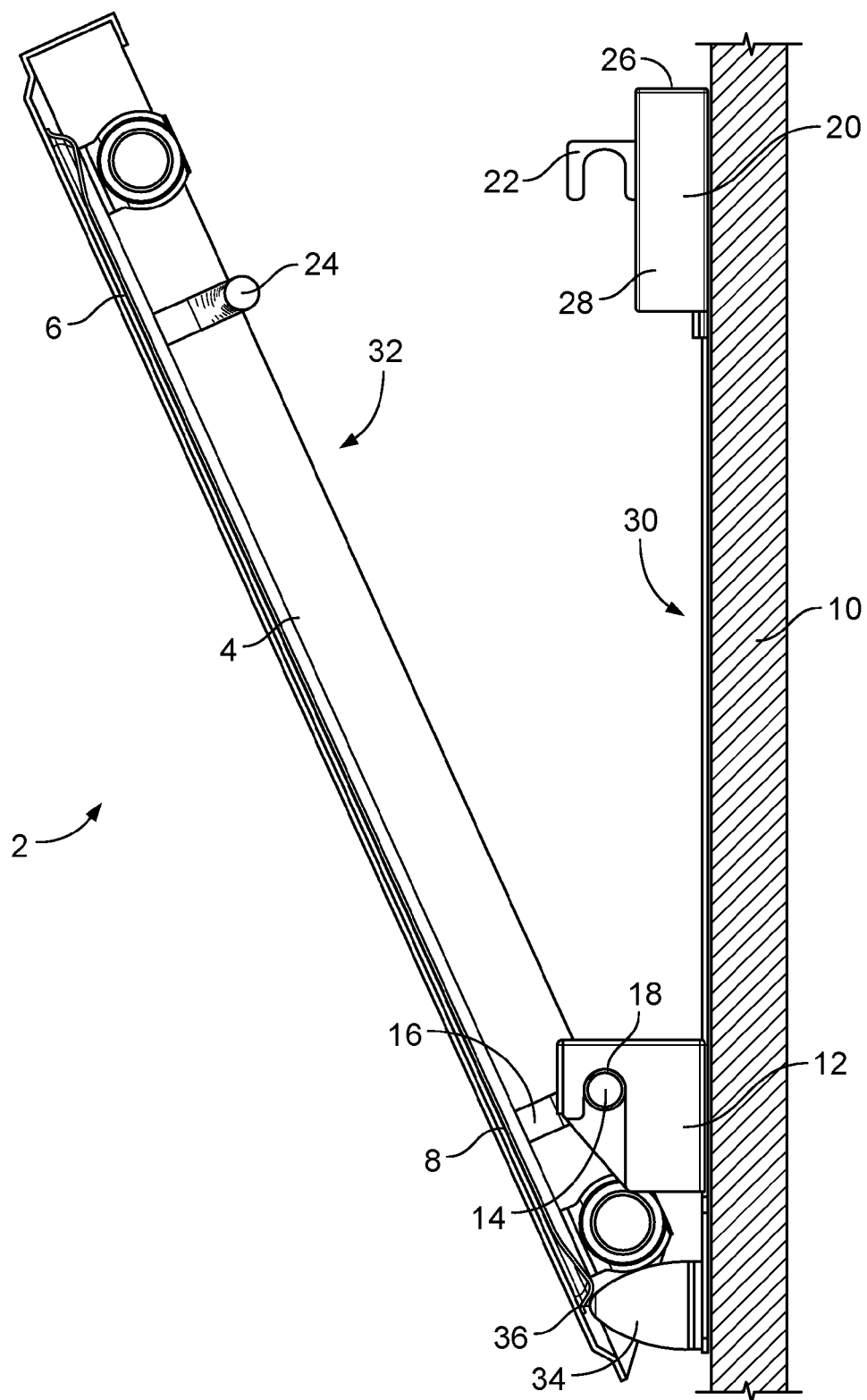


FIG. 1



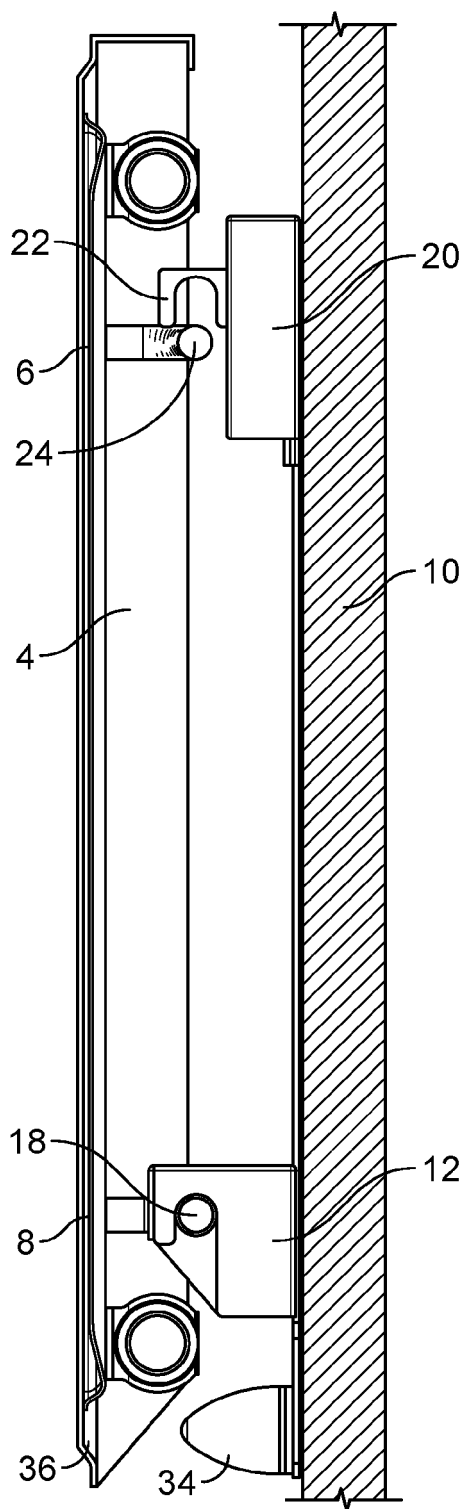


