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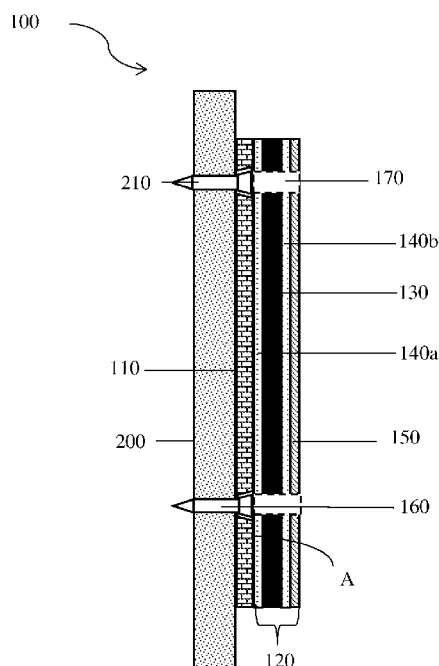


FIG. 2

(57) Abstract: A mounting fixture 100 for drywall 200 and other similar wall systems is disclosed. The mounting fixture 100 comprises of a support profile 110 and a polymer strip 120 overlying the front surface of the support profile 110. The back surface of the support profile 110 secures the mounting fixture 100 to the drywall 200 by mechanical bonding and the polymer strip 120 secures the article to be mounted on the drywall 200 to the front surface of the support profile 110 by adhesive bonding.



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A MOUNTING FIXTURE FOR GYPSUM BOARDS

Technical Field

The present disclosure relates, in general to a mounting fixture, and more specifically to a mounting fixture for gypsum boards.

5 Background

Gypsum, plasterboard, wallboard, sheetrock, drywall and other terms are common names given to panels constructed of gypsum and cardboard. These panels are used extensively in the construction of interior residential, commercial and industrial walls, floors and ceilings. Gypsum drywall is sold
10 commercially in a variety of sizes, thickness and type, manufactured and distributed by a large number of international manufacturers. This invention focuses primarily on gypsum boards, but has application to other substrates constructed of similar materials (Fiber cement, plywood, concrete or cementitious wall etc.

15 The use of gypsum board (drywall) for interior walls and ceilings of buildings is ubiquitous. Walls and ceilings may be finished in a fraction of the time required for lath and plaster finishing. Along with its many advantages (low cost, high quality characteristics etc.), gypsum board has severe limitations with respect to its ability to support pictures, mirrors and the like. In general gypsum
20 products have limited structural strength. Structural composition of gypsum boards facilitate rupture of the gypsum walls when fasteners such as screws are inserted on it. Other types of fasteners such as adhesive tapes lead to tear-outs of the wall surface. Both these type of fasteners damage the aesthetical element of gypsum boards.

25 A variety of fixing products are available that make it possible to hang pictures or heavier objects on the gypsum boards. Gypsum board screws have deeper threads than ordinary screws. The deep threads allow them to grip the gypsum boards. They are installed through the gypsum board into wall studs for fastening to walls. Gypsum board nails have wide heads to enable them not to
30 pop out when nailed into drywall. Both nails and screws should be installed with

"dimples" to plaster over after the drywall is installed. The simplest type of gypsum board fixing is a plastic plug that is inserted into the gypsum board. Plugs come in a number of configurations. The widest plugs will hold more weight than narrow plugs. After the plug is installed, a screw can be installed in
5 front of it using the right size screw for the plug.

Another common solution is to drill a hole through the board, insert an appropriately sized plastic or fiber anchor into the hole, and drive a screw into the anchor. Other devices include a self-drilling anchor which cuts its own hole and screws into the board. Yet other hanger uses a nail driven
10 downwardly into the board at an acute angle from which a hook is suspended. Yet another solution are toggle bolts. Toggle bolts expand after they are installed and can carry more weight than plugs. They work in a variety of ways. Some can be folded back and installed. Others will expand when you tighten the bolts. Toggle bolts may be hooks, eyelets or bolts and can be used for a number of
15 purposes.

Referring to U.S. patent number 7,395,998 discloses a hanging fixture or hook for installation in gypsum board from which pictures, mirrors, and the like can be hung. The hanging fixture is a steel strip bent into a Vee to provide two legs. The hanger may be removed with a screw driver or plier,
20 leaving a barely perceptible scar in the gypsum board. Referring to U.S. patent number 7,762,507 relates to wall hangers that are used in gypsum boards and similar walls to provide a safe and stable holder for objects of variable weights.

Referring to U.S. patent number 4,724,638 describes a decorative wall system for decoratively covering an existing wall structure with panels made
25 of glass, wood, marble, particle board, plaster board, fabric, or the like. The wall system comprises of a surface-forming panel including a decorative panel and a backing panel and a track for attaching said wall surface-forming panel structure to a wall structure.

All of the prior art fixtures and hangers mentioned above have
30 disadvantages. Firstly, all the cited references are standard fixing devices which may not be enough for mounting heavy objects. Secondly, none of the products

or systems described in the prior art are concealed systems that largely improve the aesthetic quotient of articles mounted on a gypsum board. Therefore, there is constant need for new and improved methods for mounting articles on gypsum boards (drywall) and similar walls. In this regard, the present disclosure
5 substantially fulfills this need.

The present disclosure overcomes the disadvantages of the prior art by foreseeing the structural weakness of the gypsum board drywalls that limits the possibility of hanging heavy objects and increasing the aesthetic quotient of the mounted articles. The mounting fixture described in the present disclosure is
10 more simple and inexpensive to fabricate and install than the ones disclosed in the aforesaid patent references. The mounting fixture anchors articles by a combination of mechanical bond strength and adhesive bond strength thereby distributing the weight of the articles along the two components of the mounting fixture. The mounting fixture further eliminates mounting failures on gypsum
15 boards by tear-out or rupturing of the drywall and is a completely concealed solution with high aesthetic appeal. Furthermore, the disclosed mounting fixture is unique by the simplicity of its components and provides fast and easy installation process.

