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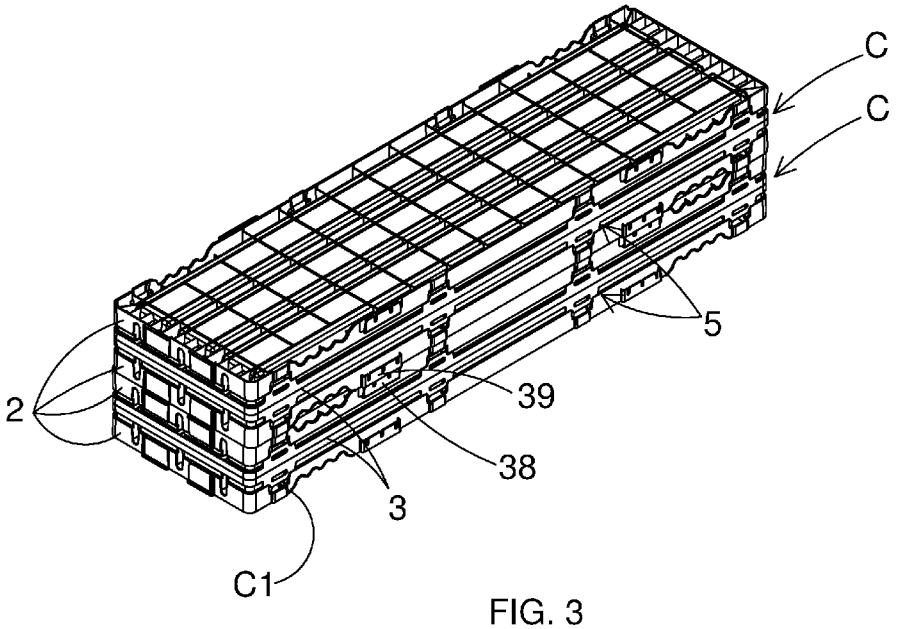

FIG. 3

(57) Abstract: The present invention relates to a modular storage box system for storing core samples (1) in modular boxes (C), used in particular in the field of mineral sampling from geological exploration activities for subsequent analysis. The modular storage box system (1) for storing core samples (not shown) is formed from the combination of at least one base (2) with an extending module (3 or 30) so as to form a modular box (C) for storing and transporting core samples (not shown), comprising connecting areas (25) that provide a sealing means between the compartments (20) of modular box (C) so as to prevent the unintentional switching of sample materials thus ensuring integrity of same and connecting means (5) between the elements to interlock them in a safe and practical way. Advantageously, such a system aims to facilitate handling, transportation and storage of samples in a practical and safe way thus ensuring the integrity of same.

WO 2018/018105 A1

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"MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES"

[01] The present patent of invention relates to a modular storage box system for storing core samples in which the samples can be stored both in dense and sandy form, used in particular in the field of mineral sampling from geological exploration activities for subsequent analysis. The purpose of such a system is to increase the internal volume and provide insulation and sealing of storage compartments in the box during sample transport to the storage site, after which the system may be reused for new samplings and transportation of same. Advantageously, such a system aims to facilitate sample handling and storage with a practical and safe transportation thus ensuring the integrity of same.

Background of the invention

[02] Various containers with the specific purpose of facilitating sampling, storage and transportation of core samples are currently known in the art, which are usually made up by a box with compartments for arranging samples collected.

[03] Sampling activities in the area of Geology, particularly mineral research activities, basically involve sample extraction, called core samples, from the underground formation to the analysis of same for research and definition of the characteristics making up the rock formation of the area such as mineral or metal content. Such activities are necessary to understand and draw up mineral exploration plans and also to manage the mine's resources, and as such, core samples must be stored during the mine's entire useful life to safeguard information for possible consultations during audits.

[04] This activity is essential as a sampling process since, during that phase, several samples are drawn for further analysis and storage, the organization and safety thereof in such operations being stages that should be observed to avoid interpretation errors in each of the process's phases. The purpose is to draw precise conclusions following lab exams where tests are conducted with given samples.

[05] The boxes used for storage and transport of core samples were initially built in wood, later evolving to plastics and, during this process, several adaptation issues have arisen naturally.

[06] Briefly, sampling process starts by extracting core samples using a specific drilling tool designed to obtain continuous rock samples in cylindrical shape and varied diameters depending on the properties of the soil's first levels or altered or non-weathered rocks, which normally need a larger diameter tool to ensure drilling quality as the bore direction may be affected at that more brittle interval.

[07] After extraction, samples are stored intact in the compartment of a duly identified storage box. Then, one or more boxes containing the samples are transported to the storage and analysis site.

[08] Larger diameter samples are removed from the box and split (sawed) to half of their diameter so as to obtain two portions in semicircle shape, one portion being sent to laboratory analysis and the other is stored for record.

[09] Nowadays, to improve the use of space in warehouses, some companies and sampling teams use two types of boxes in different sizes varying in wall height according to the diameter of sample being stored. Thus, higher wall boxes are used to store and transport recently extracted samples and lower wall boxes are used to store split samples.

[010] Disadvantageously though, moving samples from one box to another increases labor time as two different storing means need to be managed at the same time besides making it difficult to store samples as, at the time of collection, the boxes themselves are used to write down relevant information on the sampling process and on the sample itself, such information having then to be transferred to the new box and, consequently, increasing the processing time of each sample which, already intact and duly identified, must be then transferred to the new box.

[011] One solution for such a drawback is to use the same box used for storage, the one with lower walls, provided with a device to increase its internal volume, that is, a box extender. The widened walls allow the box to store larger diameter samples soon after sampling and, at the time of storage, the extender is simply removed to store the half diameter samples.

[012] Box or package extenders for storing several products are therefore currently known, said extenders being designed for the purpose of increasing the internal volume of such boxes or packages in order to facilitate transport and storage of products.

[013] An example of such extender is disclosed in the patent document PI0000561-4 A, filed on 06/01/2000, and titled "PLASTIC BOX EXTENDER", which introduces a single piece extender for boxes storing agricultural products comprising columns on their outer walls to withstand mechanical efforts and a flange located on the inner walls to help connect another package in sequence.

[014] Disadvantageously though, even presenting a box extender, patent document PI0000561-4 does not present a suitable configuration to be used in core sample boxes, since said extender only allows the box side walls to be extended, and inner partition walls would also need to project to extend walls making up compartments where samples were to be stored thus preventing a sample from involuntarily trespassing other compartments during transport.

[015] Besides, in order to maintain sample integrity, proper connection and sealing means between the compartment walls are required so that, when extender is used, sample material does not advance over other sample materials thus causing a cross contamination, which could damage and make samples unusable which, in turn, would generate unnecessary losses and rework on the sampling activities.

[016] A further disadvantage is that the connection means introduced by the extender disclosed in the patent document PI0000561-4 is ineffective during transportation of boxes with extenders as both the box and the extender are connected by a single flange, and a simple and unintentional movement can disconnect them and damage or even make the content stored inside the box unusable. Moreover, as the flange is joined to the surface it projects itself over a small area; it does not have the required mechanical strength thus making it more fragile. Consequently, the flange becomes weak with time and makes the extender useless.

[017] Furthermore, sample boxes currently known in the art usually have an elongated configuration and handles located on the smaller ends. When the boxes receive the samples, their overall mass is considerably high, thus making it difficult to handle in terms of ergonomics, both for transport and storage or access to boxes stored in warehouses having proper infrastructure for stacking boxes in higher levels for space maximization purposes. Handling the boxes causes physical

discomfort or even physical injury to the user, which is against the ergonomics labor standards in the workplace.

