

(19)



(11)

EP 3 239 428 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.11.2017 Bulletin 2017/44

(51) Int Cl.:
E04F 10/10 (2006.01)

(21) Application number: **16187066.2**

(22) Date of filing: **02.09.2016**

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

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(30) Priority: **29.04.2016 CN 201620383924 U**

(54) **AN AWNING'S CEILING STRUCTURE**

(57) The invention relates to an awning's ceiling structure including a pergola (1), a ceiling board one (2) which is connected to said pergola (1), a ceiling board two (3) and a ceiling board three (4). Ceiling board one (2), ceiling board two (3) and ceiling board three (4) can form a sequentially stepped downward slope. Ceiling

board two (3) and ceiling board three (4) are slide connected to the pergola (1), and can be successively stacked underneath ceiling board one (2) after sliding. Ceiling board one (2) is slide connected to the pergola (1), and can be successively stacked above ceiling board two (3) after sliding.

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Description

[0001] The present invention relates to the technology field of leisure goods. It involves an awning, in particular a ceiling structure of the awning.

Background

[0002] The sun shading section of a building is an easy and effective way to save energy and it has attracted extensive attention. In the recent decade, research regarding the building areas that are hot in summer and cold in winter has developed rapidly, and this produced a large number of research results. However, for existing buildings in the areas where it is hot in summer and cold in winter, the substantial sun shading situation differs hugely from the current research results, a large number of balconies which are designed to provide sunshade, are sealed by the resident, the sun shading measures are usually not appropriate, the choices regarding sun shade products are biased, the sun shading products on the market which are evaluated solely based on their sun shading ability have many problems as well. Furthermore, due to inappropriate installation and usage, the sun shading result in areas where it is hot in summer and cold in winter are not as good as expected.

[0003] The awning can block the heat and UV, it reduces ultraviolet radiation and withstands some of the heat of sunlight, it also shelters from wind and rain. While blocking the summer heat, it reduces the strong sunlight and transforms it to the form of diffuse reflection of light into the room, this makes the indoor area bright but not dazzling. In addition, it does not affect the view to outside. It allows people to expand the living areas from indoor to outdoor and creates more living space. With the improvement of the living standard, people wish to reach a higher living quality, and the number of requirements for awnings are also increasing, plus it is expected that the awnings possess good quality and deliver excellent performance.

[0004] Currently, the awning's ceiling board on the market are mostly in fixed forms, which means that sunshade section cannot be folded, there are some awnings that possess fold functioning ceiling board structure, for instance, Chinese patent (Patent number: 03284212.0) presented an automatic folding color canopy, which consists of shielding plate, sliding structure and controlling shielding plate fold structure, the described shielding plate's sliding structure includes stand, shielding plate, sliding device, the structure in details are as follows: the sliding device is installed on the stand, the shielding plate is connected to the sliding device through a connecting device. The described fold structure includes string, controlling wheel, guiding wheel, the detailed structure is, the string is connected to the shielding plate through controlling wheel, guiding wheel. Such structured awning's ceilings are mostly in fixed form, thus it cannot satisfy the users' needs to adjust the sun shading section according

to the sunlight they wish to receive. This does not allow users to enjoy the weather neither does it provide enough ventilation.

5 Detailed description

[0005] An awning's ceiling structure is provided, including a pergola (1), a ceiling board one (2) which is connected to said pergola (1), a ceiling board two (3) and a ceiling board three (4), wherein said ceiling board one (2), said ceiling board two (3) and said ceiling board three (4) can form a sequentially stepped downward slope. Said ceiling board two (3) and said ceiling board three (4) are slide connected to said pergola (1), and can be successively stacked underneath said ceiling board one (2) after sliding. Said ceiling board one (2) is slide connected to said pergola (1), and can be successively stacked above the ceiling board two (3) after sliding.

[0006] In certain embodiments, the pergola (1) includes a quadrangular frame formed by a top horizontal tube (5), a top side tube one (6), a bottom horizontal tube (7) and a top side tube two (8). Said top side tube one (6) and said top side tube two (8) possess parallel installed slide one (9), slide two (10) and slide three (11). Said ceiling board one's (2) bottom end is slide connected to said slide one (9), said ceiling board two's (3) bottom end is slide connected to said slide two (10), and said ceiling board three's (4) bottom end is slide connected to said slide three (11).

[0007] In certain embodiments, the ceiling board one (2) and the top horizontal tube (5) are connected through magnetic part one (12) and magnetic part two (13). Magnetic part one (12) is fixed on said ceiling board one's (2) top end, and magnetic part two (13) is fixed on said top horizontal tube (5), wherein said magnetic part one (12) and /or said magnetic part two (13) are magnets.

[0008] In certain embodiments, the ceiling board two (3) and the top horizontal tube (5) are connected through magnetic part three (14) and magnetic part four (15). Magnetic part three (14) is fixed on said ceiling board two's (3) top end, and magnetic part four (15) is fixed on said top horizontal tube (5), and wherein said magnetic part three (14) and/or said magnetic part four (15) are magnets.

[0009] In certain embodiments, the ceiling board three (4) possesses an upwardly projected leading part (16), wherein said leading part (16) can be leaned against said ceiling board two's (3) bottom end and lead said ceiling board two (3) to slide upwards, in instances where said ceiling board three (4) is slidden upwards.