Summary of the Disclosure

20 In one aspect of the present disclosure, a mounting fixture for enabling articles to be mounted on gypsum boards is disclosed. The mounting fixture comprises a support profile having a front surface and a back surface and a polymer strip overlying the front surface of the support profile. The polymer strip comprises a foam core sandwiched on both sides by an adhesive layer and a
25 removable liner layer overlying the adhesive layer farthest from the support profile. The back surface of the support profile secures the mounting fixture to the gypsum board by mechanical bonding and the polymer strip secures the article to the front surface of the support profile by adhesive bonding.

In another aspect of the present disclosure, a method of mounting
30 articles on a gypsum board using mounting fixtures of the present disclosure is disclosed. The method comprises the steps of securing one or more mounting

fixtures on the gypsum board by mechanical screwing, removing the liner layer attached to the polymer strips and securing articles over the polymer strips of the mounting fixtures by compression.

In yet another aspect of the present disclosure, a gypsum board
5 cladding using the mounting fixtures of the present disclosure is also described.

Other features and aspects of this disclosure will be apparent from the following description and the accompanying drawings.

Brief Description of the Drawings

Embodiments are illustrated by way of example and are not
10 limited to those shown in the accompanying figures.

FIG. 1 illustrates a mounting fixture, according to one embodiment of the present disclosure;

FIG. 2 illustrates a mounting fixture secured to a drywall, according to other embodiments of the present disclosure;

15 FIG. 3 illustrates an exploded view of the mounting fixture secured to a drywall, according to an embodiment of the present disclosure;

FIG. 4 illustrates a cross-sectional view of a glass panel mounted on a gypsum board, according to another embodiment of the present disclosure; and

20 FIG. 5 depicts a method of mounting articles on a gypsum board using mounting fixtures, according to one embodiment of the present disclosure.

Skilled artisans appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be
25 exaggerated relative to other elements to help to improve understanding of embodiments of the invention.

Detailed Description

Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or similar parts. Embodiments
30 disclosed herein are related to a mounting fixture for a gypsum based drywall.

Herein a gypsum based drywall is defined as a wall construction comprising more than 50 wt% of gypsum, preferably more than 60 wt% of gypsum and more preferably more than 70 wt% of gypsum.

FIG. 1 illustrates a mounting fixture 100, in accordance with an embodiment of the present disclosure. The mounting fixture 100 comprises of a support profile 110 and a polymer strip 120. The support profile 110 has a front surface A and a back surface B and the polymer strip 120 overlies the front surface A of the support profile 110. The polymer strip 120 comprises of a foam core 130 sandwiched on both sides by adhesive layers 140a, 140b and a liner layer 150 overlying the adhesive layer 140b farthest from the support profile 110. The liner layer 150 is removably coupled to the foam core 130 of the polymer strip 120. The adhesive layer 140a closest to the support profile 110 binds the polymer strip 120 to the support profile 110. In one embodiment, the width of the support profile 110 is no greater than 30 mm. In one other embodiment, the width of the support profile 110 ranges between 8 mm and 30 mm.

In one embodiment of the invention, the support profile 110 is made to be substantially flat without any protrusions and houses a plurality of screw holes 160. In one aspect of the embodiment, the screw holes 160 are countersunk screw holes. The countersunk screw holes 160 accommodate screw heads within the screw hole and hence prevent the screw heads from protruding from the surface of the support profile 110 coming in contact with the article to be mounted or other substrates in general. The countersunk screw holes 160 are provided at predetermined distances from each other.

In alternate embodiments, the support profile 110 may be manufactured to be a hollow support profile with an air gap between the front surface A and the back surface B. In yet another embodiment, the support profile 110 may be manufactured as two separate thin strips that are attached together with an air gap there between them. In yet another embodiment, the support profile 110 can be manufactured in any shape provided the said profile shape provides a minimal space between the drywall and the article to be mounted on the drywall.

The polymer strip 120 also houses a plurality of apertures 170 that correspond in position and size to the screw holes 160 provided on the support profile 110. In one embodiment of the present disclosure, the distance between two consecutive screw holes 160 on the support profile 110 and apertures 170 on the polymer strip 120 ranges between 100 mm and 250 mm. In one particular embodiment the distance ranges between 150 mm and 200 mm.

In one embodiment of the present disclosure, the support profile 110 is made of a metal such as aluminum or mild steel or strengthened steel, or plastic or wood or composite materials. In one other embodiment, the support profile 110 may be anodized or surface modified. In another embodiment of the present disclosure, the foam core 130 of the polymer strip 120 includes compounds selected from the group consisting of polyurethane foam, a polyvinyl chloride foam, a silicone foam, an ethylene propylene diene monomer rubber foam, an acrylic foam, a polychloroprene foam, a foam blend of EPDM rubber and polypropylene, a polyethylene foam, an ethylvinyl acetate foam or any combination thereof. In yet another embodiment, the adhesive layers 140a, 140b is made of a material selected from the group consisting of silicone, epoxy, phenoxy, amine based resins, polyester resin, cellulosic, vinyls, aldehyde condensation resins, cyanoacrylates, polyolefin polymers, urethanes, acrylic adhesives, butyl, rubber, asphalt or Bitumin based adhesives.

In one other embodiment, the liner layer 150 is formed from an aqueous precursor. In another aspect of the embodiment, the aqueous precursor includes a release agent in an aqueous medium. The release agent includes a silicone-based material, a fluorine-based material, a long-chain alkyl-based material, a fatty acid amide-based material, a polyvinyl alcohol-based material, a silica powder material, or any combination thereof. In this embodiment, the liner layer 150 is formed by applying the aqueous precursor onto the surface underlying the liner layer 150 followed by dehydration of the precursor. Optionally curing can also be performed after dehydration. Post dehydration and/or curing, the liner layer 150 is formed over the adhesive layer 140b.

In an alternative embodiment, the liner layer 150 can be formed from a non-aqueous precursor. The non-aqueous precursor includes a release agent in a non-aqueous solvent. In this embodiment, the liner layer 150 is formed by applying the non-aqueous precursor onto the surface underlying the liner layer 150 followed by removal of the non-aqueous solvent. Optionally curing can also be performed after dehydration. Post solvent removal and/ or curing, the liner layer 150 is formed over the adhesive layer 140b.

