Door and baby

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Author(s):

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State: 3/0 final solutions are constructed

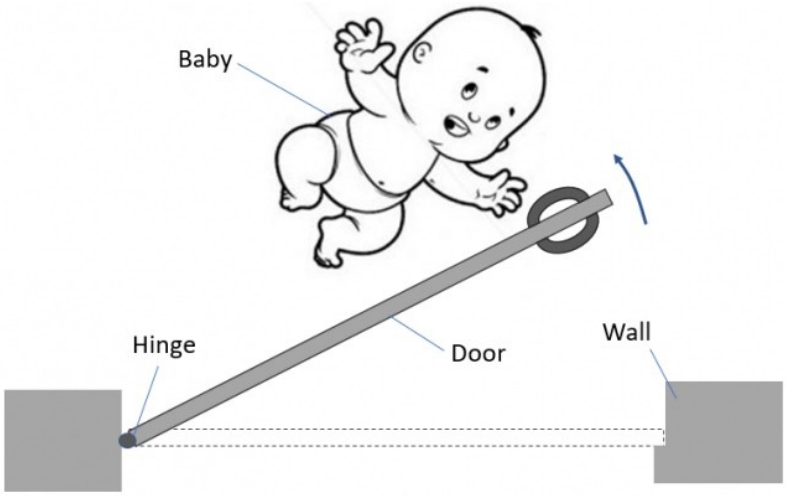
Problem models: 3
Solution models: 2
Sets of requirements to a resource: 1
Preliminary solutions: 7
Final solutions: 3

Analysis of problem situation

Describing problem situation

Problem situation:

A child plays in front of a closed door. If you suddenly open the door, you can hit the child hard. How to increase the safety of the child?



Undesirable effect:

Injured child

Useful product connected with problem situation:

Opened door

Production process essence:

An adult push the door. The door pivots and opens.

Revealing problem operation

Scheme of machine:

Machine function:

Provide a niche in a wall and close it

Machine components:

A door, hinges, doorway

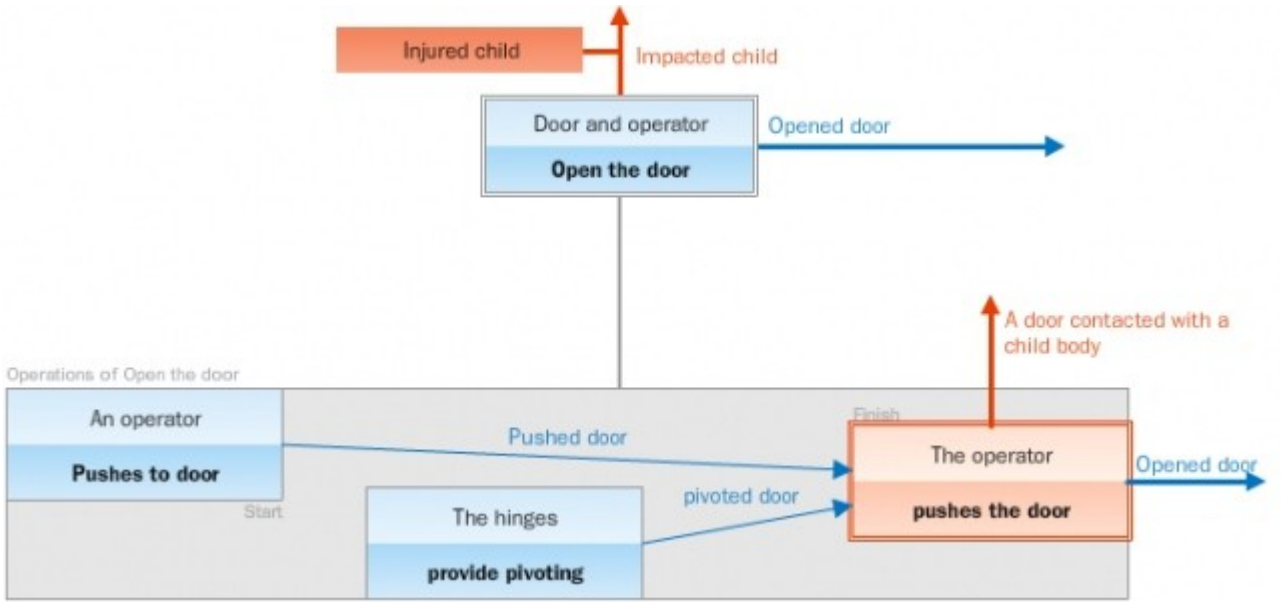
What is the structure of the machine?

the door located into doorway with possibility to pivot and open.

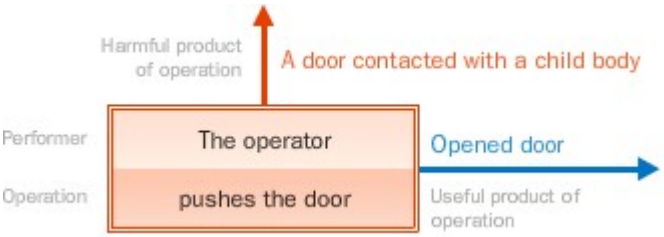
How does the machine work?

