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(71) Applicant: **Keystone Lintels Limited**
Cookstown Tyrone BT80 9DG (GB)

(72) Inventor: **Coyle, Sean**
Cookstown, Tyrone BT80 9DG (GB)

(74) Representative: **Hanna, John Philip**
Hanna IP
4th Floor
58 Howard Street
Belfast BT1 6PJ (GB)

(54) An arrangement for mounting a loft ladder subframe assembly within a ceiling aperture

(57) An arrangement for enabling the installation of a loft ladder subframe assembly in the aperture of a ceiling. The arrangement providing a quick and easy support structure to initially support the weight of a loft ladder subframe assembly to allow for the permanent installation of the loft ladder subframe assembly.

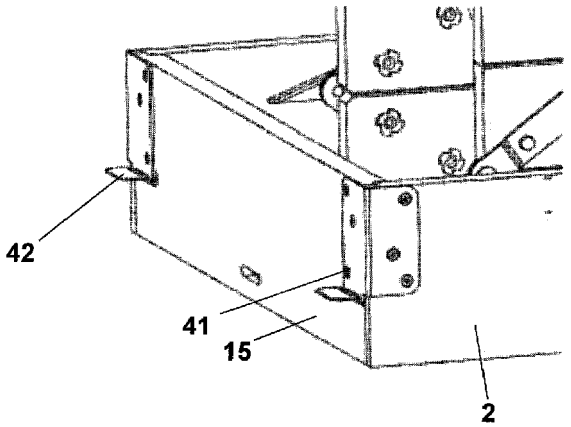


Figure 6

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Description

[0001] The present invention relates to an arrangement for enabling the installation of a loft ladder subframe in an aperture of a ceiling. A traditional loft ladder hatch frame is created by cutting away a portion of plasterboard between two ceiling joists and framing out a rectangular aperture by nailing or screwing two pieces of timber transverse the ceiling joists to define the loft ladder hatch frame. By loft ladder subframe assembly we mean a rectangular frame carrying an openable trap door. The trap door may carry the multi-sectional loft ladder folded neatly thereon. As the ceiling aperture in which the loft ladder is being placed is slightly larger than the ladder subframe itself, a means of supporting the weight of the subframe assembly is required for installation purposes. Once the loft ladder subframe assembly is initially secured, the loft ladder subframe can then be permanently mechanically coupled to the loft ladder hatch frame for a final and permanently secured fitting.

[0002] Conventionally, this method of initially supporting the weight of the loft ladder subframe assembly is achieved by an operator carrying the loft ladder subframe assembly into the attic and subsequently lowering the loft ladder subframe assembly into the ceiling aperture from above. A second operator temporarily holds the subframe assembly in place until the installer in the attic fixed the subframe assembly to the hatch frame using screws. The conventional method of installing loft ladders using two operators is no longer financially viable.

[0003] A further conventional method of installing the loft ladder subframe assembly is by the use of temporary support battens placed along the underside of the ceiling opening so as to protrude a small distance into the opening. These support battens are coupled to the ceiling plasterboard by screws and the loft ladder subframe is lowered from above to be initially supported atop the slightly protruding battens. Subsequently the subframe is nailed and/or screwed to the ceiling joists for permanent installation. Following the installation, the support battens are removed. This system provides a major safety risk as the trapdoor of the loft ladder subframe assembly must be capable of opening in the initially supported position to allow the installer access to the subframe. To ensure that the trapdoor can definitely be opened by the installer when the subframe assembly is supported on the battens, the battens can only protrude into the ceiling aperture a very short distance. This means that the length of the overlapping contact surfaces of the temporary battens and the subframe is short. Any unexpected lateral force applied to the subframe assembly could easily slide the subframe off the battens resulting in the full weight of the loft ladder subframe assembly falling on the installer or other person below.

[0004] Another current method to temporarily anchor a loft ladder and its associated subframe in place is by the utilisation of installation brackets. These installation brackets are secured to the corners of the loft ladder subframe and a horizontal steel flat bar is subsequently attached to each. Following the attachment of the flat bars to the brackets, this method requires that a single user lowers the loft ladder into the ceiling opening from above with the installation brackets and flat bar combination adjusted so that the flat bars sit securely on the hatch frame on the loft floor. This maintains the position of the loft ladder subframe flush to the ceiling until the loft ladder subframe assembly can be permanently fixed to the ceiling joists.

[0005] However there are many complications with these current cumbersome methods. The most common complication is the issue of the lift involved to lower the loft ladder into position from above. In order to carry out the lifting of an object an important health and saftey issue is the negative impact any twisting occurring during that lift would have. Twisting adds further pressure to an individual's spine during lifting. As the loft ladder unit will conventionally be in the attic, twisting and stooping of the installers body will likely occur during the installation due to the confined limited space available. If an individual lifts a heavy object with a non-vertical trunk, extra pressure will be placed upon the lumber region of the spine. This pressure over time and repeated installations can eventually compromise a disc and/or strain or sprain one of the muscles in the back. Furthermore in order to place the loft ladder subframe assembly in the ceiling aperture, transverse lifting followed by lowering will be required. Transverse lifting typically results in excessive mechanical stresses being imposed on muscles and joints which may result in injuries or at least contribute to injuries at a later stage

[0006] Moreover, in most cases during any loft ladder installations the attic region will not be floored and an individual is required to balance their footing on the narrow ceiling joists resulting in an unstable posture. If a sudden change of footing is required due to the weight of the loft ladder an individual can unintentionally slip or misplace their footing on the ceiling joists resulting in an injury to themselves and/or major structural damages to the property's ceiling plasterboards.