[0010] In certain embodiments, the ceiling board two's (3) bottom end possesses a magnetic part five (17), which is used to connect with said leading part (16) through magnetic adsorption.

[0011] In certain embodiments, the top side tube one (6) and the top side tube two (8) are installed inclined, and slide two (10) is installed with block point (18) in order to limit the motion of said ceiling board two (3).

[0012] In certain embodiments, the top side tube one (6) and the top side tube two (8) possess an undercut groove (19), wherein said undercut groove (19) is installed along the longitudinal direction of said top side tube one (6) or said top side tube two (8).

[0013] In certain embodiments, the bottom horizontal tube (7) possesses a drainage groove (20) that is connected with said undercut groove (19), wherein said drainage groove (20) is installed along the longitudinal direction of said bottom horizontal tube (7).

[0014] In certain embodiments, the bottom horizontal tube's (7) bottom end possesses a drainage tube connector (21), wherein said drainage tube connector (21) is connected with said drainage groove (20).

[0015] This utility model aims to solve the current technical problems by proposing an awning's ceiling structure, it targets the difficulties in how to control the sun shading area through adjusting the awning's ceiling.

[0016] This utility model's purpose can be achieved through the following technical solution: the awning's ceiling structure includes pergola and the ceiling board one that is connected to the pergola, ceiling board two and ceiling board three. Ceiling board one, ceiling board two and ceiling board three can form a sequentially stepped downward slope. The described ceiling board two and ceiling board three are both slide connected to the pergola, and ceiling board two and ceiling board three are able to stack below the ceiling board one successively after the sliding, its special features are as follows, the described ceiling board one is slide connected to the pergola, and ceiling board one is able to stack above the ceiling board two after sliding.

[0017] This awning's ceiling board one, ceiling board two and ceiling board three are all slide connected to the pergola, wherein ceiling board three, ceiling board two and ceiling board one are able to form a gradually decreasing slope after expanding. While adjusting the awning, ceiling board one, ceiling board two and ceiling board three are able to be stacked successively, this awning can open space for two ceiling boards; otherwise only ceiling board three will be stacked underneath the ceiling board two, and it only expands the bottom of the pergola; or the ceiling board two can be stacked underneath the ceiling board one, only expanding the middle section of the pergola; or the ceiling board one can be stacked above the ceiling board two, only expanding the pergola top section. In comparison to current existing awnings, this awning provides more ceiling expansion options in order to adjust the size of the sun shading areas.

[0018] In the awning's ceiling structure described above, the described pergola includes top horizontal tubes that are formed into a four-sided frame, top side tube one, bottom horizontal tube and top side tube two, the described top side tube one and top side tube two both possess slide one that are installed parallel to each other, slide two and slide three, the described ceiling board one's end is slide connected to the slide one, the described ceiling board two's end is slide connected to

slide two, the described ceiling board three's end is slide connected to slide three. Ceiling board one, ceiling board two and ceiling board three are connected to pergola through slide structure, and three slides are independent from each other and do not affect each other, this allows the opening and closing of the awning to be more flexible and adjustable.

[0019] In the awning's ceiling structure described above, the described ceiling board one and top horizontal tube is connected with each other through magnetic part one and magnetic part two, the described magnetic part one is fixed on the ceiling board one's end, the described magnetic part two is fixed on the top horizontal tube, the described magnetic part one and /or magnetic part two are magnets. The ceiling board one and top horizontal tube are connected through magnetic structure, this allows the ceiling board one to adsorb to the top horizontal tube while not expanded, its structure is simple, when opening the ceiling is required, one only needs to remove the ceiling board one's magnetic part one apart from the top horizontal tube's magnetic part two, easy to operate.

[0020] In the awning's ceiling structure described above, the described ceiling board two and top horizontal tube are connected through magnetic part three and magnetic part four, the described magnetic part three is fixed on the ceiling board two's end, the described magnetic part four is fixed on the top horizontal tube, the described magnetic part three and /or magnetic part four are magnets. When the ceiling board two moves underneath the ceiling board one, ceiling board two is able to adsorb to the top horizontal tube's magnetic part four through magnetic part three, its structure is simple, and it is very convenient to disassemble.

[0021] In the awning's ceiling structure described above, the described top side tube one and top side tube two are both installed inclined, the described slide two is installed with block point in order to limit the motion of ceiling board two. Since the pergola is downwards incline installed, through installing block point it can ensure the ceiling board two to remain at the middle of the pergola, it prevents the ceiling board two from sliding down along the slide two due to gravity, this ensures the ceiling board two to slide from the middle part upwards. In addition, ceiling board two slides upwards and stacks underneath the ceiling board one, this allows the awning's middle section of the ceiling to expand. Furthermore, slide one is installed with a block point in order to limit the motion of ceiling board one, in order to ensure the ceiling board one to remain at a certain spot of the ceiling board two, and this does not affect the ceiling board one's independent function to slide upwards.

[0022] In the awning's ceiling structure described above, the described ceiling board three possesses an upwards projected leading part, when the ceiling board three is slidden upwards, the leading part can lean against the ceiling board two's bottom end and lead the ceiling board two to slide upwards. The ceiling board two can be led by the ceiling board three and slide upwards,

ceiling board two does not need other driving structure to slide upwards, its structure is more simple, at the same time, the ceiling board two is combined with the ceiling board three, this makes the operation easier.

