

# Starman: An Innovative Alternative to the Traditional Tripod—The Advantages of a Design Approach in the Project of a Functional Accessory for the Music Industry

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**Abstract:** The music industry is related to various services: record companies, music publishers, recording studios, authors, performers, management, radio, television, digital music services, music retail, live music events, music merchandising, music schools... Design for the music industry, therefore, includes products of many categories: musical instruments, stage accessories, speakers, amplifiers, control systems, bags, stands, and many more. The project of a new speaker stand thus becomes an opportunity to demonstrate the advantage of a design approach in a functional field, which is usually not design-oriented. The design research generated an innovative patented stand, safer, without clutter inside, and with greater attention to aesthetic value.

**Key words:** Music industry, product design, accessory, innovation, patent.

## 1. Background

Music industry, music sector, and other related terms included many different activities: record companies, music publishers, recording studios, authors, performers, artist management, collective management organizations, music radio, music television, digital music services, physical music retail, live music event production, concert venues, manufacturing and retailing of musical instruments and music equipment, music merchandising, music schools...

Each one of these activities needs tangible products to carry on its work: musical instruments, microphones, stage accessories, speakers, amplifiers, control systems, professional bags, stands for specific uses and many more.

A report by Oxford Economics proved the economic value of this sector.

“In Europe, this industry contributes €81.9 billion gross value added (GVA) annually to the EU and

exports €9.7 billion worth of goods and service. In 2018, the music sector directly or indirectly supported the employment of two million people across the EU27 and UK economies, including people in full-time, part-time, and self-employed roles. This means that one in every 119 persons’ employment in the 28 countries was dependent on the music sector in some way.

The exports of certain music-related goods (sound recording and reproduction apparatus, musical instruments and devices for playing music such as radios, etc) generated a further €5.0 billion in exports revenue for the EU27 and UK trade balances” [1].

These important numbers confirm the opportunity to explore the theme in order to take advantage from a design-based approach, even if it is applied to products conceived solely from a utilitarian/functional perspective.

The Starman project relates to a new type of speaker stand. The project idea arose from the realization that the regulatory evolution inherent stages and public performance equipment has not been followed by a congruent evolution of support stands for the purpose

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of improving safety. In addition to this, the aesthetic level of musical equipment and the details of the venues that house them has evolved so much that it has left some doubt about the aesthetic appropriateness of tripod models whose technical conception dates back several decades.

## 2. State of the Art of Speakers Stands

The first phase of the investigation was carried out through in-depth research carried out on many areas: literature [2], reports [3], products on the market and new products registered as patents or designs.

In the technical field of music, audio/video, and lighting equipment, the use of support stands is widely known, the main feature of which, in addition to imparting suitable stability to the expected loads during operation, is that they can be folded up when not in use and thus have a small footprint.

The most common type of support devices at all levels (amateur and professional) are 3-legged stands, i.e., tripods, in which the main advantage is having a safe support surface since geometrically one and only one plane passes for 3 points. The other recurring feature in the already known devices is having a sliding rod inside the device, which acts as a variable element in height and at the same time provides a coupling for the equipment that is inserted into it.

A further feature of known tripod stands is that they consist of a very long main tube, almost equal in length to the inner sliding rod; the legs and related rods necessary for the static stability of the stand are hinged on the outer tube. Therefore, when opened, the space inside the tripod is almost entirely occupied by the outer tubular and the bracing rods. The consequence is that all of the tripod's floor space is not usable for other purposes, such as placing other useful devices during a musical performance.

A problematic feature of known tripods is that they leave the user with the task of proper adjustment of the leg opening: this has led in many cases to misjudgment,

whereby it has happened that very heavy speakers have been placed at height with a reduced leg opening of the tripod, causing the speakers to fall with consequent damage to people and property.

The search for innovative solutions by industry manufacturers (taking for granted the product architecture of 3-legs and stiffening rods), has been focusing almost exclusively toward:

- an increase in the lightness of such support systems, the usefulness of which, however, seems to be marginal since in the actual scenario of use the loudspeakers or lighting systems have considerably greater weights than the stand itself anyway (unlike stands for photographic equipment where lightness is essential to be easily gripped and moved even with one hand),
- the vertical rod locking systems,
- the possibility of inserting cranks or pneumatic systems for lifting.