[0007] The object of this present invention is to obviate the above problems and provide a quick and easy support arrangement for initially supporting the weight of a loft ladder subframe assembly, to allow the permanent installation of the loft ladder subframe assembly.

[0008] Accordingly, the present invention provides a support arrangement for taking the weight of a loft ladder subframe assembly as it is initially placed into a hatch frame defining an aperture in the ceiling, the support arrangement comprising hatch frame protrusion means capable of protruding a short distance into the aperture from the hatch frame, the support arrangement further comprising loft ladder subframe protrusion means capable of protruding a short distance from the loft ladder subframe, the hatch frame protrusion means and the loft ladder subframe protrusion means being capable of engaging so that the hatch frame protrusion means supports the

weight of the loft ladder subframe assembly.

[0009] Ideally, the hatch frame protrusion means are capable of protruding a short distance into the aperture from the frame members of the hatch frame, most preferably from the inside vertical surface of two mutually opposing frame members.

[0010] Preferably, the loft ladder subframe protrusion means are capable of protruding a short distance from the frame members of the loft ladder subframe, most preferably from the outside vertical surface of two opposing frame members.

[0011] Ideally, the hatch frame protrusion means are locatable below the loft ladder subframe protrusion means when the loft ladder subframe assembly is located in the hatch frame for securing.

[0012] Preferably, the hatch frame protrusion means and the loft ladder subframe protrusion means being capable of overlapping so that the hatch frame protrusion means supports the weight of the loft ladder subframe assembly via the overlap between the loft ladder subframe protrusion means and the hatch frame protrusion means in use.

[0013] Advantageously, a loft ladder support arrangement utilising a hatch frame protrusion means extending into the ceiling opening in combination with a loft ladder subframe protrusion means enables a user to install a loft ladder from below i.e. without the need to enter into the attic space. This is achieved by a slight tilting of the loft ladder subframe assembly in the vertical plane to allow the loft ladder subframe protrusion means to pass by the hatch frame protrusion means so as to fit the loft ladder subframe assembly into the ceiling aperture defined by the hatch frame. The loft ladder subframe assembly is then tilted back to a generally horizontal plane so that the loft ladder subframe protrusion means overlap the hatch frame protrusion means and the loft ladder subframe assembly is lowered so that the loft ladder subframe protrusion means engage onto the hatch frame protrusion means and engage to support the weight of the assembly. Placing the loft ladder subframe assembly in position from below also enables the user to utilise their leg and gluteal muscles while maintaining a vertical trunk during the lift of the loft ladder into position. As a result this minimises injury to an individual's back. This alleviates the lifting and lowering complications associated with the open chain lifting of the prior art that will occur when the loft ladder is being lowered into position from above the ceiling opening.

[0014] Ideally, the loft ladder support arrangement is a permanent fixture between the loft ladder subframe assembly and the hatch frame, providing an auxiliary securing feature for the loft ladder once permanently installed.

[0015] Advantageously, a loft ladder support arrangement that utilises overlapping protrusion means as an initial weight supporting arrangement prior to permanent fixing provides for a simple and rapid pre-installation process without the requirement for any complex mechanical fixtures and fixings.

[0016] Preferably, the hatch frame protrusion means protrudes from the inside vertical surface of two mutually opposing frame members of the hatch frame.

[0017] Ideally, the loft ladder subframe protrusion means protrudes from the external vertical surface of the two opposing frame members of the loft ladder subframe.

[0018] Preferably, the loft ladder support arrangement utilises two pairs of mutually opposing hatch frame and loft ladder subframe protrusion means.

[0019] Advantageously, the overlapping protrusion means support the loft ladder subframe assembly at a desired vertical position within the ceiling. This enables a user to then permanently and securely affix the loft ladder subframe assembly to the hatch frame with screws or the like to complete the loft ladder installation.

[0020] Ideally, the loft ladder subframe protrusion means is fixed to the hatch frame protrusion means.

[0021] Preferably, the loft ladder subframe protrusion means is mechanically coupled to the hatch frame protrusion means.

[0022] Advantageously, as the loft ladder subframe protrusion means extends from the loft ladder subframe and rests upon the hatch frame protrusion means, the support that is provided by the hatch frame protrusion means supports the weight of the entire loft ladder subframe assembly. This maintains the loft ladders position to enable the installer to permanently affix the subframe to the ceiling framing members of the hatch frame.

[0023] Ideally, the bottom surface of the hatch frame protrusion means is flush to the ceiling plasterboard.

[0024] Advantageously, the hatch frame protrusion means that is flush to the ceiling plasterboard results in no further finishing or adjustment being required subsequent to installing the loft ladder subframe assembly and this provides for the desired aesthetic finish.

[0025] Preferably, the hatch frame protrusion means is a batten fixed to mutually opposed framing members of the hatch frame.

[0026] Preferably, the hatch frame protrusion means is a timber batten.

[0027] Alternatively, the hatch frame protrusion means is a bracket.