[0023] In the awning's ceiling structure described above, the described ceiling board two's bottom end possesses magnetic part five in order to fix to the leading part through magnetic adsorption. When the ceiling board one's leading part leans against the ceiling board two's magnetic part five, the two components are combined together through magnetic adsorption, there are no other locating structures required in order to locate the ceiling board three, its structure is simpler, and the ceiling board three and ceiling board two are connected through a magnetic structure, this makes it easier to disassemble.

[0024] In the awning's ceiling structure described above, the described top side tube one and top side tube two both possess an undercut groove, the described undercut groove is installed along the longitudinal direction of the top side of tube one or top side of tube two. The water on the ceiling board can flow out from the side and drop directly into the two top side tubes' drainage grooves, water will flow down the drainage groove without making a mess.

[0025] In the awning's ceiling structure described above, the described bottom horizontal tube possesses a drainage groove that is connected with the undercut groove, the described drainage groove is installed along the bottom horizontal tube's longitudinal direction. Water that flows down from both of the top side tubes will be collected inside the drainage groove, to be collected or released accordingly.

[0026] In the awning's ceiling structure described above, the described bottom horizontal tube's end possesses a drainage tube connector, the described drainage tube connector is connected with the drainage groove. The drainage tube connector can be connected with water pipes and collect the water into a water pot, this reflects the awareness of protecting the environment through saving water.

[0027] In certain embodiments, an awning's ceiling is provided, which includes pergolas and ceiling board one which is connected to pergolas, ceiling board two and ceiling board three, ceiling board one, ceiling board two and ceiling board three can form a sequentially stepped downward slope, the described ceiling board two and ceiling board three are slide connected to pergolas, and ceiling board two and ceiling board three can be successively stacked underneath the ceiling board one after sliding, its special feature is that the described ceiling board one is slide connected to pergolas, and ceiling board one can be successively stacked above the ceiling board two after sliding.

[0028] In certain embodiments, the described pergolas includes top horizontal tube that is formed into a quadrangular frame, top side tube one, bottom horizontal tube and top side tube two, the described top side tube one

and top side tube two possess parallel installed slide one, slide two and slide three, the described ceiling board one's bottom end is slide connected to slide one, the described ceiling board two's bottom end is slide connected to slide two, the described ceiling board three's bottom end is slide connected to slide three.

[0029] In certain embodiments, the described ceiling board one and top horizontal tube are connected through magnetic part one and magnetic part two, the described magnetic part one is fixed on the ceiling board one's top end, the described magnetic part two is fixed on the top horizontal tube, the described magnetic part one and/or magnetic part two are magnets.

[0030] In certain embodiments, the described ceiling board two and top horizontal tube are connected through magnetic part three and magnetic part four, the described magnetic part three is fixed on the ceiling board two's top end, the described magnetic part four is fixed on the top horizontal tube, the described magnetic part three and/or magnetic part four are magnets.

[0031] In certain embodiments, the described ceiling board three possesses upwardly projected leading part, when the ceiling board three slide upwards, leading part can be leaned against the ceiling board two's bottom end and lead the ceiling board two to slide upwards.

[0032] In certain embodiments, the described ceiling board two's bottom end possesses magnetic part five which is used to connect with the leading part through magnetic adsorption.

[0033] In certain embodiments, the described top side tube one and top side tube two are incline installed, the described slide two is installed with block point in order to limit the motion of ceiling board two.

[0034] In certain embodiments, the described top side tube one and top side tube two possess undercut groove, the described undercut groove is installed along the longitudinal direction of the top side tube one or top side tube two.

[0035] In certain embodiments, the described bottom horizontal tube possesses drainage groove that is connected with the undercut groove, the described drainage groove is installed along the longitudinal direction of the bottom horizontal tube .

[0036] In certain embodiments, the described bottom horizontal tube's bottom end possesses drainage tube connector, the described drainage tube connector is connected with the drainage groove.

[0037] In comparison to current technologies, this invention possess the following features:

1. This awning's ceiling board can slide in all three layers (top, middle and bottom), it provides more angles, more areas, blocks the sunlight but keeps the brightness. User can pull the handle to adjust the top frame, to make the top frame move towards or backwards, in order to open or close the top frame, which further provides better sun shading performance.

2. This awning's three-layer ceiling boards are sliding in their own grooves, three-layer top frame's location is decided by the magnets and plastic block points, it is easy to operate.

3. This awning's groove around the top of the ceiling possesses drainage grooves, water flows down from the front edge and saves energy. The bottom side of the top tube possesses a leaking groove, part of the water on the boards flows through the top tube's leaking groove to the drain pipes at the front, most of the water will flow directly into the grooves of the drain pipes at the front, then it will flow towards both sides. Placing a drain connection at the end can lead the water into a water pot, this reflects the awareness of protecting the environment through saving water.

[0038] 1: pergola; 2: ceiling board one; 3: ceiling board two; 4: ceiling board three; 5: top horizontal tube; 6: top side tube one; 7: bottom horizontal tube; 8: top side tube two; 9: slide one; 10: slide two; 11: slide three; 12: magnetic part one; 13: magnetic part two; 14: magnetic part three; 15: magnetic part four; 16: leading part ; 17, magnetic part five; 18, block point; 19, undercut groove; 20, drainage groove; 21, drainage tube connector; 22: front legs; 23: middle top tube; 24: rear legs; 25: pushrod.