FIG. 2

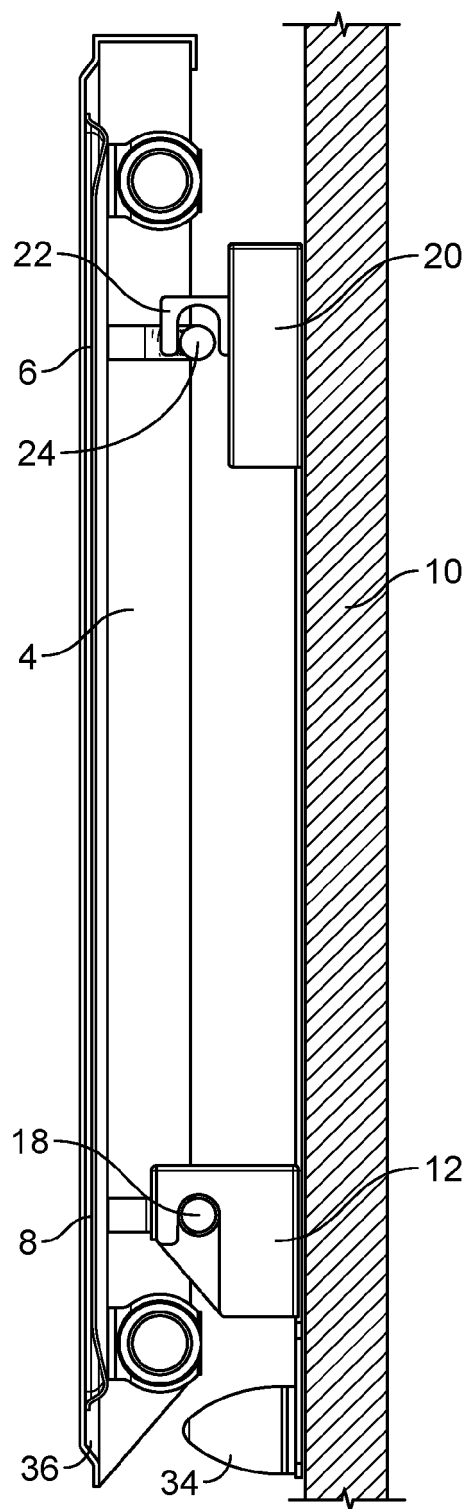


FIG. 3