[0028] Further alternatively, the hatch frame protrusion means comprises a timber batten and a bracket on mutually opposing framing members of the hatch frame.

[0029] Preferably, the hatch frame protrusion means comprises a batten fastened to the external vertical surface of two mutually opposing framing members of the hatch frame.

[0030] Preferably, the hatch frame protrusion means is temporarily pre-installed to the loft ladder subframe assembly for ease of assembly and installation.

[0031] Ideally, the hatch frame protrusion means comprises two battens being transferrably installed from the external surface of the loft ladder subframe to the hatch frame.

[0032] Advantageously, this enables the hatch frame

protrusion means to be pre-manufactured to size in the factory allowing for a quick and easy assembly of the loft ladder subframe assembly at the factory and subsequently an easy installation process on-site. This also eliminates any human errors in measuring the protrusion means to size that may occur on-site allowing the loft ladder subframe assembly to remain flush with the ceiling.

[0033] Further advantageously this will reduce the amount of equipment that would be required on-site.

[0034] Preferably, the loft ladder subframe protrusion means is fixed to the external boundary of the loft ladder subframe.

[0035] Ideally, the loft ladder subframe protrusion means is mechanically coupled to the external vertical surface of two opposing frame members of the loft ladder subframe.

[0036] Preferably, the loft ladder subframe protrusion means is characterised as at least two battens.

[0037] Ideally, the loft ladder subframe protrusion means is characterised as at least two timber battens.

[0038] In an alternative arrangement, the loft ladder subframe protrusion means is provided by a bracket mounted to the external surface of two opposing framing members of the loft ladder subframe.

[0039] Further alternatively, the loft ladder subframe protrusion means comprises a timber batten and a bracket on opposing framing members of the loft ladder subframe.

[0040] Preferably, the brackets are "L"-shaped brackets.

[0041] Ideally, a first leg of the "L" shaped bracket is generally coplanar with and fixed to the external surface of the loft ladder subframe.

[0042] Preferably, the second leg of the "L" shaped bracket protrudes towards the hatch frame, most preferably orthogonally to the first leg.

[0043] Advantageously, the "L" shape of the bracket provides the loft ladder subframe protrusion means with the ability to rest upon the hatch frame protrusion means.

[0044] Ideally, the battens and/or "L"-shaped brackets are coupled to the corner brackets of the loft ladder subframe.

[0045] In a further embodiment, the loft ladder subframe protrusion means and/or the hatch frame protrusion means is adjustable between two positions; a protruding position for initially supporting the loft ladder subframe assembly on the hatch frame and a retracted installing position for allowing the loft ladder subframe assembly to slide into the hatch frame during installation.

[0046] Preferably, the loft ladder subframe protrusion means is adjustable between two positions; a protruding position for initially supporting the loft ladder subframe assembly on the hatch frame protrusion means and a retracted installing position for allowing the loft ladder subframe assembly to slide past the hatch frame protrusion means during installation.

[0047] Ideally, the protrusion means is adjustable between the retracted installing position and the protruding position via biasing means.

[0048] Preferably, the loft ladder subframe protrusion means comprises a bracket mountable on the external vertical surface of the loft ladder subframe and a hinge moveably coupled to the bracket between an installation position substantially flat against the bracket and a protruding position for supporting the loft ladder subframe assembly on the hatch frame protrusion means.

[0049] Ideally, the hinge is normally biased into the protruding position by a biasing member acting on the hinge.

[0050] Preferably, the hinge is operable between the protruding position and the installation position by engagement with the hatch frame protrusion means as an operator pushes the loft ladder subframe assembly into the aperture defined by the hatch frame from below.

[0051] Preferably, the hatch frame protrusion means tapers towards the ceiling.

[0052] Advantageously, the tapered hatch frame protrusion means provides less resistance to the hinge as it pivots smoothly away from its protruding position to the retracted installing position.

[0053] Ideally, the hinge and bracket have a resistance member to restrict the angle of rotation of the hinge.

[0054] Preferably, the biasing means is a spring.

[0055] Preferably, the biasing means utilises a bolt and spring action.

[0056] Ideally, the hinge and bracket have a tab acting as a hinge stopper.

[0057] Advantageously, the tab provides additional rigidity to the fixture and prevents the hinge from rotatably moving or flexing relative to the bracket when the bracket and hinge are fastened to a loft ladder subframe and the hinge is abutting the hatch frame protrusion means.

[0058] Ideally, the loft ladder subframe and/or the hatch frame have an insulation member for sealing a gap between at least part of the loft ladder subframe and at least part of the hatch frame, the insulation member having a first out of use configuration and a second in use insulating configuration and means for activating the insulation member between the out of use configuration and the in use insulating configuration, the insulation member being pre-fitted on the loft ladder subframe and/or the hatch frame.

[0059] Ideally, the out of use configuration of the insulation member is a collapsed/compressed configuration.

[0060] Preferably, the in use insulating configuration of the insulation member is an expanded configuration.

[0061] Ideally, the gap is the gap extending between mutually opposing surfaces of the loft ladder subframe and the hatch frame and/or the gap extending between mutually opposing surfaces of a support member of a loft ladder subframe and the hatch frame.

[0062] Preferably, the insulation member is mountable on the loft ladder subframe.