FIG. 2 illustrates the mounting fixture 100 secured to a gypsum board (drywall) 200, according to one embodiment of the present disclosure. The mounting fixture 100 may be installed on the gypsum board or similar walls even after the wall has been assembled, without using any complex installation tools. In one embodiment of the present disclosure, the mounting fixture 100 can be secured anywhere on the drywall 200 in cases where the drywall 200 is a reinforced drywall. For example, the reinforced drywall may be a Habito (registered trademark) board manufactured by Saint-Gobain. The reinforced drywall board may comprise a polymeric binder and a plurality of fibres. Such a feature may be preferable as it may provide reinforcement to the drywall 200. Preferably, said plurality of fibres may comprise glass fibres, synthetic polymer fibres or natural fibres, either separately or in combination.

Preferably, said polymeric binder and said plurality of fibres, in combination, comprise greater than 1% by weight of the reinforced drywall board. Such an embodiment of the invention may be preferable as it may increase the strength of the drywall 200. Preferably, the polymeric binder may comprise greater than 1% by weight of the reinforced drywall board. Preferably, the fibres may comprise greater than 1% by weight of the reinforced drywall board. It may be preferable for the polymeric binder to comprise starch. It may also be preferable for the polymeric binder to comprise a synthetic material. More preferably, the synthetic polymeric binder may comprise polyvinyl acetate.

A reinforced gypsum board such as the Habito board does not necessitate the location of studs in the drywall 200 for securing the mounting fixtures 100 of the present invention. Reinforced drywall boards provide more

strength than standard gypsum boards and hence can be screwed directly into the wall surface. Alternatively, the mounting fixture 100 may also be secured to a drywall 200 made from conventional gypsum boards (not necessarily reinforced). In such cases, the mounting fixtures are positioned directly over a stud where the
5 screws or nails are driven directly into the studs. Conventional means for locating studs on the drywall 200 such as electronic stud finders may be used to locate the studs in the drywall 200.

In all the above embodiments the mounting fixture 100 is secured to the drywall 200 by mechanical screws 210. The mechanical screws 210 used
10 for securing the mounting fixture 100 may be any conventional screws used for mounting and does not require any specialized designs such as those that have wider screw heads. The countersunk screw holes 160 on the support profile 110 along with the apertures 170 on the polymer strip 120 provide room for housing the screw heads of the mechanical screws 210 in such a way that the screw heads
15 do not protrude outside the mounting fixture 100. Therefore, when an object is mounted using the mounting fixture 100 of the present disclosure, the entire surface area of the foam core 130 is found to be in contact with the object.

The configuration and the present disclosure and its mode of operation is best understood from the exploded view of the mounting fixture 100
20 of the present disclosure secured to a drywall 200 as illustrated in **FIG. 3**, according to one embodiment of the present disclosure. The dimension of the polymer strip 120 overlying the support profile 110 completely match in size and cover the entire surface area of the support profile 110. The connection between the support profile 110 and the polymer strip 120 is established by a pure
25 adhesive bonding. The liner layer 150 overlying the adhesive layer 140b farthest from the support profile 110 prevents the mounting fixtures 100 from bonding to other substrates when supplied in a package. The mounting fixtures 100 are directly screwed onto the drywall 200 using mechanical screws 210. The objects are then mounted on the mounting fixture 100 by removing the liner layer 150
30 and pressing the objects against the adhesive layer 140b.

In alternate embodiments, a liner layer 150' may optionally be present over the adhesive layer 140a closest to the support profile 110. In such embodiments, the support profile 110 and the polymer strip 120 are first bonded together by removing the releasable line layer 150'. Then the mounting fixture 100 are directly screwed onto the drywall 200 using mechanical screws 210. Following which the liner layer 150 overlying the adhesive layer 140b farthest from the support profile 110 is removed to mount the objects on the mounting fixture 100.

FIG. 4 illustrates an example embodiment showing a glass panel 220 mounted on a drywall 200 using the mounting fixture 100 of the present disclosure. Two mounting fixtures 100 of the present disclosure are screwed to the drywall 200 at a predetermined distance from each other. The predetermined distance between the mounting fixtures 100 corresponds to the length of the glass panel 220 to be mounted on the drywall 200. The distance between two mounting fixtures 100 is not greater than 500 mm. In embodiments where the length of the glass panel 220 is greater than 500 mm, multiple mounting fixtures 100 are used for mounting the glass panel 220 on the drywall 200.

In one aspect of the embodiment, the mounting fixtures 100 are placed vertically and screwed onto the drywall 200 as illustrated in **FIG. 4**. In alternate aspects of the embodiment, the mounting fixtures 100 can be placed horizontal at a predetermined distance from each other. The predetermined distance corresponds to the height of the glass panel in embodiments where the mounting fixture 100 is placed horizontally on the drywall 200. In few other aspects of the embodiment, the mounting fixtures 100 may be placed diagonally and screwed onto the drywall 200. In yet another aspect of the embodiment, a combination of mounting fixtures 100 secured vertically, horizontally and diagonally to the drywall 200 can be used for mounting articles on the drywall 200. The desired position in which the mounting fixtures 100 are to be screwed onto the drywall 200 is selected based on the dimension of the article to be mounted on the drywall 200.

The back surface B of the support profile 110 secures the mounting fixture 100 to the gypsum board 200 through screws 210 and the polymer strip 120 secures the glass panel 220 to the front surface A of the support profile 110 by adhesive bonding. Multiple mounting fixtures 100 can be used for securing multiple glass panels 220 on a drywall 200. Glass panel 220 illustrated in **FIG. 4** is only for teaching purpose and should not be considered to limit the scope of the invention in any manner. Articles other than glass panels not limiting to tiles, wooden shelves, cabinets, mirror, laminates, composite panels etc. may also be mounted on the drywall 200 using the mounting fixture 100 of the present disclosure.

Examples

Comparative Example 1

Shear Bond Strength of Mounting Fixture 100 (with Planilaque Glass Panels)

The shear-load and failure mode of the mounting fixture 100 of the present disclosure was measured by performing the following test. Five Planilaque (registered trademark) glass panels manufactured by Saint-Gobain, samples of size 100 mm x 20 mm were mounted on a plywood and Habito board (from Saint-Gobain) using silicon adhesive for an adhesion area of 50 mm x 20 mm, double sided tape and mounting fixture 100 of the present disclosure. The failure mode and the shear bond strength of each of the samples were tested and the results are tabulated in Table 1.

