

From Idea creation to a Patent acquisition by TRIZ

—For the escaping from danger livingry of the victim of the disaster—

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We challenged the making of example with the universality to be usable as a TRIZ example for activity of the Knowledge Creation Study Group, Mitsubishi Research Institute. Afterwards, we challenged not only making of example as the study, but also the patent acquisition.

The setting of the problem

Whenever natural disaster such as a big earthquake or a typhoon happens, we are in condition a large number of people to have been packed into the large places such as gymnasia, and it is put and we are in condition to have only blue seats to us to the utmost and are forced to live a life.

We improve this living environment in the gymnasium of the victim a little.



It is quoted than a Shizuoka disaster prevention station publication "escaping from danger life plan" implementation guide

➡ **A purpose : The situation improvement of the refugee at the time of the natural disaster such as big earthquake**

The creation of the concept
①
Physical Contradictions ~ 1

The cration of the concept
②
Physical Contradictions ~ 2

The creation of the concept
③
Technical Contradictions

The simple chair which become the cushion, and become the table in the meal.

Bend at the time of chair, but a straight board at the time of a table

Strength becomes weak when lower the area of one piece of board

「A Soft and Hard Thing」 : Typical Physical Contradiction

「bend and not bend」 Physical Contradiction

Improving: [Area of moving object] vs Worsening: [Strength]

Separate by Time : time to eat and time to sit down

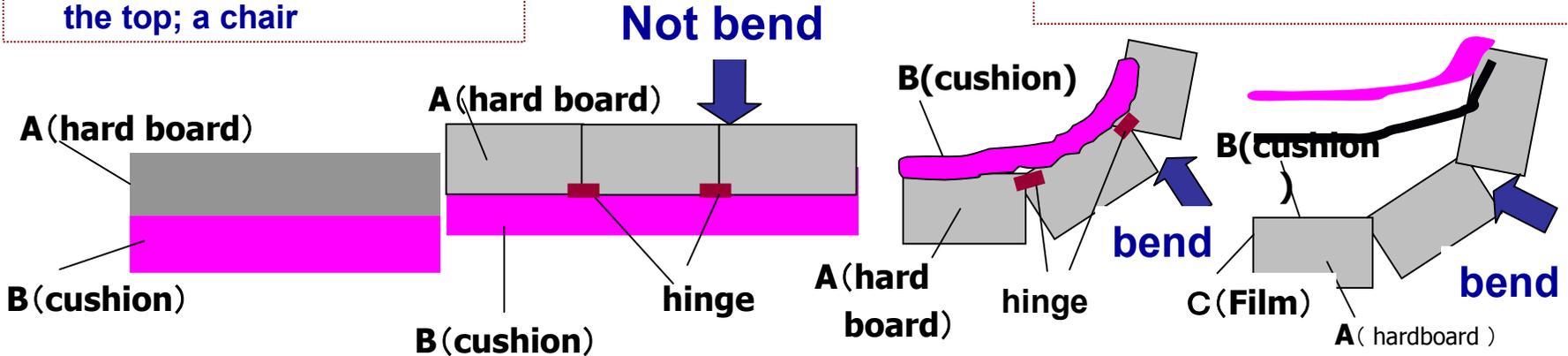
Separate by Time : time to use of chair and time to use of table

40.Composite Materials 「Thin Film」
· Hinge→Re-enforced Plastic Film

- If make a hard board (A) the top; a table
- If make a cushion(B) the top; a chair

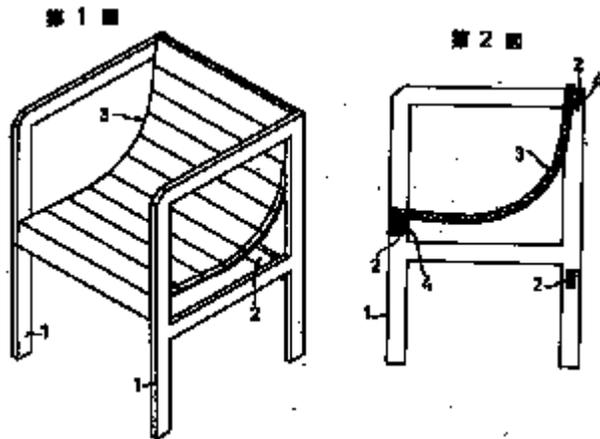
Divide a hard board into a plural number and tie up a thin board with a hinge