[0063] Ideally, the insulation member is factory mounted on the loft ladder subframe.

[0064] Preferably, the loft ladder subframe has a re-

cess formed for receiving the insulation member.

[0065] Ideally, the recess is formed for receiving the insulation member so that no part of the insulation member while in the out of use configuration protrudes beyond the external boundary of the loft ladder subframe.

[0066] Advantageously, this prevents any interaction between the insulation member and the packaging of the loft ladder subframe during factory packaging, shipping or unpacking of the loft ladder on site.

[0067] Ideally, the insulation member comprises a deformable resilient body compressible into an out of use configuration under a compressive force.

[0068] Preferably, the deformable resilient body is expandable into an in use insulating configuration when the compressive force is removed.

[0069] Ideally, the means for activating the insulation member between the out of use configuration and the in use insulating configuration comprises a restrictor means for retaining the deformable resilient body in the out of use configuration.

[0070] Preferably, the restrictor means further comprises means for releasably fixing the restrictor means to the loft ladder subframe and/or hatch frame. Preferably, the restrictor means comprises a restrictor member.

[0071] Ideally, the restrictor member comprises a panel or sheet of material capable of compressing and retaining the deformable resilient body into the out of use configuration.

[0072] Ideally, the panel or sheet of material is releasably coupled to the loft ladder subframe and/or hatch frame by releasable fixing means.

[0073] Preferably, the releasable fixing means comprise low strength adhesive or light gauge mechanical fixings such as staples.

[0074] Advantageously, an operator can easily pull/peel the panel or sheet away from the insulation member allowing the insulation member to expand into the in use insulating position for completion of the loft ladder installation process. Ideally, the deformable resilient body comprises a panel of insulation material.

[0075] Preferably, the deformable resilient body is formed for engaging at least part of the hatch frame and/or loft ladder subframe.

[0076] Ideally, the deformable resilient body is manufactured from an insulation foam.

[0077] Preferably, the deformable resilient body is manufactured from a low density insulation foam. Ideally, the insulation member is manufactured from an insulation foam.

[0078] Preferably, the insulation member is manufactured from a low density insulation foam.

[0079] Alternatively, the insulation member is manufactured from medium to high density foam.

[0080] Preferably, the insulation member has a covering means covering at least part of the surface of the insulation member formed for engaging the hatch frame or the loft ladder subframe.

[0081] Ideally, the covering means is a covering sheet.

[0082] Accordingly, the present invention provides a loft ladder subframe assembly mountable in a hatch frame having a support arrangement as outlined above for taking the weight of a loft ladder subframe assembly as it is initially placed into a hatch frame defining an aperture in the ceiling.

[0083] The invention will now be described with reference to the accompanying drawings which show by way of example two embodiments of the loft ladder subframe support arrangement in accordance with the invention. In the drawings:

Figure 1: is a cross-sectional perspective view of the ceiling aperture defined by the hatch frame with the hatch frame protrusion means attached;

Figure 2: is a detailed and enlarged cross-sectional view in the vertical plane of the ceiling aperture defined by the hatch frame with the hatch frame protrusion means attached;

Figure 3: is a loft ladder subframe assembly (in this case with the loft ladder attached) with one embodiment of the associated loft ladder subframe protrusion means attached in the form of an "L"-shaped bracket;

Figure 4: is a perspective view of the loft ladder subframe protrusion means within the second embodiment as a bracket and hinge;

Figure 5: is a profile view of the loft ladder subframe protrusion means within the second embodiment as a bracket and hinge;

Figure 6: is a partial perspective view of a loft ladder subframe assembly with the bracket and hinge embodiment of the loft ladder subframe protrusion means attached;

Figure 7: is a partly sectioned perspective view of the ceiling and hatch frame and a perspective view of the loft ladder partly installed;

Figure 8: is a detail view of one pair of cooperating protrusion means comprising a tapered batten and a L-shaped mounting bracket;

Figure 9: is a detail elevational part sectioned view of a loft ladder subframe assembly with a hinge in the protruding position prior to entering the ceiling aperture defined by the hatch frame;

Figure 10: is a detail view of a loft ladder subframe assembly with the hinge rotating into the retracted position upon contact with the hatch frame tapered batten while entering the aperture defined by the hatch frame;

Figure 11: is a perspective view of the loft ladder subframe assembly hinge in the retracted position;

Figure 12: is a cross-sectional view of the loft ladder subframe assembly hinge returned to the protruding position once past the hatch frame protrusion;

Figure 13: is a cross-sectional view of the engaged support arrangement of the hatch frame and the loft ladder subframe lowered into the supported position.

[0084] Referring to the drawings and initially to Figures 1 to 3, there is shown a support arrangement indicated generally by the reference numeral 1 for taking the weight of a loft ladder subframe assembly 2 as it is initially set into a hatch frame 3 defining an aperture 4 in the ceiling 5 prior to permanent fixing. The support arrangement 1 has hatch frame protrusion members 6 protruding a short distance into the aperture 4 from the inside vertical surface 7 of two mutually opposing frame members 8 of the hatch frame 3. The support arrangement 1 further has loft ladder subframe protrusion members 11 protruding a short distance from the outside vertical subframe surface 12 of two opposing frame members 14 of the loft ladder subframe 15.