[018] Aiming to solve these drawbacks, the present invention proposes a “MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES”, the system comprising a combination of elements so as to increase the box internal volume which provides a practical and effective storage of samples from sampling to storage; connection and sealing means between the modular box compartments to prevent the unintentional switching of sample materials thus ensuring the integrity of same from their collection to transport and analysis; and locking means between the elements comprising the system to ensure safe and practical locking.

[019] Another object of the present invention is to provide a system capable of making the definitive storage of samples more efficient by reducing the space required for each sample and increasing storage capacity in warehouses.

[020] Another object of the present invention is to provide ergonomic and conveniently positioned handles which make it easier to handle the modular box without compromising the user's physical integrity since the samples have mostly a heavy mass.

[021] Another object of the present invention is to provide a partition with suitable geometry to facilitate its connection and, at the same time, prevent the unintentional switching of material between the samples stored in a same compartment.

[022] Yet another object of the present invention is to provide a system which is manufactured using sustainable and highly durable material, preferably plastic, as samples need to be stored for a long period of time while keeping their integrity.

[023] Advantageously, the present invention provides a practical storage of samples, keeping the relevant information of same on the modular boxes the samples are to be permanently stored thus reducing the processing time for each sample.

[024] Also advantageously, the present invention allows part of the elements comprising the modular box, after definitive storage of samples, to be reused in subsequent sampling and sample transport processes, thus optimizing sampling activities.

Brief description of the invention

[025] Briefly, the present invention describes a modular storage box system for storing core samples formed from the combination of at least one main base with an extending module so as to form a modular box for storing and transporting core samples in ideal conditions which complies with the different diameters of samples from their extraction to the final storage.

[026] The main base and the extending module comprise connection areas to be fitted together and seal the compartments where the samples are to be stored and connection means for connecting said extending module to the base.

[027] In a preferred embodiment of the present invention the extending module is responsible for connecting the two bases; in another embodiment the extending module is connected to the base on its lower portion and can be provided with a cover.

[028] The system further comprises ergonomic handles on the sides of the base to make it easier to handle the modular box and partitions in a new constructive way fitted together so as to separate and isolate the core samples in sample intervals according to the size of the collected sample.

[029] Schematic figures of a particular embodiment of the invention are presented below, the dimensions and proportions of which are not necessarily the actual ones as the figures are intended only to present its various aspects informatively, and whose protective scope is determined solely by the scope of the appended claims.

Brief description of the drawings

[030] Figure 1 is a perspective, exploded view of the modular storage box system for storing core samples in a particular embodiment;

[031] Figure 2 is an expanded, sectional view of the modular storage box system for storing core samples in a particular embodiment;

[032] Figure 2A is an expanded, exploded sectional view of the modular storage box system for storing core samples in a particular embodiment;

[033] Figure 3 is a perspective view of two stacked modular boxes (C) in a particular embodiment of the present invention;

[034] Figure 4 is a perspective view of the partitions (SA and SB) of the present invention;

[035] Figure 5 is a perspective, exploded view of the modular storage box system for storing core samples in another particular embodiment;

[036] Figure 6 is an expanded, sectional view of the modular storage box system for storing core samples in another particular embodiment of the present invention;

[037] Figure 6A is an expanded, exploded sectional view of the modular storage box system for storing core samples in another embodiment of the present invention; and

[038] Figure 7 is a perspective view of two stacked modular boxes (C) in another embodiment of the present invention.

Detailed description of the invention

[039] As illustrated in the accompanying figures, the modular storage box system (1) for storing core samples (not shown) is formed from the combination of at least one main base (2) with an extending module (3 or 30) so as to form a modular box (C) for storing and transporting core samples (not shown) in ideal conditions which complies with the different diameters of samples from their extraction to the final storage.

[040] As illustrated in Figures 1, 2, 5, and 6A, base (2) comprises a single body provided with outer walls (24) fitted with notches (27), inner partitions (21) conveniently positioned so as to form compartments (20) for storing core samples (not shown) possessing holes (20A) associated with ducts (20B) to enable draining of liquids deriving from the core samples (not shown) to the external environment and connection slots (38 and 39) for interlocking the bases (2).

[041] As illustrated in Figures 2, 2A, 6, and 6A, main base (2) and extending module (3 and 30) comprise connecting areas (25) with concordant geometries to be tightly connected together by male and female fittings so as to efficiently seal the compartments (20) thus preventing the unintentional switching of materials between the samples and ensuring the integrity of same from their collection to transport and analysis.

[042] It will be thus understood that both the main base (2) may comprise a connecting area with male fittings (25) and the extending module (3 or 30) may comprise a connecting area with female fittings (25), and vice-versa, without

departing from the technical and functional concept proposed by the present invention.

[043] Preferably, as illustrated in Figures 1, 2A, 5, and 6A, partitions (21) on the base (2) comprise notches (26) that, along with notches (27) on the outer walls (24), constitute a proper connection means to receive an extending module (3 or 30) comprising channels (33) with a suitable geometry to fit said main base (2) and the extending module (3 or 30).

[044] The extending module (3 and 30), as illustrated in Figures 1, 2A, 5, and 6A, further comprises a single body, outer walls (31), hollow compartments (32) and channels (33) formed by adjacent walls (34) responsible for separating each hollow compartment (32) from each channel (33). Adjacent walls (34) are structurally designed and joined by structural grooves (35) interspersed arranged along the adjacent walls (34) responsible for providing greater mechanical strength and avoiding deformations on said adjacent walls (34).

[045] As illustrated in Figures 1 and 5, the extending module (3 and 30) comprises locking areas (36) evenly distributed along the outer walls (31) of extending module (3 and 30) to provide greater mechanical strength to the modular box set (C) when installed, thus preventing warping. Each locking area (36) is provided with locking holes (3A) and side tabs (3B) arranged in sequence with the locking holes (3A), while said base (2) is provided with locking ledges (2A) and side recesses (2B) which are arranged in sequence with the locking ledges (2A).

[046] Thus, the extending module (3 and 30) is designed to be connected to the base (2) so that the side tabs (3B) overlap the side recesses (2B) and, at the same time, the locking ledges (2A) insert into the locking holes (3A) to form the connection means (5).

[047] In addition, said channels (33) of the extending module (3 and 30) are arranged on the base (2) inner walls (21) so as the adjacent walls (34) of each channel (33) are positioned on the notches (26) of each inner wall (21) thus sealing the compartments (20). Thus, structural grooves (35) of channels (33) also ensure that the adjacent walls (34) do not move and each inner wall (21) is perfectly fitted to the inside of each channel (33) ensuring sealing efficiency and preventing cross-contamination between different samples (not shown) stored in a same box (C).

[048] As illustrated in Figures 1 to 3, in a particular embodiment, the extending module (3) comprises an adapter provided with a symmetrical structure comprising channels (33) and locking areas (36) that project into the extending module (3) outer area from the outer walls (31), in a suitable way, to connect and lock said extending module (3) and the bases (2). Moreover, as illustrated in Figure 1, hollow compartments (32) are provided with a series of vertical tabs (37).

