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(54) **Title:** MODULAR SANDWICH PANEL AND ASSEMBLY METHOD

(57) **Abstract:** Modular system of sandwich panels and its installation in multi functional building covering is self-carrying and does not require load-bearing walls or additional substructures while meeting the requirements for fire resistance, air- and water-tightness and thermal insulation at no additional risks from external impacts and effects of the human element during installation in different ways (modes) of installation. Also gasket is fitted during manufacturing stage thus resolving the technical problem of quality and sustainability of leakage due to external influences and impacts the human element during installation. Modular sandwich panels are linear modular components suitable for installation meeting the requirements of architects for perfect appearance of the modules - screens in facades. Modular sandwich panel (1) is comprised of lower plate (9), the internal joint gasket (10), an insulating core (8), the cover (5), the longitudinal connection gasket on the outer side (11), a corner-gasket "man" (6), two corner-gaskets "woman" (7) and the rest of parts integrated into the cover. In pre-assembled element of modular panel have also been fitted all gaskets of longitudinal connections and also in corner connections which are key elements for air-and water-tightness facades in different directions and were developed specifically for this purpose. Moreover, in pre-assembled modular panel has also reinforcement elements built in transverse direction that contribute to self-carrying ability of modular panels and quick and easy installation.



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MODULAR SANDWICH PANEL AND ASSEMBLY METHOD

DESCRIPTION OF INVENTION

Field of Technology

Modular sandwich panels, sealing, building coverings, airtightness, watertightness, drainage, water pressure decompression.

Technical Problem

Systems of modular coverings are composed of individual modules - elements that are attached to the supporting structure and sealed one to another. Sustainability of such systems is highly dependent on the sustainability of individual elements and conditions for installation, which include the impact of human factors affecting the achievement of actual functionality requirements. Conditions of installation of modular panels on the site are typically external weather conditions in assembling modular panels in the entire system more functional coatings last over time and are therefore quite variable. In different external conditions, the individual components assembled modular panels behave differently - eg. deviations in tolerances for various temperatures, etc..

Effects due to varying conditions is then reflected in the dimensional and relative position of one modular panel according to another. Consequently, there are inaccuracies and additional risks to the sustainability and reduce the functionality of individual buildings lining.

In practice, this means that in certain details and locations of buildings turns leads to local irregularities in the application as reflected:

- ingress of water in the joint modular covering elements
- water leaking in the premises of the installation
- condensation in the joints between elements
- reduction of heat insulation of damp thermal insulation
- rapid deterioration of materials and components installed
- higher energy consumption for space heating and cooling (higher costs)

- shorter practical value of object covering

Another problem with previously known solutions is the implementation of the cover of modular sandwich panel in the corner and the curved and overlapping panels and subsequent painting of severed edges, which represents a problem of water- and air-tightness in the corner, risk of corrosion and less aesthetically pleasing product. Incision and bending is usually carried out with the aid of devices, installing sealant and painting is usually depending on the skilful human hand and represents a risk for consequential leaking and / or corrosion of the cut sheet metal cover corner.

State of the Art

Outer building covering in this problem must ensure security and protection against external influences comprising carrying capacity (load external environment such as wind, snow, etc. own weight.) water- and air-tightness, thermal insulation and fire safety. Users expect to see another design configuration - architectural solutions, aesthetics.

Basically there are two types of object covers:

combined building covers comprised of (outside to inside): a cover, supporting frame cover, air space, vapor-permeable film, thermal insulation and carrying wall of concrete, brick or different carrier panels. Assembling such facilities turns out to be a simple installation. These are so called "Build Up Systems", which need a carrier wall for the stability. These systems fulfill conditions only in the load bearing wall or installation of additional substructures. They meet criteria of the water-tightness and thermal insulation but add additional risks due to external influences and impacts the human element during installation and only in limited modes (ways) of installation. They do not meet, or meet at much lower level requirement of air-tightness and fire resistance and are therefore used as decorative elements of building coverings with limited functionalities. Cover, which is in the assembly of the structure being installed on the lower

composite thermal insulation complies with the requirements of architects of the external appearance modularity, in facades.

Building coverings of preassembled liner sandwich panels which are composed of outside to inside of composite sandwich panel and the basic structure of steel, concrete, wood ... Composite sandwich panel is made in production and as such brought to the building site. Sandwich panels are installed directly to the main structure or the existing wall, and assume as self-supporting elements external loads by themselves. Filling is made of insulation core so they have the appropriate level of thermal insulation and in cases of non-combustible insulating core also required fire resistance. Since they are manufactured on line as sandwich panels are usually there are already installed gaskets in vertical connections to ensure water- and air-tightness. In the transverse connections such sandwich panels lack sealing during manufacturing stage so there remains a problem of quality and sustainability due to leakage due to external influences and impacts the human element during installation. These systems have the disadvantage that they are less suited for modular installation due to being linear elements as they do not meet the requirements of architects for full appearance of the modules - appearances in facades (longitudinal and transversal deep channel - groove which breaks up the façade in network of the same or different modules).

Description of New Invention

Modular system of sandwich panels and its installation in multi functional building covering (figure 1) is solving the above referenced technical problem. It is self-carrying and does not require load-bearing walls or additional substructures while meeting the requirements for fire resistance, air- and water-tightness and thermal insulation at no additional risks from external impacts and effects of the human element during

installation in different ways (modes) of installation. Also gasket is fitted during manufacturing stage thus resolving the technical problem of quality and sustainability of leakage due to external influences and impacts the human element during installation. Modular sandwich panels are linear modular components suitable for installation meeting the requirements of architects for perfect appearance of the modules - screens in facades.

