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(54) MULTIFUNCTIONAL FALSE CEILING SYSTEM FOR THE PARTITIONING AND LIGHTING OF A SPACE

MULTIFUNKTIONALES ABHÄNGBARES DECKENSYSTEM ZUR TEILUNG UND BELEUCHTUNG EINES RAUMES

SYSTÈME DE FAUX PLAFOND MULTIFONCTIONNEL POUR LA DIVISION ET L'ÉCLAIRAGE D'UN ESPACE

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Description

[0001] The present invention generally applies to the field of interior furnishing and it regards a multifunctional system installable in a space at a ceiling, in particular for offices, museums, shops and the like.

State of the Art

[0002] Systems for obtaining false ceilings in a space, for example the so-called "open space" office, a shop, a museum or the like, are known. Such systems generally included a plurality of beams or longitudinal profiles connected to a ceiling. In case there is a false ceiling, a plurality of panels are coupled to the beams.

[0003] The bearing beams are multifunctional, i.e. suitable to concealingly house a plurality of accessories such as alarms, lighting lights, electric cables, data cables, ducts for air conditioning, partitioning walls or the like.

[0004] Such accessories can be removably inserted into the bearing beam so as to enable a user to change the configuration of the environment whenever required.

[0005] When the accessory is not inserted, the bearing beam remains exposed or concealed by means of special finishing elements. Such characteristic jeopardises the aesthetic aspect of the system.

[0006] Furthermore, the solutions of known multifunctional systems which comprise lighting accessories for spaces can be improved from different points of view.

[0007] From DE202006002567 a system is known having all the features of the preamble of the independent claim 1.

Summary of the invention

[0008] An object of the present invention is to at least partly overcome the drawbacks illustrated above, by providing a multifunctional system installable in a space at a ceiling, that is highly functional and inexpensive.

[0009] An object of the invention is to provide a multifunctional system that enables to change the configuration of the space in which it is mounted in a simple and quick manner.

[0010] An object of the invention is to provide a multifunctional system that enables to mount a particularly versatile lighting accessory.

[0011] An object of the invention is to provide a multifunctional system that enables to mount partitioning walls in an entirely integrated manner.

[0012] An object of the invention is to provide a multifunctional system that enables to mount the panels of the false ceiling in a simple and quick manner.

[0013] An object of the invention is to provide a multifunctional system that minimises the installation times.

[0014] An object of the invention is to provide a multifunctional system of high aesthetic appeal.

[0015] These objects, as well as others that will be clearer hereinafter, are attained by a multifunctional system according to claim 1.

[0016] The dependent claims 2 to 14 define advantageous embodiments of such invention.

Brief description of the drawings

[0017] Further characteristics and advantages of the invention will be more apparent in light of the detailed description of a preferred but non-exclusive embodiment of a system **1,** illustrated by way of non-limiting example with reference to the attached drawings, wherein:

FIGS. 1A and 1B are schematic views of embodiments of a system **1;**

FIG. 1C is a schematic view of the electric power supply of a lighting device **40;**

FIGS. 1D and 1E are axonometric views of some details of the system **1,** in particular FIG. 1D illustrates a beam **10** and FIG. 1E illustrate a lighting device **40;**

FIGS. 2, 3A and **4** are a sectional schematic view of different embodiments of some details of the partitioning system **1,** with **FIG. 4B** showing some enlarged details of FIG. 4;

FIG. 3B is an exploded lateral view of the system **1.**

Detailed description of some preferred embodiments

[0018] With reference to the mentioned figures, herein described is a system **1** installable in a space **E,** generally an open space, at a ceiling **C** or a false ceiling.

[0019] The system **1** may essentially include one or more longitudinal profiles **10** that can be connected to the ceiling **C** in a per se known manner. The longitudinal profiles **10** may be structural, in which case they are referred to as "beams", or not.

[0020] Even though beams will be referred to hereinafter, it is clear that the profiles may be structural or not, without departing from the scope of protection of the attached claims.

[0021] A plurality of panels **20** of the false ceiling and a plurality of elements **26** for the mutual connection of the panels **20** and the beams **10** may be possibly present.

[0022] Once the panels **20** and the beam **10** are connected, the latter may cooperate to define a main extension plane of the false ceiling π.

[0023] The beam **10** may have a substantially longitudinal extension defining an axis **X** and it may comprise a pair of lateral walls **11, 12** facing each other and an upper wall **13** designated to be faced towards the ceiling **C.**

[0024] The lateral walls **11, 12** may extend in respective planes substantially perpendicular to the false ceiling, i.e. they may be substantially perpendicular to the upper wall **13** so as to cooperate in a manner such that the beam **10** is substantially C-shaped.

[0025] It is clear that the lateral walls **11, 12** may be divided into two or more portions, without departing from

the scope of protection of the attached claims.

[0026] The lateral walls **11, 12** and the upper wall **13** may thus mutually cooperate to define a compartment **14** open at the bottom part to removably, selectively and alternatively receive one or more accessories that perform one or more functions in the space **E,** for example a lighting device **40** or an accessory **30** for sustaining one or more partitioning walls or similar accessories. Furthermore, a protection element **50** operatively coupled with the lighting device **40** may possibly be provided for.

[0027] Each of the lateral walls **11, 12** of the beam **10** may include an upper edge **1100', 1200'** facing towards the ceiling **C** and an upper edge **1100", 1200"** opposite thereto and faced downwards.

[0028] The lateral walls **11, 12** may have inner surfaces **110', 120'** and outer surfaces **110", 120",** the latter being designated to remain facing the panels **20.**

[0029] Elements **16** for connection with corresponding connection elements **26** of the panels **20** may be arranged externally to the beam **10.** For example, the connection elements **16** may be seats or female elements **16'** arranged at the outer surfaces **110", 120",** while the connection elements **26** may be male elements **26'.**

[0030] The connection elements **16** and the connection elements **26** may possibly be snap-coupled to each other.

[0031] For example, as illustrated in the attached figures, the lateral walls **11, 12** may comprise a pair of guides **17', 17"** facing each other and a step **18** cooperating with the former to define the guide rail **16'.**

[0032] It is clear that the aforementioned male and female elements may also be inverted without departing from the scope of protection of the attached claims. For example, the connection elements **26** may include the female element and the connection elements **16** may include the male element.

[0033] The beam **10** and the panel **20** may be coupled so as to enable the mutual sliding along a direction substantially parallel to the axis **X** and prevent the mutual sliding thereof along a direction substantially perpendicular with respect to the axis **X,** i.e. they may prevent the de-coupling of the beam **10** and of the panel **20.**

[0034] Thus, the panels **20** and the beam **10** may be connected in a simple and quick manner, without using screws, bolts or similar fixing elements. Furthermore, thanks to such characteristic, the positioning of the panel **20** may be varied slightly even when it is already connected with the beam **10.**

[0035] The maximum distance **d1** between the inner surfaces **110', 120'** of the walls **11, 12** may be particularly large with respect to the general overall dimensions of the beam **10.** For example, such distance **d1** may be about 100 mm.

[0036] The distance **d2** between the upper edge **1100', 1200'** and the lower edge **1100", 1200"** of the respective walls **11, 12** may be particularly small, for example lesser than 100 mm, preferably about 60 mm.

[0037] Such distance **d2** may thus define the height **h** of the beam **10.**

[0038] Thus, the beam **10** may suitably have particularly small overall dimensions and it may be particularly suitable to be installed in ceilings or false ceilings having low thickness. For example, such system **1** may use panels **20** having thicknesses comprised between 15 mm and 45 mm.

[0039] Furthermore, as shown in the attached figures, the panel **20** and the lower edge **1100", 1200"** may be substantially flushed so as to confer a high aesthetic appeal to the system **1.**

[0040] The beam **10** may suitably comprise one or more portions **19** to be coupled with the ceiling **C.** Such type of coupling may be of the per se known type.

[0041] On the other hand, the inner surfaces **110', 120', 130'** of the walls **11, 12, 13** may thus define the inner surface **140'** of the compartment **14.**

[0042] Furthermore, according to a particular aspect of the invention, the inner surface **140'** of the compartment **14** may be configured so as to have a low reflection, for example it may be substantially black, it may be painted black or it may be treated and/or covered with a high light absorption material.