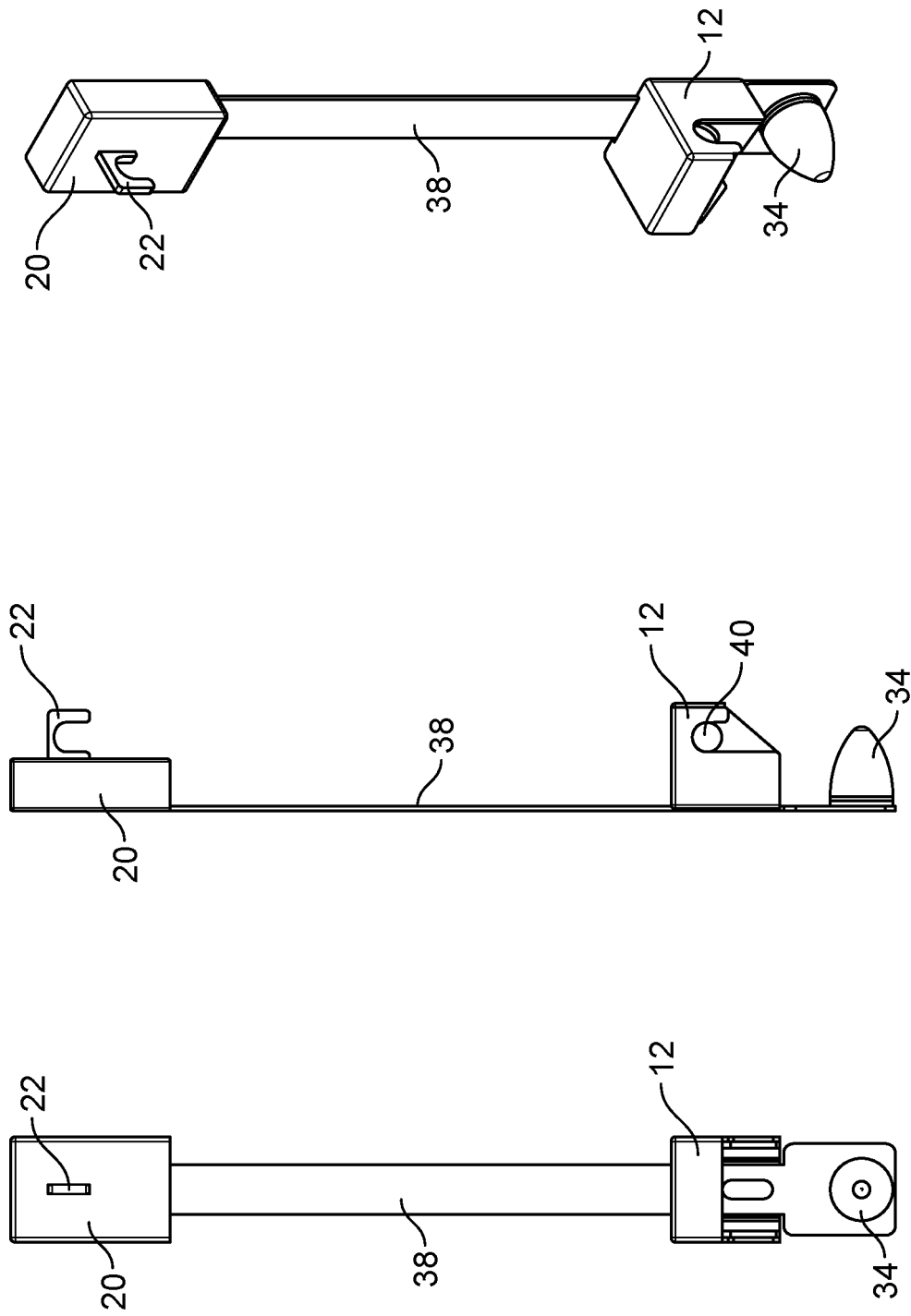


FIG. 4

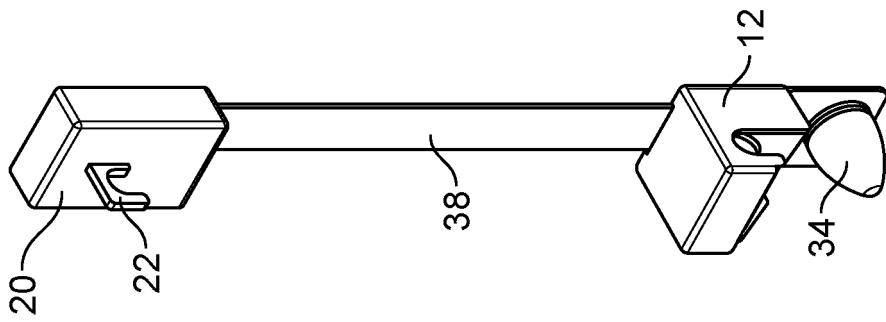