Present invention provides all the functionality of the integrated pre-assembled modular panel and system installation providing a high level of sustainability in different ways and methods of installation while to a large extent preventing the influence of human factors and external influences on the sustainability of the building and reduction of the functionality. Element of modular panel is fully pre-assembled in stable conditions of the internal (industrial) environment with a cover plate special technology which meets the highest requirements for modularity in the form of raster networks and high aesthetic corners, and channels that define the module in the transverse and longitudinal direction. In pre-assembled element of modular panel (figure 3) have also been fitted all gaskets of longitudinal connections and also in corner connections which are key elements for air- and water-tightness facades in different directions and were developed specifically for this purpose. Moreover, in pre-assembled modular panel has also reinforcement elements built in transverse direction that contribute to self-carrying ability of modular panels and quick and easy installation. Tightness in the transverse direction between the modular panels is made using specially designed gaskets for mounting of the assembly. The tightness of connections between the panels is not new, however the form of the gasket is such that it compensates the differences of the elongation due to temperature effects on the facade, and also compensates for allowed tolerances during installation. Gaskets are designed in such a way that it is possible to easily insert decorative moldings, lighting channels, additional decoration in the ducts, which may be of different colors, shapes, materials or illumination thus allowing additional combinations of architects design facades and aesthetic solution to the modular panels and decorative moldings.

Modular sandwich panel is an essential element of the building covering. It is made of different thicknesses (50 to 250 mm) depending on the requirements for thermal insulation, fire resistance and other technical characteristics. Width of modular sandwich panels is subject to restrictions on technology and means of transport, but it is usually between 500 and 1200 mm. Length of modular sandwich panels depends on technology and transportation restrictions, typically between 500 mm and 14 m. The invention solves the problems described above independently of variable dimensions of modular sandwich panels. Modular sandwich panel is basically composed of the lower plate 9, the internal joint gasket 10, an insulating core 8, the cover 5, the longitudinal joint gasket on the outer side 11, a corner-gasket "man" 6, a corner-gasket "woman" 7 and the rest of below listed parts as integrated parts of the cover. Installation of modular sandwich panels 1 is implemented in a simple and robust way, modular sandwich panel 1 contain all the necessary and in the manufacture of integrated components for more functionality except the attachment – screw 2 itself, gaskets for transverse joint 4 and decorative slats for longitudinal joint 3 or decorative profile in cross joint 404 to be inserted at the assembly during attachment of modular sandwich panels. The system of installation can be customized as shown in figure 1 due to the invention described below. In the plane of the facade it can be parallel, the step like, laid horizontally, vertically placed or placed under any oblique angle 15. It also allows the installation of an invention to non vertical walls of the facade which may be inclined planes forward or backward (+ - to 45-degree angles). Modular sandwich panel can be made in curved form, which allows the system curved modular buildings cover - the invention solves this problem in a substantial element of the modular sandwich panels - corners and contact of 4 panels.

Cover of the modular sandwich panel 5 is made by technology of bending and deep drawing . The invention solves performance and form a corner 501 with a corner radius of 3 to 150 mm and a height of corner 10 to 40 mm, in combination with specially developed corner gaskets 6,7. The cover is made of thin colored or uncoloured plates of steel, aluminum, stainless steel or other metallic materials, and thicknesses from 0.5 to 1.2 mm. Along the cover there is a specially designed channel 503, which represents

the longitudinal highlighting of a module of modular sandwich panel façade. Channel representing width and depth of the longitudinal groove on the façade of modular panels is arbitrarily wide, but to achieve appropriate light and shadow effect it is from 20 - 30 mm wide (in this embodiment 25 mm) and deep from 15 to 30 mm (in this case 25 mm). Transverse on the cover there is similar transverse channel 504 with the width or depth of groove representing the transverse highlighting of a module of modular sandwich panel façade. The subject of the invention is also that the sheet metal in both channels is shorter than the length or width of the cover which is in the optimum range of the missing material between 30 and 200 mm (x), which allows the production of high quality corner and adjust all sealing and other elements making up cover and bottom plates to ensure a high degree of tightness. At the end of the longitudinal channel there is a special imprint formed 502 deep of 1 to 5 mm, which enables appropriate connection of corner gaskets 6 and cover 5 in longitudinal connection. The shape of the corner gaskets 6, 7 is also specially designed to "catch" the sheet on the bottom plate corner in the dry part and thus protects it against external influences such as moisture. Before the gasket of the corner 6 or 7 is completed there is sealing material entered onto the surface of the connection between corner and metal sheet compensating the difference in tolerances of manufactured corner 501 and sealant of the corner and ensures good sealing of connection during manufacturing stage. On the left hand side of the cover are the gaskets having the appearance of "male" connection - a corner gasket 6, in another part of the cover gaskets are inserted in the form of a "woman" connection - a corner gasket 7. Both corner gaskets are protected until time of the assembly, this protection taking place during the composition of the cover gaskets in production. Corner gaskets 6, 7 are from the material (rubber, synthetic materials for sealing, a combination of materials and hardness of materials), which is of suitable stiffness, defined by the interval from 40 to 90 Shore, while the contact points are elastic enough to allow high degree of adaptation to the contacts with other gaskets and cover. In our tests, it was found that the the elements function 6, 7 in hardness from 40 to 90 Shore. In preferred embodiment the best operative results are of 70 Shore.