The operator pushes the door. The door is opened in direction to a child.

Production process model:



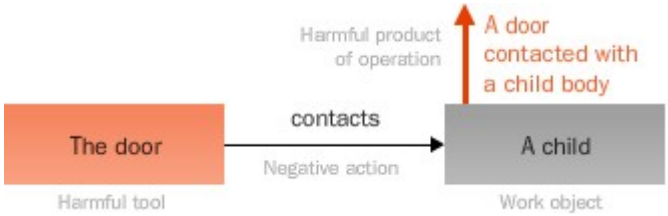
Scheme of problem operation:



Model of useful system for producing Opened door:

Investigating conflict

Scheme of conflict:

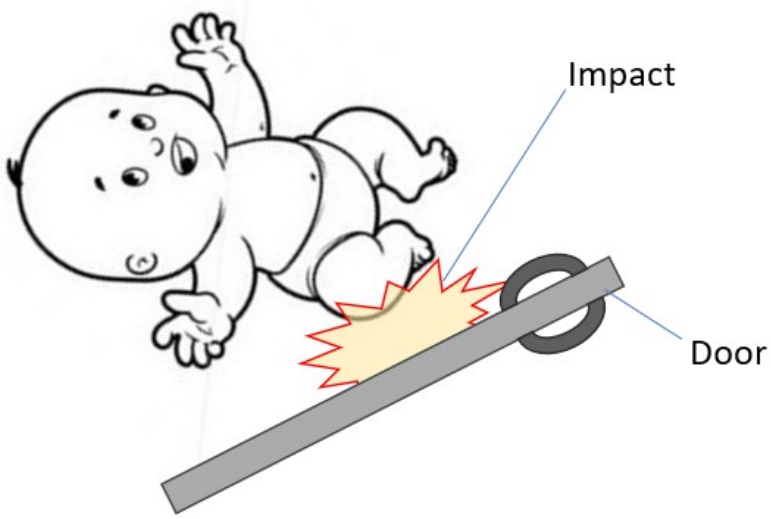


Exact conflict place:

A door and a child

Conflict time:

Time of contact a door and a child

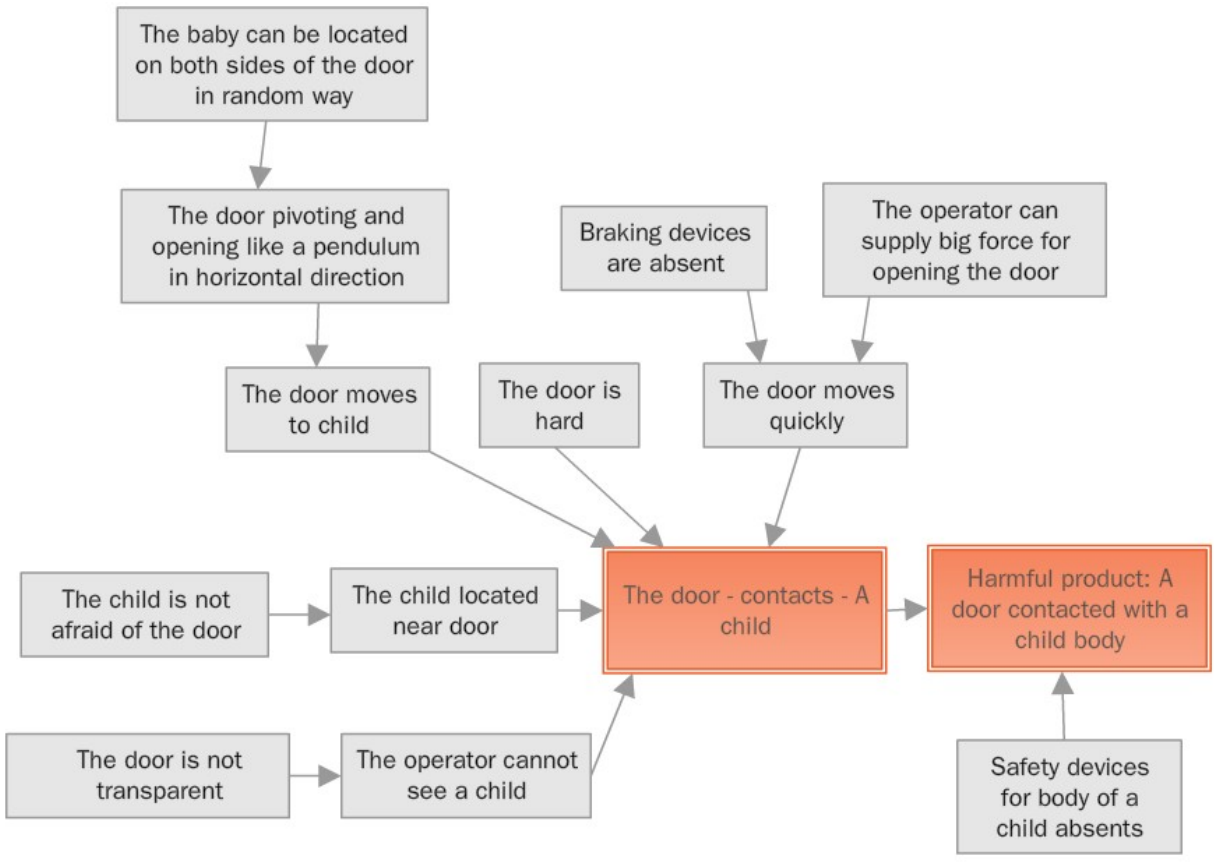


Conclusion:

The conflict is significant and should be eliminated.