[0043] Thus, the inner surface **140'** may appear as substantially dark to the user.

[0044] The space **E** may thus be captivating in that when the beam **10** is without accessories **30, 40** or covering elements, the user inside the space **E** can see the dark, substantially black, beams **10** only.

[0045] Thus, there may be obtained a stark difference between the panels, generally light-coloured (white or grey) and the dark beam **10** so as to confer a particular aesthetic appeal to the system **1.**

[0046] As a matter of fact, the systems generally available in the market use covering elements coupled to the beam so as to be substantially aligned with the panels. Such covering elements are of the same colour as the light colour of the panels so as to have chromatic continuity.

[0047] Such covering elements have a plurality of holes to ensure an appropriate sound insulation performance. In particular, the presence of the latter holes slightly varies the chromaticity of the covering element so as not to jeopardising aesthetic aspect of the entire system.

[0048] The beam **10** may comprise at least one portion **15** to enable the coupling of the accessory **30, 40** with the beam **10.** Such coupling may preferably be of the removable type.

[0049] For example, male or female elements **15'** susceptible to snap-receive the partitioning accessory **30** may be provided for as illustrated in FIG. 3.

[0050] The system **1** may thus be multifunctional, i.e. it may be suitable to house a plurality of accessories in a removable manner so as to guarantee to the user the possibility of changing the configuration of the space **E** whenever required

[0051] For example, the accessories may be the lighting device **40** and/or the system **30** for sustaining one or

more partitioning walls or further accessories may be provided for. The accessories may be of different type, for example, they may be service accessories such as lights, fire safety alarms, cable ducts and/or the like. Data cables, telephone cables or the like may be possibly inserted into the cable ducts.

[0052] The protection element **50** which may preferably be more or less transparent and/or reflecting to enable the light beams of the lighting device **40** to pass through, may possibly be provided for.

[0053] It is clear that the system **1** may comprise a plurality of beams **10** having the characteristics described above, each one of which may comprise one or more accessories **30, 40**.

[0054] Should the need to vary the configuration of the system **1** arise, the appropriate accessory **30, 40** may be suitably mounted upon removing the accessory **30, 40** present, if present, from one or more of the beams **10.**

[0055] For example, should there arise the need to partition the space **E** of the open space type into a plurality of compartments, it may be sufficient to mount the accessory **30** for sustaining one or more partitioning walls, which for example may be made of glass or plasterboard, or mount one or more lighting devices **40.**

[0056] The beams **10** may possibly comprise several accessories simultaneously. However, the accessories **30, 40** may preferably be selectively alternatively mountable on a beam **10.** In other words, the latter may receive the partitioning accessory **30** or one or more lighting devices **40.**

[0057] The latter may comprise conductive means **41** and at least one light source **40'.** In particular, an electric power supply line, for example the domestic power mains, electrically connected with the conductive means **41** may be provided for so that the latter power-supplies the light source **40'.**

[0058] The latter may for example comprise one or more LED lights, possibly a spot of LED lights, i.e. a plurality of of LEDs **40'** mounted on a special support structure of the known type. In particular, the LED lights **40'** may be electrically connected with the conductive means **41** so as to be power-supplied by the latter.

[0059] More in detail, the conductive means **41** may comprise a longitudinal guide rail **41'** and the LED lights **40'** may be coupled with the longitudinal guide rail **41'** so that the latter power-supplies the former.

[0060] Each device **40** may be substantially modular, i.e. it may be formed by two or more LED spots **40'.** For example, the device **40** may have a length of 600 mm (one spot), 1200 mm (two spots) or 1800 mm (three spots).

[0061] Each spot may comprise a high number of LEDs. For example, a spot measuring 600 mm long may comprise 294 LEDs **40'** arranged in 7 rows.

[0062] According to a particular aspect of the invention, the guide rail **41'** may be power-supplied at low voltage. Thus, the LED lights **40' may** too be power-supplied at low voltage.

[0063] The electronic devices are divided into electrical insulation classes as defined by the IEC (*International Electrotechnical Commission*). In particular, the device **40** may meet the insulation class III requirements according to the IEC.

[0064] Thus, the device **40** may be particularly safe, it may not be hazardous in case of contact with the human body, and thus does not require the earthing of the device.

[0065] For example, the voltage of the guide rail **41'** may be about 48 volts in direct current.

[0066] The electric power supply line may suitably be at low voltage (electricity generated by a low voltage battery) or there may be provided for at least one low voltage transformer **42** connected to the electric power supply line and arranged upstream of the of the guide rail **41'** so that the latter is power-supplied in low voltage (FIG. 1C).

[0067] There may be provided for a transformer **42** at each beam **10** so that it is connected with a guide rail **41',** or the transformer **42** may be simultaneously connected electrically with a plurality of guide rails **41'.**

[0068] Furthermore, there may be possibly connected a plurality of consecutive guide rails **41'** connected to the same beam **10** with the same transformer **42.**

[0069] It is clear that the dimensioning and configuration of the transformer **42** may vary depending on the need, materials, length of the guide rail, or the current of the power mains that supply it with power.

[0070] In other words, the domestic mains (220 V in alternating current) may define the electric power supply line, while - due to the presence of the transformer - the guide rail **41'** and thus the LED lights **40'** may be power-supplied at low voltage (48 V in direct current).

[0071] This may allow avoiding the high number of cables and transformers which can generally be observed in such devices. Furthermore, the use of low voltage electric current makes the device particularly safe, with low risks for the users and operators and without requiring earthing.

[0072] Thus, the installation thereof will also be particularly simple, safe and quick.

[0073] A longitudinal profile **44** which may comprise one or more portions **46** for coupling with the beam **10,** for example at the upper wall **13** thereof, may be suitably provided for. Such coupling may be of any type of the per se known type.

[0074] The longitudinal profile **44** may have a shape similar to the shape of the beam **10,** with a pair of respective opposite lateral walls **47, 48** and an upper wall **49** interposed therebetween so as to define a substantially C-shaped section.

[0075] The walls **47, 48** may have a respective upper **4700', 4800'** and opposite lower **4700", 4800"** edge.

[0076] Once coupled, the longitudinal profile **44** may remain inside the compartment **14.** The former may preferably be coupled so that the lower edge **4700", 4800"** may remain substantially facing the lower edge **1100",**

1200" of the respective wall **11, 12** and preferably flushed with the same.

[0077] The LED lights **40'** may suitably be coupled to the guide rail **41'** in any position so that the lighting device **40** and thus the system **1** adapts to the various needs for lighting the space **E.**

[0078] Furthermore, the LED lights **40'** may be removably coupled with the guide rail **41'** so as to enable to easily configure the arrangement of the former. More in particular, the LED lights **40'** may be coupled with the profile **44** in a per se known manner, while the latter may be coupled with the beam **10** as better outlined hereinafter.

[0079] The device **40** may suitably comprise at least one adapter **43** for coupling the profile **44** with the beam **10.** Each device **40** may preferably comprise an adapter **43** in proximity of an end **44'** and an adapter **43** in proximity of the opposite end **44'** of the longitudinal profile **44.**

[0080] The adapter **43** may be coupled with the profile **44** in a per se known manner. For example, as shown in FIG. 3, by means of a screw-bolt system.

[0081] The guide rail **41'** may suitably comprise at least one magnet, for example a magnetic longitudinal bar, while the adapter **43** may be configured to be attracted by the magnet so as to couple the latter to the guide rail **41'.**

[0082] In other words, the adapter **43** is coupled at the upper part with the guide rail **41'** by means of the mutual magnetic attraction action, and - at the lower part - with the longitudinal profile **44** by means of the screw-bolt system.

[0083] The magnetic coupling may for example be obtained so that the guide rail **41'** can sustain a weight of 5 Kg per linear metre, i.e. the configuration and characteristics of the magnetic bar and the adapter **43** may be such that the mutual attraction is substantially equal to or greater than such force.

[0084] The guide rail **41'** may be integrally coupled with the upper wall **13** of the beam **10** in a per se known manner, for example by means of self-tapping screws or screw-bolt systems.

[0085] As known, given that the lighting device **40** is under class III, there is no need for particular solutions for the safety or insulation of one or more parts thereof.