[049] Thus, each locking hole (3A) of the extending module (3) receives a locking ledge (2A) from each base (2), while each side recess (2B) from each base (2) receives a side tab (3B) of the extending module (3) so as to interlock, by interference fit, and form the modular box (C). Simultaneously, vertical tabs (37) of the extending module (3) are aligned over the base (2) tabs (22).

[050] Preferably, as illustrated in Figure 1, the extending module (3) is provided with surrounding ribs (N) projected from the outer walls (31) of the extending module (3), between locking areas (36), resulting in better structural resistance to said extending module (3).

[051] After core samples (not shown) are stored into the modular box (C) for further transport and laboratory analysis, the extending module (3) is removed to be reused. For that purpose, said extending module (3), along with the second base (2) located in an upper position, is disconnected from the first base (2) in the lower position, the later containing the samples and duly identified for storage.

[052] As illustrated in Figure 3, two or more modular boxes (C) can be stacked for storage, transport and handling during sampling activities. For greater box (C) stability, when using the modular storage box system (1) with the extending module (3), they are interlocked by the connection slots (38 and 39) that fit each other to enable the combination of a first modular box (C) on the upper position and a second modular box (C) on the lower position and so on to hold the box stack stationary.

[053] In another embodiment of the present invention, as illustrated in Figures 5 to 7, the extending module (30) comprises channels (33) arranged on its lower portion only to connect with the base (2), locking areas (36) and a notch (300) on its upper portion, this extending module (30) being able to receive a cover (4) or a base (2) to form said modular box (C), as illustrated in Figures 6 and 7.

[054] The extending module (30) is provided with locking ledges (3C), side recesses (3D), locking holes (3A) e side tabs (3B). The extending module (30) is therefore designed to be connected to the base (2) so that the side tabs (3B) overlap the side recesses (2B) and, at the same time, the locking ledges (2A) insert into the locking holes (3A) to form the connection and locking means (5). Said extending module (30) is also designed to receive a cover (4) provided with locking holes (4C) and side tabs (4D) so that said locking holes (4C) receive the locking ledges (3C), while said side tabs (4D) are positioned into the side recesses (3D) thus connecting and locking the cover (4) to said extending module (30) by interference fit.

[055] Preferably, as illustrated in Figures 2A and 6A, side tabs (3B) are provided with tapered ends and overlap side recesses (2B) that, in turn, are extended to define a free handle area (C1) which, along with the tapered ends, make it easier to handle the locking area (36) when the connection means (5) are to be unlocked.

[056] After the core samples (not shown) are stored into the modular box (C) for further transport and laboratory analysis, the extending module (30) is removed to be reused. For that purpose, said extending module (30) and the cover (4), are disconnected from the base (2), the cover (4) being directly connected to the base (2) containing the samples to be stored.

[057] Alternatively, two or more boxes (C) may be stacked for storage, transport and handling during sampling activities, each base (2) being able to be connected to the extending module (30) positioned immediately below so that a single cover (4) is connected to the last extending module (30) of the stack formed.

[058] Advantageously, the extending module (3 and 30) configuration, particularly the connecting areas (25) and the fact that the locking areas (36) are evenly distributed along the outer walls (31) of the extending module (3 and 30) provide a greater strength to the structure when handling it since samples (not shown) are provided with a heavy mass, thus making the modular box (C) set a practical and safe device.

[059] As illustrated in Figures 1 and 5, modular box (C) can be provided with partitions (SA and SB) on its inside to separate and isolate the samples (not shown) in sample intervals (not shown) according to the size of the sample collected, partition (SA) being fitted into the compartments (20) of the base (2) and

partition (SB) being fitted into the compartments (32) of the extending module (3 or 30).

[060] As illustrated in Figures 1 and 5, partitions (SA and SB) are provided with a configuration which is concordant with that of the compartments (20 and 32) and said partition (SA) may be fitted into any compartment in compartments (20) of the base (2) while partition (SB) may be fitted into any compartment in compartments (32) of the extending module (3 or 30).

[061] As illustrated in Figure 4, partitions (SA and SB) comprise a main body (S1), an extended top surface (S2) arranged on the body (S1) upper end so as to allow partitions (SA and SB) to be handled as well as writing down technical data on the samples. Preferably, extended top surface (S2) comprises some texturing for an improved adhesion of the marker pen to the box (not shown).

[062] Said partition (SA) is provided with an opening (S5) arranged on the extended top surface (S2) so as to make it possible to fit a partition (SB) by its lower end (S6).

[063] Partition (SA) body (S1) is provided with enlarged side tabs (S10) projecting up to a median area on the body (S1), in which tabs (S10) are responsible for tightly connecting partition (SA) to the base (2) side tabs (22) so as to prevent unintentional movements of partition (SA) while handling the box (C), according to a fitting simulation shown in Figure 5.

[064] Partition (SB) body (S1) is also provided with enlarged side tabs (S10) projecting close to the body (S1) lower end (S6) which are responsible for connecting the partition (SB) to the side tabs (37) of an extending module (3), according to a fitting simulation shown in Figure 1.

[065] Alternatively, a first partition (SA) can receive a second partition (SA) by connecting the second partition (SA) lower end (S11) provided with a recess (S5).

[066] Alternatively, partition (B) can simply be housed in any compartment (32) of the extending module (3 or 30) and be directly fitted into the partition (SA) opening (S5) which is fitted in the base (2) compartments (20).

[067] As illustrated in Figures 1 and 5, base (2) further comprises anatomical handles (23) which are arranged on the base (2) side walls (24) which, advantageously, makes it possible to handle base (1) with greater comfort and safety

by redistributing involved efforts and avoiding physical discomfort or even physical injury to user.

[068] Advantageously, positioning of anatomical handles (23) on the side walls (24) of the base (2) makes it easier to lift boxes (C) for handling and transportation and during stacking of boxes in warehouses since the heavy weight resulting from samples (not shown) stored inside the boxes (C) makes it difficult to move them. Thus, anatomical handles (23) allow operators to hold the box (C) on both sides for ease displacement as the professionals are able to share weight while engaged in the collection, handling and storage activities.

[069] Finally, in a preferred embodiment of the present invention, said modular box (C) is fully made from recycling material so as to contribute with a sustainable production.

[070] A person skilled in the art will promptly infer, from the description and the drawings depicted, various ways of carrying out the invention without departing from the scope of the accompanying claims.

CLAIMS

1 - “MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES”, the modular storage box system (1) comprising at least a base (2) with an extending module (3 or 30) so as to form a modular box (C), the base (2) comprising a single body provided with outer walls (24) and inner partitions (21) designed in such a way as to form compartments (20) provided with vertical tabs (22) that receive partitions (SA and SB) and both the base (2) and the extending module (30) can be closed by a cover (4) **characterized in that** the base (2) and the extending module (3 and 30) comprise connection and sealing means (25) configured to be tightly connected to one another by means of a male and female fittings, and whose outer walls (24) and inner partitions (21) of the base (2) comprise notches (26) while the extending module (3 and 30) comprises a single body provided with outer walls (31) and inner walls (34) designed to form hollow compartments (32), said inner walls (34) being adjacent and structurally joined together to form channels (33) which, when combined with the outer walls (24) and inner partitions (21) of the base (2) configure proper connection and sealing means for the compartments (20 and 32); the extending module (3 and 30) being installed and locked to the base (2) by locking areas (36) distributed along the outer walls (31).