The investigation into the research databases connected to the WIPO (World International Patent Organization) system [4], in particular IPC International Patent Classification [5], Deposits of designs and models (Locarno Classification) [6], and trademarks (Nice Classification) [7] revealed that the latest requests filed by leading companies in the sector concern minimal variations in some components of their products, such as the logo stamped on the rod adjustment knob, the insertion of colored details to be used as recognition, rubber feet with customized design. In essence, it was confirmed that this type of product has undergone only minimal incremental innovations over time.

In summary, at least three problems present in all existing or known 3-legged stands can be noted:

- poor stability due to tilt line close to the center of gravity;
- the possibility of incorrect assembly due to narrow leg opening;
- unusable internal space due to the presence of stiffening rods and other elements.



**Fig. 1** Traditional speaker stand (left) vs. Starman new stand (right).

Designed by Marco Mancini, Courtesy of Starman-stand, Italy. With 5 legs the rollover line is further from the centre of gravity: it is possible to reduce the footprint.

### 3. The Project

The research was focused on finding a leg opening system that would allow stability even without tie rods or other locking mechanisms: the solution found was that of a first-class lever, in which the fulcrum is the pin that connects the leg to the central part of the tripod. After some unsuccessful attempts, the final choice was that of a shaped plate, to be positioned slightly lower than the fixing pins, to allow 10 accommodations for the legs: 5 in the closed position and 5 in the open position. This star-shaped plate (hence the first reference to the product name), is pushed against the legs by a spring: by pressing the plate from above and rotating it by  $36^\circ$ , the legs are locked or unlocked, in a very simple and effective way.

Some prototypes were made to test the mechanism, optimizing the position of the hole in the legs, the design and thickness of the plate, and the characteristics of the spring, until a performance compromise deemed suitable for use was obtained.

The basic problem was to make a folding stand that would find use in musical performances (or dance, or other performances), structurally and functionally designed to overcome the limitations of existing products.

The main purposes were:

- to avoid any margin of discretion for the user and consequent uncertainty in the opening of the legs;
- to improve the stability thanks to the outward displacement of the tilt line;
- to realize a stand that, in the use phase (with open legs) offered an internal space free of encumbrances and therefore was usable to place other elements necessary for the performance (cables, additional speakers, bags, lights, pop-ups, ...).

These purposes were achieved through the design and fabrication of an innovative patented spring system for locking the legs, without rods or other additional internal stiffening elements.

The product described has 5 legs, but it can also be made with the classic 3 legs. The 5-leg solution offers

the main advantage of greater stability and a smaller footprint, in fact, with the same radius of the circle circumscribed by the geometric figure described by the base, the tilting line is farther from the center of gravity than employing the traditional 3-legs (Fig. 1).

#### 3.1 Detailed Description (Fig. 2)

Scheme A: the stand 1 includes a main tubular body 2 onto which a cruciform plate 3 is engaged and stopped. This plate has a central hole (so that it can be inserted into the main tubular body 2) and hinging slots 3a for the insertion of legs 4. Each leg 4 of the stand has a tubular body with a hole suitable for hinging, by using a pin. The tubular body of each leg extends from the hinging point until the contact point with the main tubular body.

Scheme C: When the stand is open and loaded, the position of hole F results in a lever of the first kind, in which the fulcrum (F) is placed between the two forces of action A1 and reaction R1, so the system naturally finds its equilibrium due to the horizontal component A1 of the weight force P (stand's weight plus the load: acoustic speaker, lighting device, other loads if any). In such a configuration it happens that as the weight on the stand increases, the stability of the same stand also increases since the upper end of each leg comes to rest on the main tubular body making the grip even tighter.

To prevent accidental closing of the legs or if it becomes necessary to raise and move the stand, it is important to find a horizontal action component A2 that, in the absence of the weight force P, keeps the legs in the open position, facilitating the subsequent shifting and re-positioning of the stand. This component is generated by a force M exerted by the spring 6 that pushes a locking and clamping plate 5, free to slide on the main tubular body 2 thanks to a suitably shaped central hole.