[0086] The LED lights **40'** may be all identical to each other or not. In any case, each LED light **40'** may be coupled with the guide rail **41'** by means of the adapters **43** described above in any position of any beam **10.**

[0087] It is clear that the electrical connections between each LED **40'** and the guide rail **41'** may be of the per se known type, for example by means of suitable cables passing through the adapter **43.**

[0088] As shown in FIG. 3, the system **1** may suitably comprise the lighting device **40** and the protection element **50** which may be at least partly optically transparent to enable the light beams to pass through.

[0089] The protection element **50** may comprise a pair of opposite longitudinal walls **51, 52** and a horizontal wall **53** interposed therebetween so as to have a substantially C-shaped section. In particular, the latter horizontal wall **53** may be optically transparent and remain faced to the LED lights **40'.**

[0090] The protection element **50** may suitably be removably coupled with the snap-coupled lighting device **40.** For example, the protection element **50** may comprise a portion **55** for snap-coupling with the lighting device **40** (FIG. 3A).

[0091] In particular, the lateral walls **51, 52** may have male or female elements defining such coupling portions while the longitudinal profile **44** may comprise coupling portions **45** comprising corresponding female or male elements **45'** configured to be snap-coupled with the former.

[0092] As described above, the same beam **10** may be coupled with different types of accessories. For example, in FIG. 4 there is shown a partitioning accessory **30** removably snap-coupled with the beam **10.**

[0093] In a per se known manner, the partitioning accessory **30** may also comprise a longitudinal profile **34** which may comprise, similarly to the longitudinal profile **44,** a pair of respective faced **37, 38** and upper **39** lateral walls mutually interposed so as to define a substantially overturned C-shaped section. The longitudinal profile **34** may suitably comprise at least one portion **36** for coupling with the beam **10.** Each lateral wall **37, 38** may for example comprise a male or female element **36'** to be snap-coupled with the corresponding female or male element **15**' of the beam **10.**

[0094] The longitudinal profile **34** may thus be configured to define a longitudinal profile **32** for a partitioning wall **W** formed by a single panel, or - despite not being shown in the attached figures - a plurality of substantially parallel longitudinal seats for a partitioning wall formed by two or more panels.

[0095] Such accessory **30** may for example be particularly suitable for glass doors or partitioning walls.

[0096] The invention invention is susceptible to numerous modifications and variants, all falling within the scope of protection of the attached claims. All details can be replaced by other technically equivalent elements, and the materials can be different depending on the technical needs, without departing from the scope of protection defined by the attached claims.

Claims

1. A multifunctional system installable in a space **(E)** at a ceiling **(C),** comprising:

   - at least one longitudinal profile **(10)** couplable with the ceiling **(C);**
   - at least one first accessory and one second accessory **(30, 40)** that perform one or more functions in the space **(E),** said at least one first and one second accessory **(30, 40)** being alter-

natively and selectively removably couplable with said at least one longitudinal profile **(10);**

wherein said at least one profile **(10)** comprises a pair of lateral walls **(11, 12)** facing each other and an upper wall **(13)** designated to be faced towards the ceiling **(C)** cooperating with each other to internally define a compartment **(14)** open at the bottom for removably receiving said at least one first **(30)** or at least one second **(40)** accessory,
wherein said at least one first or one second accessory **(40)** comprises:

- at least one longitudinal conductive guide rail **(41')** susceptible to be powered by means of electric power supply means;
- at least one light source **(40')** removably coupled with said at least one longitudinal conductive guide rail **(41')** so that the latter power-supplies the former;

wherein said multifunctional system further comprises at least one low voltage transformer coupled or couplable with said at least one profile **(10)** and electrically connected with said at least one longitudinal conductive guide rail **(41')** and with the electric power supply means so that said at least one light source **(40')** is power-supplied at low voltage;
characterized in that said at least one second accessory **(40)** comprises at least one adapter element **(43)** operatively coupled with said at least one light source **(40')** and said adapter element (43) being susceptible to be removably coupled with said at least one longitudinal conductive guide rail **(41'),** the latter and said adapter element **(43)** being mutually coupled by means of magnetic attraction.

2. System according to the preceding claim, wherein said at least one light source **(40')** is operatively coupled with said at least one longitudinal conductive guide rail **(41')** at any position of the latter.

3. System according to one or more of the preceding claims, wherein said at leastone light source **(40')** is rotationally coupled with said at least one longitudinal conductive guide rail (**41'**).

4. System according to one or more of the preceding claims, wherein said lightsource **(40')** is power-supplied at low voltage in direct current.

5. System according to one or more of the preceding claims, wherein said light source **(40')** is a LED or a spot of a plurality of LEDs, said light source **(40')** preferably comprising a plurality of modularly couplable spots of LEDs all identical to each other.

6. System according to one or more of the preceding claims, comprising a pluralityof longitudinal profiles **(10)** each one of which having a respective at least one longitudinal conductive guide rail **(41'),** said light source **(40')** or said plurality of light sources **(40')** being couplable to any one of said at least one longitudinal conductive guide rail **(41')** of said longitudinal profiles **(10).**

7. System according to one or more of the preceding claims, comprising a plurality of longitudinal profiles **(10)** and a plurality of panels **(20)** couplable with said longitudinal profiles **(10)** to obtain a false ceiling, wherein said lateral walls **(11, 12)** and said upper wall **(13)** have each an inner surface **(110', 120', 130')** defining the inner surface **(140')** of said compartment **(14),** wherein when said at least one first and one second accessory **(30, 40)** are de-coupled from said at least one longitudinal profile **(10),** said inner surface **(140')** of said compartment **(14)** is designated to remain exposed, wherein said panels **(20)** are light-coloured, said inner surface **(140')** of said compartment **(14)** being configured or treated so as to be dark-coloured.

8. System according to the preceding claim, wherein said panels **(20)** are white or grey-coloured, said inner surface **(140')** of said compartment **(14)** being configured or treated to be black-coloured.

9. System according to claim 7 or 8, wherein when said at least one first and one second accessory **(30, 40)** are de-coupled from said at least one longitudinal profile **(10),** said inner surface **(140')** of said compartment **(14)** remains exposed without any covering element of said longitudinal profiles **(10).**

10. System according to claim 7, 8 or 9, wherein said lateral walls **(11, 12)** extend in respective planes substantially perpendicular to the false ceiling, said lateral walls **(11, 12)** having an upper edge **(1100', 1200')** faced towards the ceiling **(C)** and an opposite lower edge **(1100", 1200")** faced towards the space **(E),** the distance **(d2)** between said upper **(1100', 1200')** and lower **(1100", 1200")** edges defining the height **(h)** of said at least one longitudinal profile **(10),** the latter being lesser than 100 mm, preferably about 60 mm.

11. System according to any one of claims 7 to 10, wherein said at least one first and one second accessory **(30, 40)** comprise at least one respective first and second portion **(36, 46)** for the removable coupling with said longitudinal profiles **(10)** inside said compartment **(14).**

12. System according to the preceding claim, wherein said lateral walls **(11, 12)** comprise a respective third coupling portion **(15),** the latter and said first coupling

portion **(36)** of said at least one first accessory **(30)** or said first and second coupling portions **(36, 46)** of said at least one first and one second accessory **(30, 40)** being mutually configured for snap-coupling.

13. System according to any one of claims 7 to 12, wherein said lateral walls **(11, 12)** have each an outer surface **(110", 120")** comprising first elements **(16)** for coupling with said panels **(20),** the latter comprising second elements **(26)** for coupling with said first coupling elements **(16)** of said lateral walls **(11, 12),** said first coupling elements **(16)** of said lateral walls **(11, 12)** and said second coupling elements **(26)** of said panels **(20)** being preferably mutually couplable in a removable manner.

14. System according to the preceding claim, wherein said longitudinal profiles **(10)** and said panels **(20)** are mutually configured so that upon mutually coupling said first and second coupling elements **(16, 26),** said panels **(20)** are substantially flushed with said lower edge **(1100", 1200")** of said lateral walls **(11, 12)** of said longitudinal profiles **(10)** so as to ensure a substantial view continuity for the user.