[0085] In use, the hatch frame protrusion members 6 are located below the loft ladder subframe protrusion members 11 when the loft ladder subframe assembly 2 is located in the hatch frame 3. The hatch frame protrusion members 6 and the loft ladder subframe protrusion members 11 overlap so that the hatch frame protrusion members 6 support the weight of the loft ladder subframe assembly 2 via the overlap between the loft ladder subframe protrusion members 11 and the hatch frame protrusion members 6 in use. Advantageously, a loft ladder support arrangement 1 utilising hatch frame protrusion members 6 extending into the ceiling opening in combination with loft ladder subframe protrusion members 11 enable a user to install a loft ladder from below i.e. without the need to enter into the attic space. This is achieved by a slight tilting of the loft ladder subframe assembly 2 in the vertical plane to allow the loft ladder subframe protrusion members 11 to pass by the hatch frame protrusion members 6 so as to fit the loft ladder subframe assembly 2 into the ceiling aperture 4 defined by the hatch frame 3. The loft ladder subframe assembly 2 is then tilted back to a generally horizontal plane so that the loft ladder subframe protrusion members 11 overlap the hatch frame protrusion members 6 and the loft ladder subframe assembly 2 is lowered so that the protrusion members 11 engage onto the protrusion members 11 and engage to support the weight of the assembly 2. Placing the loft ladder subframe assembly 2 in position from below also enables the user to utilise their leg and gluteal muscles while maintaining a vertical trunk during the lift of the loft ladder into position. As a result this minimises injury to an individual's back. This alleviates the lifting and lowering complications associated with the open chain lifting of the prior art that will occur when the loft ladder is being lowered into position from above the ceiling opening. The loft ladder support arrangement 1 is a permanent fixture between the loft ladder subframe assembly 2 and the hatch frame 3, providing an auxiliary securing feature for the loft ladder once permanently installed. Advantageously, a loft ladder support arrangement 1 that utilises overlapping protrusion members 6, 11 as an initial weight supporting arrangement prior to permanent fixing provides for a simple and rapid pre-installation process without the requirement for any complex mechanical fixtures and fixings often used in the prior art. The hatch frame protrusion members 6 protrude from the inside vertical surface of two mutually opposing frame members 8 of the hatch frame 3. The loft ladder subframe protrusion members 11 protrude from the external vertical surface of the two opposing frame members 14 of the loft ladder subframe 15. The loft ladder support arrangement 1 utilises two pairs of mutually opposing hatch frame and loft ladder subframe protrusion members 6, 11. Advantageously, the overlapping protrusion members 6, 11 support the loft ladder subframe assembly 2 at a desired position within the ceiling 5. This enables a user to then permanently and securely affix the loft ladder subframe assembly 2 to the hatch frame 3 with screws or the like to complete the loft ladder installation. For further security, the loft ladder subframe protrusion members 11 can be fixed to the hatch frame protrusion members 6. Advantageously, as the loft ladder subframe protrusion members 11 extends from the loft ladder subframe 15 and rest upon the hatch frame protrusion members 6, the support that is provided by the hatch frame protrusion members 6 support the weight of the entire loft ladder subframe assembly 2. This maintains the loft ladders position to enable the installer to permanently affix the subframe 15 to the ceiling framing members of the hatch frame 3.

[0086] The bottom surface 21 of the hatch frame protrusion members 6 is flush to the ceiling plasterboard 22, see Figure 2. Advantageously, the hatch frame protrusion members 6 which are flush to the ceiling plasterboard 22 results in no further finishing or adjustment being required subsequent to installing the loft ladder subframe assembly 2 and this provides for the desired aesthetic finish. The hatch frame protrusion members 6 are battens fixed to mutually opposed framing members 8 of the hatch frame 3. The hatch frame protrusion members 6 are provided by one batten 6 fastened to the external vertical surface of two mutually opposing framing members 8 of the hatch frame 3. These battens 6 are temporarily pre-installed to the loft ladder subframe assembly 2 for ease of assembly and installation. The hatch frame protrusion members are two battens 6 easily transferred from the external surface of the loft ladder subframe 15 to the hatch frame 3 during the installation process. Typically, these battens 6 are screwed to the outside of the subframe 15 in the factory and subsequently removed from the subframe 15 and screwed to the hatch frame 3 on site when the loft ladder subframe assembly 2 is unpackaged. Advantageously, this enables the hatch frame protrusion members 6 to be pre-manufactured to size in the factory allowing for a quick and easy assembly of the loft ladder subframe assembly 2 at the factory and subsequently an easy installation process on-site. This also eliminates any human errors in measuring the battens 6 to size that may occur on-site allowing the loft ladder subframe assembly 2 to remain flush with the ceiling. Further advantageously this will reduce the amount of equipment that would be required on-site. The loft ladder

subframe protrusion members 11 can be provided by two battens, not shown in the drawings provided on the external vertical surfaces of two opposing framing members of the subframe 15. In an alternative arrangement shown in Figure 3 of the drawings, the loft ladder subframe protrusion members are provided by a bracket 31 mounted to the external surface of two opposing framing members 14 of the loft ladder subframe 15. The brackets 31 are "L"-shaped brackets and a first leg 32 of the "L" shaped bracket is generally coplanar with and fixed to the external vertical surface of the loft ladder subframe 15. The second leg 33 of the "L" shaped bracket 31 protrudes towards the hatch frame 3 orthogonally to the first leg 32. Advantageously, the "L" shape of the bracket 31 provides the loft ladder subframe protrusion members 11 with the ability to rest upon the hatch frame protrusion members 6 being the wooden battens 6 shown in the drawings. The battens and/or "L"-shaped brackets 31 are coupled to corner brackets 31 of the loft ladder subframe, used to reinforce the wooden joints of the subframe 15.