Harmful system model:

Root cause scheme:



Main causes of the conflict:

The door pivoting and opening like a pendulum in horizontal direction
The baby can be located on both sides of the door in random way
The operator cannot see a child
The door is not transparent
The door is hard
The door moves quickly
Safety devices for body of a child absents

Suggesting conflict eliminating hypotheses

Problem solving

Hypothesis 1

Conflict can be eliminated if
the door would be opened in direction from place of location of the child

Formalized problem model (hyp. 1)

Short formulation:

There is a conflict in the machine "Door and operator" for producing "Opened door". The conflict essence is "The door - contacts - A child. Harmful product is A door contacted with a child body". Conflict can be eliminated ifthe door would be opened in direction from place of location of the child .

Goal:

Provide conditions indicated in the hypothesis <Conflict can be eliminated if
the door would be opened in direction from place of location of the child>

Operational zone:

A door and a child

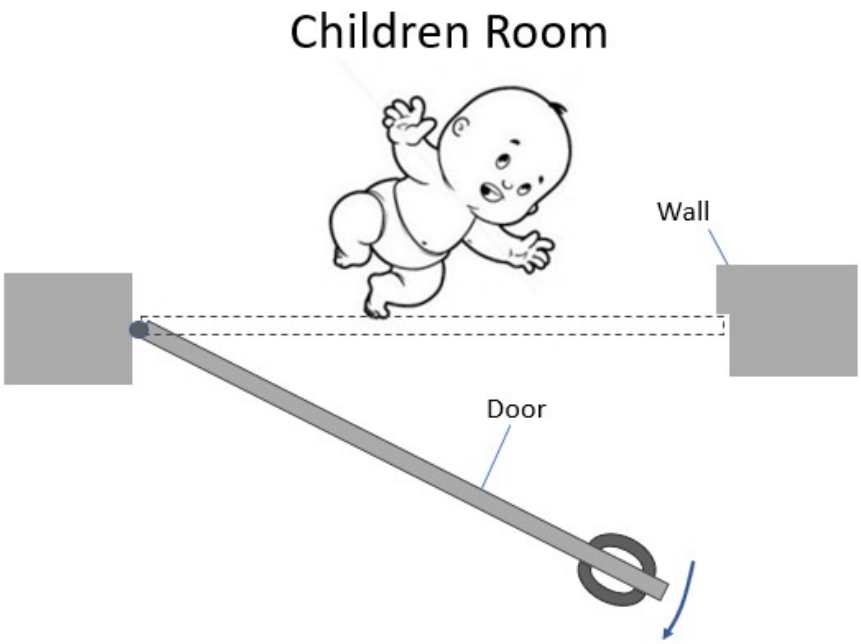
Available resources:

Substances	Fields
A door hinges doorway	mechanical electrical
Time	Space
Time of contact a door and a child	A door and a child

Preliminary solution 1 for FPM1

Description:

Accurately identify the room for the child. Run the door so that it does not open in the nursery, but rather, outward.



Advantages:

The contact a door and a child is absent

Disadvantages:

The child could located from both place of the door in random way

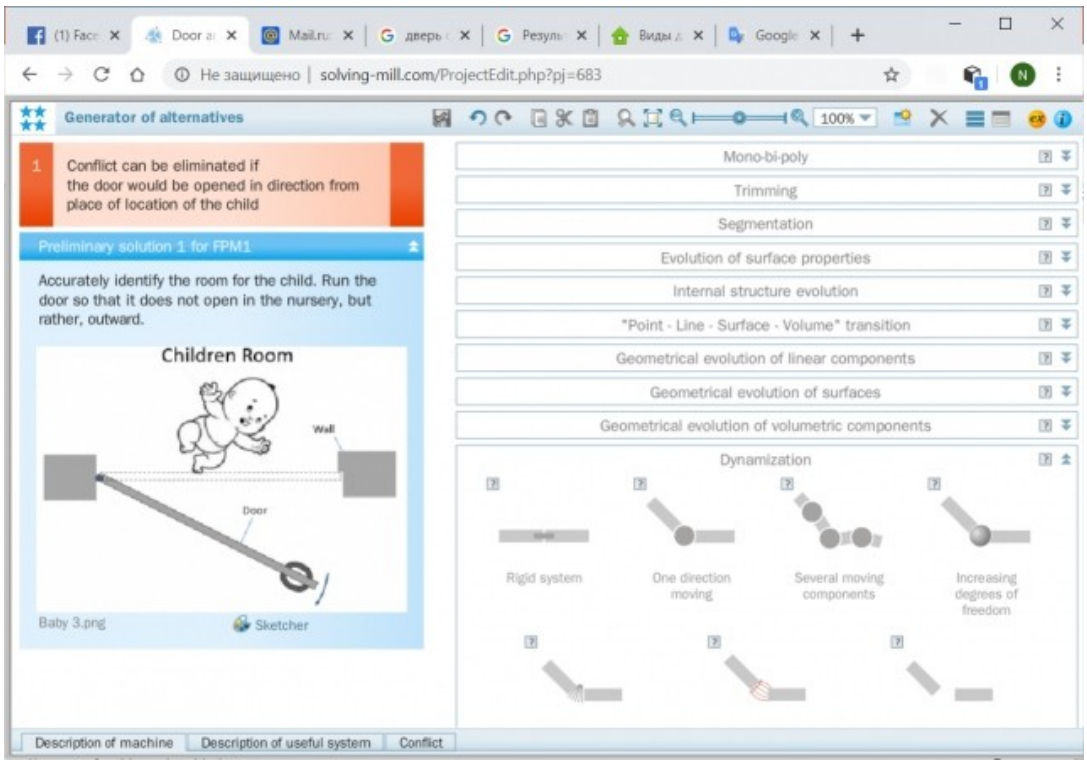
Additional preliminary solutions

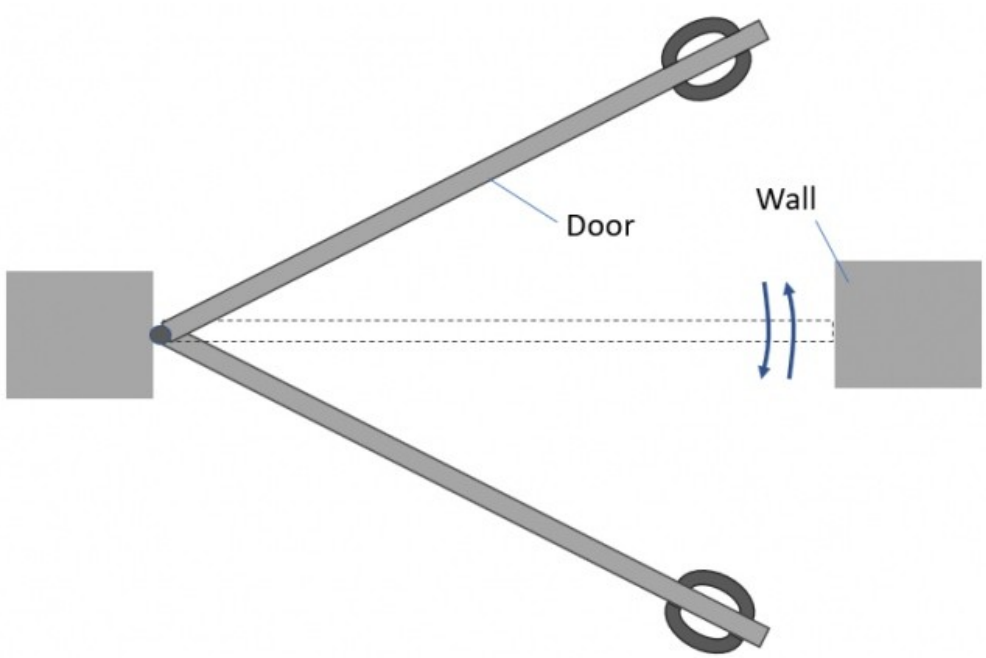
Preliminary solution GA1

Description:

Make the door opened into two directions. Use supports fron double hinges.

To prevent injury to the child, the operator can always open the door for himself.

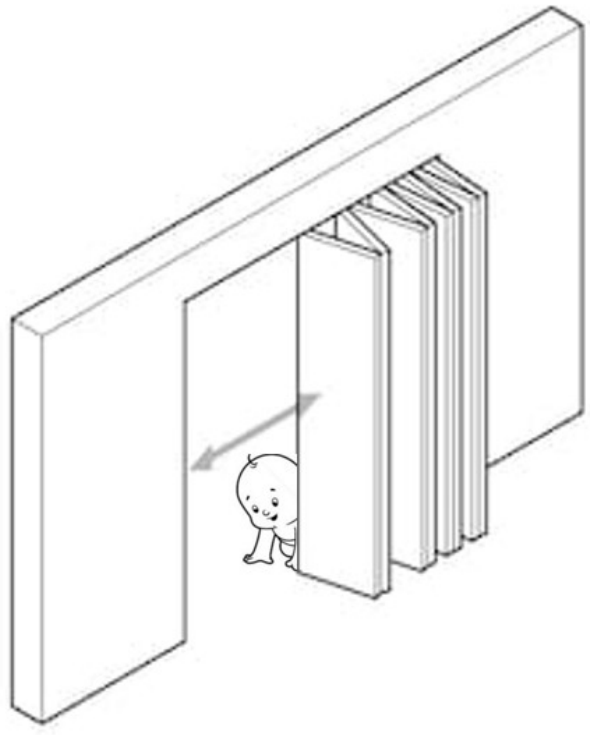




Preliminary solution GA2

Description:

Make the door like accordione.