Patentansprüche

1. Multifunktionales System, installierbarbar an einer Decke (C) in einem Raum (E), umfassend:

wenigstens ein Längsprofil (10) koppelbar mit der Decke (C);
wenigstens ein erstes Zubehör und ein zweites Zubehör (30, 40), die eine oder mehrere Funktionen in dem Raum (E) ausführen, wobei das wenigstens eine erste und eine zweite Zubehör (30, 40) alternativ und wahlweise entfernbar mit dem wenigstens einen Längsprofil (10) koppelbar sind;
wobei das wenigstens eine Profil (10) ein Paar von Seitenwänden (11, 12) umfasst, die einander zugewandt sind, und eine obere Wand (13), die dazu bestimmt ist zur Decke (C) ausgerichtet zu werden, die miteinander zusammenwirken, um ein internes Fach (14) auszubilden, das unten offen ist, um das wenigstens eine erste (30) oder wenigstens eine zweite (40) Zubehör entfernbar aufzunehmen;
wobei das wenigstens eine erste oder eine zweite Zubehör (40) umfasst:

wenigstens eine längliche, leitende Führungsschiene (41') geeignet um durch elektrische Energieversorgungsmittel versorgt zu werden;
wenigstens eine Lichtquelle (40') entfernbar verbunden ist mit der wenigstens einen länglichen, leitenden Führungsschiene (41'), so dass letztere erstere mit Energie versorgt,
wobei das multifunktionale System ferner wenigstens einen Niederspannungstransformator umfasst, verbunden oder verbindbar mit dem wenigstens einen Profil (10) und elektrisch verbunden mit der wenigstens einen länglichen, leitenden Führungsschiene (41') und mit den elektrischen Energieversorgungsmitteln, so dass die wenigstens eine Lichtquelle (40') mit einer niedrigen Spannung versorgt wird;
dadurch gekennzeichnet, dass das wenigstens zweite Zubehör (40) wenigstens ein Adapterelement (43) umfasst, wirkend verbunden mit der wenigstens einen Lichtquelle (40') und das Adapterelement (43) ist geeignet um entfernbar mit der wenigstens einen länglichen, leitenden Führungsschiene (41') verbunden zu werden, wobei letztere und das Adapterelement (43) gegenseitig mittels magnetischer Anziehung verbunden sind.

2. System nach dem vorherigen Anspruch, wobei die wenigstens eine Lichtquelle (40') mit der wenigstens einen länglichen, leitenden Führungsschiene (41') an beliebiger Position letzterer wirkend verbunden ist.

3. System nach einem oder mehreren der vorherigen Ansprüche, wobei die wenigstens eine Lichtquelle (40') rotierbar mit der wenigstens einen länglichen, leitenden Führungsschiene (41') verbunden ist.

4. System nach einem oder mehreren der vorherigen Ansprüche, wobei die wenigstens eine Lichtquelle (40') mit einer niedrigen Gleichspannung versorgt wird.

5. System nach einem oder mehreren der vorherigen Ansprüche, wobei die Lichtquelle (40') eine LED oder ein Strahler mit einer Mehrzahl von LEDs ist, wobei die Lichtquelle (40') vorzugsweise eine Mehrzahl von modular koppelbaren Strahlern von LEDs umfasst, die alle identisch zueinander sind.

6. System nach einem oder mehreren der vorherigen Ansprüche, umfassend eine Mehrzahl von Längsprofilen (10), wobei jedes wenigstens eine längliche, leitende Führungsschiene (41') aufweist, wobei die Lichtquelle (40') oder die Mehrzahl von Lichtquellen (40') mit jeder der wenigstens einen länglichen, leitenden Führungsschiene (41') der Längsprofile (10) verbindbar ist.

7. System nach einem oder mehreren der vorherigen

Ansprüche, umfassend eine Mehrzahl von Längsprofilen (10) und eine Mehrzahl von Platten (20) verbindbar mit den Längsprofilen (10) zum Erhalten einer Zwischendecke, wobei die Seitenwände (11, 12) und die obere Wand (13) jeweils eine innere Oberfläche (110', 120', 130') aufweisen zum Bilden der inneren Oberfläche (140') des Fachs (14), wobei wenn das wenigstens eine erste und eine zweite Zubehör (30, 40) von dem wenigstens einen Längsprofil (10) entfernt sind, die innere Oberfläche (140') des Fachs (14) offen liegt, wobei die Platten (20) eine helle Farbe aufweisen und die innere Oberfläche (140') des Fachs (14) dunkelfarbig ausgebildet oder behandelt ist.

8. System nach dem vorherigen Anspruch, wobei die Platten (20) weiß oder grau sind und die innere Oberfläche (140') des Fachs (14) schwarz ausgebildet oder behandelt ist.

9. System nach Anspruch 7 oder 8, wobei wenn das wenigstens eine erste und eine zweite Zubehör (30, 40) von dem wenigstens einen Längsprofil (10) entfernt sind, die innere Oberfläche (140') des Fachs (14) offenliegend ist ohne ein Abdeckungselement für die Längsprofile (10).

10. System nach Anspruch 7, 8 oder 9, wobei sich die Seitenwände (11, 12) in entsprechenden Ebenen im wesentlichen rechtwinklig zur Zwischendecke erstrecken, wobei die Seitenwände (11, 12) eine zur Decke (C) weisende obere Kante (1100', 1200') und eine gegenüberliegende zum Raum (E) weisende untere Kante (1100", 1200") aufweisen, wobei der Abstand (d2) zwischen der oberen (1100', 1200') und unteren (1100", 1200") Kanten die Höhe (h) des wenigstens einen Längsprofils (10) definieren, letzteres ist kleiner 100 mm, vorzugsweise ungefähr 60 mm.

11. System nach einem der Ansprüche 7 bis 10, wobei das wenigstens eine erste und eine zweite Zubehör (30, 40) wenigstens einen entsprechenden ersten und zweiten Abschnitt (36, 46) umfassen, zum entfernbaren Verbinden mit den Längsprofilen (10) innerhalb des Fachs (14).

12. System nach dem vorherigen Anspruch, wobei die Seitenwände (11, 12) einen entsprechenden dritten Verbindungsabschnitt (15) umfassen, wobei letzterer und der erste Verbindungsabschnitt (36) des wenigstens einen ersten Zubehörs (30) oder des ersten und zweiten Verbindungsabschnitt (36, 46) von dem wenigstens einen ersten und zweiten Zubehör (30, 40) zur gegenseitigen Schnappverbindung ausgebildet sind.

13. System nach einem der Ansprüche 7 bis 12, wobei die Seitenwände (11, 12) eine äußere Oberfläche (110", 120") aufweisen, umfassend ein erstes Element (16) zum verbinden mit den Platten (20), wobei letztere zweite Elemente (26) zum Verbinden mit den ersten Verbindungselementen (16) der Seitenwände (11, 12) umfassen, wobei die ersten Verbindungselemente (16) der Seitenwände (11, 12) und die zweiten Verbindungselemente (26) der Platten (20) vorzugsweise gegenseitig in einer lösbaren Art verbindbar sind.

14. System nach dem vorherigen Anspruch, wobei die Längsprofile (10) und die Platten (20) gegenseitig so ausgebildet sind, dass beim gegenseitigen Verbinden der ersten und zweiten Verbindungselemente (16, 26) die Platten (20) im Wesentlichen eben sind mit der unteren Kante (1100", 1200") der Seitenwände (11, 12) der Längsprofile (10), um für den Benutzer eine im Wesentlichen ebene Ansicht sicherzustellen.