System of specially designed cover 5 or corner of the cover 501 and gaskets, which are adapted to all contacts tolerances provides a very high degree of tightness - watertightness under a pressure difference of 600 Pa (up to 1500 Pa). As mentioned, the corner gasket 6 or 7 is inserted in the corner of the cover with an additional 501 sealant which temporary gaskets it to the cover. By inserting the corner gasket into the cover on the connection of longitudinal channel of the cover 503 the adaptive connection is established and at the same time it captures longitudinal gasket 11 into longitudinal channel of gasket of corner 7. By doing so the sealing of connection between longitudinal channel and corner of the cover is established. The sealing of connection between two adjacent modular panels are established because of particular geometry and adaptive connection – principle of “pen-groove”. At the same time during connection of two adjacent panels means that the gasket of internal connection 10 is captured into the connection. This gasket is inserted into panel during manufacturing stage. Inexact assembly of initial and final position of longitudinal gasket 11 is compensated by so called membrane (hollow cavity) 702 inserted into the corner gasket 7. On position of longitudinal gasket 11 the membrane 702 is offset in the corner gasket 7 for thickness of the gasket in the connection and provides for sealing of the façade. To ensure functionality of the membrane the optimum thickness of the membrane is between 0,3 mm and 2 mm and stiffness between 20 and 90 Sh for rubber. Instead of insertion of the membrane similar effect of transfer of longitudinal connection as described before can be achieved by using materials of different hardness. Harder part of the corner element should have hardness between 40 and 90 Sh for rubber, the softer part is manufactured with hardness between 15 and 30 Sh for rubber. The thickness of the soft part is 1 to 10 mm to achieve compensation of different thicknesses of longitudinal gaskets at the end of longitudinal connection.

As the gasket can be made of different materials (EPDM rubber, silica rubber, butyl, etc.) different level of vapor-permeability can be achieved and therefore control over warm air ingress into the connection thereby control over condensation onset.

The sealing (air – and water-tightness) in transversal direction of modular panels is achieved with transversal connection gasket 4 covering the area of width of vertical groove 14 between 15 mm and 30 mm. This gasket has special form and is comprised of materials of various levels of stiffness and therefore is variable adaptable. The basic part of the gasket 401 is of harder material (hard rubber etc.) with hardness between 40 and 90 Shore, this part having carrier function while the lower lip of the gasket 403 provides with protection against gasket dropping out. Softer insertion part of the gasket 402 with hardness 10 to 30 Shore has function of labyrinth gasket adaptable to variable groove width (compensation of tolerances) and therefore prevents ingress of water into transverse junction (connection) of modular panel 1 with water pressure decompression. This form of gasket provides for constant push force extending lifespan of gasket and sealing function. The composition of corner gaskets 6 and 7 can be changed due to tolerances in length of modular panels and also tolerances during assembly. This invention solves the problem of sealing on transverse connection of four panels using special shape of corner gasket having thin flexible membrane 703 formed on the surface of transverse connection of said modular sandwich panels. The membrane 703 adapts to sealing surface of labyrinth gasket of transverse connection 402 during insertion of transverse connection gasket 4 and therefore creates continuous connecting surface and provides for high quality sealing in case of tolerances which are usual during assembly of modular sandwich panels. Thin flexible membrane 703 has a changing thickness of 0.1 mm to 3 mm, width from 0.1 to 30 mm and a length of 5 to 150 mm and used for membrane coating on the adjacent corner element flap 603, which has similar dimensions as the flap 703, and together they serve for covering of said membrane on adjacent corner element flap 603 of similar dimensions as flap 703, and together they serve for covering of transverse position change of corner elements or panels. The optimum width of the membrane depends on type of transverse gasket and can be as 300 mm wide for different situations and required sealing properties. On connection of four panels/ corner elements there are above described non-symmetric membranes (total 4) serving continuous transfer of elements and provide for excellent sealing surface for transverse gasket.

The transverse connection gasket has in hard part of the gasket 401 provided a channel for introduction of decorative profiles or other additions to the facades made of modular sandwich panels (light elements etc.)

Into the cover 5 of modular sandwich panel 1 in the channel of longitudinal connection 503 there are fasteners of decorative slats 13 built into using cold transformation. The subject of this invention is also principle of assembly providing that the surface of the cover is not penetrated – it is only adapted providing for water- and air-tightness and necessary load carrying capacity of the fastener of decorative slats. The transformation of sheet metal of cover 5 is without penetration, i.e. water- and air-tight, the fastener is changed into head-like form and inserted into the transformed sheet metal and therefore has enough load carrying capacity.

Into cover 5 of modular sandwich panel 1 the fastening profile 12 is built into the channel of transverse connection using technology of cold fusion with transformation 121, said channel water- and air-tight. This fastening profile 12 is used to spread the load of fastening point. This is known solution, however in this embodiment it present novelty due to exact location and use of automation technology providing for robotic assembly. The fastening of the panel is provided with special connection with overlapping sheets of metal, the support one part with wool and screwing through the bottom sheet metal provides for load carrying transversal connection while using optimum quantity of material. Our research showed that for same load carrying capacity there is not need for continuous fastening profile throughout whole width of the panel but optimum length of each fastening profile 12 on fastening point is 150 mm.

This modular sandwich panel 1 in pre-assembled form provides for high level of self-carrying capacity, water- and air-tightness, required level of heat and fire resistance and top aesthetics. Repeatable quality due to stable conditions of fabrication in industrial environment is provided. Specially formed corner of cover 501 of modular sandwich panel provides for problem of weak point for corrosion and aesthetically non pleasing cut-offs and sealing on the corners of cover related to system of “build-up” covers.