Affix it with a thin film (re-enforced film). Power appears with the hinge partially, but disperses on the film

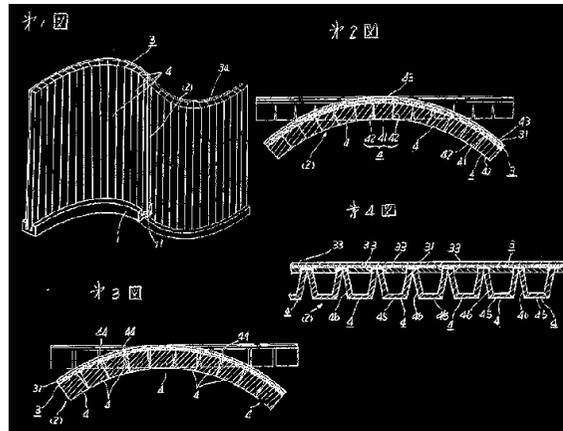


The invalidating art literatures which was used as the ground of rejection.

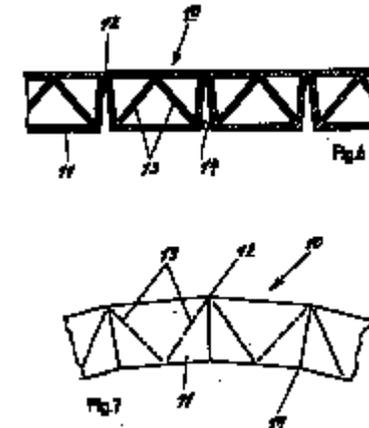
Invalidating art 1



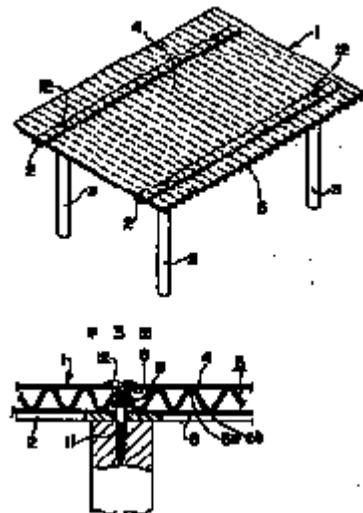
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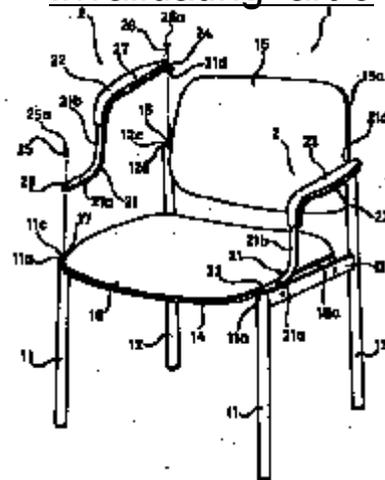
Invalidating art 4



Invalidating art 5



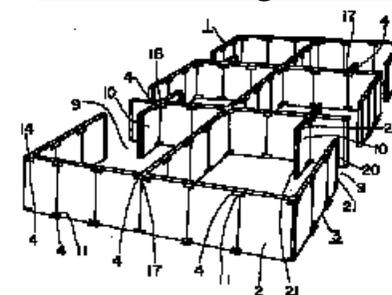
Invalidating art 6



Invalidating art 14



Invalidating art 15



Objection to the ground of rejection

The mini-sample

Because we flatten it and can use it as building department materials such as inner wall materials or floorings such as gymnasiums in normal, we can use it even if we do not prepare for a large safekeeping place and storage space separately. If we tear off from the wall surface and the floor and move it at the time of the disaster, earthquake, eruption and the flood on the floors

such as spread cushioning side on the surface on a floor. We can use it as a chair with the cushion and can avoid pain of the knee and a waist.

And we can use it as a table at the time of the meal and a table by a thing of work as a table top if we make the hardness side the top surface because the top surface becomes flat.

We can use it as a parting strip or wall by using hardness parts. Furthermore, there is soundproof effect by the cushion materials and we can protect privacy from neighboring people more or less. **We can use it as a structure body serving as the many functions that had hardness and the softness while being one structure materials. We relax pain of refuge life frightened by uneasiness more or less and can send comfortable refuge life conventionally.**

**This invention became the Patent.
Our claim that used TRIZ was accepted.**