Revendications

1. Système multifonctionnel pouvant être installé dans un espace **(E)** au niveau d'un plafond **(C),** comprenant :

- au moins un profil longitudinal **(10)** pouvant être couplé au plafond **(C)** ;
- au moins un premier accessoire et un second accessoire **(30, 40)** qui effectuent une ou plusieurs fonctions dans l'espace **(E),** lesdits au moins un premier et un second accessoires **(30, 40)** pouvant être couplés alternativement et sélectivement de manière amovible audit au moins un profil longitudinal **(10)** ;

dans lequel ledit au moins un profil **(10)** comprend une paire de parois latérales **(11, 12)** se faisant face l'une à l'autre et une paroi supérieure **(13)** conçue pour être orientée vers le plafond **(C)** coopérant les unes avec les autres pour définir de manière interne un compartiment **(14)** ouvert au fond pour recevoir de manière amovible ledit au moins un premier **(30)** ou au moins un second **(40)** accessoire,
dans lequel ledit au moins un premier ou un second accessoire **(40)** comprend :

- au moins un rail de guidage conducteur longitudinal (**41**') susceptible d'être alimenté au moyen d'un moyen d'alimentation électrique ;
- au moins une source de lumière **(40')** couplé de manière amovible audit au moins un rail de guidage conducteur longitudinal **(41')** de sorte que ce dernier alimente électriquement le premier ;

dans lequel ledit système multifonctionnel comprend en outre au moins un transformateur basse tension couplé ou pouvant être couplé audit au moins un profil **(10)** et électriquement raccordé audit au moins un rail de guidage conducteur longitudinal **(41')** et au moyen d'alimentation électrique de sorte que ladite au moins une source de lumière **(40')** est alimentée électriquement à basse tension ;
caractérisé en ce que ledit au moins un second accessoire **(40)** comprend au moins un élément adaptateur **(43)** couplé de manière fonctionnelle à ladite au moins une source de lumière **(40')** et ledit élément adaptateur (43) étant susceptible d'être couplé de manière amovible audit au moins un rail de guidage conducteur longitudinal (**41**'), ce dernier et ledit élément adaptateur **(43)** étant mutuellement couplés au moyen d'une attraction magnétique.

2. Système selon la revendication précédente, dans lequel ladite au moins une source de lumière **(40')** est couplée de manière fonctionnelle audit au moins un rail de guidage conducteur longitudinal (**41**') à une position quelconque de ce dernier.

3. Système selon l'une ou plusieurs des revendications précédentes, dans lequel ladite au moins une source de lumière **(40')** est couplée en rotation audit au moins un rail de guidage conducteur longitudinal (**41**').

4. Système selon l'une ou plusieurs des revendications précédentes, dans lequel ladite source de lumière **(40')** est alimentée électriquement à basse tension en courant continu.

5. Système selon l'une ou plusieurs des revendications précédentes, dans lequel ladite source de lumière **(40')** est une LED ou un projecteur d'une pluralité de LED, ladite source de lumière **(40')** comprenant de préférence une pluralité de projecteurs de LED pouvant être couplés de manière modulaire tous identiques les uns aux autres.

6. Système selon l'une ou plusieurs des revendications précédentes, comprenant une pluralité de profils longitudinaux **(10)** dont chacun présente au moins un rail de guidage conducteur longitudinal respectif (**41**'), ladite source de lumière **(40')** ou ladite pluralité de sources de lumière **(40')** pouvant être couplée à l'un quelconque dudit au moins un rail de guidage conducteur longitudinal (**41**') desdits profils longitudinaux **(10).**

7. Système selon l'une ou plusieurs des revendications précédentes, comprenant une pluralité de profils longitudinaux **(10)** et une pluralité de panneaux **(20)** pouvant être couplés auxdits profils longitudinaux **(10)** pour obtenir un faux plafond, dans lequel lesdites parois latérales **(11, 12)** et ladite paroi supérieure **(13)** présentent chacune une surface intérieure **(110', 120', 130')** définissant la surface intérieure **(140')** dudit compartiment **(14),** dans lequel, lorsque lesdits au moins un premier et un second accessoires **(30, 40)** sont découplés dudit au moins un profil longitudinal **(10),** ladite surface intérieure **(140')** dudit compartiment **(14)** est conçue pour rester exposée, dans lequel lesdits panneaux **(20)** sont de couleur claire, ladite surface intérieure **(140')** dudit compartiment **(14)** étant configurée ou traitée de manière à être de couleur foncée.

8. Système selon la revendication précédente, dans lequel lesdits panneaux **(20)** sont de couleur blanche ou grise, ladite surface intérieure **(140')** dudit compartiment **(14)** étant configurée ou traitée pour être de couleur noire.

9. Système selon la revendication 7 ou 8, dans lequel, lorsque lesdits au moins un premier et un second accessoires **(30, 40)** sont découplés dudit au moins un profil longitudinal **(10),** ladite surface intérieure **(140')** dudit compartiment **(14)** reste exposée sans aucun élément recouvrant desdits profils longitudinaux **(10).**

10. Système selon la revendication 7, 8 ou 9, dans lequel lesdites parois latérales **(11, 12)** s'étendent dans des plans respectifs sensiblement perpendiculaires au faux plafond, lesdites parois latérales **(11, 12)** présentant un bord supérieur (**1100'**, **1200')** orienté vers le plafond **(C)** et un bord inférieur opposé **(1100", 1200")** orienté vers l'espace **(E),** la distance **(d2)** entre lesdits bords supérieur (**1100'**, **1200')** et inférieur **(1100", 1200")** définissant la hauteur **(h)** dudit au moins un profil longitudinal **(10),** ce dernier étant inférieur à 100 mm, de préférence environ 60 mm.

11. Système selon l'une quelconque des revendications 7 à 10, dans lequel lesdits au moins un premier et un second accessoires **(30, 40)** comprennent au moins une première et une deuxième parties respectives **(36, 46)** pour le couplage amovible auxdits profils longitudinaux **(10)** à l'intérieur dudit compartiment **(14).**

12. Système selon la revendication précédente, dans lequel lesdites parois latérales **(11, 12)** comprennent une troisième partie de couplage respective **(15),** cette dernière et ladite première partie de couplage **(36)** dudit au moins un premier accessoire **(30)** ou lesdites première et deuxième parties de couplage **(36, 46)** desdits au moins un premier et un second accessoires **(30, 40)** étant mutuellement configurées pour s'encliqueter.

13. Système selon l'une quelconque des revendications

7 à 12, dans lequel lesdites parois latérales **(11, 12)** présentent chacune une surface extérieure **(110", 120")** comprenant des premiers éléments **(16)** pour se coupler auxdits panneaux **(20),** ces derniers comprenant des seconds éléments **(26)** pour se coupler auxdits premiers éléments de couplage **(16)** desdites parois latérales **(11, 12),** lesdits premiers éléments de couplage **(16)** desdites parois latérales **(11, 12)** et lesdits seconds éléments de couplage **(26)** desdits panneaux **(20)** pouvant de préférence être couplés mutuellement de manière amovible.

14. Système selon la revendication précédente, dans lequel lesdits profils longitudinaux **(10)** et lesdits panneaux **(20)** sont mutuellement configurés de sorte que, lors du couplage mutuel desdits premiers et seconds éléments de couplage **(16, 26),** lesdits panneaux **(20)** sont sensiblement alignés avec ledit bord inférieur (**1100"**, **1200")** desdites parois latérales **(11, 12)** desdits profils longitudinaux **(10)** de manière à assurer une continuité de vue considérable pour l'utilisateur.