Table 1: Shear Bond Strength and Failure Mode Testing

Sample	Configuration	Shear bond Strength (KPa)	Failure Mode
Comparative sample 1	Planilaque /Silicone adhesives /Plywood	400	Cohesive split of Silicone
Comparative sample 2	Planilaque /Silicone adhesives /Habito board	380	Board breakage/Paper delamination
Comparative sample 3	Planilaque /Double sided tape /Plywood	320	Cohesive split of foam tape
Comparative sample 4	Planilaque /Double sided tape /Habito	290	Paper delamination under humidity

	board		
(Present Disclosure)	Planilaque /Mounting Fixture 100 /Habito board	525	Cohesive split of polymer strip 120

The Planilaque samples mounted using conventional silicone adhesives and double sided tapes failed due to system failures such as board breakage and paper delamination with shear strengths 380 Kpa and 290 Kpa, respectively on gypsum board. The Planilaque sample mounted on Habito board using mounting fixture 100 of the present disclosure exhibited a superior shear bond strength of 525 Kpa, which is approximately 60% more than the shear bond strengths achieved by samples mounted on Habito boards using silicone and double sided tape.

From the table it is also understood that the failure mode in using the mounting fixtures 100 of the present disclosure does not occur from the failure of the Habito board i.e., delamination of the paper or putty / paint debonding from the gypsum board. Hence, the only failure mode that could possibly occur, is the cohesive spilt of the polymer strip 120. But given the high dynamic shear strength (620 kPa) of the polymer strip 120, the mounting fixture 100 of the present disclosure recorded a superior strength when compared to all the comparative samples 1 to 4.

Comparative Example 2

20 Shear-Load of Mounting Fixture 100

The shear-load of a 1 m x 1 m Planilaque glass panel (from Saint-Gobain) mounted on a Habito board (from Saint-Gobain) using a double-sided tape (2 m x 25 mm at the two edges of the Planilaque glass) was calculated and compared with the shear-load of a 1 m x 1 m Planilaque glass mounted on a Habito board using the mounting fixture 100 of the present disclosure through 5 mm screws at 150 mm distance. The results of the study are tabulated in Table 2.

Table 2: Shear-Load Testing

Sample	Configuration	Shear-Load (N)
Comparative sample 5	Planilaque / Double-sided tape /Habito	4680 N
Comparative sample 6	Aluminum / Double-sided tape /Habito	6723 N
(Present Disclosure)	Planilaque /Mounting Fixture 100 /Habito	8528 N

Since the failure mode of the mounting fixture 100 does not occur through a system failure, the polymer strip 120 and its interface with the support profile 110 form the limiting factor for this mounting system. While the system using the double-sided tape fails at 4680 N (with the tape between the glass panel and the gypsum board), the maximum shear load for the double-sided tape between the aluminium substrate and the gypsum board (comparative sample 6) was found to be 6723 N. Thus the mounting system using mounting fixture 100 of the present disclosure failing at 8528 N is due to the placement of the polymer strip 120 between the glass panel and the support profile 110 and not between the glass panel and Habito.

Comparative Example 3

15 Shear Bond Strength of Mounting Fixture 100 (with Wooden Articles)

The shear-load and failure mode of the mounting fixture 100 of the present disclosure was further measured by mounting wooden articles on Habito board (from Saint-Gobain) using double sided tape and mounting fixture 100 of the present disclosure. The failure mode and the shear bond strength of each of the samples were tested and the results are tabulated in Table 3.

Table 3: Shear Bond Strength and Failure Mode Testing

Sample	Configuration	Shear bond strength (kPa)	Failure Mode
Comparative sample 7	Habito board/Double sided tape/wooden article	203	Adhesive failure from Habito

			surface
(Present Disclosure)	Habito board/Mounting fixture/wooden article	480	Cohesive split of polymer strip

The wooden articles mounted using conventional double sided tapes failed due to failure of adhesive strength with a shear strength of 203 Kpa on gypsum board. The wooden articles mounted on Habito board using mounting
5 fixture 100 of the present disclosure exhibited a superior shear bond strength of 480 Kpa, which is achieved by the introduction of a support profile between the Habito board and the polymer strip and further by mechanical screwing of the support profile to the Habito board.

Industrial Applicability

10 With the implementation of the mounting fixture 100 of the present disclosure, any article not limited to glass, mirrors, cabinets, shelves, tiles etc. can be mounted on a drywall. Surprisingly the mounting fixture 100 described in the present disclosure permit objects weighing as much as 852 kg/m to be mounted on gypsum drywall and other similar drywall structures. Such
15 installations may be done in a continuous manner and further provide a seamless finish to the drywall post installation. Since the mounting fixture 100 is a completely concealed system for mounting articles on the drywall, the aesthetic quotient of the drywall remains unaltered.

Since the failure mode from using the mounting fixture 100 of the
20 present disclosure cannot occur due to a drywall system failure, the disclosed invention is more stable and does not cause any damage to the drywall system. Further fixing of the mounting fixture 100 to drywall or other similar walls does not require any special tools or skills. Conventional mechanical screws can be used for fixing the mounting fixture 100 onto drywall or other similar wall
25 systems. The apertures and countersunk screw holes provided in the support profile 100 and polymer strip 120, respectively provide means for directly fixing

the mounting fixture 100 onto the drywall followed by mounting any article onto the mounting fixture 100 of the present disclosure.

The installation time using the mounting fixtures 100 of the present disclosure is roughly about half the time required by conventional mounting solutions available in the market. Further the mounting fixture 100 of the present disclosure minimizes the gap between the drywall and the mounted article thereby avoiding dust collection at the same time providing enough space for circulation of air. The mounting fixture 100 also facilitates mounting of curved articles on the drywall. The shape of the mounting fixture 100 may be custom made according to the article to be mounted on the drywall.

The present disclosure further discloses a method 300 depicted in **FIG. 5** for mounting articles on a gypsum board using mounting fixtures 100 of the present disclosure. The method 300 comprises of steps 310 to 340. In step 310 the mounting fixtures 100 are placed over the drywall and markings corresponding to the desired position for fixing the mounting fixtures 100 are marked on the drywall. In a preferred embodiment, the mounting fixtures 100 are placed vertically at positions where the edges of the article to be mounted on the drywall are marked. In alternate embodiments, the mounting fixtures 100 could be mounted horizontally. In another embodiment, the mounting fixtures 100 could be mounted diagonally as well.