FIG. 5

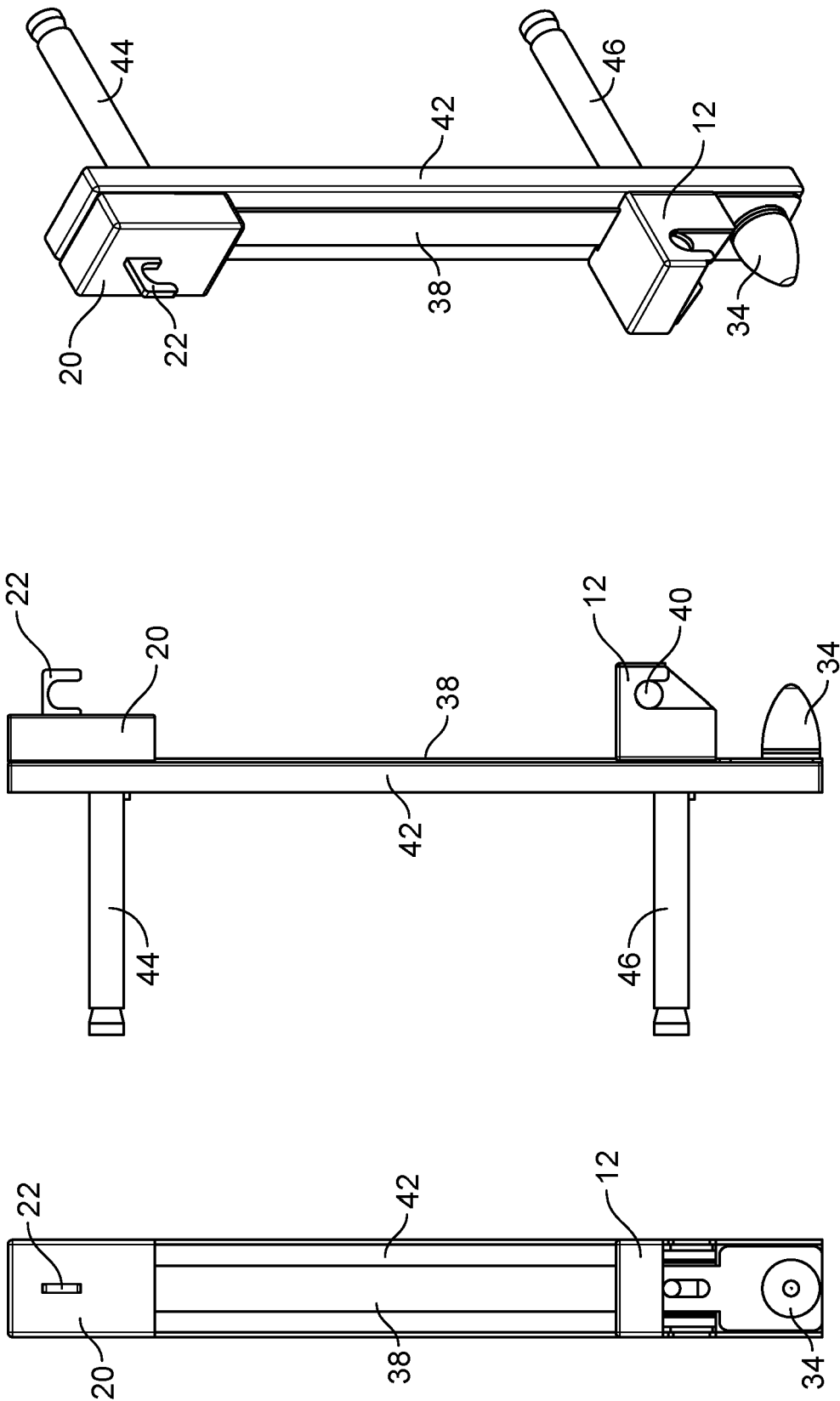


FIG. 7

FIG. 6