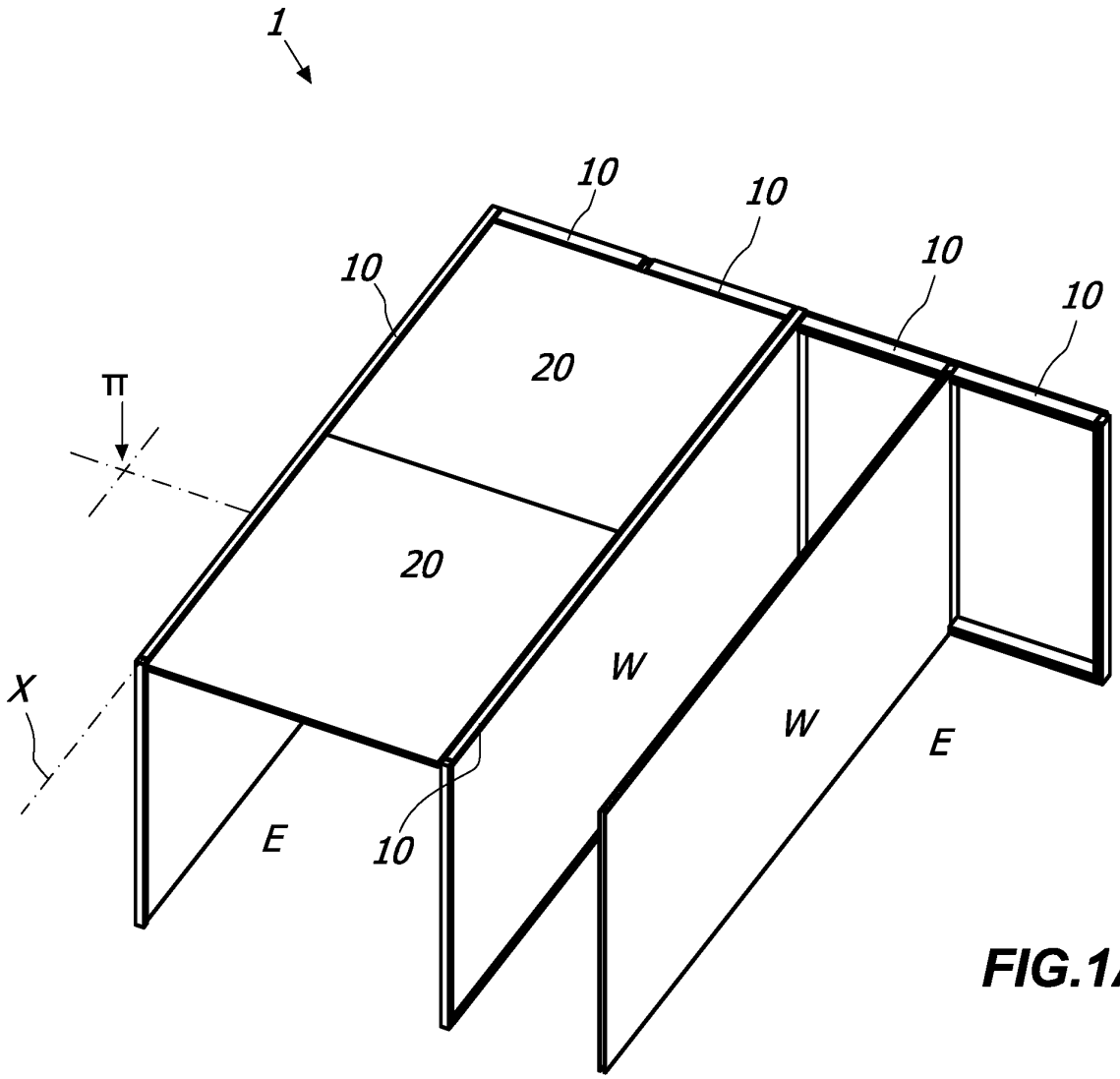

FIG.1A

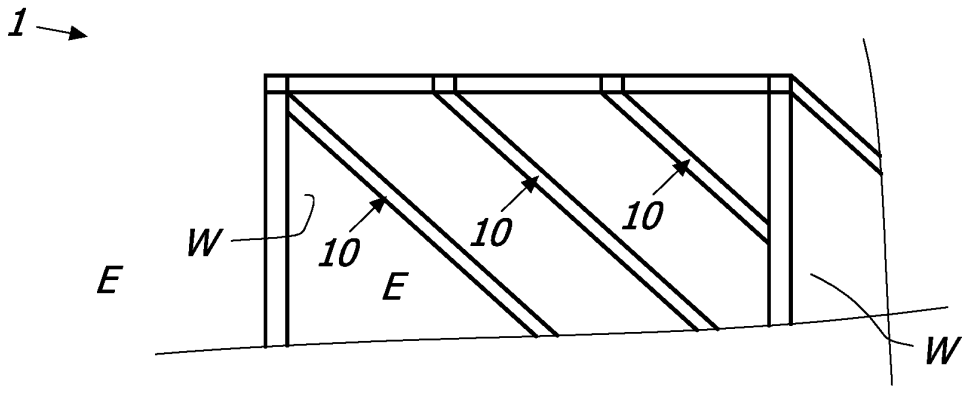

FIG.1B

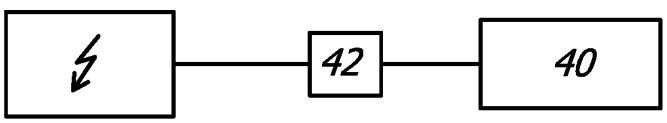

FIG.1C

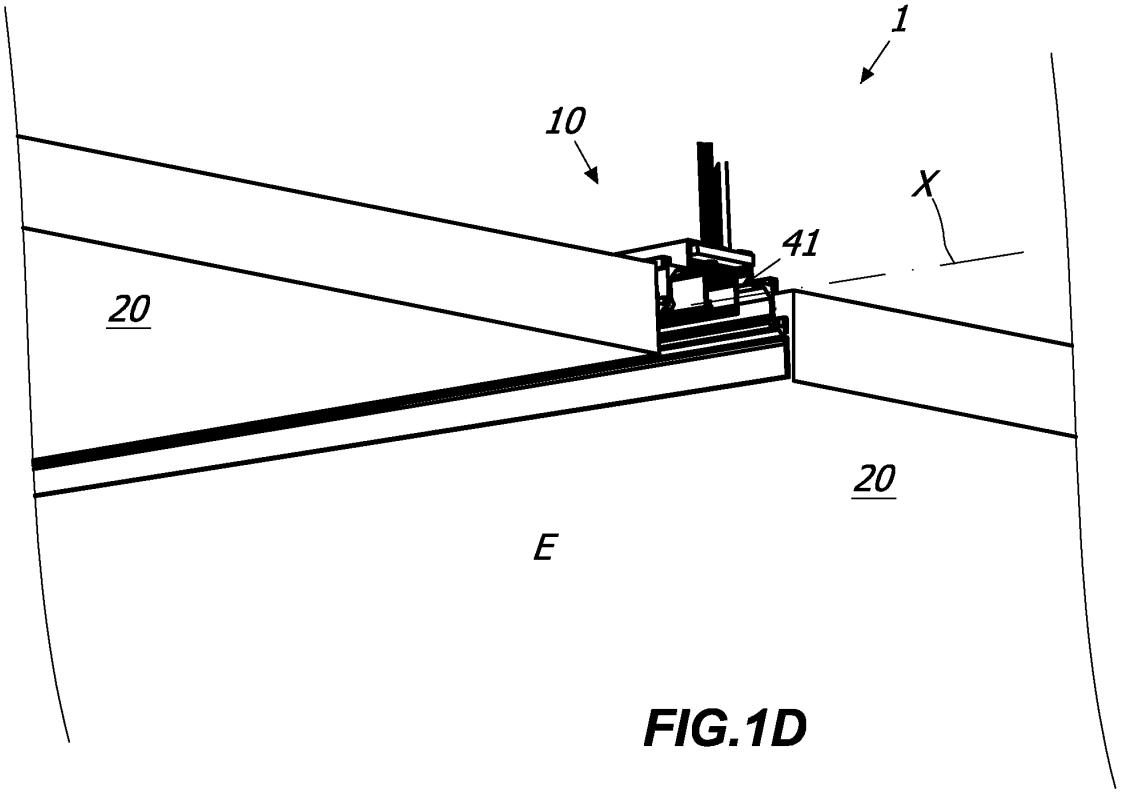

FIG.1D

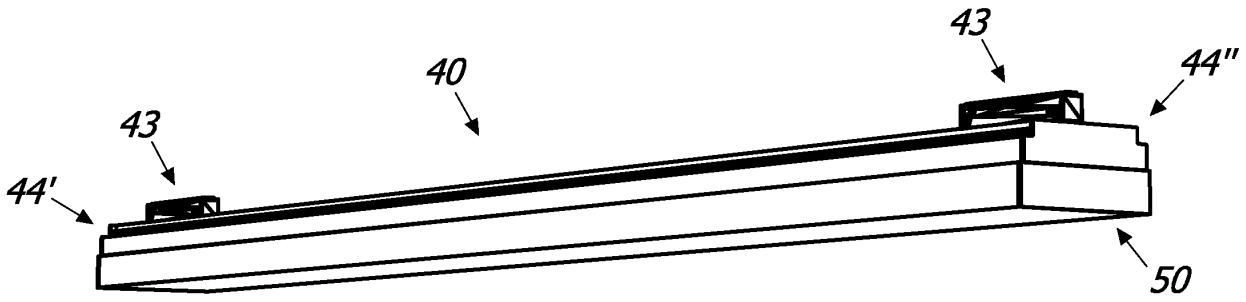

FIG.1E

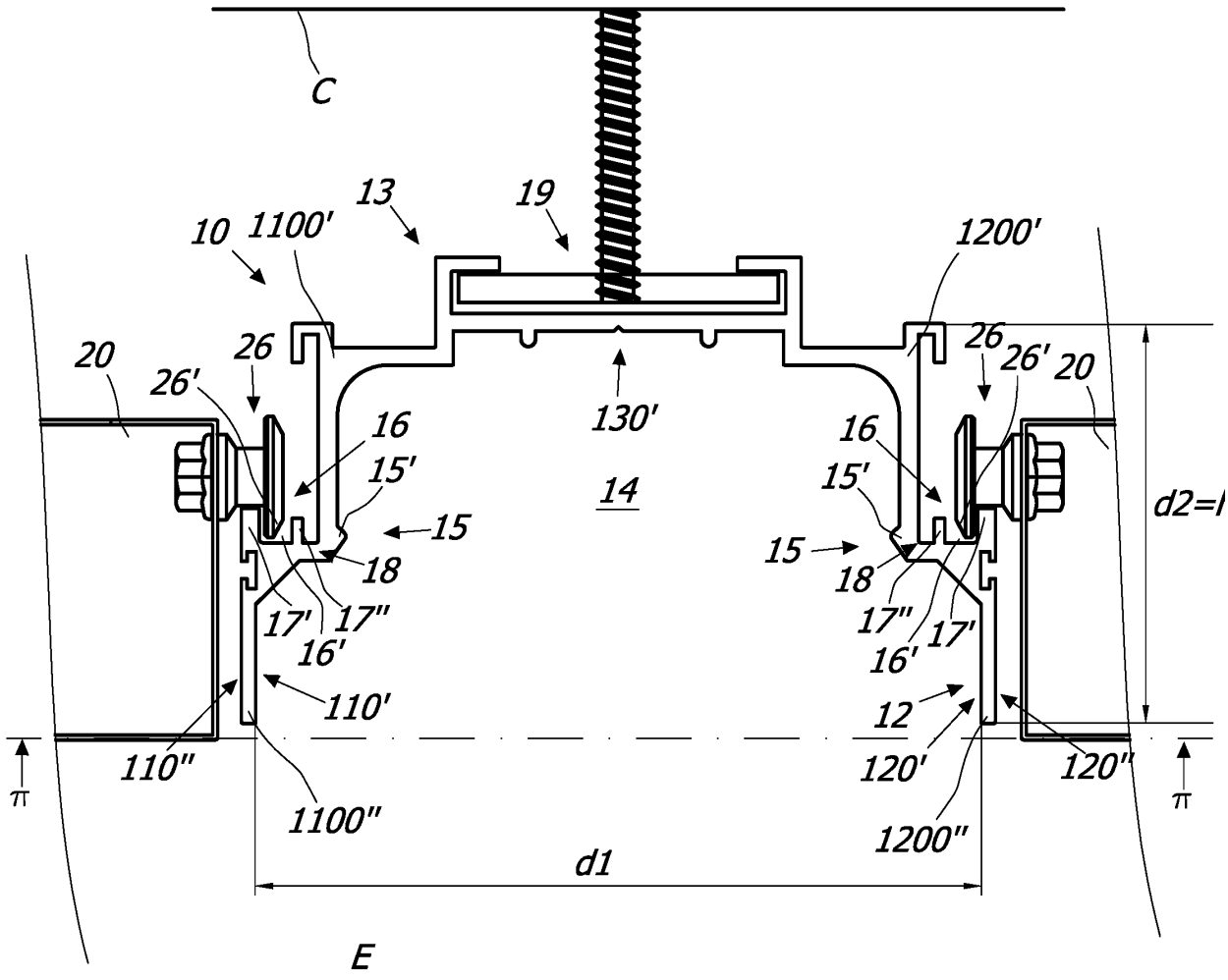
