

MODULAR STRUCTURE SHELTER

Main Technological Area —> Mechanics

Keyword —> Shelter |

A shelter is a prefabricated unit commonly used for residential and/or operational use (e.g. control, civil or military operational centres) having the special feature of being temporary and transportable.

The shelters known to date suffer from some drawbacks due mainly to the fact that their frame, extended to the entire length is necessarily made of tubular profiles that are heavy and expensive in themselves because the standard corner blocks they are supplied with only match profiles of this type.

Furthermore, since the dimensions of a shelter are preferably in accordance with the ISO container standards (ISO1161 and ISO668), in order to satisfy demand, it is necessary to provide for a relatively high number of of different side panels, generally equipped panels, of different longitudinal dimensions.

The solution identified by the patent has the purpose of indicating how it is possible to create a shelter in which it is possible to limit both the use of tubular profiles and the number and type of side panels to be used to meet market demand.

The result is an economic production process depending on the variety of primary elements available (profiles, corner blocks, variously configured types of walls) that can be standardized with a significant reduction of costs and reduced production times having to substantially assemble primary items of stock.



TECHNICAL FEATURES

From a structural point of view, a shelter is normally similar to a container and includes a frame parallelepiped formed by sections, which are rigidly connected to each other by means of corner type blocks standards that allow the handling and locking of container vehicles transport platforms of panels welded to the frame and possibly equipped with doors and / or windows that limit the shelter to the side and inside, they define a closed space, which is normally further subdivided by internal walls into a living quarters and in one or more technical rooms suitable for housing, for example, service apparatuses such as generating sets, air conditioning systems, work equipment, etc.

In the traditional embodiment, the shelters are constituted by a monolithic structure which is not very high flexible in case you want to change the longitudinal dimensions, the distribution of the internal spaces and theirs functionality as, usually, leads to having to prepare ad hoc parts with a low level of replicability.



Leonardo’s solution is instead oriented to implement a modular structure which enables to :

- simplify and lighten the frame structure considerably with the use of L-shaped bars;
- change the position of the body along the shelter within relatively wide limits and according to requirements simply by varying the length of the longitudinal tubes;
- considerably reduce installation times and costs compared to traditional shelters (they may not be provided welds), offering, at the same time, a remarkably flexible and adaptable solution to each application requirement;
- meet market needs with a minimum number of basic “off-the-shelf” structural parts.

In other words, the "modular structure" of the shelter allows, simply by varying the length of the longitudinal components and adapting the dimensions of the panels, to reach an overall size in accordance with the ISO 668 standard or, in any case, any overall size within the minimum and maximum limits established by standard standards, with obvious advantages in terms of simplification and standardization of structure design.

INNOVATION/BENEFITS

- *Reduction in the number of tubular sections*
- *Reduction in the number of side panels*
- *Reduced installation time and costs*
- *Increased stability*
- *Design Simplification*
- *Compliance with ISO standards.*

AREAS OF USE

Military	<u>Transportable Command Stations for military applications (command and control stations for radar systems, positions for mobile missile tracking systems, etc.)</u>
Civilian	<u>Mobile surgery rooms, Homeland Protection, containers for logistics services, accommodation and auxiliary services, etc.)..</u>

PATENT INFORMATION

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Active Worldwide Extensions

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Italy – Germany – France – United Kingdom – Poland

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Leonardo internal code

LDO-0463

Leonardo Reference

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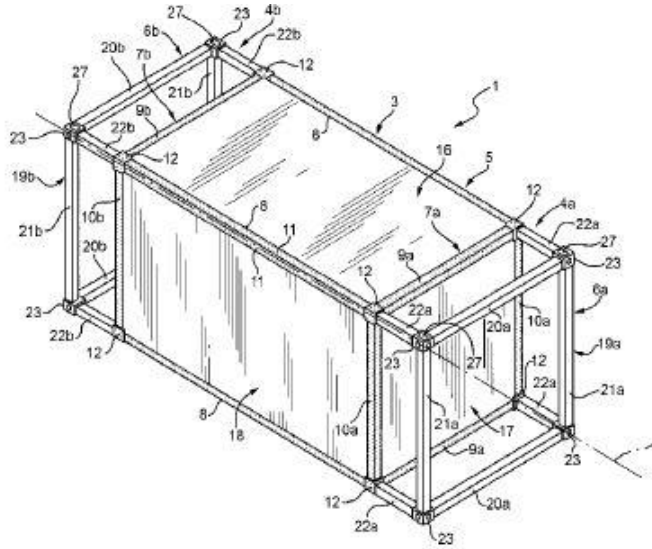


Figure 1. Shelter assembly on the basis of the patented solution

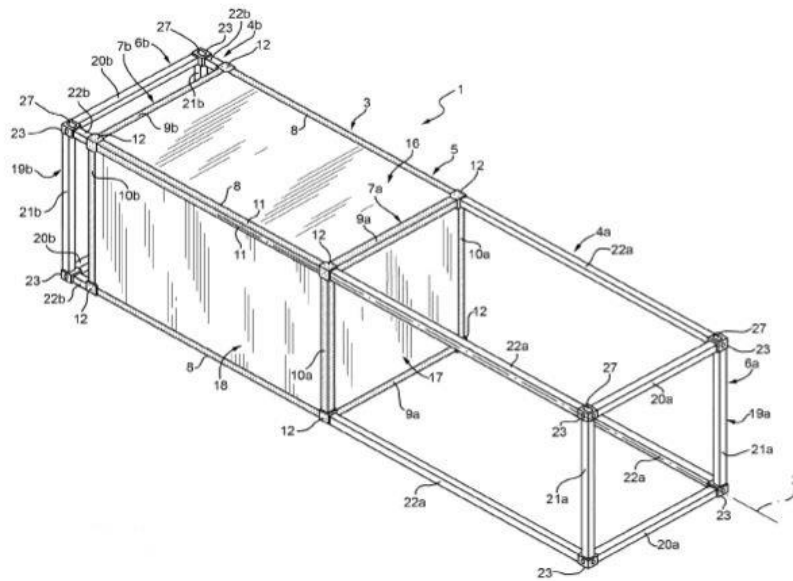


Figure 2 Main basic elements of the shelter