INVENTIVE PRODUCT CONSTRUCTION WAY TO INTERNATIONAL MARKET

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ABSTRACT: *Herby we represent a special construction of chair for children. Inventive construction of this product was designed in several phases as well as produced in two different phases, first with metal and plastic materials and then latter ecological reasons produced from laminated elements. The product was registered as innovation as well as certificated and tested according to the Euro standards for wood products according to the places of usage. The product is also received several awards in the internal fairs and other institution. It present a very attractive multifunctional products for children where accepted in several markets as so.*

1. INTRODUCTION

Working with chairs production and sales for a long period with different markets from Canada, USA, Europe and Middle East, visiting many fairs, I found that the offer of chairs in these markets more or less is standard. The different between these products is a several variation of standard designs, only with different types of basic material. Furniture designed for children's is usually offered in a very wide pallet from chairs, tables, cupboards, wardrobes, and similar as well as toys are constructed and produced based on the special standards for products tended to children. So more or less the products are standardized and produced for that purpose.
Etymology, the word "chair" comes from the early 13th century English word chair, which came from Old French chair (chair, seat, and throne). Modern French chair "pulpit, throne;" the more modest sense having gone since 16 century with variant form chaise). The Old French chair comes ...from Latin cathedra "seat".
The chair has been used since antiquity, although for many centuries it was a symbolic article of state and dignity rather than an article for ordinary use. "The chair" is still used as the emblem of authority in the House of Commons in the United Kingdom and Canada, and in many other settings. In keeping with this historical connotation of the "chair" as the symbol of authority, committees, boards of

directors, and academic departments all have a “chairman” or “chair”. Endowed professorships are referred to as chairs.Chair design considers intended usage, ergonomics (how comfortable it is for the occupant), as well as non-ergonomic functional requirements such as size, stacking ability, folding ability, weight, durability, stain resistance, and artistic design. Intended usage determines the desired seating position. “Task chairs” or any chair intended for people to work at a desk or table, including dining chairs, can only recline very slightly; otherwise the occupant is too far away from the desk or table. Dental chairs are necessarily reclined. Easy chairs for watching television or movies are somewhere in between depending on the height of the screen.

Ergonomic design distributes the weight of the occupant to various parts of the body. A seat that is higher results in dangling feet and increased pressure on the underside of the knees (“popliteal fold”). It may also result in no weight on the feet which means more weight elsewhere. A lower seat may shift too much weight to the “seat bones”.

Actual chair dimensions are determined by measurements of the human body or anthropometric measurements. The two most relevant anthropometric measurements for chair design is the popliteal height and buttock popliteal length.

Additional anthropometric measurements may be relevant to designing a chair. Hip breadth is used for chair width and armrest width. Elbow rest height is used to determine the height of the armrests. The buttock-knee length is used to determine “leg room” between rows of chairs. “Seat pitch” is the distance between rows of seats. In some airplanes and stadiums the leg room (the seat pitch less the thickness of the seat at thigh level) is so small that it is sometimes insufficient for the average person.

The furniture for children is specially designed, so the chairs. Young children often use furniture as an adventure playground. Therefore, nursery furniture must be safe for climbing, biting and other game play. Bunk beds are recognised as a potential hazard to children, so it is essential that designers and manufacturers understand current regulations and standards. In this paper we are going to concentrate on a very success innovation which a certain design of chair for children which is not only use as a chair in different position but it is a toy with which children can safely and jolly play as well as sit with for different needs.

2. THE FIREST INVENTIVE CHILDREN CHAIR DESIGN

The designer and the inventor for long time analyse the basic idea for the construction of such special chair with which children could also play. Checking all the existing children chars offered in the international market, we found that all of them is more or less are standard, and they mostly designed and produced according to the existing recommendations of standards (EN 58, EN 1021 parts 1 & 2, EN 1335, EN 1725, EN 1728, EN 1957, ENV 12520, EN 14443, EN 15373, BS 5459, BS 6807, BS 4875, ENV 14443).

The inventor started to realize his basic idea, starting with the sitting function combined with rocking added part to the end of the legs. His final design named as a HOPLA chair - for swinging, climbing, sitting and riding.

HOPLA chair and toys intended for children from 3 to 10 years old for sitting, swinging, climbing, and driving and as a stretching tunnel.