C
13
19
10
1100'
1200'
20
26
26'
130'
16
15'
14
15
18
17'
17"
16'
110'
110"
1100"
d1
E
π
12
120'
120"
1200"
d2=l

FIG. 2

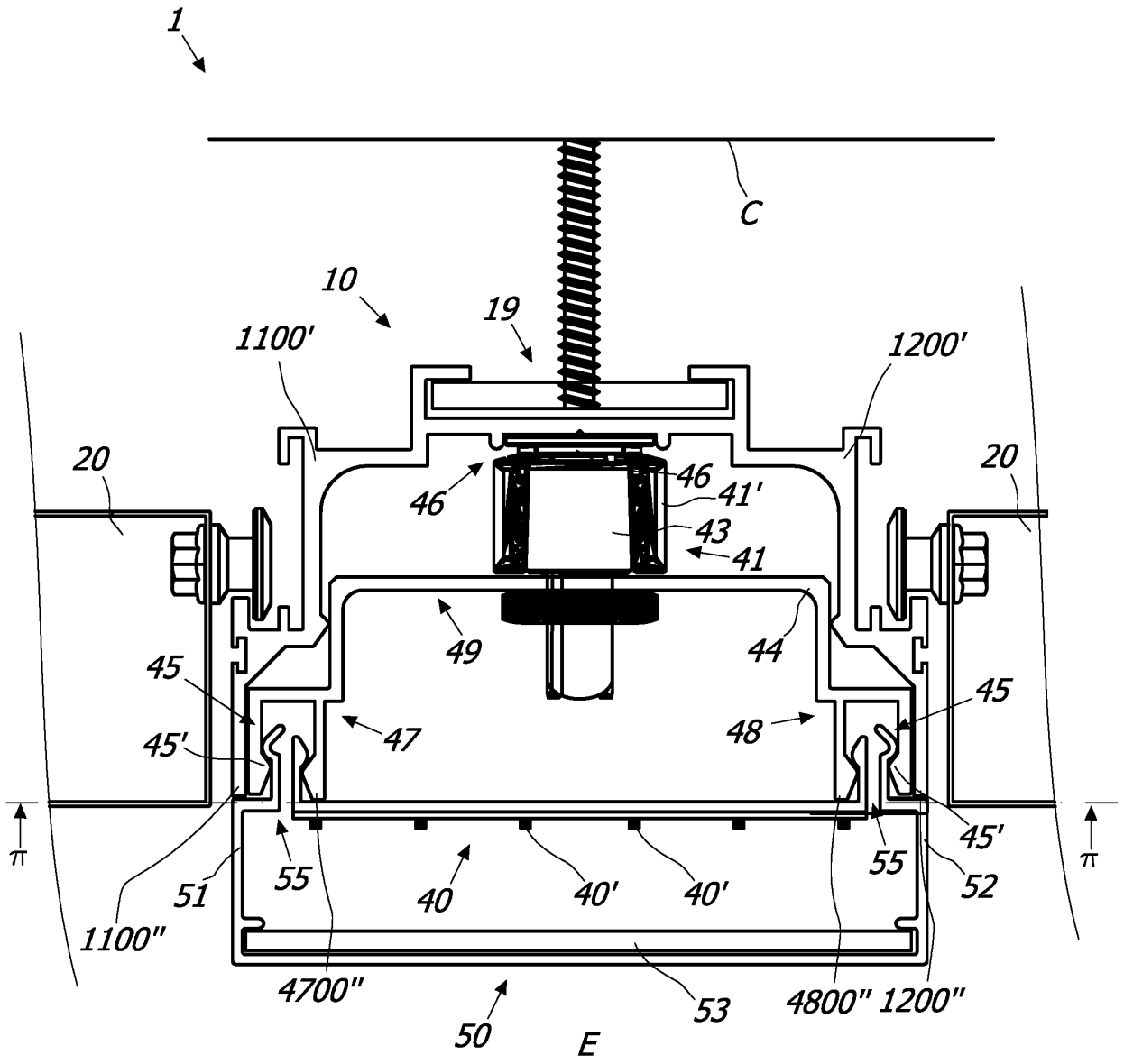
1
C
10
19
1100'
1200'
20
20
46
46
41'
43
41
49
44
45
45
45'
47
48
45'
π
π
55
55
51
40
40'
40'
52
1100"
4700"
50
53
4800"
1200"
E