2 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** locking areas (36) comprise locking holes (3A) and side tabs (3B) while said base (2) is provided with locking ledges (2A) and side recesses (2B) whose installation is accomplished by overlapping side tabs (3B) onto side recesses (2B) and, at the same time, inserting locking ledges (2A) into the locking holes (3A) so as to form connection means (5).

3 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** channels (33) of the extending module (3 and 30) are arranged on the base (2) inner walls (21) so that the adjacent walls (34) of each channel (33) are positioned on the notches (26) of each inner wall (21).

4 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** channels (33) comprise structural grooves (35) distributed interspersed along the adjacent walls (34).

5 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** the extending module (3) comprises a symmetrical structure and acts as a connecting adapter for two opposing bases (2) so as to form a modular box (C).

6 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** each locking area (36) of the extending module (3) projects into the outer area from the outer walls (31) so as to connect said extending module (3) and the bases (2) by locking holes (3A) that receive the locking ledges (2A) of each base (2) while each side recess (2B) receive a side tab (3B) of the extending module (3).

7 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 6, **characterized in that** the extending module (3) is provided with surrounding ribs (N) projected from the outer walls (31) of the extending module (3) between locking areas (36).

8 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 5, **characterized in that** modular boxes (C) formed by connecting an extending module (3) with two bases (2) are stackable and interlocked by the connection slots (38 and 39) that fit to one another when the upper portion of a first modular box (C) is combined with the lower portion of a second modular box (C).

9 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** the extending module (30) comprises channels (33) arranged on its base (2) lower portion so as to form a modular box (C).

10 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 9, characterized in that the extending module (30) comprises a notch (300) on its upper portion and receives a cover (4) or a base (2).

11 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 10, **characterized in that** the cover (4) comprises locking holes (4C) and side tabs (4D), while said extending module (30) is provided with locking ledges (3C) and side recesses (3D) whose installation is accomplished by overlapping side tabs (4D) into side recesses (3D) and, at the same time, inserting locking ledges (3C) into the locking holes (4C) so as to form connection means (5).

12 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claims 2 and 6, **characterized in that** side tabs (3B) are provided with

tapered ends and overlap side recesses (2B) that project to define a free handle area (C1).

13 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", provided with partitions (SA and SB) comprising a main body (S1), an extended top surface (S2) arranged on the body (S1) upper end, according to claim 1, **characterized in that** partitions (SA and SB) fit to one another when the extending module (3 or 30) is connected with a base (2).

14 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 13, **characterized in that** partition (SA) can be fitted into any compartment (20) of base (2) and partition (SB) can be fitted into any compartment (32) of extending module (3 or 30).

15 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 13, **characterized in that** partition (SA) comprises an opening (S5) arranged on the extended top surface (S2) to be fitted to partition (SB) lower end (S6).

16 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 13, **characterized in that** partition (SA) body (S1) comprises enlarged side tabs (S10) projecting up to a median region of the body (S1) to tightly connect partition (SA) to the base (2) vertical tabs (22).

17 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 13, **characterized in that** partition (SB) body (S1) comprises enlarged side tabs (S10) projecting close to body (S1) lower end (S6) to connect partition (SB) to the extending module (3) vertical tabs (37).

18 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claims 13 and 15, **characterized in that** a first partition (SA) can receive a second partition (SA) by connecting the second partition (SA) lower end (S11) which is provided with a recess (S5).

19 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claims 13 and 15, **characterized in that** partition (SB) is housed in any compartment (32) of the extending module (3 or 30) and be directly fitted into the partition (SA) opening (S5) which is, in turn, connected to the base (2) compartments (20).

20 – "MODULAR STORAGE BOX SYSTEM FOR STORING CORE SAMPLES", according to claim 1, **characterized in that** anatomical handles (23) are arranged on the base (2) side walls (24).

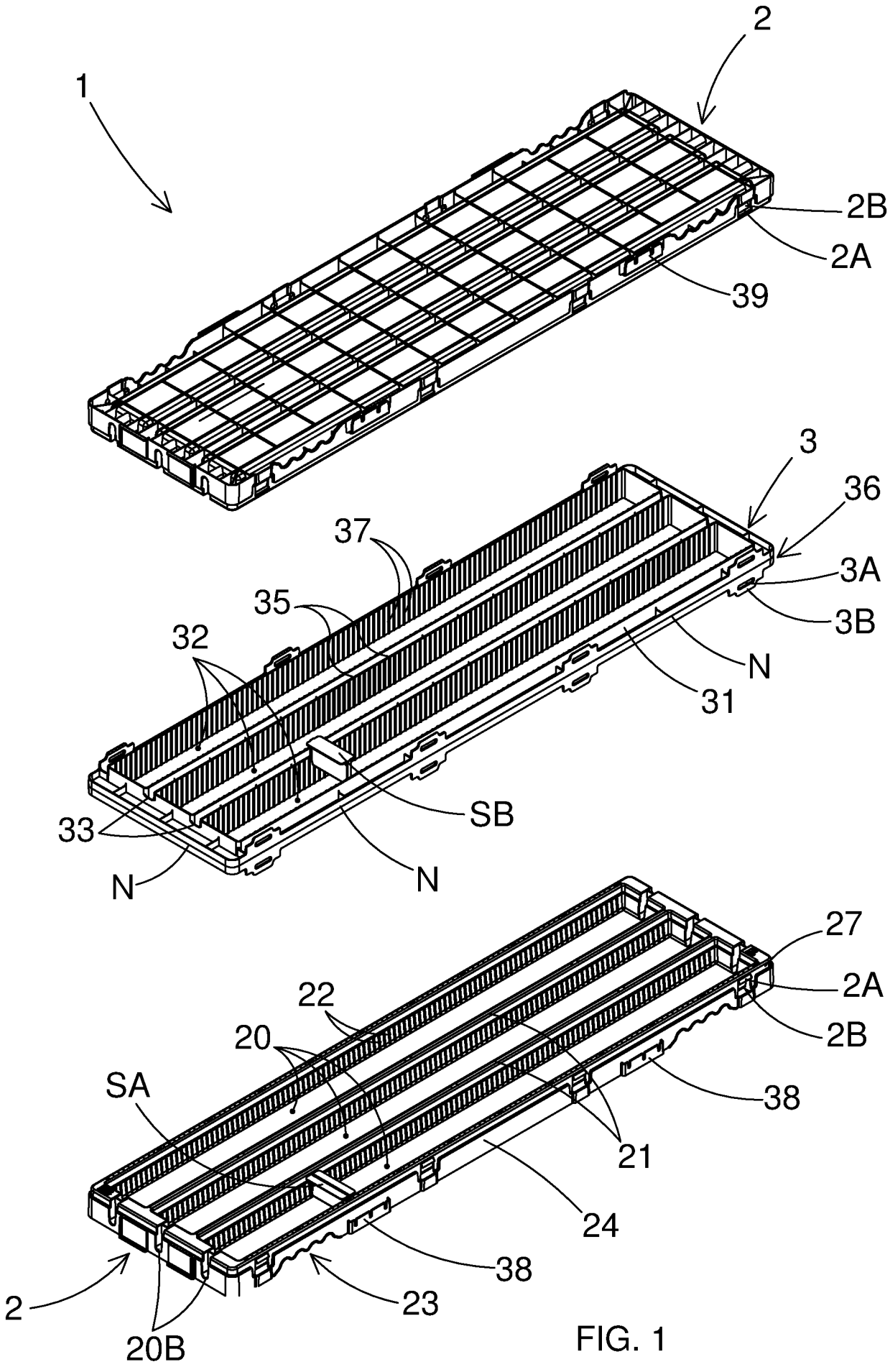
1
2
2B
2A
39
3
36
37
3A
35
3B
32
N
31
SB
33
N
N
27
2A
22
2B
20
SA
38
21
24
38
2
23
20B