His planed design needed a special material which could allow him to realize the full idea with all the planed function. Finding the material which could be shaped as the design was not easy. But consulting with several material producers, they suggested several different materials depending on the production technology which could be used with producing less waste. So the first prototype was made as seen in Picture (1):

Picture 1 First prototype of planed design of the chair

As you see the material of the first prototype of the chair-toy is made of a metal substructure that is connected to screws, which is integrated with integral polyurethane foam: (a material often used in the manufacture of furniture for the automotive industry and medicine).
Thanks to its particular softness and specific warmth, we have a chair that provides a feeling of complete comfort when sitting and swinging.
It allows children to choose the way to sit and swing, and because of the way of making and selecting soft material in all parts, the inability to be injured.
This production of the HOPLA CHAIR received a lot of complements from different professionals in different children gardens from there pedagogy teachers. As well as a many rewards in different international Fairs.
The International Awards which it receives as a chair for sitting, rocking, climbing and driving for children from 3 to 8 years are as follows:

- Silver medal in INPEX –PITTSBURG USA,
- Golden Medal from LONDON ,UK,
- Silver Medal at INOVA, KARLOVAC, HR.

The product as a chair is registered in the Register of INTELLECTUAL PROPERTY under the number COI OHIM-RCD 002876607. CE HR EN 71-1.
The chair-toy was represented in several children gardens and kids were dilated and played with big satisfaction.
Our remark or observation at that time was it will be better and suitable for children to be from natural material as wood.

3. THE FINAL DESIGN AND CONSTRUCTION OF THE CHAIR-TOY

After some consultation at several Fairs it confirmed that the potential buyers will prefer that this chair –toy will be more acceptable if it is produced from natural material which ecologically be accepted and better for the children. The inventor with his close consulting group started to search for the better material which basically wood or laminated wood elements. For such construction and after several attempts of producing the elements of the product from wood elements, they decide to use the veneer laminated elements.For the production of this construction it was needed to change certain elements of the parts of the chair to define the final elements of the chair from laminated wood. As it is in the production of laminated elements, first it should define the moulds for their production with big precessions to be sure to get the defined design. It is also important for continues production with assurance of quality of the elements. The first prototype is produced and tested for the quality of the final production of chair-toy.

Picture 2 The last version of the chair-Toy constructed from laminated veneer elements

As you see from the two pictures above (2) it constructed from three laminated veneer elements. The moulded veneer elements are of 13 mm, 15 mm and 22 mm thickness. The upper and the lower seating parts are moulded laminated elements produced with special designed moulds. Also as you see from the picture the third part which is functioning as arms of the chair in one position and in the other poison as a rocking parts as legs of the chair –toy product. The elements are joints with special safety screws for wood. As you see in picture (2) the chair has also wheels at the end of the rocking part of the chair-toy to able the child easy rolling with it. The chair finishing is done with eco-wood varnish safe for children.

The dimension of the chair-toy in position two is 380 mm X 755 mm X 635 mm.

This product is also tested as a chair-toy for children at Euroinspect Zagreb. The test report according to HRN EN71-1:2014, where statistic strength (toys for children under and over 36 months (25 kg- 5 min and 50kg- 5min.The requirement are fulfilled. Toys intended to bear the mass of children under and over 36 months are also fulfilled the requirement.

After that the chair is represented in several International Fairs from London to Dubai where we registered that inters for such children chair-toy is enormous. The potential buyers at the Fairs are asking for sales offers for big quantities our even joint –venture in production.

4. CONCLUTIONS

Here by we can conclude that the construction of the children chair-toy represented above is a very interested invention as such and it assures the following

1. Very interested as such construction to the children when presented to them,
2. The construction itself serve in the place of usage as a multi functional product,
3. It receive several rewards in the local and international market as such,
4. The first prototype from the metal construction integrated with integral polyurethane foam was accepted as an interested invention and amuse the children as well as the purchaser of the furniture to children gardens,
5. The second construction of the chair-toy from laminated veneer elements makes the product more acceptable, because of the eco-natural material,
6. The testing and the certification of the chair-toy shows hi quality of product for children
7. With multi functional purpose for them,
8. The marketing of these children chair-toy shows very big inters for it the matter that prove

INVENTIVE PRODUCT CONSTRUCTION IS THE SUCESSFULL WAY TO INTERNATIONAL MARKET.

5. LITERATURE

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