[0039] The invention is further illustrated by the following examples and figures, from which further embodiments and advantages can be drawn. These examples are meant to illustrate the invention but not to limit its scope.

Examples

Example one :

[0040] Example one (not depicted) is an awning's ceiling structure, it includes a pergola (1) and a slide connected to the pergola's (1) ceiling board component. The pergola (1) is inclined downwards installed, the rear end of the pergola (1) is leaned against the walls, front end of the pergola (1) is supported through front legs (22). The ceiling board component includes ceiling board one (2) that can be sequentially stacked from top to bottom, ceiling board two (3) and ceiling board three (4). Ceiling board one (2), ceiling board two (3) and ceiling board three (4) are all slide connected to pergola (1), and ceiling board one (2), ceiling board two (3) and ceiling board three (4) can be formed to a sequentially stepped downward slope. The pergola (1) includes top horizontal tube (5) that is formed into a four-sided frame with top side tube one (6), bottom horizontal tube (7) and top side tube two (8). Top horizontal tube (5) and bottom horizontal tube (7) are horizontal lateral installed, top side tube one and top side tube two are parallel and symmetric.

[0041] The detailed structure is as follows: top side tube one (6) possesses parallel installed slide one (9), slide two (10) and slide three (11), ceiling board one (2)'s

end is slide connected to slide one (9), ceiling board two (3)'s end is slide connected to slide two (10), ceiling board three (4)'s end is slide connected to slide three (11). The top side tube one (6) possesses undercut groove (19), undercut groove (19) is installed along the longitudinal direction of top side tube one (6). The top side tube two (8) and top side tube one (6) are installed symmetrically, top side tube two (8) also possesses slide one (9) that is installed along the longitudinal direction of top side tube two (8), slide two (10), slide three (11) and undercut groove (19).

[0042] Ceiling board one (2) and top horizontal tube (5) are connected through magnetic part one (12) and magnetic part two (13), magnetic part one (12) is fixed on the ceiling board one's (2) top end, magnetic part two (13) is fixed on the top horizontal tube (5), magnetic part one (12) and magnetic part two (13) are magnets, or magnetic part one (12) is a metal plate, magnetic part two (13) is a magnet, or magnetic part one (12) is a magnet, magnetic part two (13) is a metal plate.

[0043] Ceiling board three (4) possesses upwardly projected leading part (16), when the ceiling board three (4) slides upwards, leading part (16) can lean against the ceiling board two's (3) bottom end and lead the ceiling board two (3) to slide upwards.

[0044] Ceiling board two (3) and top horizontal tube (5) are connected through magnetic part three (14) and magnetic part four (15), magnetic part three (14) is fixed on the ceiling board two's (3) top end, magnetic part four (15) is fixed on the top horizontal tube (5), magnetic part three (14) and magnetic part four (15) are magnets, or magnetic part three (14) is metal board, magnetic part four (15) is a magnet, or magnetic part three (14) is a magnet, magnetic part four (15) is a metal board.

[0045] The Bottom horizontal tube (7) possesses a drainage groove (20) that is connected with undercut groove (19). The drainage groove (20) is installed along the bottom horizontal tube's (7) longitudinal direction, horizontal tube (7)'s end possesses drainage tube connector (21), drainage tube connector (21) and drainage groove (20) are connected.

Example two :

[0046] Example two's structure (not depicted) is basically the same as in example one, the difference is that this example two uses example one's structure as unit component, it reaches out on the side, thus example two possesses two sets of ceiling board components, the two sets of ceiling board components are connected through middle top tube (23), middle top tube's (23) side walls possess slide one (9) which is installed along the longitudinal direction of middle top tube (23), slide two (10), slide three (11) and undercut groove (19).

Example three :

[0047] Example three's structure (not depicted) is ba-

sically the same as in example one, the difference is that this awning's pergola (1) rear end is supported through rear legs (24), pergola (1) front is supported through front legs, it can be applied without leaning on walls.

Example four :

[0048] Example four's structure (Fig. 1, Fig. 2, Fig. 5, Fig. 6, Fig. 7) is basically the same as in example three, the difference is that example four uses example three's structure as unit component it reaches out to the side, thus example four possesses two sets of ceiling board components, the two sets of ceiling board components are connected through middle top tube (23).

[0049] This example's awning can be applied both with or without walls, and it can be further combined with other units, in order to fulfil the customers' needs according to the avenue space and structure, it has more market potential.

[0050] The application example presented in this text is merely to illustrate the idea of this utility model. The technical staff that specialize in the technology field of this utility model is entitled to make all kinds of amendments, supplements and replacements, and such do not derive from the idea of this utility model, neither do it exceed the limitations of the attached claims.

Claims

1. An awning's ceiling structure including

- a. a pergola (1)
- b. a ceiling board one (2) which is connected to said pergola (1),
- c. a ceiling board two (3) and
- d. a ceiling board three (4),

wherein said ceiling board one (2), said ceiling board two (3) and said ceiling board three (4) can form a sequentially stepped downward slope, and wherein said ceiling board two (3) and said ceiling board three (4) are slide connected to said pergola (1), and can be successively stacked underneath said ceiling board one (2) after sliding, **characterized in that** said ceiling board one (2) is slide connected to said pergola (1), and can be successively stacked above said ceiling board two (3) after sliding.