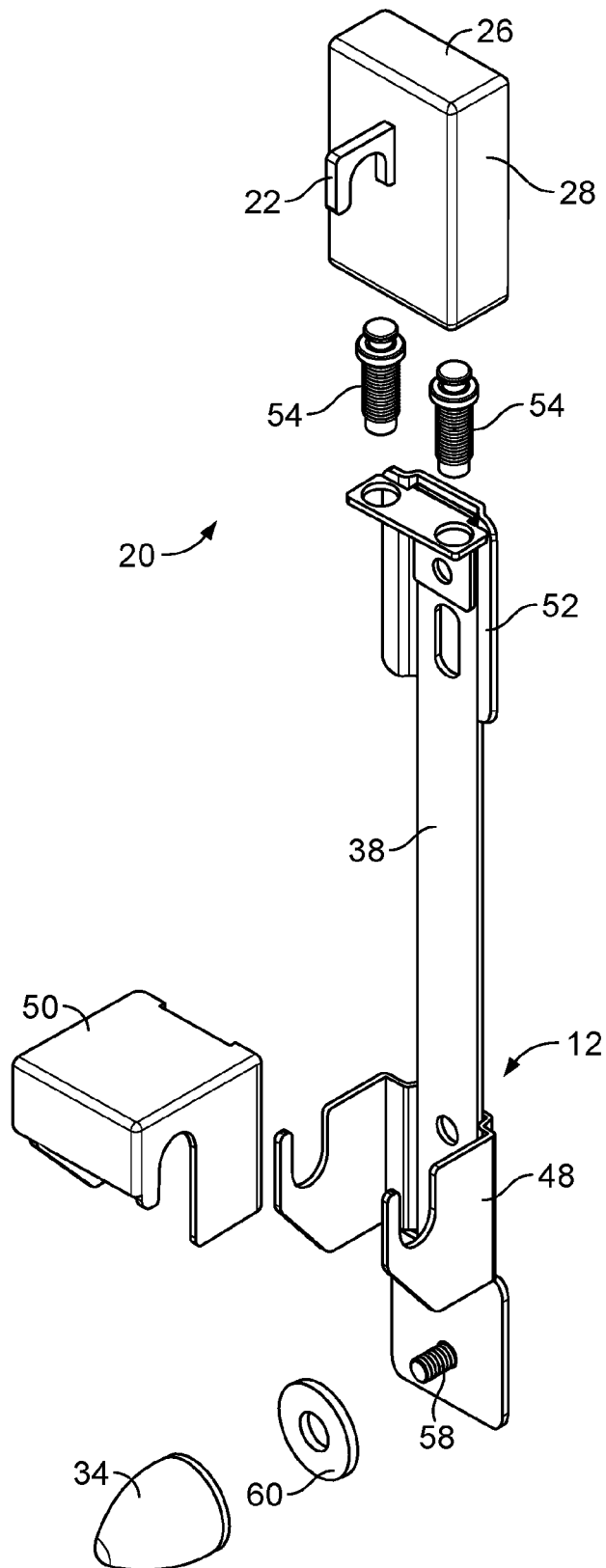


FIG. 8

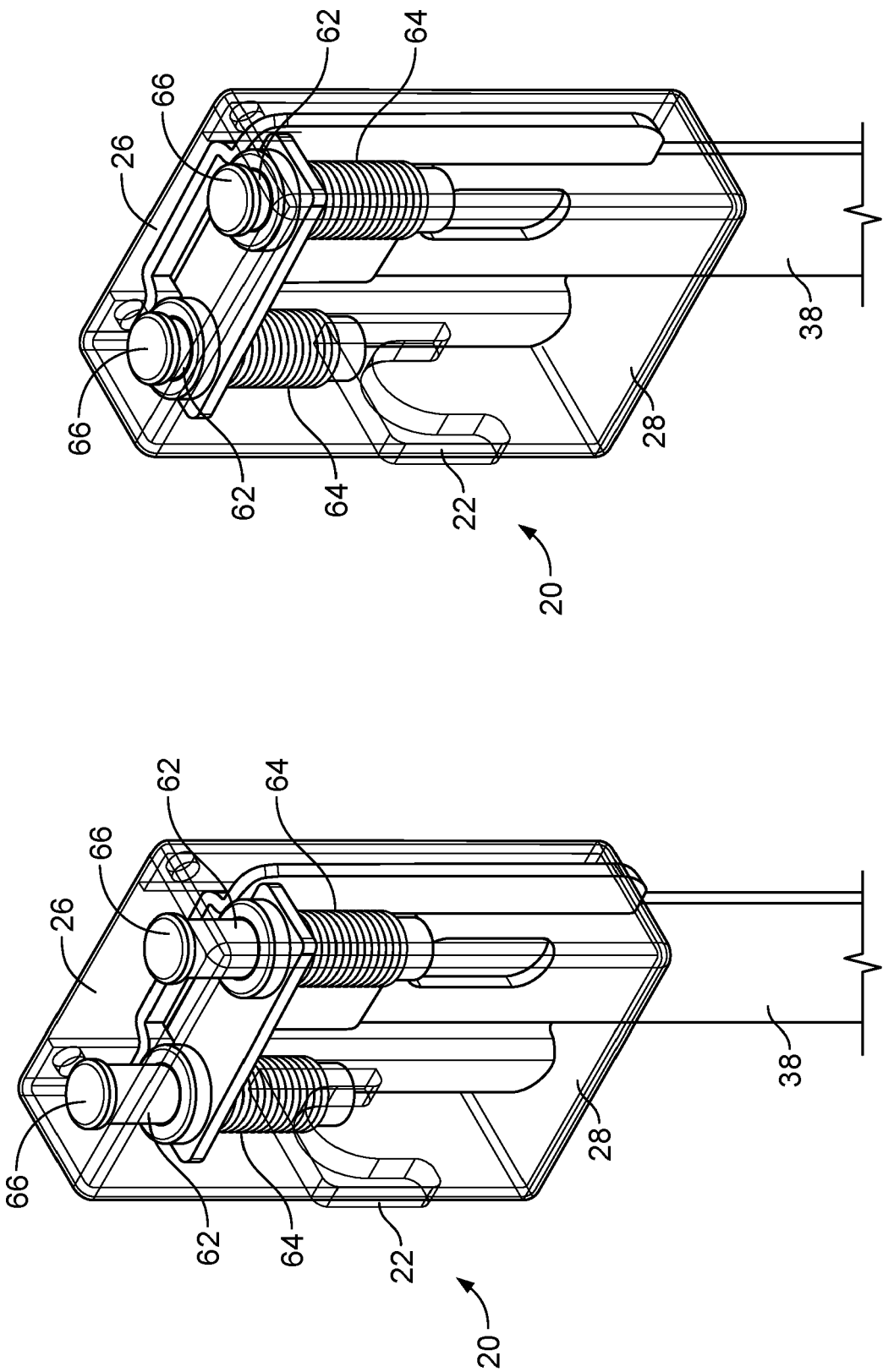