In step 320, the mounting fixtures 100 are fixed on the drywall 200 using mechanical screws 210. The countersunk screw holes 160 provide to accommodate the head of the mechanical screws 210 within in and thus prevent the mechanical screws 210 from coming in contact with the article to be mounted. Further the aperture 170 in the polymer strip 120 of the mounting fixture 100 houses the head of the mechanical screw 210 within it. In alternate embodiments, the support profile 100 of the mounting fixture 100 could be first screwed onto the drywall 200 and the polymer strip 120 provided with apertures 170 corresponding in size and position to the countersunk screw holes 160 in the support profile 110 may be laid over the support profile 110.

In yet another embodiment, multiple mounting fixtures 100 may be mounted vertically at intervals of less than 500 mm covering the entire surface of the drywall 200 for the purpose of wall cladding or curtain walling of the drywall. In the penultimate step 330, the liner layer 150 is removed from the polymer strip 120. The adhesive layer 140b farthest from the support profile 110 is exposed. The article to be mounted is then placed over the adhesive layer 140b and attached by compression in the final step 340. In one optional embodiment, a foam backing may be placed on the back surface of the article to be mounted on the drywall. The foam backing may be made from polyethylene, polyurethane, polystyrene or acrylic etc. and prevents damage to the article due to any impact.

Note that not all of the activities described above in the general description or the examples are required, that a portion of a specific activity may not be required, and that one or more further activities may be performed in addition to those described. Still further, the order in which activities are listed is not necessarily the order in which they are performed.

Benefits, other advantages, and solutions to problems have been described above with regard to specific embodiments. However, the benefits, advantages, solutions to problems, and any feature(s) that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as a critical, required, or essential feature of any or all the claims.

The specification and illustrations of the embodiments described herein are intended to provide a general understanding of the structure of the various embodiments. The specification and illustrations are not intended to serve as an exhaustive and comprehensive description of all of the elements and features of apparatus and systems that use the structures or methods described herein. Certain features, that are for clarity, described herein in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features that are, for brevity, described in the context of a single embodiment, may also be provided separately or in a sub combination. Further, reference to values stated in ranges includes each and every value within that range. Many other embodiments may be apparent to skilled

artisans only after reading this specification. Other embodiments may be used and derived from the disclosure, such that a structural substitution, logical substitution, or another change may be made without departing from the scope of the disclosure. Accordingly, the disclosure is to be regarded as illustrative rather
5 than restrictive.

The description in combination with the figures is provided to assist in understanding the teachings disclosed herein, is provided to assist in describing the teachings, and should not be interpreted as a limitation on the scope or applicability of the teachings. However, other teachings can certainly be
10 used in this application.

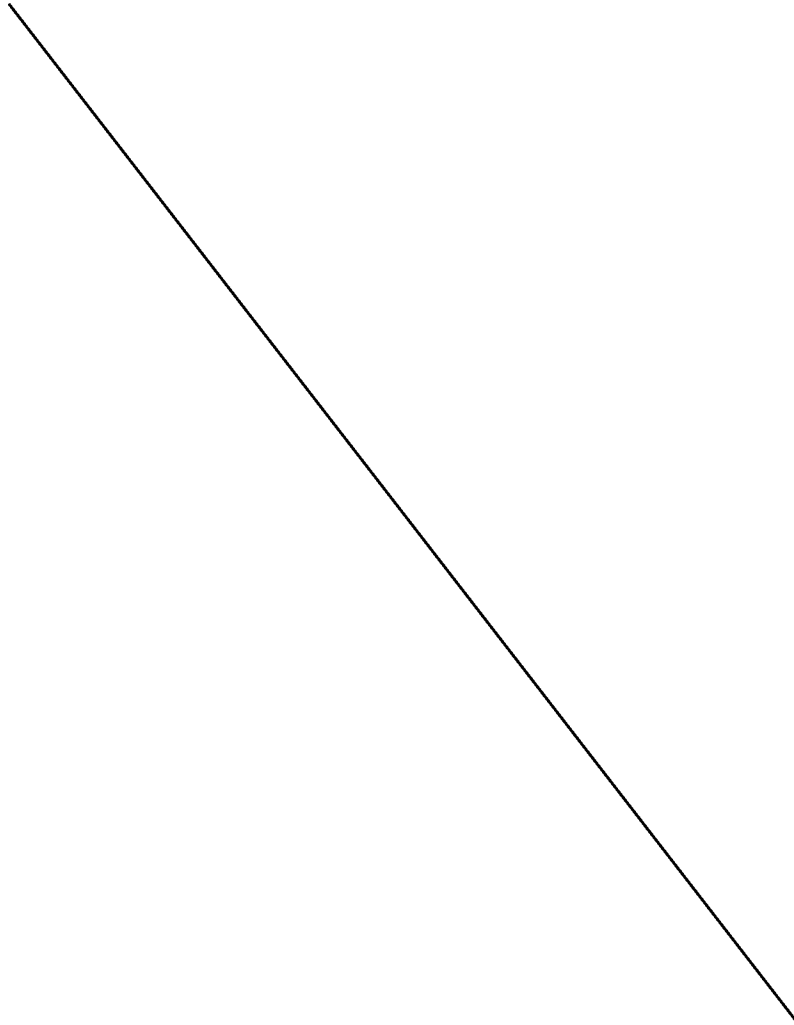
As used herein, the terms "comprises," "comprising," "includes," "including," "has," "having" or any other variation thereof, are intended to cover a non-exclusive inclusion. For example, a method, article, or apparatus that comprises a list of features is not necessarily limited only to those features but
15 may include other features not expressly listed or inherent to such method, article, or apparatus. Further, unless expressly stated to the contrary, "or" refers to an inclusive-or and not to an exclusive-or. For example, a condition A or B is satisfied by any one of the following: A is true (or present) and B is false (or not present), A is false (or not present) and B is true (or present), and both A and B
20 are true (or present).