Accordion door

Preliminary solution GA3

Description:

Use a roll-up door.

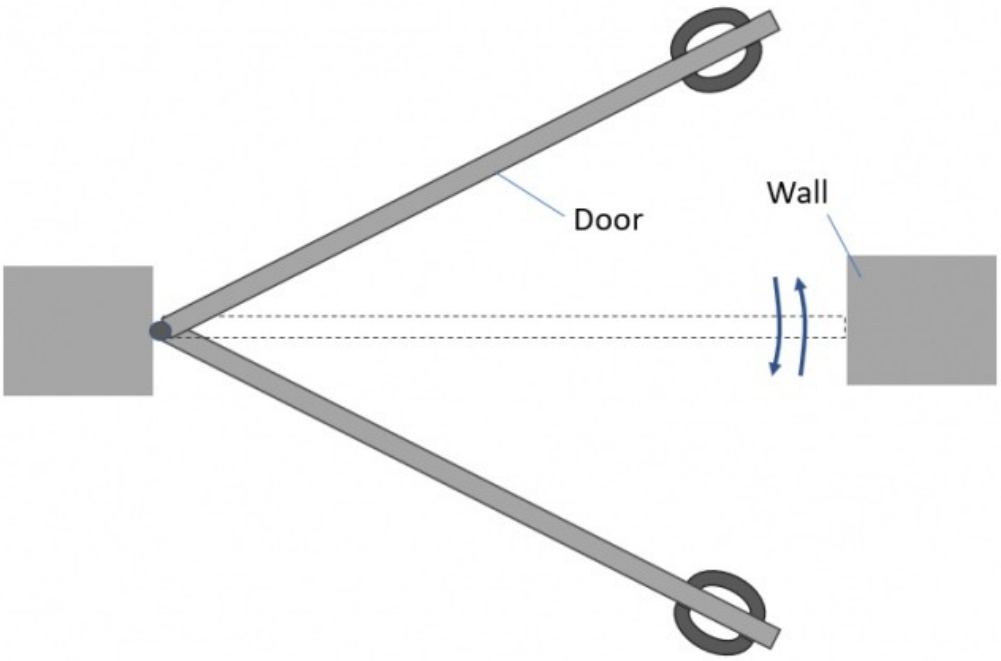
Final solution (hyp. 1)

Description:

Proposed idea:

Make the door opened into two directions. Use supports fron double hinges.

To prevent injury to the child, the operator can always open the door for himself.



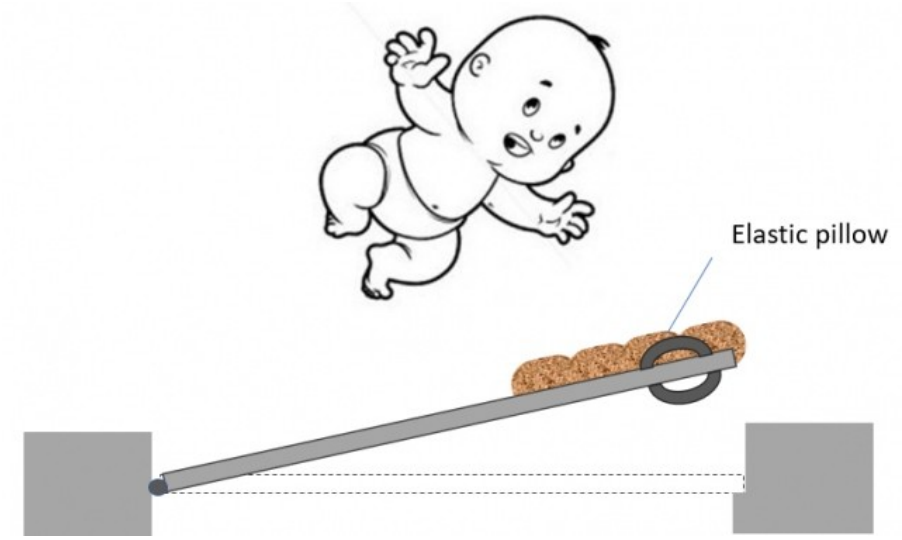
Hypothesis 2

Conflict can be eliminated if the door would be soft and elastic

Final solution (hyp. 2)

Description:

Make the door soft and elastic. Place on the door a pillow from soft material.



Hypothesis 3

Conflict can be eliminated if an operator would be understand the child is located behind the door during opening

Formalized problem model (hyp. 3)

Short formulation:

There is a conflict in the machine "Door and operator" for producing "Opened door". The conflict essence is "The door - contacts - A child. Harmful product is A door contacted with a child body". Conflict can be eliminated if an operator would be understanding the child is located behind the door during opening.

Goal:

Provide conditions indicated in the hypothesis <Conflict can be eliminated if an operator would be understand the child is located behind the door during opening>

Operational zone:

A door and a child

Available resources:

Substances	Fields
A door hinges doorway	Mechanical Electrical
Time	Space
Time of contact a door and a child	A door and a child

Solution model 1 for FPM1

What and how should be done:

Provide a property Ability to observe place behind a door for operator in a system by means of a component which exhibits this property.