2. The awning's ceiling structure according to claim 1, **characterized in that** said pergola (1) includes a quadrangular frame formed by

- a. a top horizontal tube (5),
- b. a top side tube one (6),
- c. a bottom horizontal tube (7) and
- d. a top side tube two (8),

wherein said top side tube one (6) and said top side tube two (8) possess parallel installed slide one (9), slide two (10) and slide three (11), wherein said ceiling board one's (2) bottom end is slide connected to said slide one (9), said ceiling board two's (3) bottom end is slide connected to said slide two (10), and said ceiling board three's (4) bottom end is slide connected to said slide three (11).

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10 **3.** The awning's ceiling structure according to claim 2, **characterized in that** ceiling board one (2) and said top horizontal tube (5) are connected through magnetic part one (12) and magnetic part two (13), and magnetic part one (12) is fixed on said ceiling board one's (2) top end, and said magnetic part two (13) is fixed on said top horizontal tube (5), wherein said magnetic part one (12) and/or said magnetic part two (13) are magnets.

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20 **4.** The awning's ceiling structure according to claim 2, **characterized in that** said ceiling board two (3) and said top horizontal tube (5) are connected through magnetic part three (14) and magnetic part four (15), wherein said magnetic part three (14) is fixed on said ceiling board two's (3) top end, said magnetic part four (15) is fixed on said top horizontal tube (5), and wherein said magnetic part three (14) and/or said magnetic part four (15) are magnets.

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30 **5.** The awning's ceiling structure according to claim 2, **characterized in that** said ceiling board three (4) possesses an upwardly projected leading part (16), wherein said leading part (16) can be leaned against said ceiling board two's (3) bottom end and lead said ceiling board two (3) to slide upwards, when said ceiling board three (4) is slidden upwards.

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40 **6.** The awning's ceiling structure according to claim 5, **characterized in that** said ceiling board two's (3) bottom end possesses a magnetic part five (17) which is used to connect with said leading part (16) through magnetic adsorption.

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50 **7.** The awning's ceiling structure according to claim 2, 3 or 4, **characterized in that** said top side tube one (6) and said top side tube two (8) are installed inclined, and said slide two (10) is installed with block point (18) in order to limit the motion of said ceiling board two (3).

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8. The awning's ceiling structure according to claim 2, 3, 4, 5 or 6, **characterized in that** said top side tube one (6) and said top side tube two (8) possess an undercut groove (19), wherein said undercut groove (19) is installed along the longitudinal direction of said top side tube one (6) or said top side tube two (8).

9. The awning's ceiling structure according to claim 8,

characterized in that said bottom horizontal tube (7) possesses a drainage groove (20) that is connected with said undercut groove (19), wherein said drainage groove (20) is installed along the longitudinal direction of said bottom horizontal tube (7). 5

10. The awning's ceiling structure according to claim 9, **characterized in that** said bottom horizontal tube's (7) bottom end possesses drainage tube connector (21), wherein said drainage tube connector (21) is connected with said drainage groove (20). 10