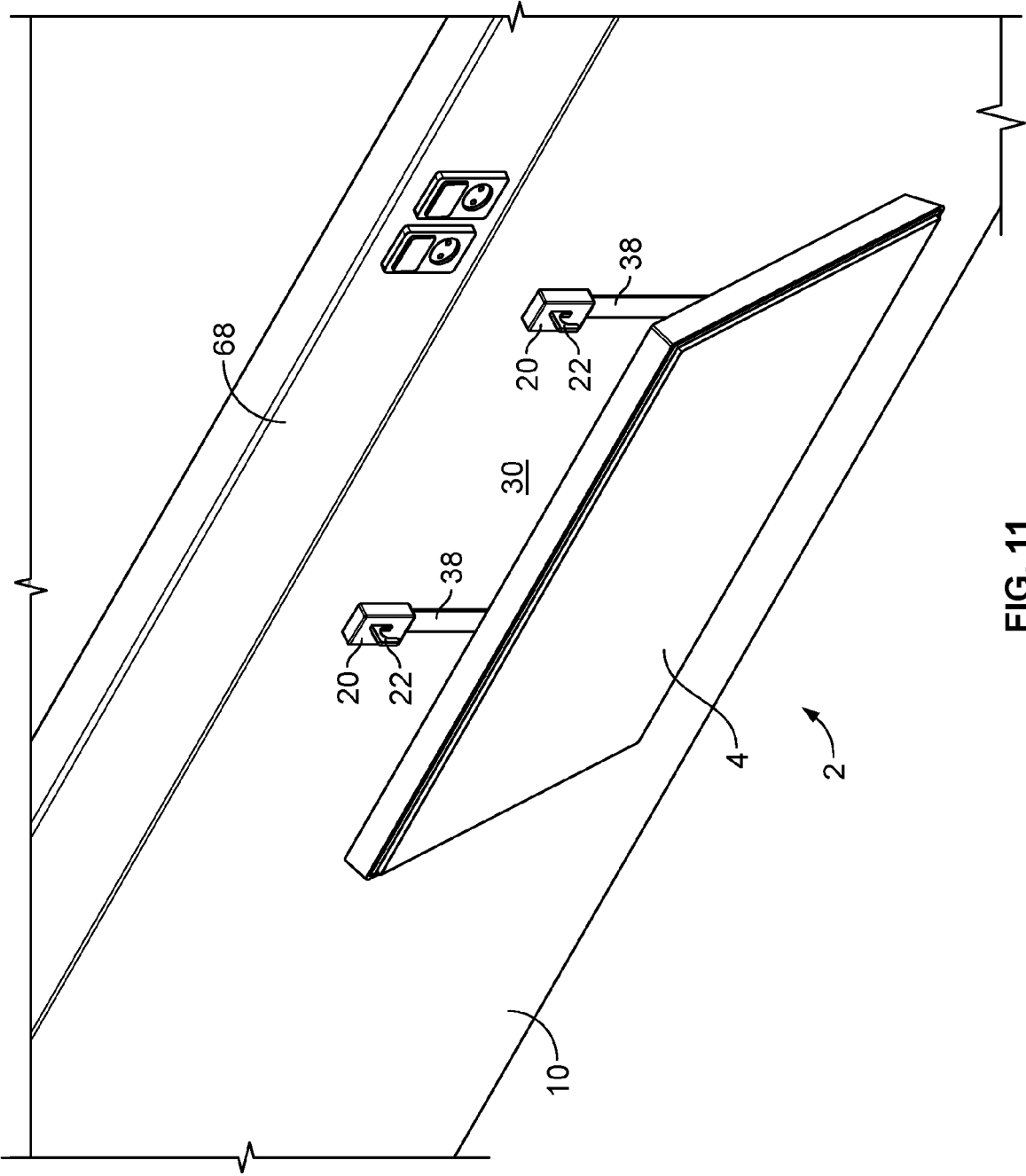


FIG. 10

FIG. 9





## EUROPEAN SEARCH REPORT

Application Number  
EP 12 16 0440

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