[0087] In one particularly preferred embodiment, shown in Figures 4, 5, 6, 9, 10, 11 and 12 the loft ladder subframe protrusion members are adjustable between two positions; a protruding position see figures 3, 4, 5, 6, 9, 12 and 13 for initially supporting the loft ladder subframe assembly 2 on the hatch frame protrusion members 6 and a partly retracted or retracted installing position see figures 10 and 11 for allowing the loft ladder subframe assembly 2 to slide past the hatch frame protrusion members 6 during installation. The loft ladder subframe protrusion members 11 are adjustable between the protruding position and retracted installing position using biasing members 35. Referring more particularly to Figures 4 and 5, and 11, the loft ladder subframe protrusion member 11 has a bracket 41 mounted on the external vertical surface of the loft ladder subframe 15 and a hinge 42 moveably coupled to the bracket 41 between an installation position substantially flat against the bracket see Figure 11 and a protruding position for supporting the loft ladder subframe assembly 2 on the hatch frame protrusion members see Figure 13. The hinge 42 is normally biased into the protruding position by the biasing member 35 acting on the hinge 42. The hinge 42 is operable between the protruding position and the installation position by engagement with the hatch frame protrusion member 6 as an operator pushes the loft ladder subframe assembly 2 into the aperture 4 defined by the hatch frame 3 from below. The hinge 42 and bracket 41 have a resistance member 44 to restrict the angle of rotation of the hinge 42 much beyond a perpendicular orientation relative to the vertical surface of the framing member 14 of the subframe 15. The resistance member 44 of the hinge 42 and bracket 41 has a tab 44 acting as a hinge stopper. Advantageously, the tab 44 provides additional rigidity to the fixture and prevents the hinge 42 from rotatably moving or flexing relative to the bracket 41 when the bracket 41 and hinge 42 are fastened to a loft ladder subframe 15 and the hinge 42 is abutting the hatch frame protrusion members 6. The biasing member 35 is a spring. In relation to the detailed description of the different embodiments of the invention, it will be understood that one or more technical features of one embodiment can be used in combination with one or more technical features of any other embodiment where the transferred use of the one or more technical features would be immediately apparent to a person of ordinary skill in the art to carry out a similar function in a similar way on the other embodiment. In the preceding discussion of the invention, unless stated to the contrary, the disclosure of alternative values for the upper or lower limit of the permitted range of a parameter, coupled with an indication that one of the said values is more highly preferred than the other, is to be construed as an implied statement that each intermediate value of said parameter, lying between the more preferred and the less preferred of said alternatives, is itself preferred to said less preferred value and also to each value lying between said less preferred value and said intermediate value. The features disclosed in the foregoing description or the following drawings, expressed in their specific forms or in terms of a means for performing a disclosed function, or a method or a process of attaining the disclosed result, as appropriate, may separately, or in any combination of such features be utilised for realising the invention in diverse forms thereof as defined in the appended claims.

Claims

1. A support arrangement (1) for taking the weight of a loft ladder subframe assembly (2) as it is initially placed into a hatch frame (3) defining an aperture (4) in the ceiling (5), the support arrangement (1) comprising hatch frame protrusion means (6) capable of protruding a short distance into the aperture (4) from the hatch frame (3), the support arrangement (1) further comprising loft ladder subframe protrusion means (11) capable of protruding a short distance from the loft ladder subframe (2), the hatch frame protrusion means (6) and the loft ladder subframe protrusion means (11) being capable of engaging so that the hatch frame protrusion means (6) supports the weight of the loft ladder subframe assembly (2).

2. A support arrangement (1) as claimed in claim 1 wherein the hatch frame protrusion means (6) is capable of protruding from the inside vertical surface (7) of two mutually opposing frame members (8) of the hatch frame (3) and the loft ladder subframe protrusion means (11) is capable of protruding from the outside vertical surface (12) of the two opposing frame members (14) of the loft ladder subframe (15).

3. A support arrangement (1) as claimed in claim 1 or claim 2, wherein the hatch frame protrusion means

(6) is one or more battens and/or one or more brackets (31).

4. A support arrangement (1) as claimed in any one of the preceding claims, wherein the hatch frame protrusion means (6) is transferrably installable from the loft ladder subframe (15) to the hatch frame (3).

5. A support arrangement (1) as claimed in any of the preceding claims, wherein the bottom surface (21) of the hatch frame protrusion means (6) is flush to ceiling plasterboard (22).

6. A support arrangement (1) as claimed in any one of the preceding claims, wherein the loft ladder subframe protrusion means (11) is provided by one or more battens and/or one or more brackets protruding from the external vertical surface of two opposing framing members of the loft ladder subframe (15).