Installation a modular panel system provides a high level of air- and water-tightness in all ways and methods of installation, in addition, enables rapid installation with minimum impact on the sustainability of the risks due to external impact or influence of the human element during the assembly. The system has been developed to enable the automated assembly.

Installation of a modular panel system also provides an aesthetic diversity of possible combinations between the modular panels with different lines of laying and intermediate strips or other decorative elements possible to be easily incorporated into raster channel network between modular panels. Given the high degree of modular panel self-carrying capacity does not require additional subframes unless the principal structure does not meet the architectural solution raster network.

This invention reduces the effects of external influences and the human element during the assembly on the sustainability and hence the risk of:

- Wetting the insulation in the event of rain during the assembly
- Water entering a joint panel or even inside a building due to the human element during the performance
- Condensation in the case of low-quality spoju performance
- Reduce the functionality of thermal insulation and watertightness of the reasons mentioned above
- The occurrence of corrosion on the corners of the cover - an aesthetic and functional defect
- Reduced worth of building covering for buyer due to reduced functionalities as described above.

There are sealing corner elements built into the corners of external panel in which so called membrane is built into, said membrane compensating for inexact assembled initial and final position of longitudinal gasket. On the corner elements are integrated asymmetrical flaps (603, 703) in which the longitudinal shift reflects the relative mutual

delay of two pens on the corner elements, but as the pen is thin and elastic that the insertion of the third element (transverse sealing profile) bent inwards, thus forming a vertical continuous sealing area. Transverse sealing profile comprises the drainage groove 406 for decompression of water pressure and the primary water (drainage), and a drainage channel 405, which in the event of water leakage collects said water and expels it from the building through the vertical drainage.

The invention is further described with help of attached figures with description of preferred embodiment, and added figures whereas the figures are part of this patent application, and show:

Figure 1 shows different methods of assembly of modular façade system with modular sandwich panels 1 built under various angles 15 and have in transverse connections 14 transverse gasket 4, and longitudinal decorative slat 3.

Figure 2 shows transverse gasket 4, and drainage channel 405.

Figure 3 shows modular sandwich panel 1 and bolt 2.

Figure 4 shows connection of four panels, vertical connection with gasket 4, horizontal connection with decorative slat 3.

Figure 5 shows gasket 4 with harder part 401, softer part 402, lip against falling out of gaskets 403, decorative profile 404, drainage channel 405, and drainage groove 406.

Figure 6 shows combination of cover 5 with “woman” corner gasket 7, “man” corner gasket 6, fastening profile 12, fastener of decorative slat 13, decorative slat 3.

Figure 7 shows junction of fastener of decorative slat 13 and cover 5.

Figure 8 shows cross section of connection of two modular panels in corner part showing cover 5, insulation core of panel 8, lower plate 9, "woman" corner gasket 7, flap 702, "man" corner gasket 6, decorative slat 3, gasket of longitudinal connection on outer side 11, and gasket of longitudinal connection on inner side 10.

Figure 9 shows "woman" corner gasket 7 with flap 703 and membrane 702, and gasket of longitudinal connection on outer side 11.

Figure 10 shows cover 5, corner of cover 501, imprint 502, longitudinal connection 503, fastener of decorative slat 13, fastening profile 12, attachment of fastening profile 121, transverse groove 504, "man" corner gasket 6, flap 603, dimension of missing material (x).

In preferred embodiment the modular sandwich panel 1 is comprised of lower plate 9, the internal joint gasket 10, an insulating core 8, the cover 5, the longitudinal connection gasket on the outer side 11, a corner-gasket "man" 6, two corner-gaskets "woman" 7 and the rest of parts integrated into the cover.

Installation of modular sandwich panels 1 is implemented in a simple and robust way, modular sandwich panel 1 contain all the necessary and in the manufacture of integrated components for more functionality except the attachment – screw 2 itself, gaskets for transverse joint 4 and decorative slats for longitudinal joint 3 or decorative profile in cross joint 404 to be inserted at the assembly during attachment of modular sandwich panels.

In the plane of the facade the assembly system can be parallel, the step like, laid horizontally, vertically placed or placed under any oblique angle 15. In vertical grooves 14 the sealant for transversal connection 4 is placed where the basic part of the gasket 401 is of harder material (hard rubber etc.), this part having carrier function while the lower lip of the gasket 403 provides with protection against gasket dropping out, and softer insertion part of the gasket 402 has function of labyrinth gasket adaptable to

variable groove width. The transverse sealing profile of the drainage groove 406 for decompression of water pressure and the primary water (drainage), and a drainage channel 405, which in the event of water leakage collects said water and expels it from the building through the vertical drainage.

The cover of modular sandwich panel 5 is manufactured using particular technology and solves the execution and form of corner of the modular sandwich panel 501 in combination with particularly formed corner gasket elements. The cover 5 is manufactured from thin colored sheet of metal. Along the cover there is specially formed channel – longitudinal connection 503, the transverse there is transverse groove 504 similarly formed to said cover. At the exit of longitudinal connection 503 there is particular imprint in the sheet of metal 502 allowing adaptable connection of corner elements and cover 5 in longitudinal connection.

Inexact assembly of initial and final position of longitudinal gasket 11 is compensated membrane 702 inserted into the corner gasket. On the corner element is also integrated adjacent corner element 603, and thin membrane 703 which is adapted to sealing surface of labyrinth gasket of transversal connection 402 during insertion of gasket of transverse connection 4.