Scheme B: plate 5 is free to rotate around the vertical axis of the stand, to engage two locking positions: the open position (with legs at their maximum opening

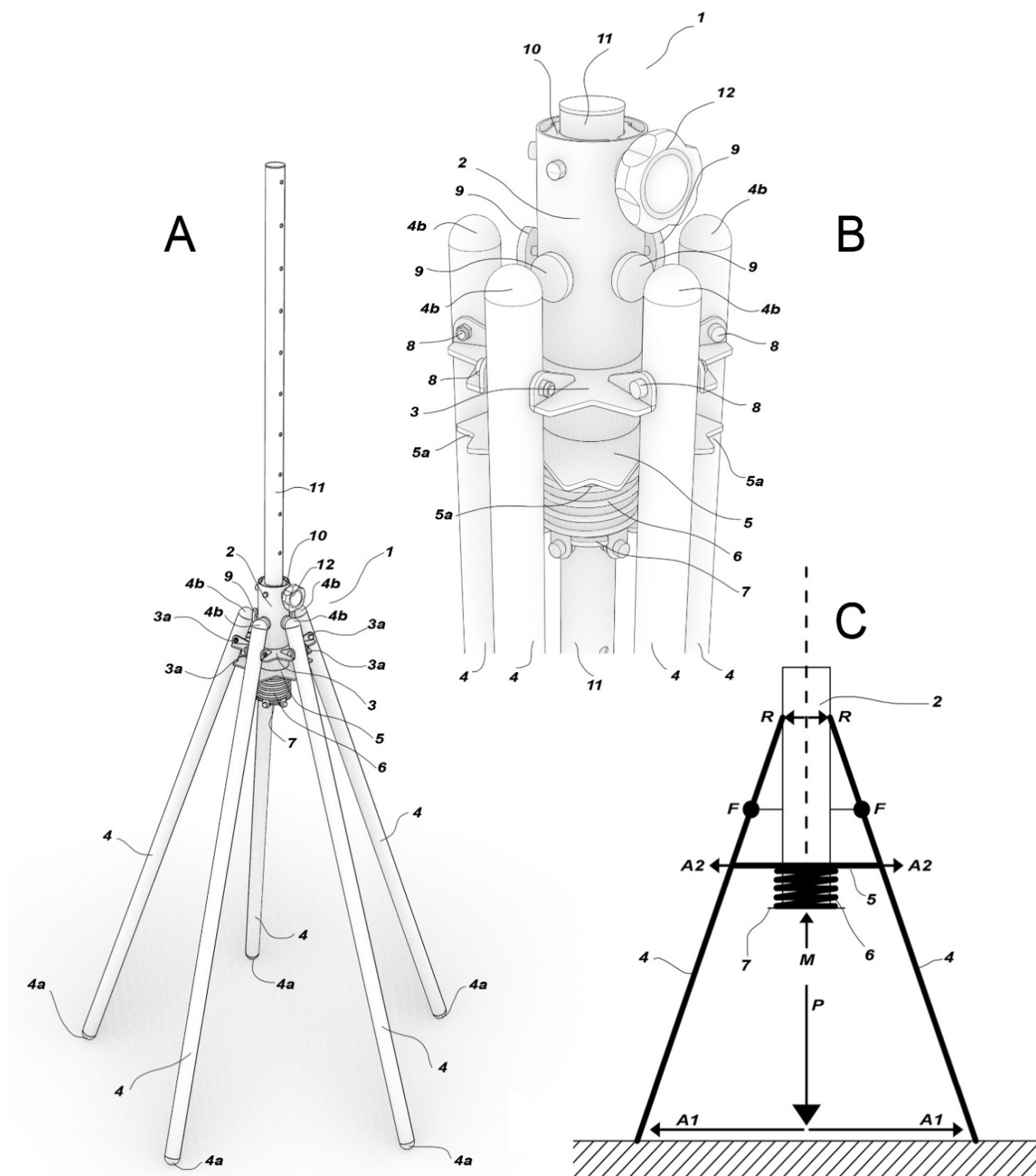


Fig. 2 System parts and functioning.

angle) and the closed one (with legs closed and parallel to each other). These locking positions are achieved by the special design of the clamping and locking plate 5, which provides, for each of the legs, a pair of recesses conformed to a V shape: recess 5a corresponds to the open position, recess 5b corresponds to the closed position.

The locking and clamping plate 5 is held in place by a spring 6 which, running externally to the main tubular body, exerts a thrust on the plate 5 to tighten the legs. This spring is stopped at the bottom by a stop plate 7 attached to the main tubular body.

The locking and clamping plate 5 is manually rotated so that each of the recesses 5a or 5b naturally finds a position across each of the legs: this is done simultaneously for all legs. The rotation is done smoothly, with the stand open, by exerting pressure from top to bottom with both thumbs, to compress the spring and then rotating the plate 5 by 36°.