FIG. 1

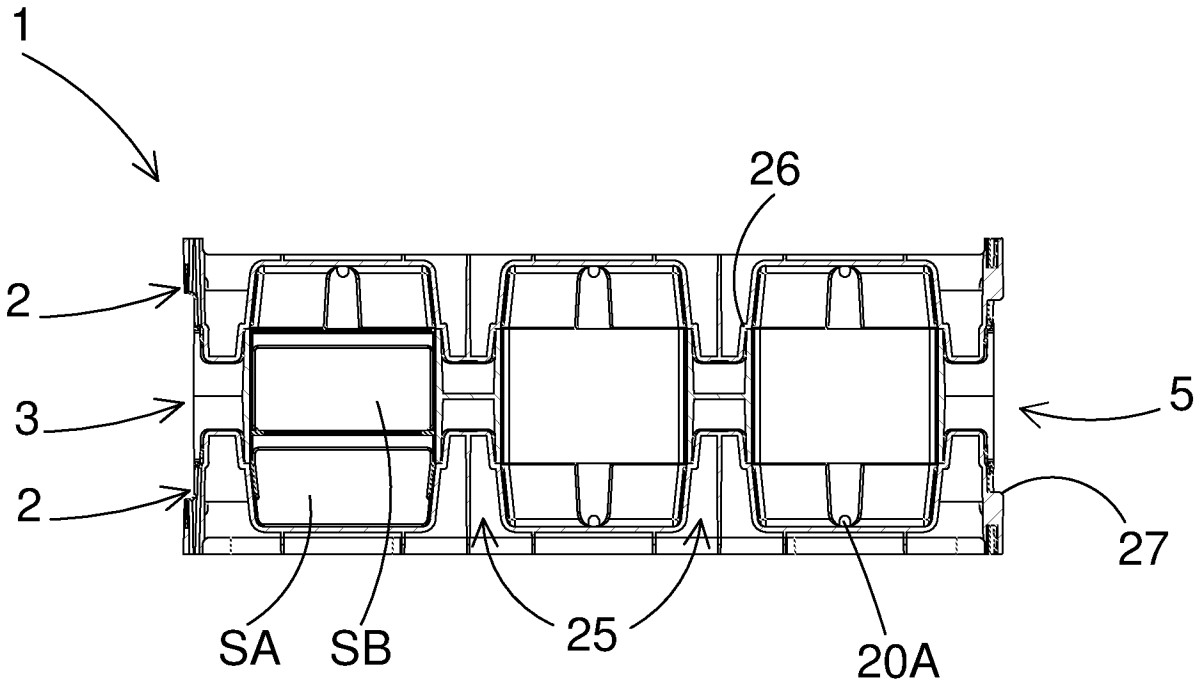
1
26
2
3
2
5
27
SA
SB
25
20A

FIG. 2

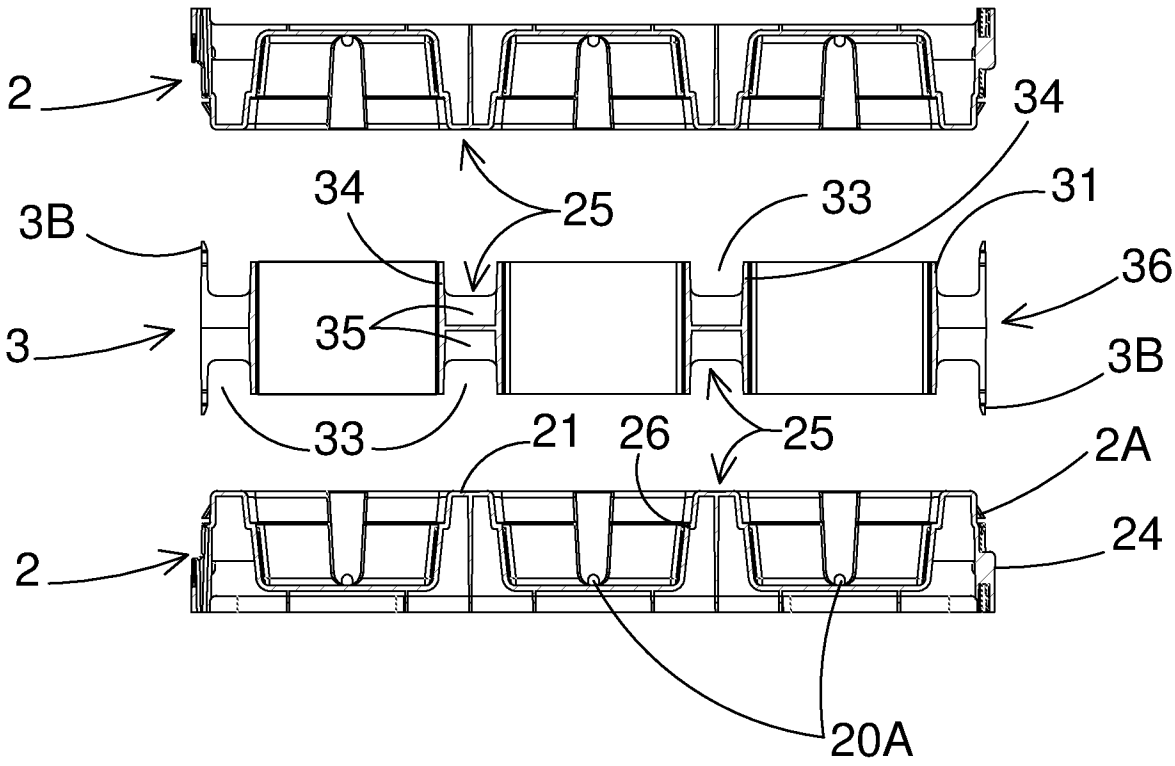
2
34
25
34
33
31
3B
36
3
35
3B
33
21
26
25
2A
24
2
20A