7. A support arrangement (1) as claimed in claim 3 or claim 6, wherein the brackets (31) are "L"-shaped brackets.

8. A support arrangement (1) as claimed in claim 7 wherein a first leg (32) of the "L" shaped bracket (31) is generally coplanar with and fixed to the external surface of the loft ladder subframe (15) or the hatch frame (3) and the second leg (33) of the "L" shaped bracket (31) protrudes towards the hatch frame (3) or loft ladder subframe (15).

9. A support arrangement (1) as claimed in any of the preceding claims wherein the loft ladder subframe protrusion means (11) are integrally formed with corner brackets (31) of the loft ladder subframe (15).

10. A support arrangement (1) as claimed in any one of the preceding claims wherein the loft ladder subframe protrusion means (11) and/or the hatch frame protrusion means (6) is adjustable between two positions; a protruding position for initially supporting the loft ladder subframe assembly (2) on the hatch frame (3) and a retracted installing position for allowing the loft ladder subframe assembly (2) to slide into the hatch frame (3) during installation.

11. A support arrangement (1) as claimed in claim 10 wherein the loft ladder subframe protrusion means (11) is adjustable between the retracted installing position and the protruding position via biasing means (35).

12. A support arrangement (1) as claimed in any one of the preceding claims wherein the mechanically operated device utilises a bolt and spring action.

13. A loft ladder assembly having a support arrangement (1) as claimed in any one of claims 1 to 12.

14. A loft ladder assembly as claimed in claim 13, wherein the loft ladder subframe (2) and/or the hatch frame (3) have an insulation member for sealing a gap between at least part of the loft ladder subframe (2) and at least part of the hatch frame (3), the insulation member having a first out of use configuration and a second in use insulating configuration and means for activating the insulation member between the out of use configuration and the in use insulating configuration, the insulation member being pre-fitted on the loft ladder subframe (2) and/or the hatch frame (3).

15. A loft ladder assembly as claimed in claim 14, wherein the insulation member is mounted on the loft ladder subframe (2).

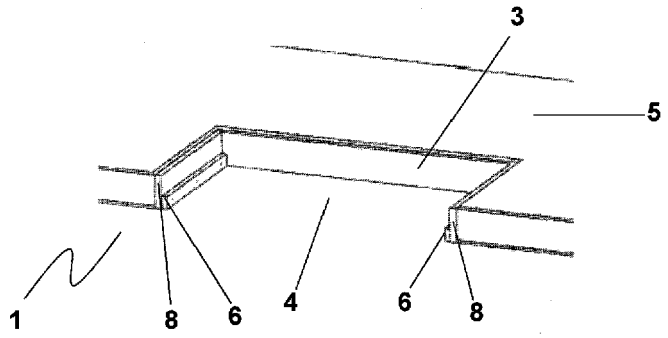


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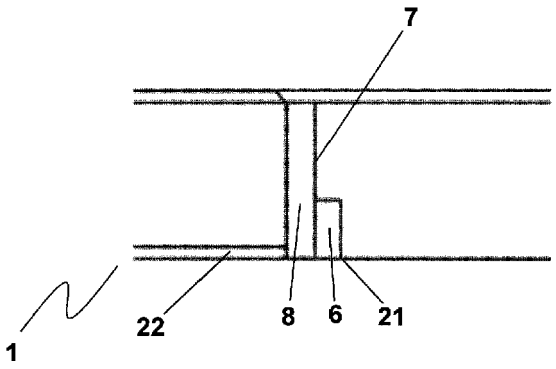


Figure 2

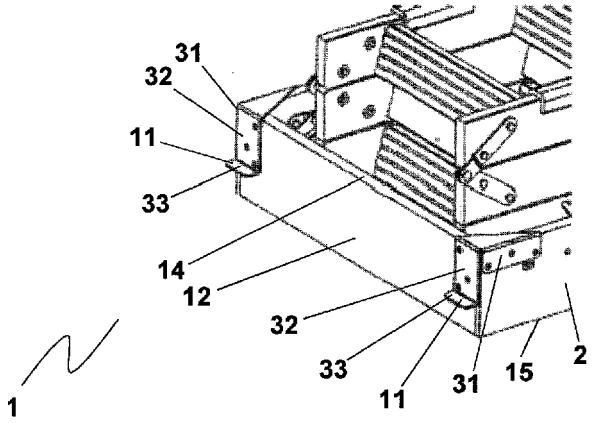


Figure 3

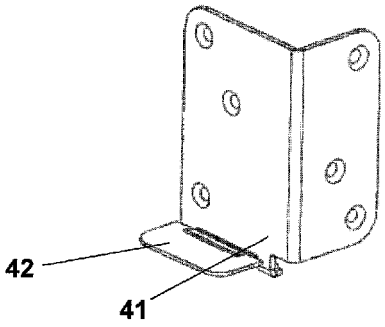


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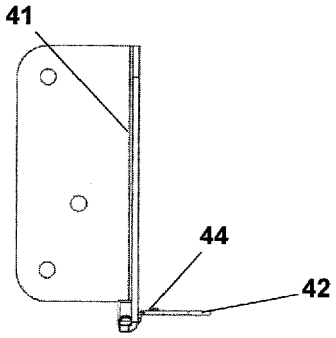