In each leg, hemispherical terminals 4b are provided at each end, designed to always find one and only one point of support (on the main tubular body 2 and the floor). In some cases it may be necessary to compensate for possible instability due to a support surface that is not perfectly flat and horizontal (although where there is a stage, this is always regular): for this reason, adjustable support devices 9 are provided on the main tubular body 2, so that the angle of rotation of each leg 4 can be individually managed, thus compensating the instability.

The stand is completed by a sliding rod 11, stopped by a single spring-piston locking and tightening knob that fits over holes drilled in the rod. Once stopped, the rod is suitable for allowing the engagement of the external device (sound box, lighting system, other devices), according to known procedures.

Regarding the locking of the legs in the closed transport position, an elastic band with an adjustable spring retainer is provided. Thus, transporting the stand in the closed configuration is done by simply gripping it with any of the legs.

### *3.2 The Intellectual Property Protection*

The positive confirmation of the functioning required to protect the product before marketing. A parallel research phase was therefore activated in the various WIPO databases, aimed at verifying the existence of the conditions for patent protection.

After having obtained the patent (that would have protected the operating system), it was decided to implement intellectual protection with the design filing, which protects the external and formal aspects of the design.

## **4. The Aesthetic Problem and the Chromatic Choice**

Connected with the idea of temporary nature of any live performance in medium/small scenarios, for example, pubs, small theaters, aperitifs, wedding events, presentations, readings, ... there is also the acceptance of a series of aesthetic parameters that normally we would be ready to accept in contexts where the fruition is of a more stable and permanent type. Tripods (for speakers, lights, photographic equipment...) used in all these temporary areas are a fact. But it is not the only possible solution.

In a charming event every detail is studied and designed, from the colors of the cables to the arrangement of the chairs, from the type of flowers to the choice of towels for the bathroom, so why not propose a stand adequate also from an aesthetic point of view? After all, the show area is delimited by these supports that often define the stage, constituting its outposts, the dividing landmarks between the public and the artists.

Manufacturers make these supports with few modifications and with standard colors (almost all black, in some cases silver, and in rare cases white).

One of the key choices was therefore the proposal of chromatic alternatives [8] and the possibility of customization (Fig. 3). A stage and, in general, the show, is made of lights and atmospheres that adapt to





Fig. 3 Positioned in front of the public, Starman defines and qualifies the stage.

the context of the song, dance, show, and their character (playful, sad, melancholy...): the choice of chromatic variables was dictated from the combination with the most used colors in the stages (iridescent reds for the lights, for example), with the details of the accessories (golden jacks and connectors, amplifiers

and rods with chromed details, ...), with strong personality characters of certain instruments customized (orange fluo...), moreover, a metallic variant with sparkling finishes was proposed to replace the usual matte black, to better reflect stage lights such as moving heads and LED (light-emitting diode) projectors.

## 5. The Communication

In the innovation literature, it is well-known that the distance of innovation from a product or a pre-existing process, is what determines also the grade of difficulty in the correct communication of the new product (or process). The risk is the partial or complete misunderstanding of the new features of the innovation and, consequently, the failure of the product [9].

In this case, the communication strategy was dictated by the type of contemporary communication media and by the musician's typical shopping experience.

### 5.1 The Naming Process

The first step was to study the naming of the product. With the name, the characteristics to communicate were:

- absolute novelty and innovation, that is, an object out of the ordinary and out of the commodity standards;
- the beauty and elegance that, through a design-driven approach, was also granted to a service product up to now not touched by even formal design approaches but only by functional solutions;
- instead of the usual numerical codes or abbreviations of other competing products, this new product should have been immediately identifiable and memorable, with a “belly” name, referring to a character, with anthropomorphic elements, or arouse an evocation of the memory of positive feeling;
- the name had to have a real, specific reference to one or more characteristics of the product, to be even more easily memorized.

The chosen name was Starman:

- for the star shape of the locking plate (exclusive and patented feature);
- for its meaning of “man of space” that is coming

from other planets and “out of this world” in the sense of unknown but in a positive, fantastic, attractive way;

- for the association with Bowie's song, as a personal tribute by the author to the great songwriter, and to increase the possibility of memorizing the product;
- because, by containing the word “man”, it would mention the type of use, manual and with strong functional and ergonomic specifications.

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Starman is designed, realized and patented by Marco Mancini (Italy).

Starman-stand.it

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