FIG. 2A

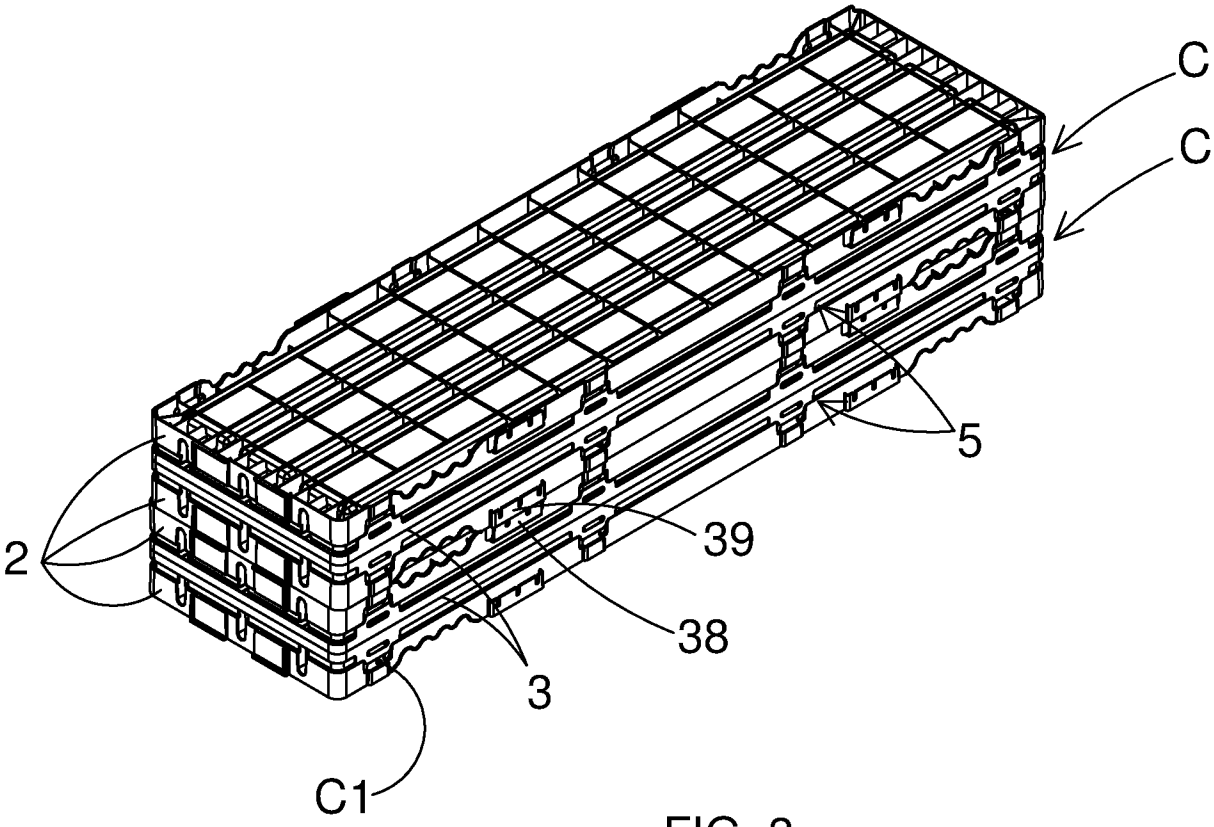

FIG. 3

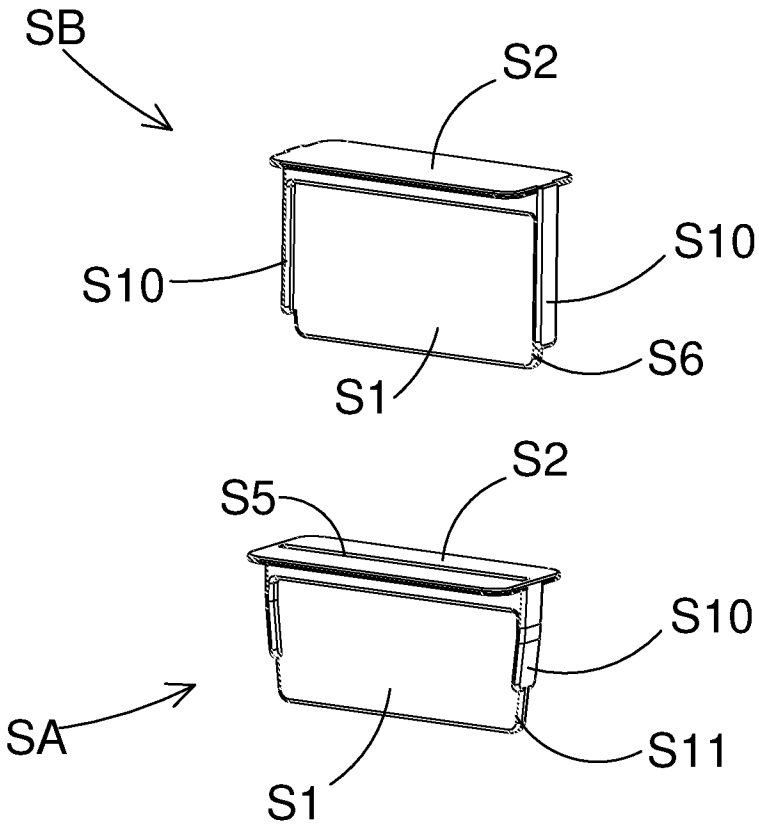

FIG. 4

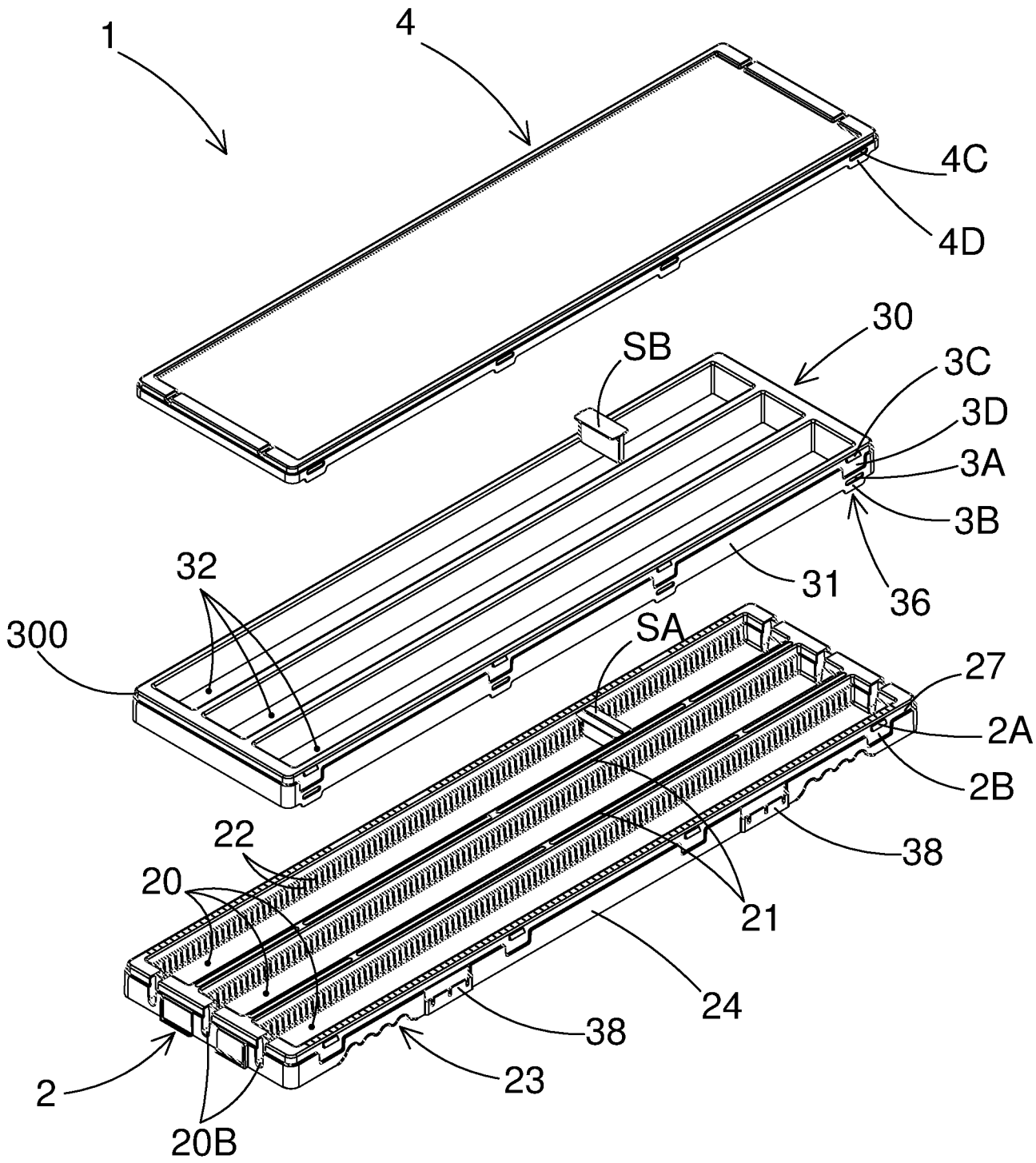
1
4
4C
4D
30
SB
3C
3D
3A
3B
32
31
36
300
SA
27
2A
2B
22
20
38
21
24
38
23
2
20B