In the cover 5 of modular sandwich panel 1 there are fastening profiles 12 built into the channel of transverse connection 504 using special system of fastening – attaching of fastening profile 121 which there are fasteners of decorative slats 13 built into the channel of longitudinal connection.

It is self evident that the proposed solution can be executed in different form not changing the essence of this invention.

PATENT CLAIMS

1. Modular sandwich panel (1) with sealing elements comprising the lower plate (9), insulation means (8), gaskets of longitudinal connection (10, 11), characterized in that it is completed with corner gaskets (6, 7), and membrane (702), flaps (603,703).
2. Panel according to claim 1, characterized in that there are corner gaskets (6,7) inserted into the corners of the outside panel of rubber or artificial materials for sealing, combination of materials and hardness of materials of stiffness provided by interval from 40 to 90 Shore, preferably 70 Shore, with built into membrane (702), with thickness of wall 0,3 mm to 2 mm, of rubber with hardness between 20 and 90 Sh, further, that there are asymmetric flaps (603, 703) integrated into corner gaskets (6, 7) providing for relative position between two pens on corner gaskets (6, 7) whereas the pens are thin with variable thickness from 0,1 mm to 3 mm, width from 0,1 to 30 mm, and length from 5 to 150 mm, and elastic, whereas the hardness of the material is 40 to 90 Shore, and further that they bend inward and form vertical continuous sealing surface on insertion of transverse gasket (4) comprised of material of various levels of stiffness or adaptability and is basic part of gasket (401) of harder material with hardness between 40 and 90 Shore, and softer insertion of gasket (402) with hardness 10 to 30 Shore, whereby the transverse gasket(4) comprises drainage groove (406) and drainage channel (405).
3. The panel according to any claims 1 to 2 characterized in that the corner gasket (6, 7) filling in for missing part of cover (5) is of single part of rubber joining longitudinal and transverse connection of the cover (5) into unified cover whereas the sheet of metal in both formed channels is shorter than length or width of said cover (5) which is in optimum range of missing material between 30 and 200 mm (x).

4. The panel according to any claims 1 to 3 characterized in that it comprises into the corners of outer panel inserted corner gaskets (6, 7) of rubber or other material or combination of material with properties enabling sealing, filling in the void or missing form of cover (5) whereas in exit of longitudinal channel (503) there is formed imprint into the sheet of metal (502) depth 1 to 5 mm enabling adaptable connecting of corner gasket (6) and cover (5) in longitudinal connection.
5. The panel according to any claims 1 to 4 characterized in that the corner gasket (6,7) fills in for missing material, further enables integrity of outside panel (2), seals the corner or prevents leakage of water under the outside panel (2) on the place of missing material and prevents corrosion on parts of cut-off material.
6. The panel according to any claims 1 to 5 characterized in that it comprises additional linear element (3) and means for covering the gaps between adjacent modular sandwich panels (1).
7. The panel according to any claims 1 to 6 characterized in that it comprises linear elements (3) serving as carriers of light elements.
8. The panel according to any claims 1 to 7 characterized in that it comprises attachable system as means for attaching of line elements (3) on cover (5) of modular sandwich panel (1).
9. The panel according to any claims 1 to 8 characterized in that the attaching of attachable elements (13) is executed by means of cold fusion of two material without their destruction.
10. The panel according to any claims 1 to 9 characterized in that in modular sandwich element (1) there are integrated sealing elements and there is only

attaching of said modular sandwich panel (1) performed on the building or securing of attaching position from water ingress and for aesthetic reasons.

11. The panel according to any claims 1 to 10 characterized in that in corner gasket (7) there is built into flap (702) compensating for position change of initial and final position of built into longitudinal gasket (11).
12. The panel according to any claims 1 to 11 characterized in that in transverse gasket (4) the second level of water drainage is drainage channel which provides for expelling of water on vertical out of the building in case of leakage.
13. The panel according to any claims 1 to 12 characterized in that sheet of metal of cover (5) is not penetrated but adapted which provides for water- and airtightness and at the same time necessary load carrying capacity of fastener of decorative slats (13).
14. Method of assembly of modular sandwich panel characterized in that the corner gasket (6) is built into the corner of cover (501) with additional sealant and temporarily attaches to cover (5) whereby on the connection of longitudinal channel of the cover (503) adaptable connection is established and at the same time in longitudinal channel of cover gasket (7) longitudinal gasket (11) is captured.
15. The method according to any claim 14 characterized in that during assembly of two adjacent panels the inner gasket is captured into the connection providing tightness on inner side whereby the inexact initial and final position of longitudinal gasket (11) is compensated by into corner gasket (7) built membrane (702), and further on the position of gasket of longitudinal connection (11) the membrane (702) in corner gasket (7) is moved for thickness of gasket toward inside and therefore provides for compensation of additional thickness of gasket in connection and sealing of façade.

16. The method according to any claims 14 to 15 characterized in that only assembly of the modular sandwich panel (1) is executed on the building with already integrated gaskets in longitudinal connection and corner gaskets (6, 7) while transversal gasket (4) is inserted during assembly.
17. The method according to any claims 14 to 16 characterized in that the system of integrated asymmetric flaps (603, 703) on corner element (6, 7) compensation of relative position shift of two adjacent modular sandwich panels (1) connected by means of "pen-groove" system is executed resulting in longitudinal position shift is shown in relative position shift of two thin and elastic pens on corner gaskets (6,7) which are bent inward during insertion of transversal gasket (4) and therefore form transversal continuous sealing surface.
18. The method according to any claims 14 to 16 characterized in that into the channel (504) of transverse connection of cover (5) of modular sandwich panel (1) fastening profile (12) is built into using method of cold fusion (121) being air- and water-tight, and further that this fastening profile (12) is used to spread the load of fastening point.