Resource (component) requirements

what is it making in the system, where and when	to provide the operator with surveillance of the space behind the door
size	coordinate with size of the door
shape	coordinate with shape of the door
internal space	should to be evacuated in the center of the door to provide the void
material	transparent material (glass)
ability of control	handly

IFR:

the door itself provides the operator with surveillance of the space behind the door

Preliminary solution 1 for FPM1 by SM1

Description:

Computer's description of an idea:

Provide a property Ability to observe place behind a door for operator by means of the system component A door. Use resource:

with size coordinated with size of the door

with shape coordinated with shape of the door

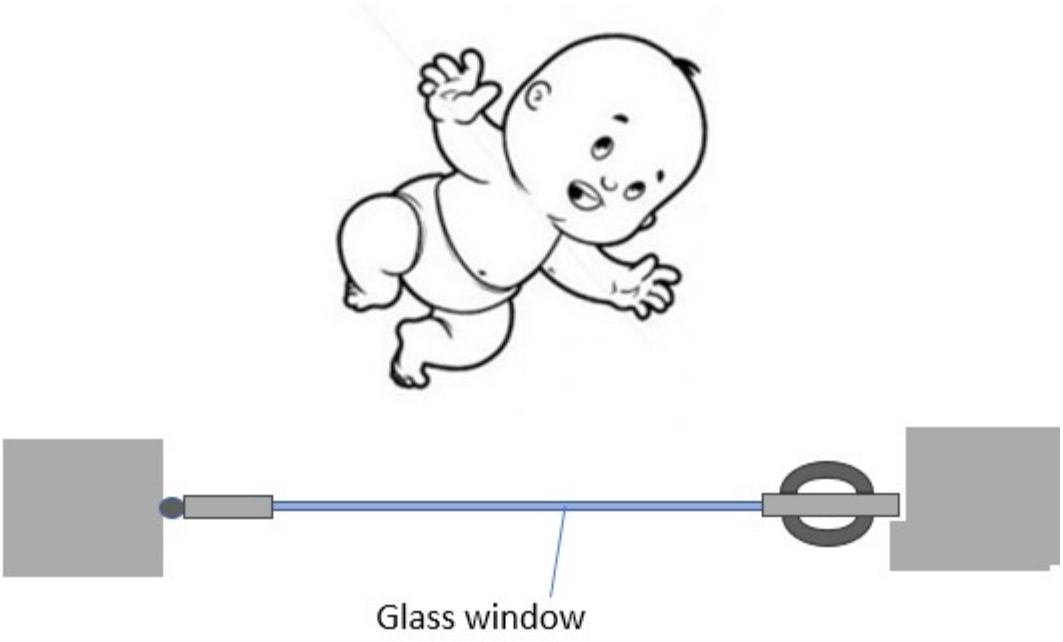
with internal space evacuated in the center of the door to provide the void

with material transparent material (glass)

with control handly

Translated description of an idea:

Make a door with transparent glass incert.



Advantages:

We obtain desired result

The design of the door is simple

Disadvantages:

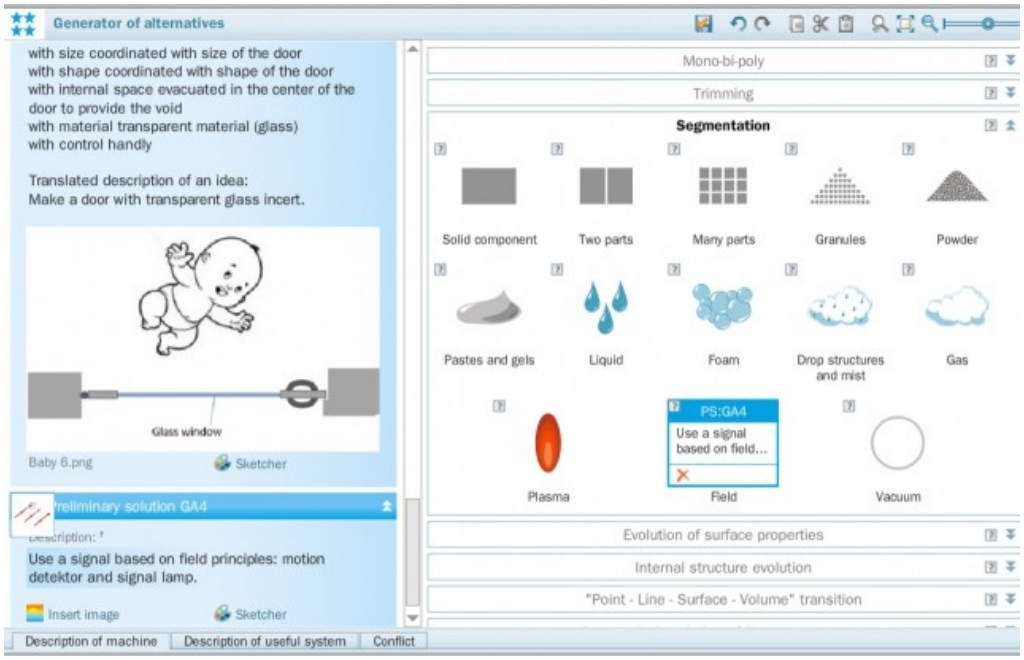
no signal

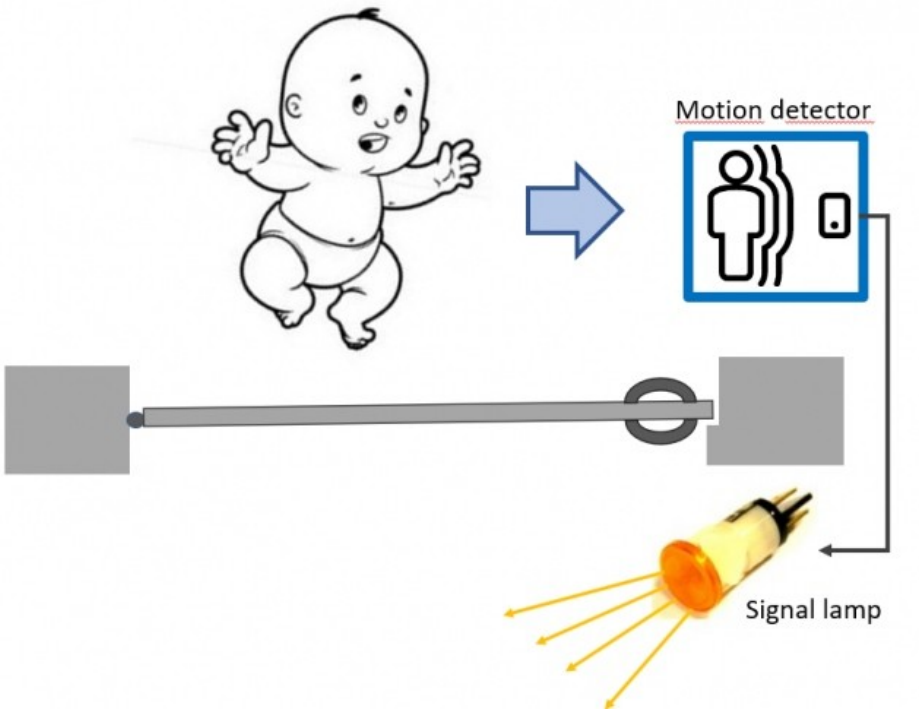
Additional preliminary solutions

Preliminary solution GA4

Description:

Use a signal based on field principles: motion detektor and signal lamp.





Final solution (hyp. 3)

Description:

Make a door with transparent glass incert.

Hypothesis 4

Conflict can be eliminated if the door would be move slowly during opening

Structural problem model (hyp. 4)

Short formulation:

There is a conflict in the machine "Door and operator" for producing "Opened door". The conflict essence is "The door - contacts - A child. Harmful product is A door contacted with a child body". Conflict can be eliminated if the door would be move slowly during opening.

Goal:

Improve the performance of the action <operator> - <pushes> - <door>

Operational zone:

A door and a child

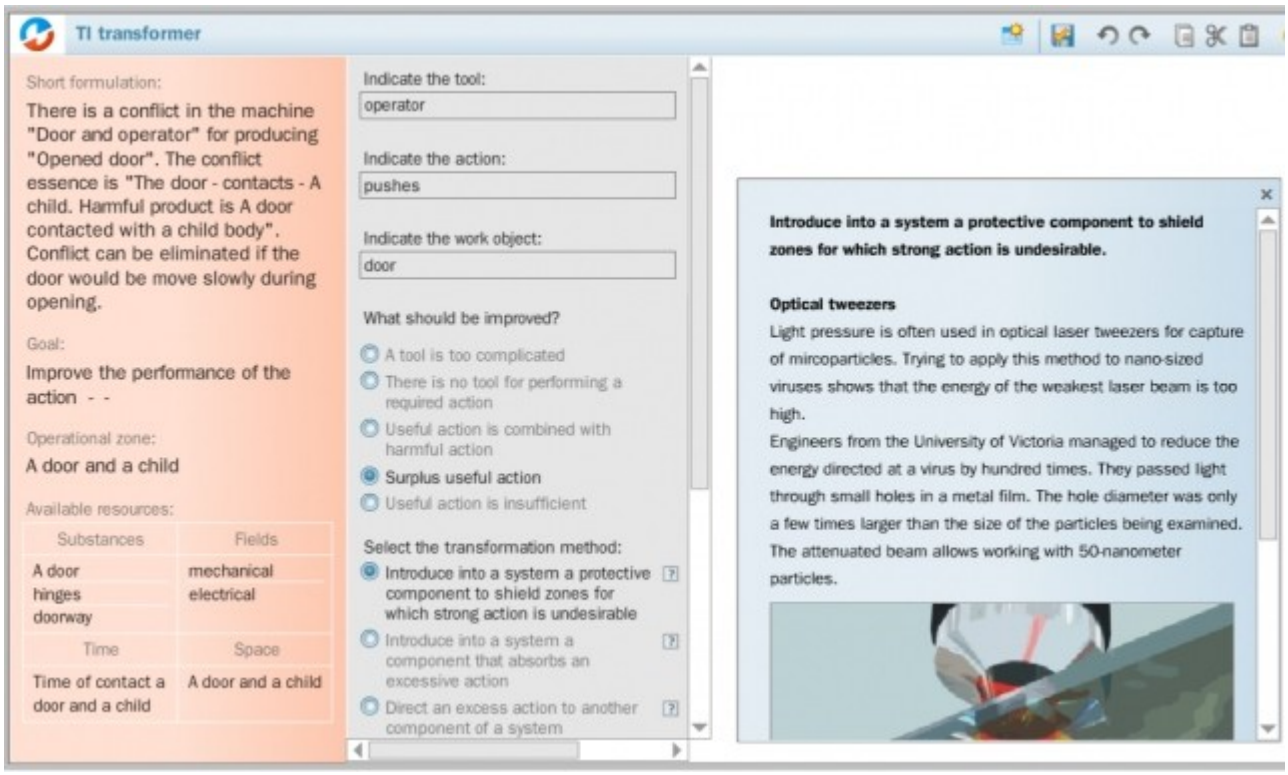
Available resources:

Substances	Fields
A door hinges doorway	mechanical electrical
Time	Space
Time of contact a door and a child	A door and a child

Solution model 1 for SPM1

What and how should be done:

Weaken the action by introducing into the system a protective component.



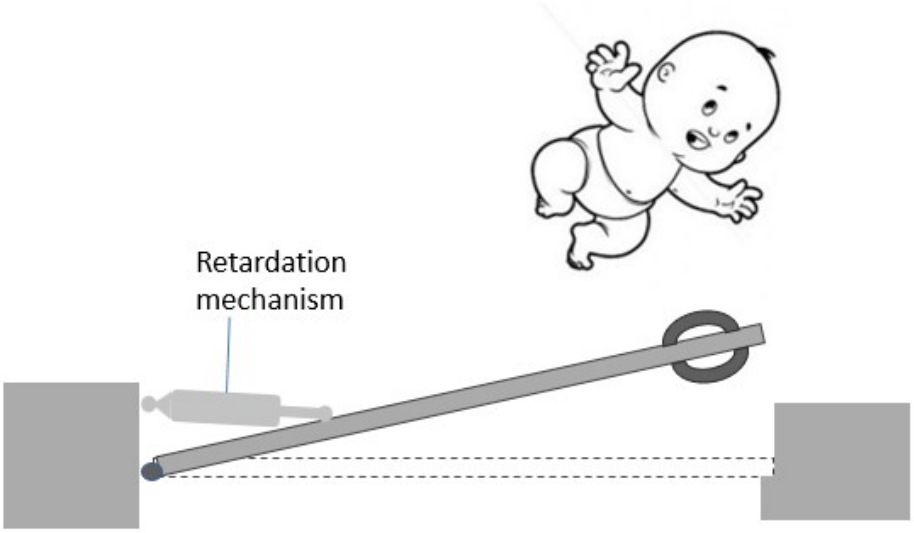
Resource (component) requirements

Preliminary solution 1 for SPM1 by SM1

Description:

Weaken the action by introducing into the system a protective component.
The introduced component is: a brake.

The place and position of the component in the system is: between a doorway and a door.



Analysis of situation improving

Composing technical proposal

Estimating conflict elimination

Draft of patent claims

Please note that the patent claim is automatically generated based on your texts. It is necessary to check whether the texts fit the patent application rules.

Claim 1. A device (equipment) for Provide a niche in a wall and close it, comprising:
A door, hinges, doorway
wherein
proposed idea:
Make the door opened into two directions. Use supports fron double hinges.
To prevent injury to the child, the operator can always open the door for himself.

Claim 2. A device (equipment) in accordance with claim 1
wherein
accurately identify the room for the child. Run the door so that it does not open in the nursery, but rather, outward.

Claim 3. A device (equipment) in accordance with claims 1, 2
wherein
make the door opened into two directions. Use supports fron double hinges.
To prevent injury to the child, the operator can always open the door for himself.

Claim 4. A device (equipment) in accordance with claims 1, 2, 3
wherein
make the door like accordione.

Claim 5. A device (equipment) in accordance with claims 1, 2, 3, 4
wherein
use a roll-up door.

Claim 6. A device (equipment) in accordance with claims 1, 2, 3, 4, 5
wherein
computer's description of an idea:
Provide a property Ability to observe place behind a door for operator by means of the system component A door. Use resource:
with size coordinated with size of the door
with shape coordinated with shape of the door
with internal space evacuated in the center of the door to provide the void
with material transparent material (glass)
with control handly

Translated description of an idea:
Make a door with transparent glass incert.

Claim 7. A device (equipment) in accordance with claims 1, 2, 3, 4, 5, 6
wherein
use a signal based on field principles: motion detektor and signal lamp.

Claim 8. A device (equipment) in accordance with claims 1, 2, 3, 4, 5, 6, 7
wherein
weaken the action by introducing into the system a protective component.
The introduced component is: a brake.

The place and position of the component in the system is: between a doorway and a door.