FIG. 5

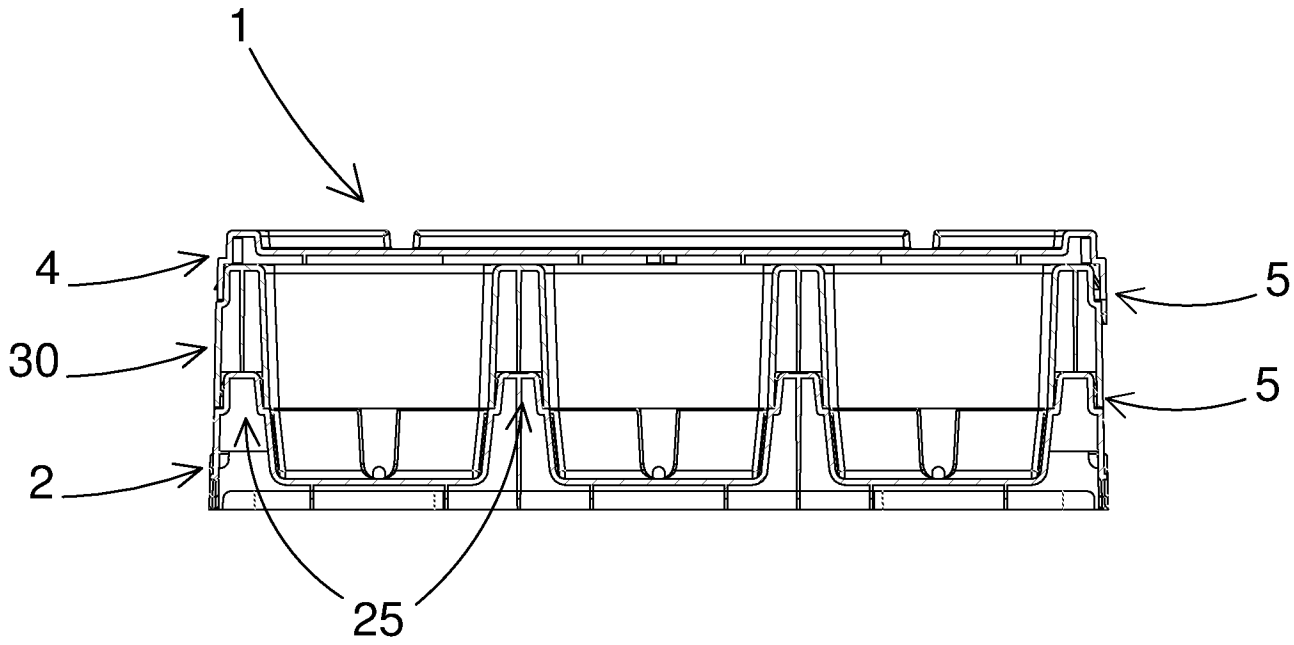

FIG. 6

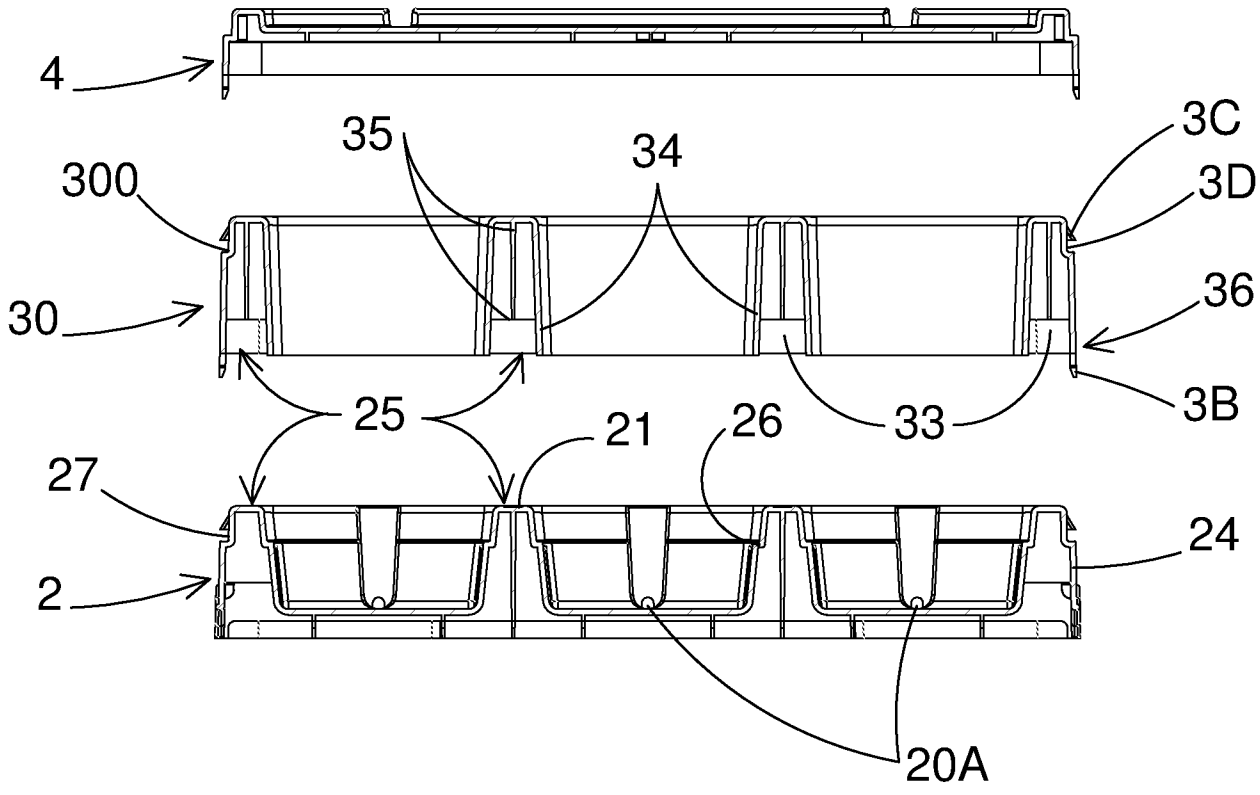

FIG. 6A

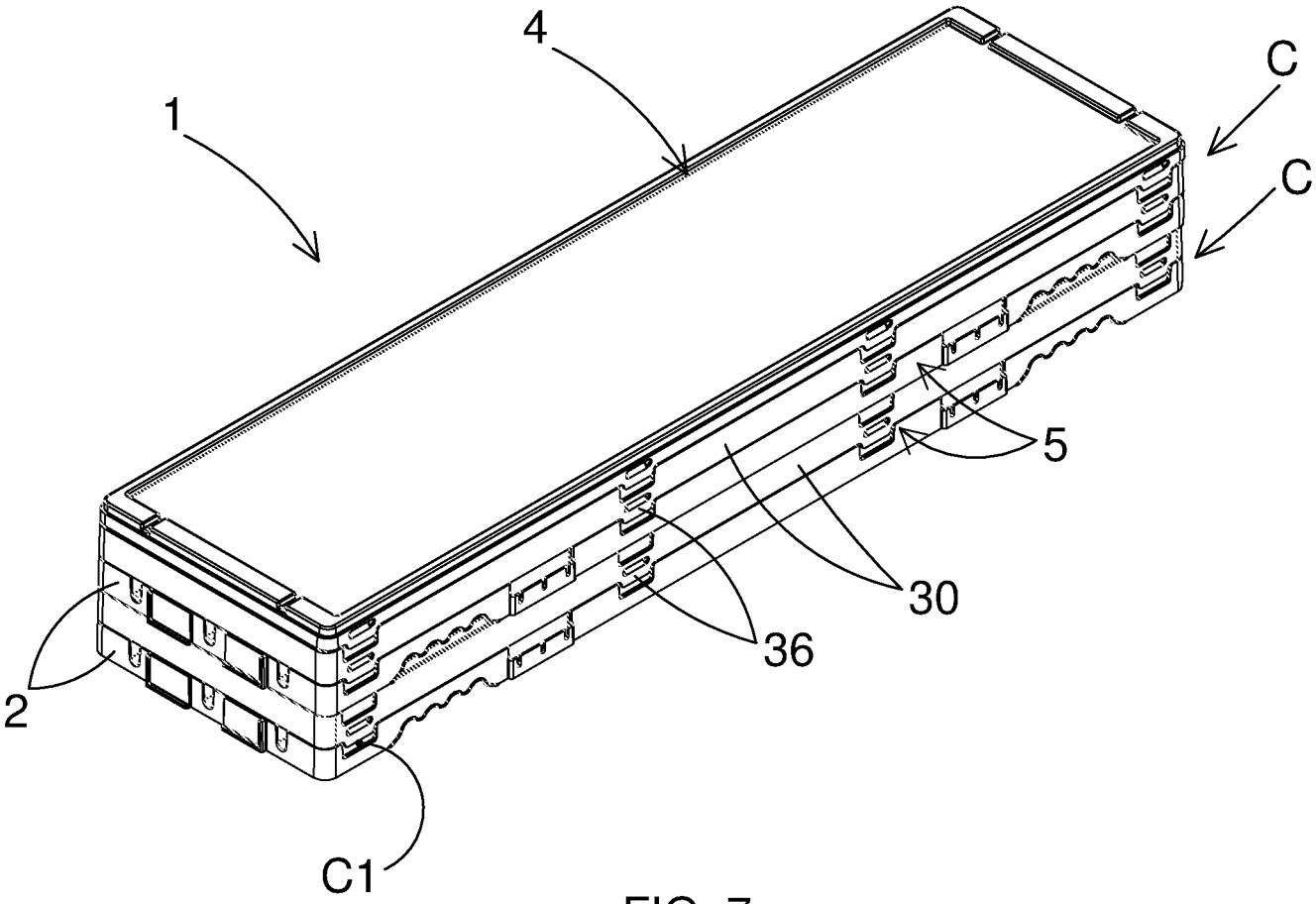

FIG. 7

RELATÓRIO DE PESQUISA INTERNACIONAL

Depósito internacional Nº
PCT/BR 16/50174

A. CLASSIFICAÇÃO DO OBJETO
IPC(8) - E21B 25/00 (2017.01)
CPC - E21B 25/00
De acordo com a Classificação Internacional de Patentes (IPC) ou conforme a classificação nacional e IPC

B. DOMINIOS ABRANGIDOS PELA PESQUISA

Documentação mínima pesquisada (sistema de classificação seguido pelo símbolo da classificação)

Documentação adicional pesquisada, além da mínima, na medida em que tais documentos estão incluídos nos domínios pesquisados

Base de dados eletrônica consultada durante a pesquisa internacional (nome da base de dados e, se necessário, termos usados na pesquisa)

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoria*	Documentos citados, com indicação de partes relevantes, se apropriado	Relevante para as reivindicações Nº
A	BR202012024078 U2 (Pisani Plasticos S.A.) 1 julho 2014 (01.07.2014), documento completo, especialmente fig 1-5	1-20
A	WO 2016/049723 A1 (Flavio De Barros Ramos) 7 abril 2016 (07.04.2016), documento completo, especialmente fig 1-2, 4a-6; parágrafos [020], [022]	1-20
A	US 3,272,329 A (Mehalov) 13 setembro 1966 (13.09.1966), documento completo	1-20
A	US 2016/0059987 A1 (Prospectors IP Holdings Pty Limited) 3 março 2016 (03.03.2016), documento completo	1-20
A	US 3,581 ,929 A (Guenard et al.) 1 Junho 1971 (01.06.1971) documento completo	1-20
A	US 3,196,229 A (Glass) 20 Julho 1965 (20.07.1965) documento completo	1-20

☐ Documentos adicionais estão listados na continuação do Quadro C ☐ Ver o anexo de família da patentes

* Categorias especiais dos documentos citados:

"A" documento que define o estado geral da técnica, mas não é considerado de particular relevância.

"E" depósito ou patente anterior, mas publicada após ou na data do depósito internacional.