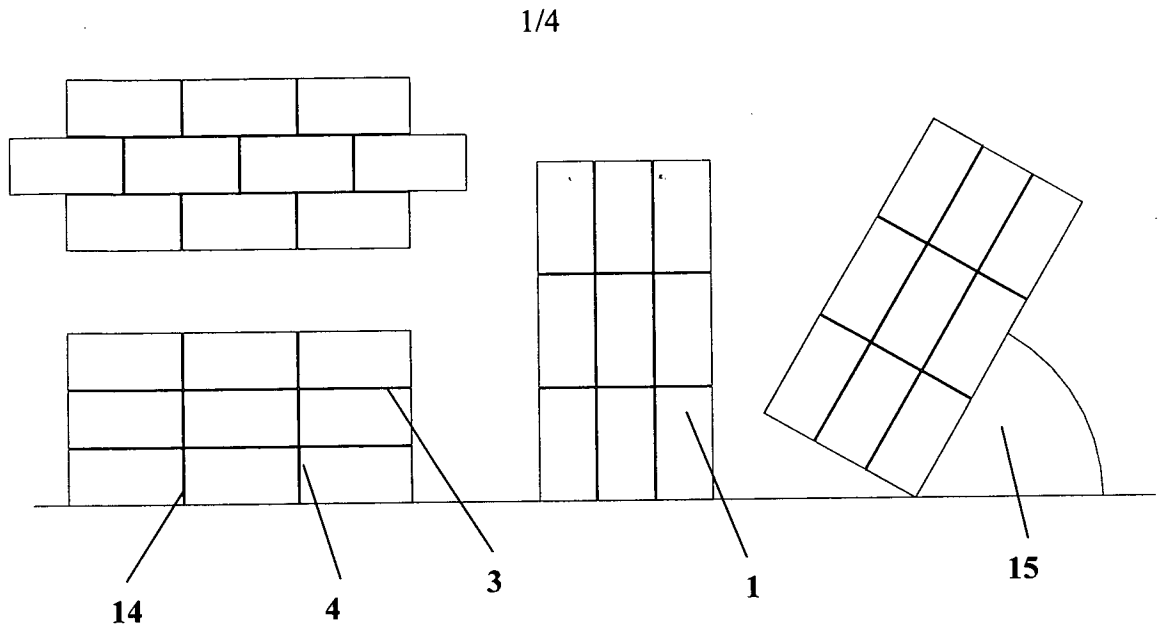


Fig. 1

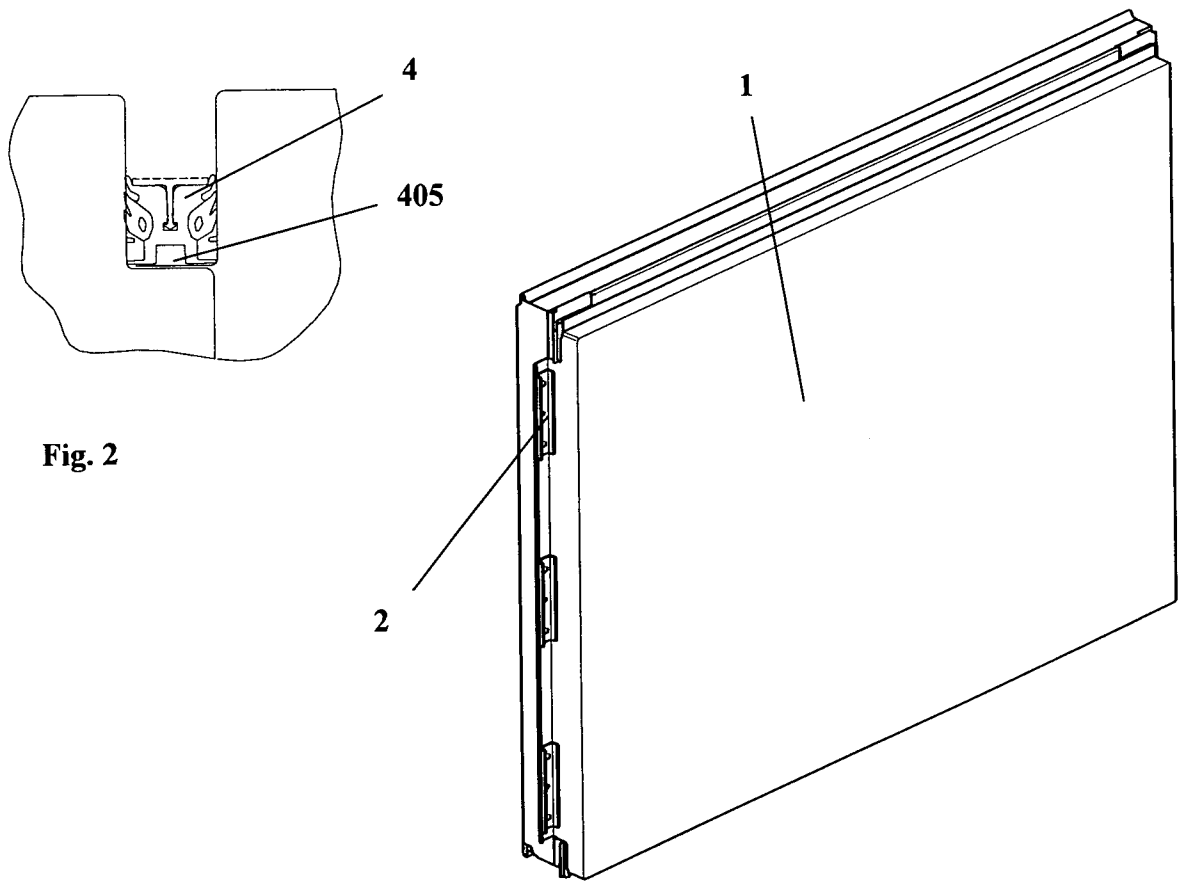


Fig. 2

Fig. 3

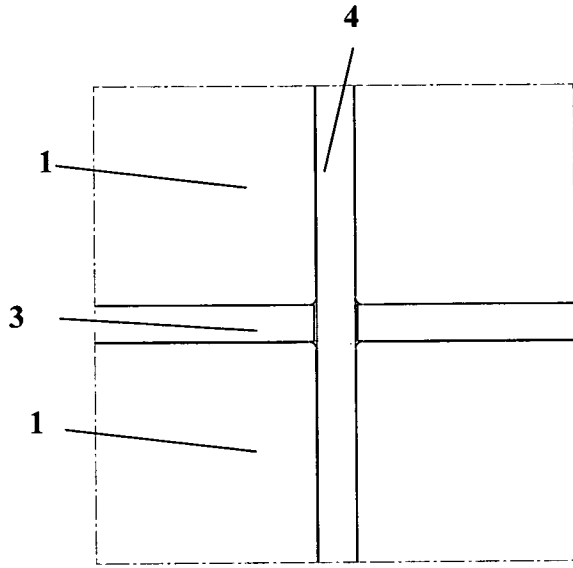


Fig. 4