Also, the use of "a" or "an" is employed to describe elements and components described herein. This is done merely for convenience and to give a general sense of the scope of the invention. This description should be read to include one or at least one and the singular also includes the plural, or vice versa,
25 unless it is clear that it is meant otherwise. For example, when a single item is described herein, more than one item may be used in place of a single item. Similarly, where more than one item is described herein, a single item may be substituted for that more than one item.

Unless otherwise defined, all technical and scientific terms used
30 herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. The materials, methods, and examples

are illustrative only and not intended to be limiting. To the extent that certain details regarding specific materials and processing acts are not described, such details may include conventional approaches, which may be found in reference books and other sources within the manufacturing arts.

5 While aspects of the present disclosure have been particularly shown and described with reference to the embodiments above, it will be understood by those skilled in the art that various additional embodiments may be contemplated by the modification of the disclosed machines, systems and methods without departing from the spirit and scope of what is disclosed. Such
10 embodiments should be understood to fall within the scope of the present disclosure as determined based upon the claims and any equivalents thereof.



List of Elements

TITLE: A MOUNTING FIXTURE FOR GYPSUM BOARDS

- 100 Mounting Fixture
- 110 Support Profile
- 120 Polymer Strip
- 130 Foam Core
- 140a Adhesive Layer
- 140b Adhesive Layer
- 150 Liner Layer
- 150' Liner Layer
- 160 Countersunk Screw Holes
- 170 Aperture
- 200 Drywall
- 210 Mechanical Screws
- 220 Glass Panel
- A Front Surface
- B Back Surface
- 300 Method
- 310 Step
- 320 Step
- 330 Step
- 340 Step

Claims

We Claim:

1. A mounting fixture 100 for enabling articles to be mounted on a gypsum board, the mounting fixture comprising:
 - a support profile 110 having a front surface and a back surface;
 - and
 - a polymer strip 120 overlying the front surface of the support profile 110 comprising a foam core 130 sandwiched on both sides by an adhesive layer 140a, 140b and a removable liner layer 150 overlying the adhesive layer 140b farthest from the support profile 110,wherein the back surface of the support profile 110 secures the mounting fixture 100 to the gypsum board by mechanical bonding and the polymer strip 120 secures the article to the front surface of the support profile 110 by adhesive bonding.
2. The mounting fixture 100 as claimed in claim 1, wherein the support profile 110 is substantially flat without protrusions and houses a plurality of countersunk screw holes 160 at predetermined distance from each other.
3. The mounting fixture 100 as claimed in claim 1, wherein the polymer strip 120 houses a plurality of apertures 170 corresponding in position and size to the plurality of countersunk screw holes 160 on the support profile 110.
4. The mounting fixture 100 as claimed in claim 2 and claim 3, wherein the distance between two consecutive countersunk screw holes 160 and two consecutive apertures 170 range between 100 mm and 250 mm.

5. The mounting fixture 100 as claimed in claim 1, wherein the adhesive layer 140a closest to the support profile 110 binds the polymer strip 120 to the front surface of the support profile 110.
6. The mounting fixture 100 as claimed in claim 1, wherein the liner layer 150 is removably coupled to the foam core.
7. The mounting fixture 100 as claimed in claim 1, wherein the liner layer 150 is removed when deployed to secure the article on the polymer strip 120.
8. The mounting fixture 100 as claimed in claim 1, wherein the support profile 110 is made of metals such as aluminium or strengthened steel or plastic or composite materials.
9. The mounting fixture 100 as claimed in claim 1, wherein the foam core 130 includes a polyurethane foam, a polyvinyl chloride foam, a silicone foam, an ethylene propylene diene monomer rubber foam, an acrylic foam, a polychloroprene foam, a foam blend of EPDM rubber and polypropylene, a polyethylene foam, an ethylvinyl acetate foam or their combinations thereof.
10. The mounting fixture 100 as claimed in claim 1, wherein the removable liner layer 150 is formed from an aqueous precursor.
11. The mounting fixture 100 as claimed in claim 1, wherein the adhesive layer 140a, 140b is made of a material selected from the group consisting of silicone, epoxy, phenoxy, amine based resins, polyester resin, cellulosic, vinyls, aldehyde condensation resins, cyanoacrylates, polyolefin polymers, urethanes, acrylic adhesives, butyl, rubber, asphalt or Bitumin based adhesives.

12. The mounting fixture 100 as claimed in claim 1, wherein the width of the support profile 110 is no greater than 30 mm.
13. The mounting fixture 100 as claimed in claim 1, wherein the gypsum board comprising more than 50 wt% of gypsum.
14. A method of mounting articles on a gypsum board using mounting fixtures 100 as claimed in claim 1 comprising the steps of:
 - securing one or more mounting fixture 100 on the gypsum board by mechanical screwing;
 - removing the liner layer of the mounting fixture 100; and
 - securing articles over the polymer strip of the mounting fixture by compression.
15. The method as claimed in claim 14, wherein distance between two mounting fixtures 100 is not greater than 500 mm.
16. Gypsum board cladding using mounting fixtures as claimed in claim 1.