"L" documento que pode lançar dúvida na(s) reivindicação(ões) de prioridade ou na qual é citado para determinar a data de outra citação ou por outra razão especial (como especificado).

"O" documento referente a uma divulgação oral, uso, exibição ou por outros meios.

"P" documento publicado antes do depósito internacional, porém posterior a data de prioridade reivindicada.

"T" documento publicado depois da data de depósito internacional, ou de prioridade e que não conflita com o depósito, porém citado para entender o princípio ou teoria na qual se baseia a invenção.

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"&" documento membro da mesma família de patentes.

Data da conclusão da pesquisa internacional	Data do envio do relatório de pesquisa internacional:
01 agosto 2017	**30 agosto 2017**

Nome e endereço da ISA/ US	Funcionário autorizado
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450	Lee W. Young
Nº de fax: 571-273-8300	Nº de telefone:

INTERNATIONAL SEARCH REPORT

International application No.
PCT/BR 16/50174

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - E21B 25/00 (2017.01)
CPC - E21B 25/00

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
See Search History Document

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BR202012024078 U2 (Pisani Plasticos S.A.) 1 July 2014 (01.07.2014), entire document, especially fig 1-5	1-20
A	WO 2016/049723 A1 (Flavio De Barros Ramos) 7 April 2016 (07.04.2016), entire document, especially fig 1-2, 4a-6; para [020], [022]	1-20
A	US 3,272,329 A (Mehalov) 13 September 1966 (13.09.1966), entire document	1-20
A	US 2016/0059987 A1 (Prospectors IP Holdings Pty Limited) 3 March 2016 (03.03.2016), entire document	1-20
A	US 3,581,929 A (Guenard et al.) 1 June 1971 (01.06.1971), entire document	1-20
A	US 3,196,229 A (Glass) 20 July 1965 (20.07.1965), entire document	1-20

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
1 August 2017	30 AUG 2017
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774