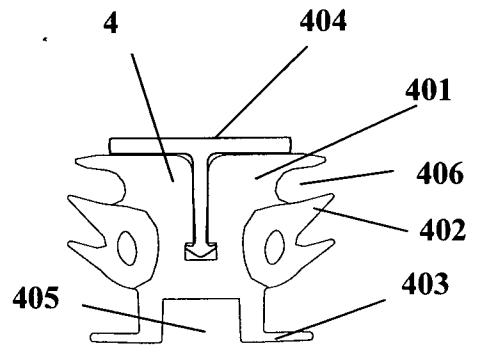


Fig. 5

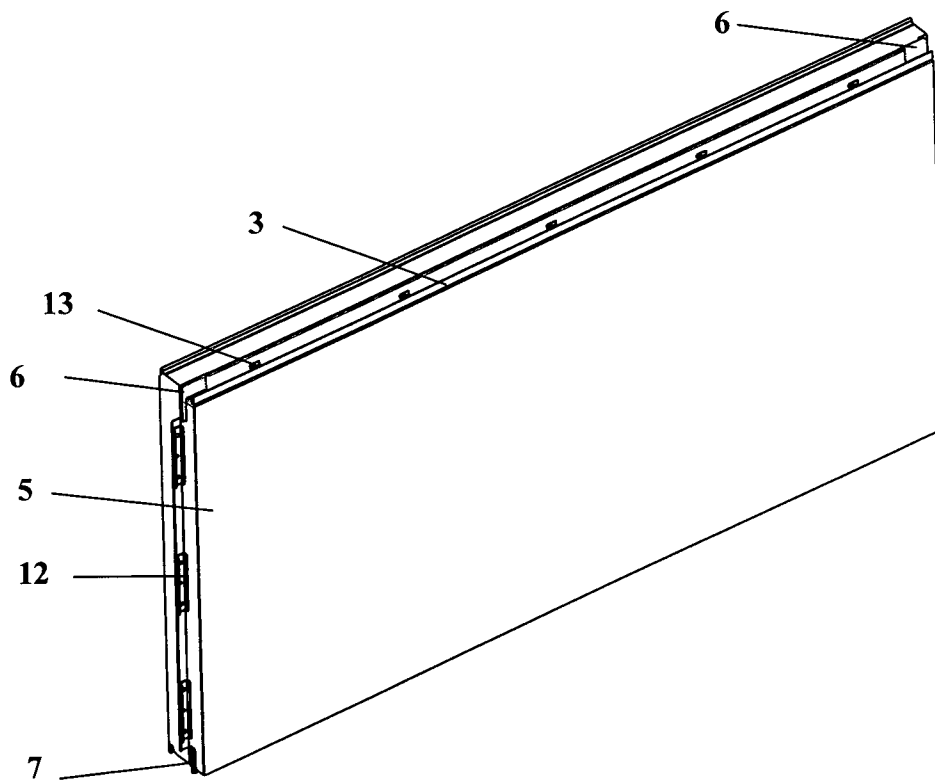


Fig. 6

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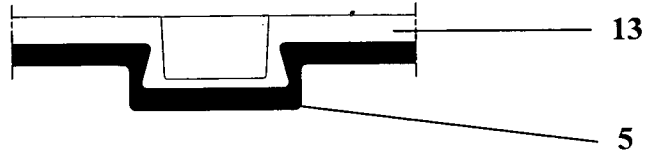