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Fig. 1

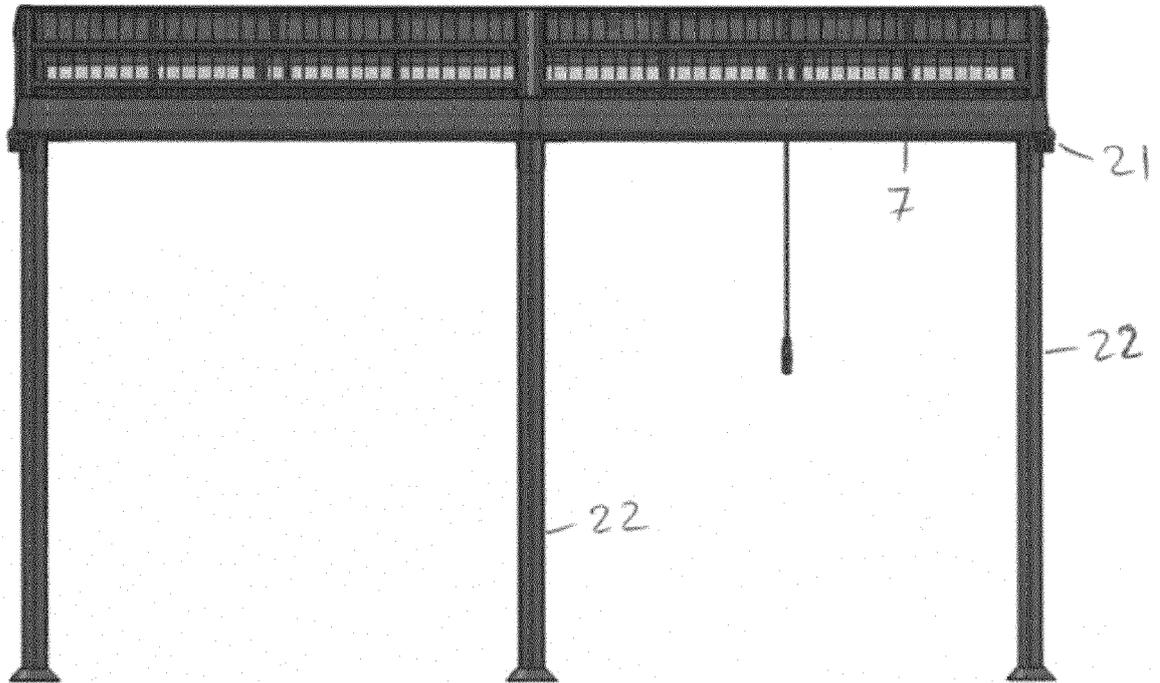


Fig. 2

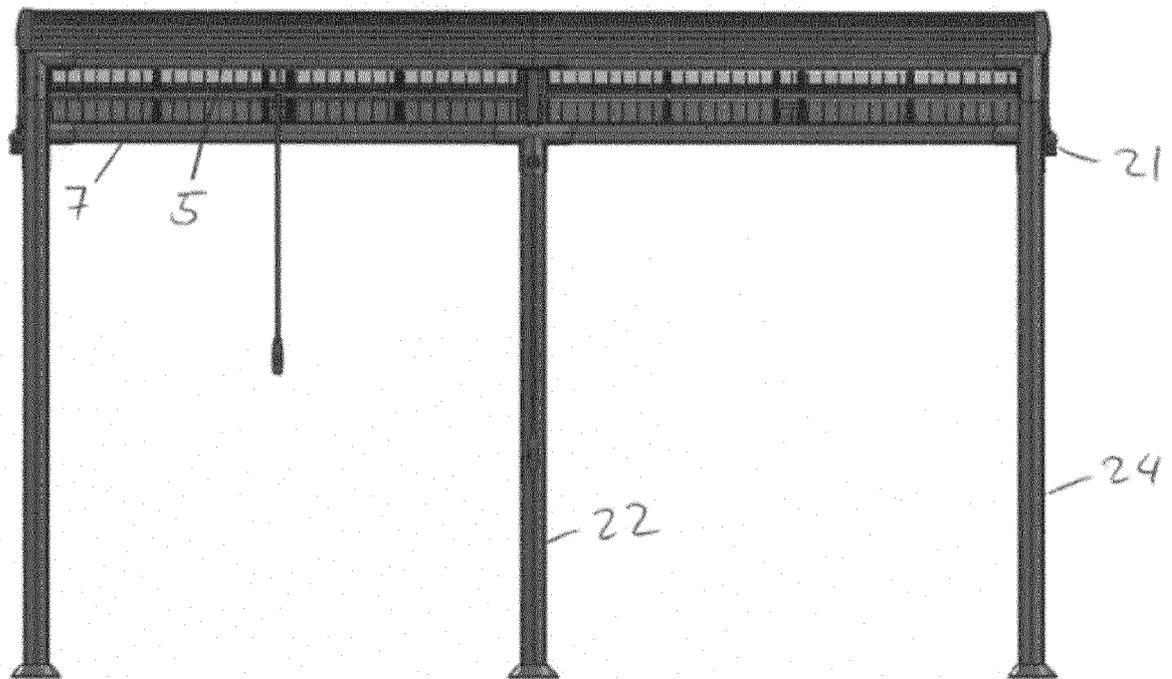


Fig. 3

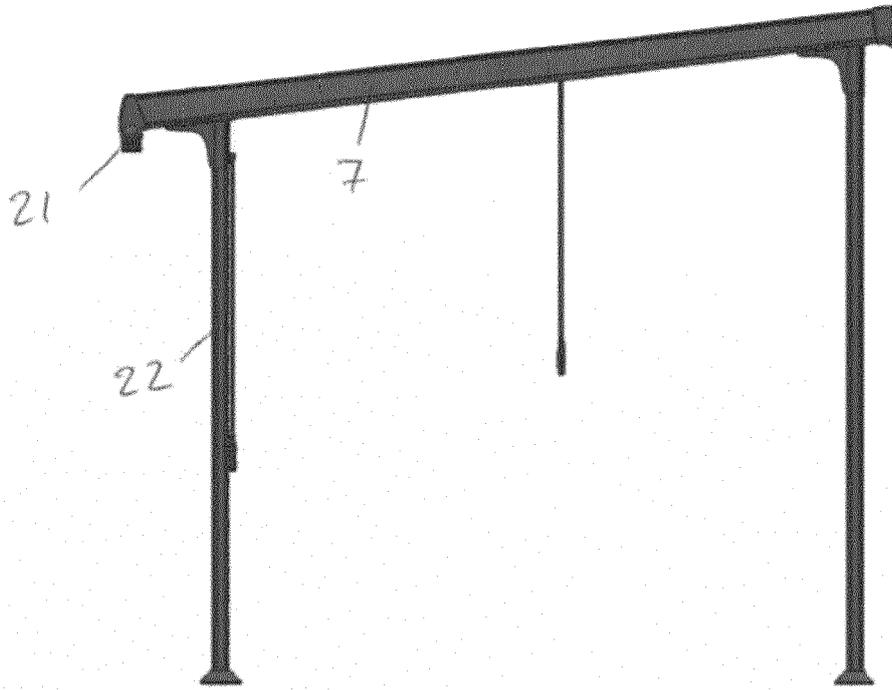


Fig. 4

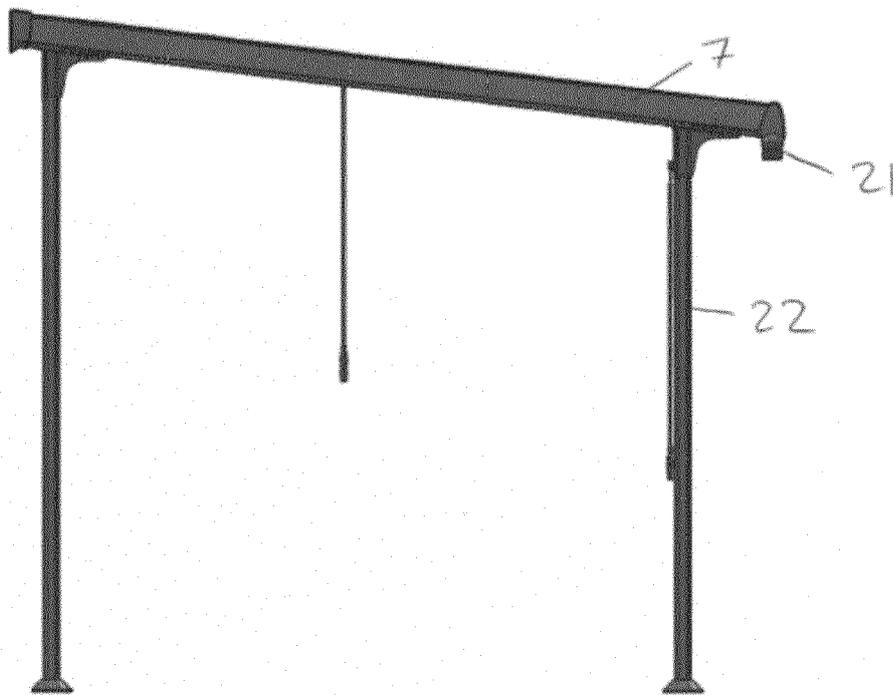


Fig. 5

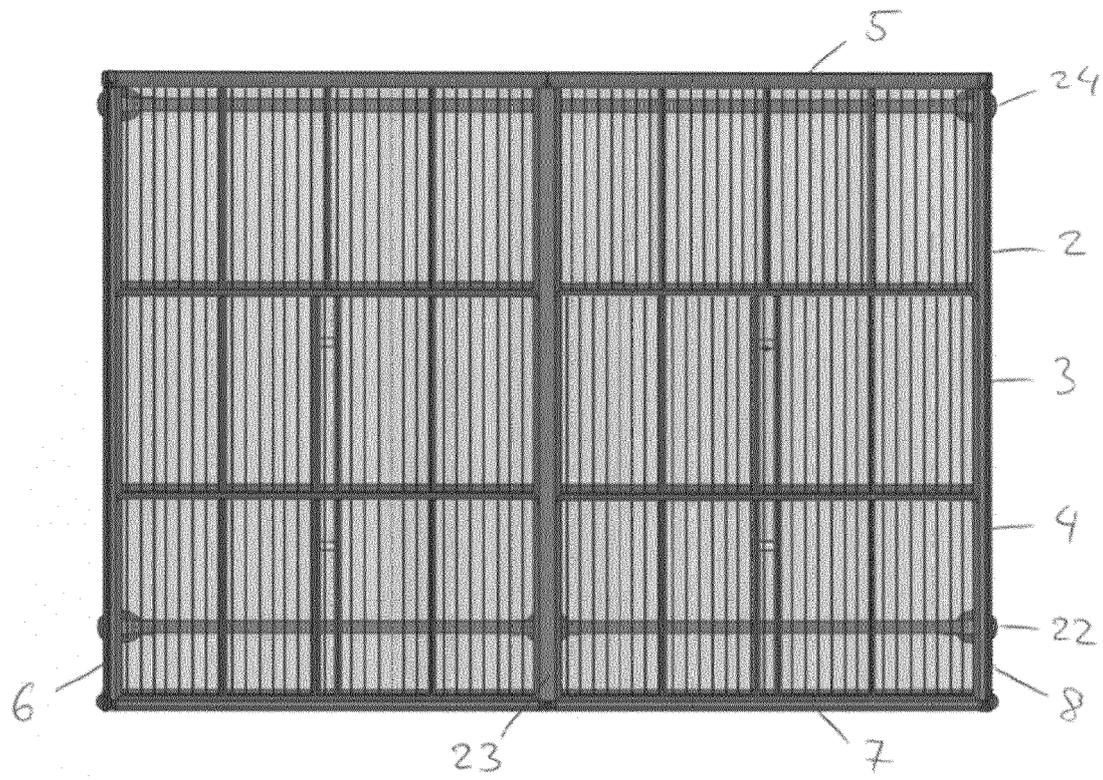


Fig. 6

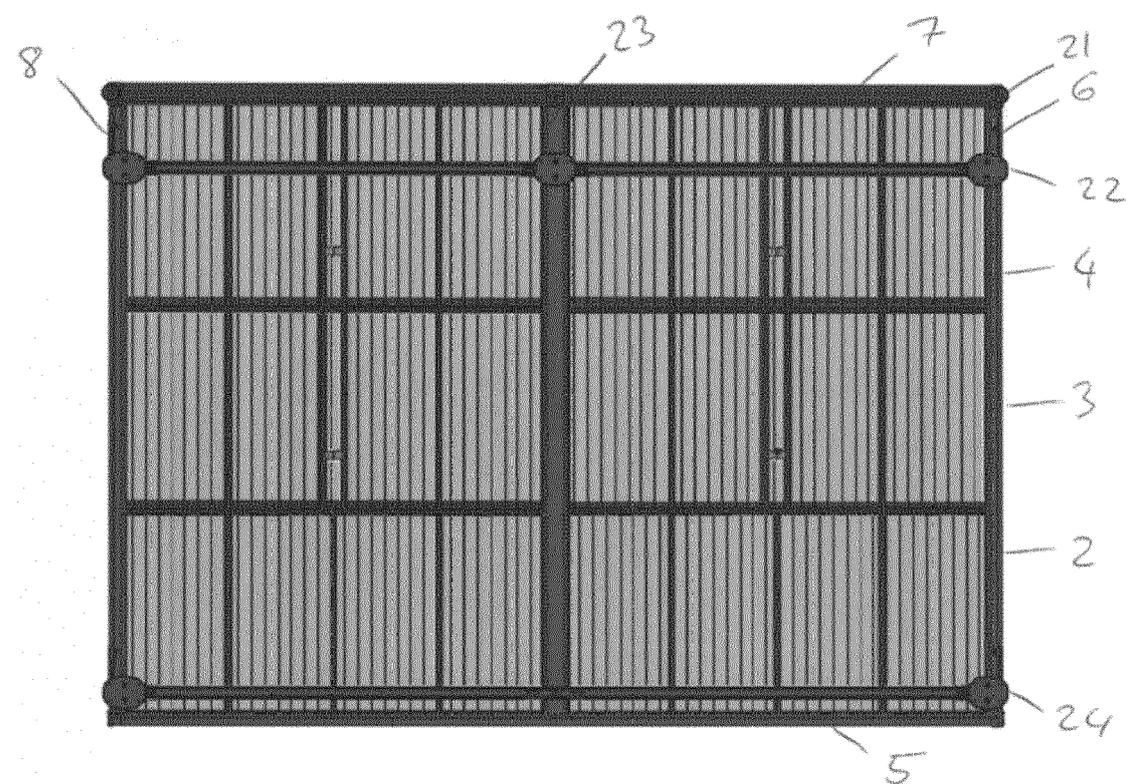
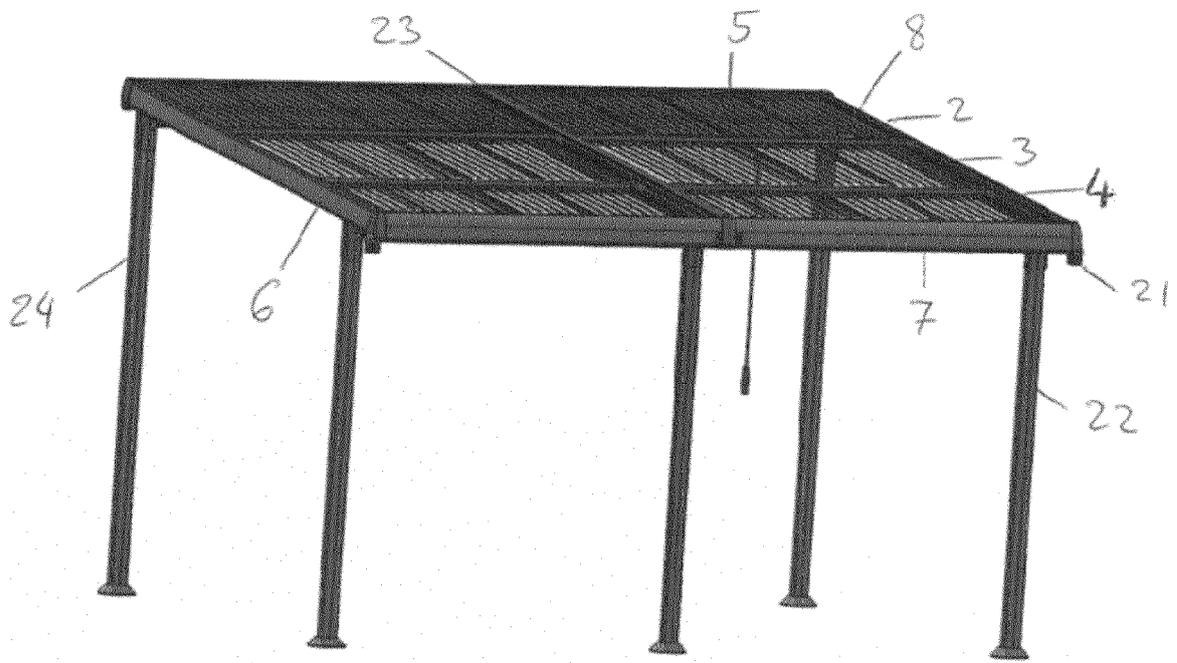


Fig. 7





EUROPEAN SEARCH REPORT

Application Number
EP 16 18 7066

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2013/124594 A1 (CASTEL JEAN-LOUIS [FR]) 29 August 2013 (2013-08-29)	1,2,7-10	INV. E04F10/10
Y	* abstract; figures 1,5 * * page 1, line 11 - line 12 * * page 5, line 12 - line 16 * * page 6, line 25 - line 28 *	3-6	
Y	FR 2 906 282 A1 (MILLEVILLE ENTPR UNIPERSONNELL [FR]) 28 March 2008 (2008-03-28) * abstract; figure 2 *	3-6	
A	FR 2 595 109 A1 (MANENC CHRISTIAN [FR]) 4 September 1987 (1987-09-04) * the whole document *	1-10	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E04F E04B
Place of search		Date of completion of the search	Examiner
Munich		13 December 2016	Cornu, Olivier
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EPO FORM 1503 03.02 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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