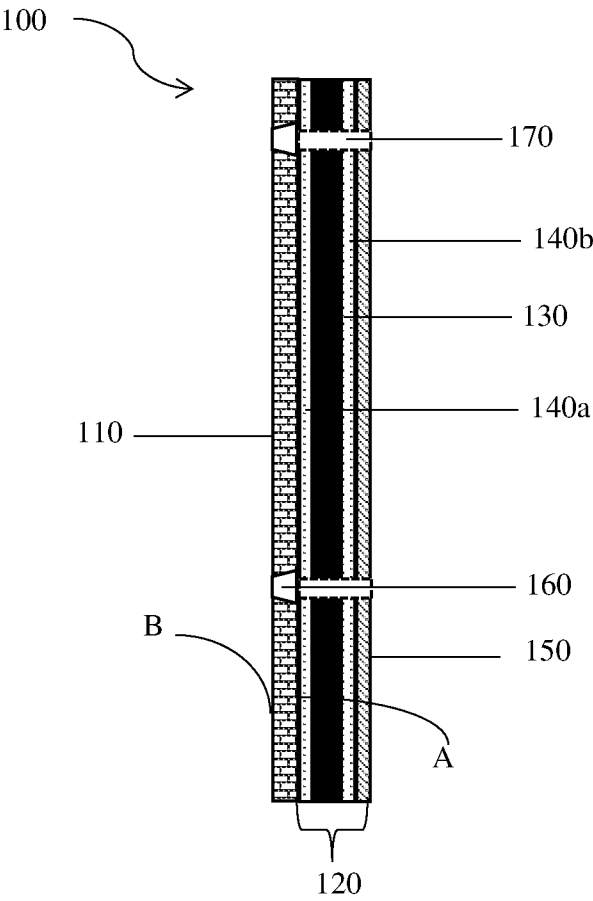


FIG. 1

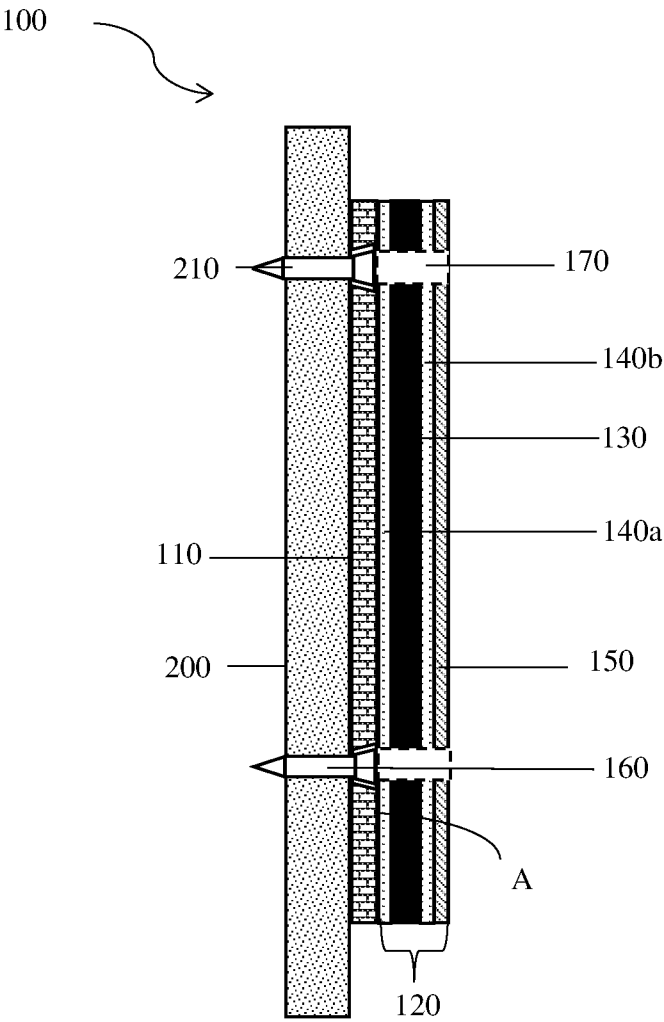


FIG. 2

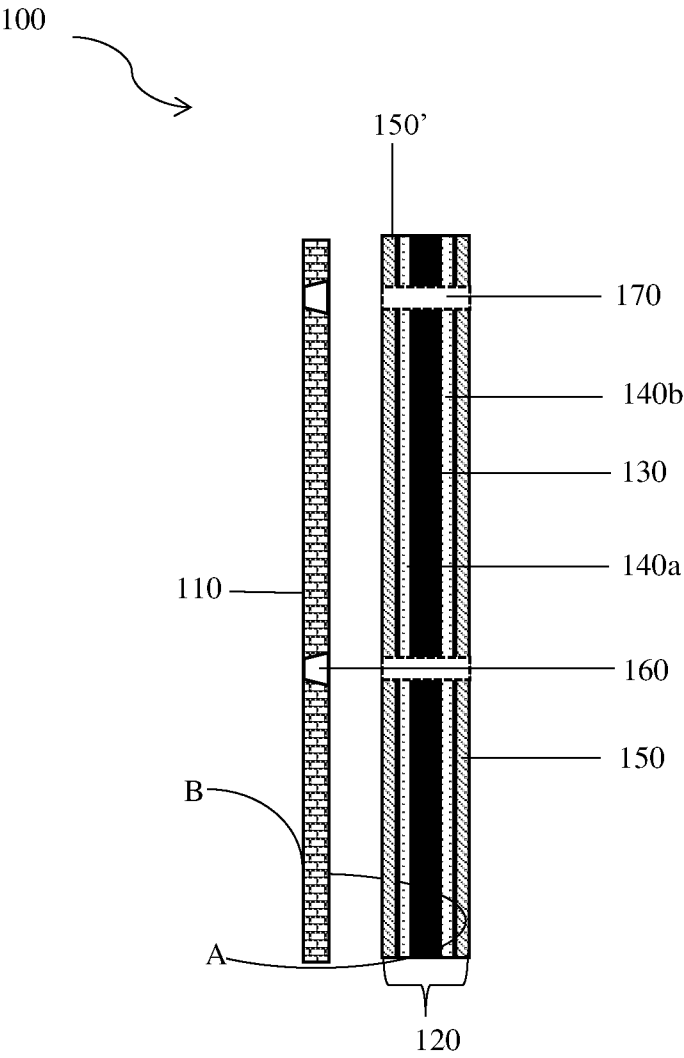


FIG. 3

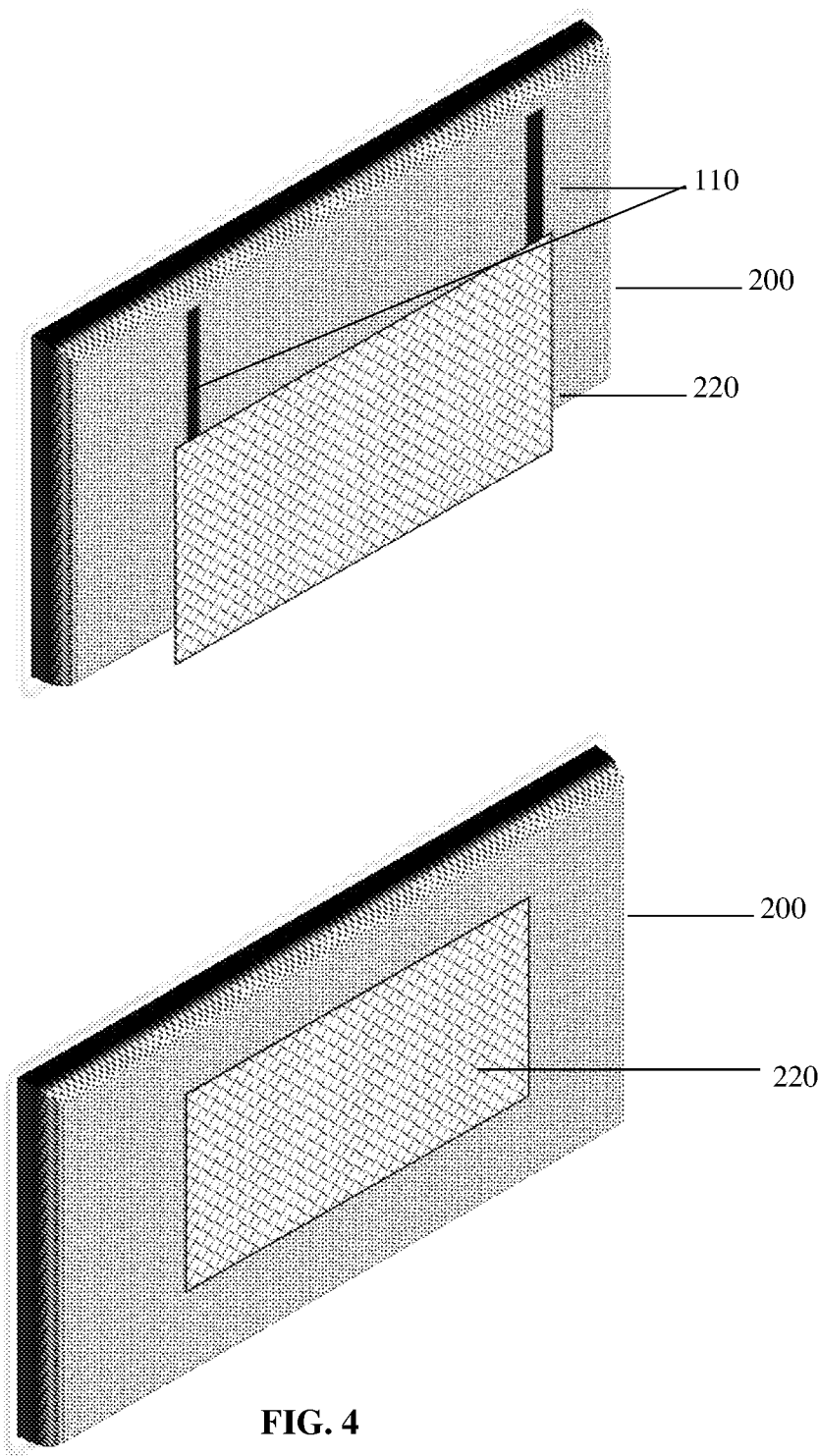
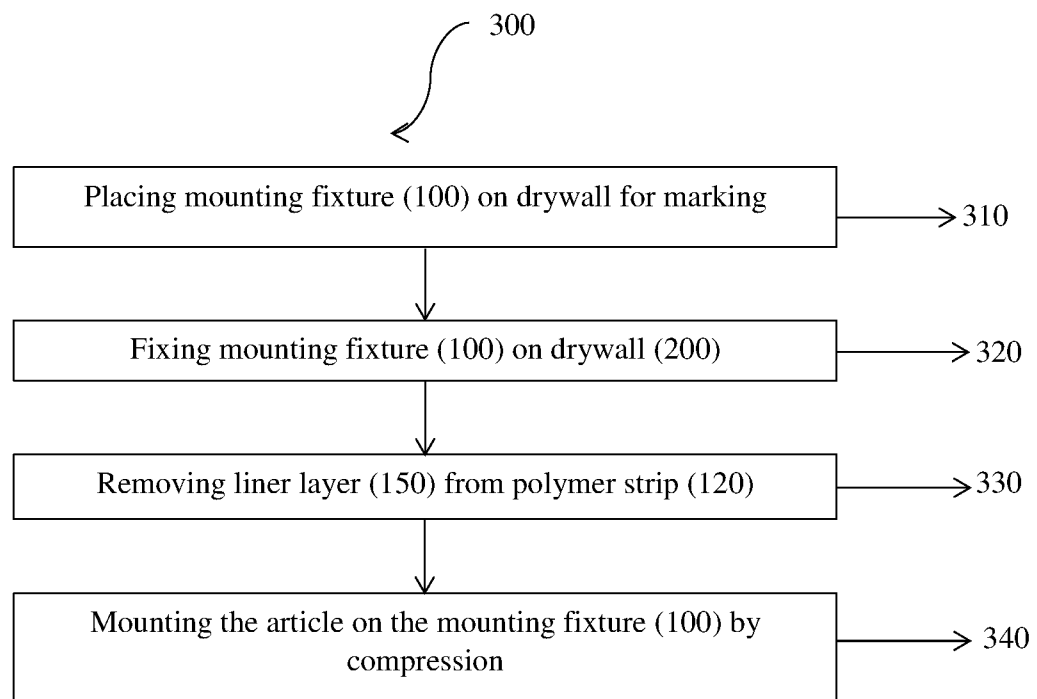


FIG. 4

**FIG. 5**

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2019/050484

A. CLASSIFICATION OF SUBJECT MATTER
E04F21/00, F16B13/00 Version=2019.01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E04F, F16B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

TotalPatent One, IPO Internal Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US8241720B2 (3M Innovative Properties Company) 14 August 2012 (14.08.2012) Column-6, line-43 to Column-7, line-3; Column-9, lines-32-46	1-16
Y	US7661640B2 (MULTIBRACKETS EUROP AB) 16 February 2010 (16.02.2010) Figure-4	1-4, 8, 12-16
Y	US7451955B2 (THK Co Ltd) 18 November 2008 (18.11.2008) Claim 1	2-4, 8, 12
Y	US8708305B2 (3M Innovative Properties Company) 29 April 2014 (29.04.2014) Column-3, lines- 55-65	5-7, 9-11

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

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"D" document cited by the applicant in the international application

"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

25-09-2019

Date of mailing of the international search report

25-09-2019

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2019/050484

Citation	Pub.Date	Family	Pub.Date
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