Fig. 7

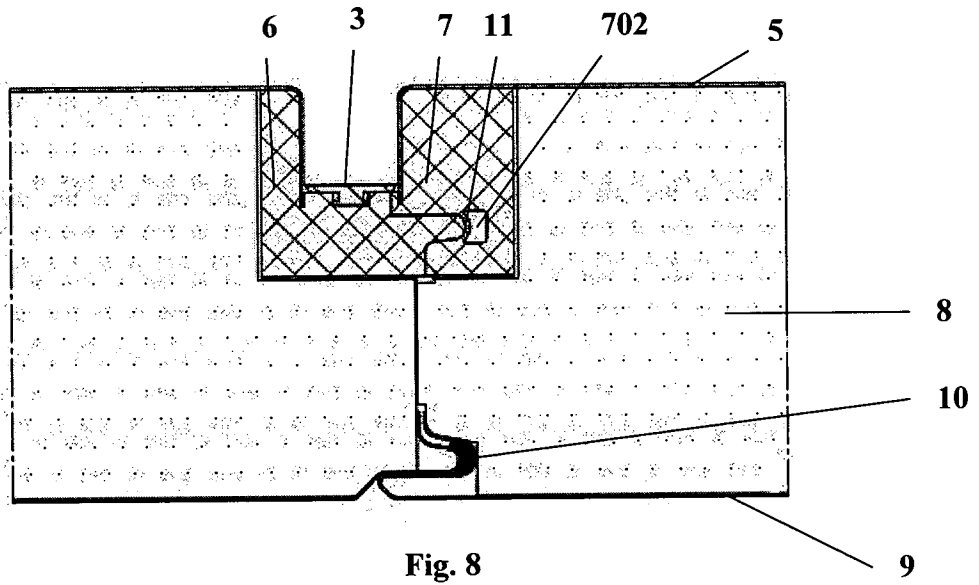


Fig. 8

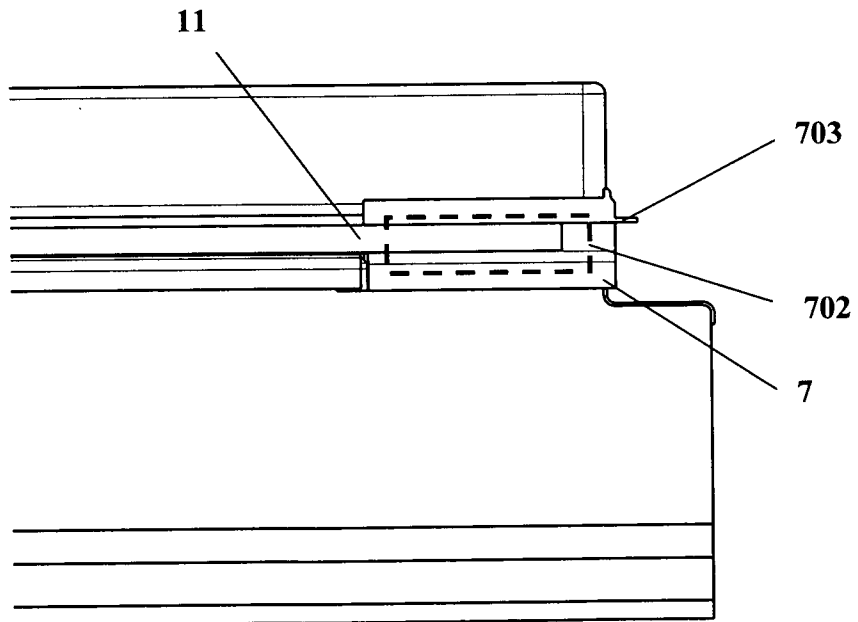


Fig. 9

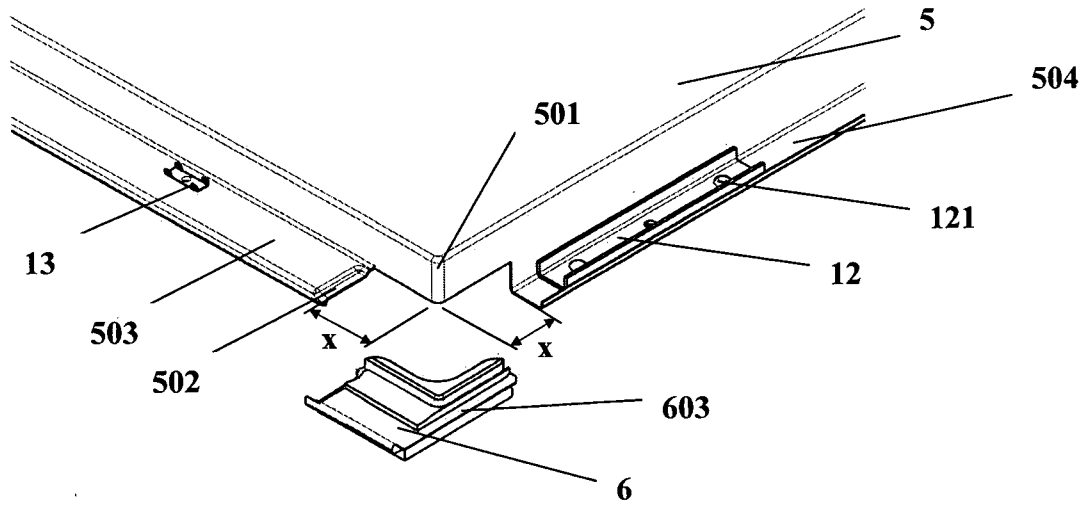


Fig. 10