Figure 5

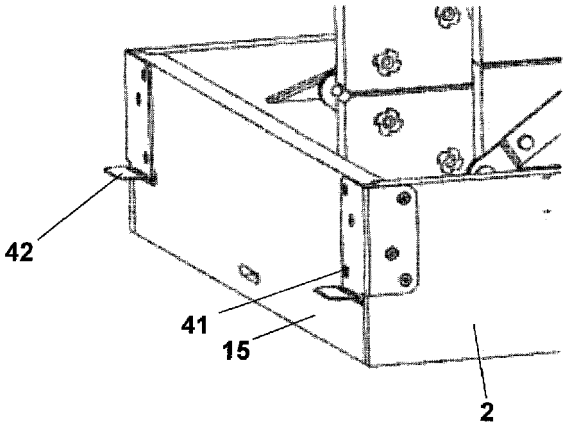


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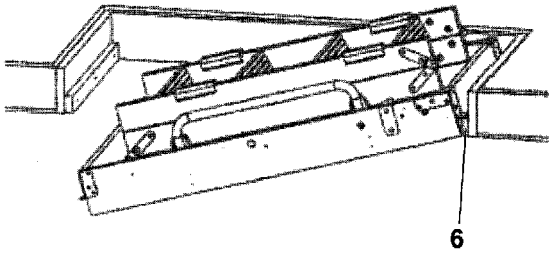


Figure 7

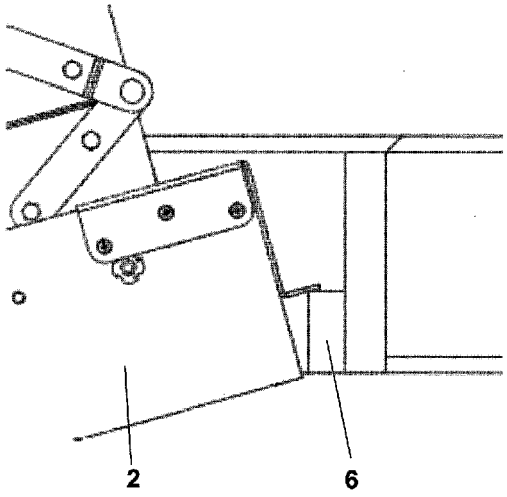


Figure 8

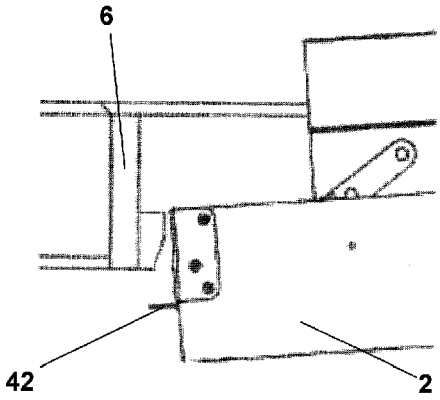


Figure 9

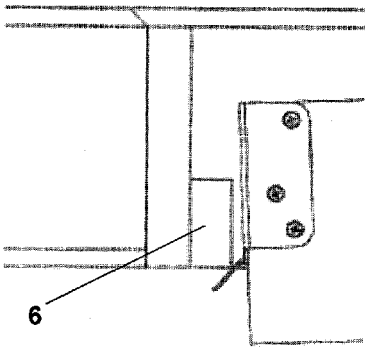


Figure 10

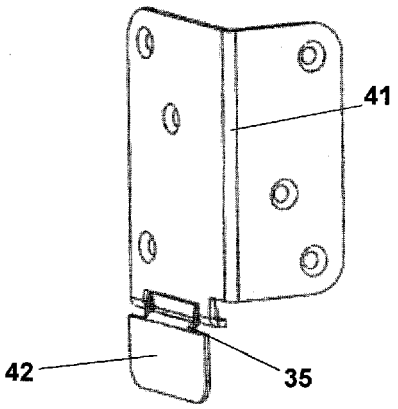


Figure 11

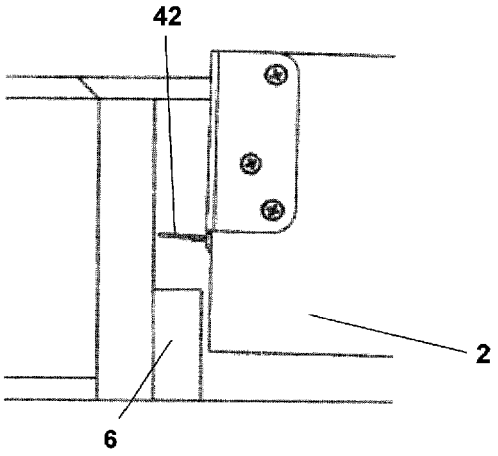


Figure 12

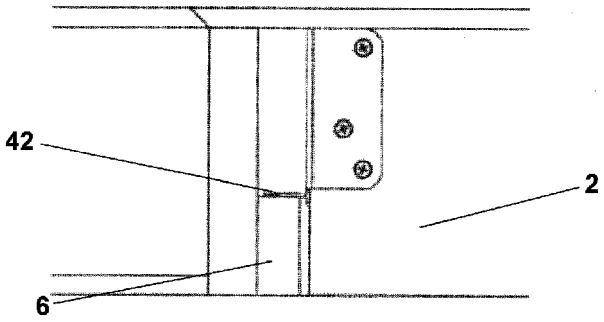


Figure 13