FIG. 3A

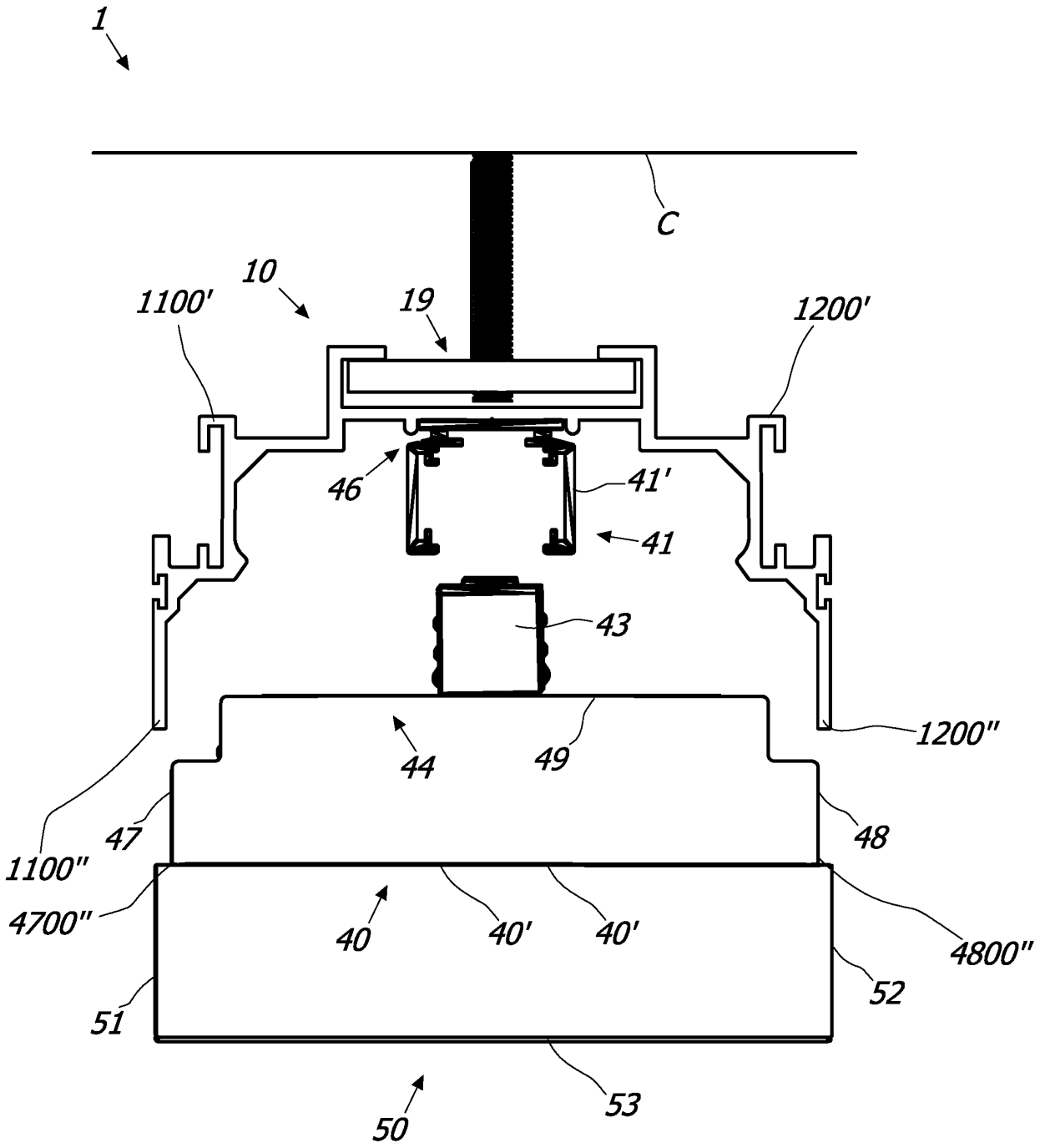
1
C
10
1100'
19
1200'
46
41'
41
43
1200"
44
49
47
48
1100"
4700"
40
40'
40'
4800"
52
51
53
50

FIG. 3B

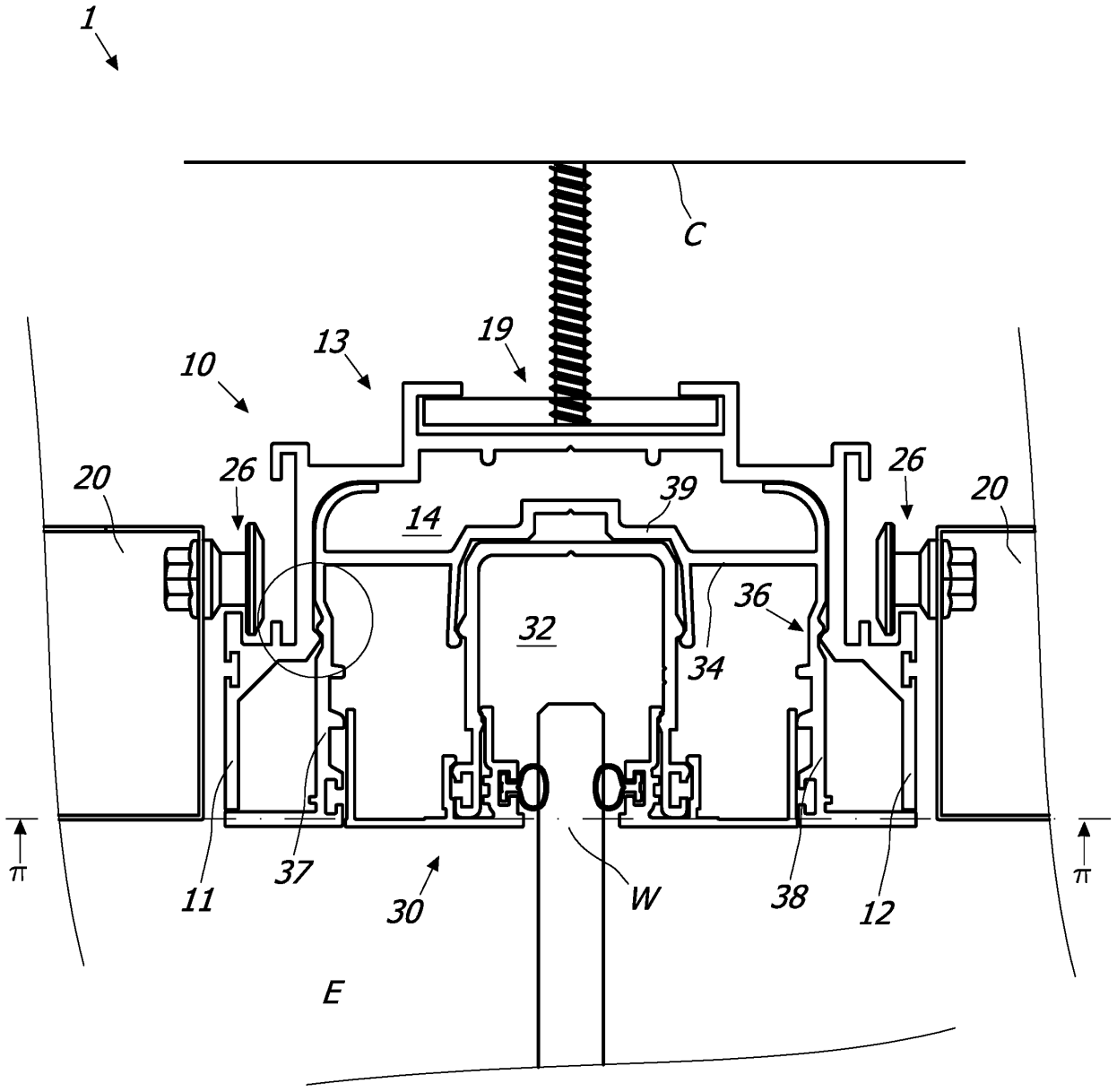

FIG. 4

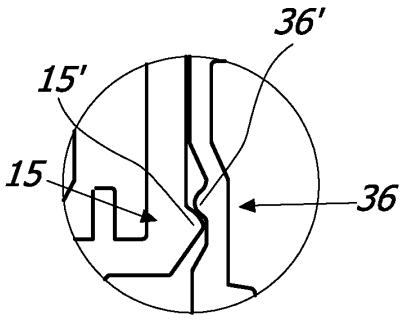

FIG. 4B

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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