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ANY POSITIONING POSSIBILITY FOR HOLES, BREAKTHROUGHS, PINS, BRACKETS AND HOLDERS THROUGH THE USE OF TWO ECCENTRIC DISCS

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ANY POSITIONING POSSIBILITY FOR HOLES, BREAKTHROUGHS, PINS, BRACKETS AND HOLDERS THROUGH THE USE OF TWO ECCENTRIC DISCS

Technical task:

The position of a hole, pin or holder in a construction is either fixed or can be modified using the following methods:

- With a defined hole pattern, it is possible to choose from several holes
- The position can move on a certain path (usually along a straight line or a circular line).
- A combination of two vertical rails (e.g. for a holder) allows any movement over a rectangular area. However, this solution is expensive and several holders can only be positioned to a limited extent so that they are independent of each other.

Initial situation:

Currently, the user only has a very limited selection of positioning options available, which usually does not mean much flexibility in the design and high costs.

Solution:

The positioning is carried out by two independently rotatable eccentric discs. For example, the position of a hole on a plate should be adjusted.

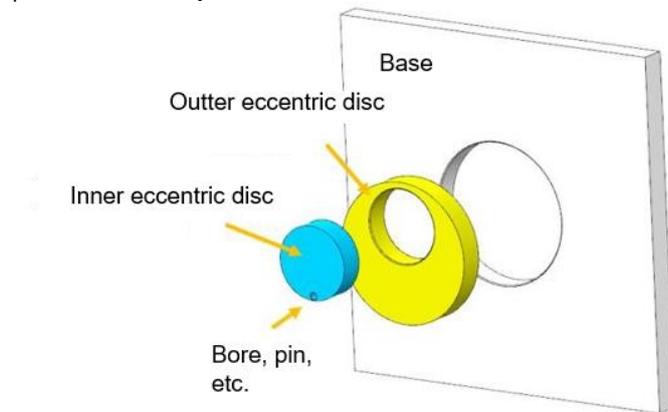


Figure 1:

This can be defined in a polar coordinate system (which is now fixed to the plate) by two parameters (radius and position angle). In two steps (which can also be done at the same time) you can see how this construction allows the setting of the above two parameters:

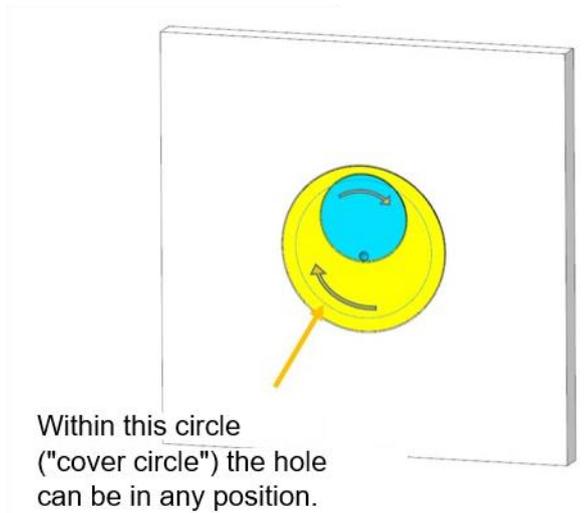
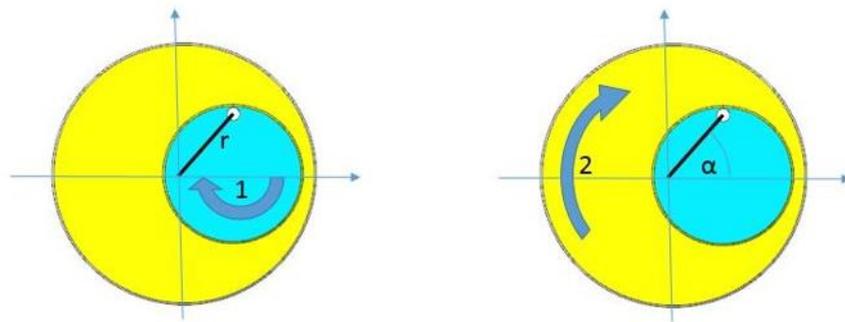


Figure 2:

Turning the inner disk sets the radius. By turning the outer disc (where the inner disc rotates automatically) you can set the finite position angle. This achieves a well defined position within the cover circle.

Extension of the idea in the case of multiple holes, pins, etc.:

If, for example, a variable pallet is built up on which different products have to be fixed with different fixing points, it is possible to extend it as follows by multiplying the invention:

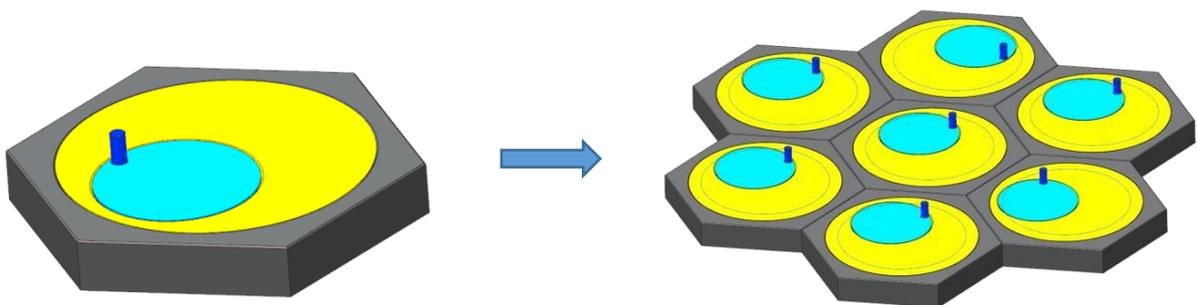


Figure 3:

With these hexagonal modules it is possible to obtain the maximum coverage of the surface (where the pins can be positioned) and to significantly increase the flexibility of application, for example of a pallet structure.

The optimal geometry:

In order to create the maximum "cover circle", the inner disc must be designed so that the hole (pin, etc.) can pass through the centre of the external disc. If its path is smaller, the cover will not be maximum. If the path is larger, some positions may occur in several settings. This does not prevent use, but leads to unnecessary redundancy.

Advantages:

- The application of the invention increases the flexibility of the construction. This leads to cost reduction
- The design is very simple, which also makes it inexpensive
- If required, a high accuracy is achievable with simple manufacturing technology that
- Invention offers a good solution for those areas where high precision is desired
- The invention can be easily automated. In production it is a big advantage
- Cheap manual applications are also possible, depending on the application.

Possible application:

The invention can be used anywhere where during use the position of a hole, a hole, a screw, a holder, a pin has to be changed arbitrarily on one plane.

Examples:

- Simple variable pallet structure in production, on the test field, in the warehouse and during transport.
- Modifiable openings on the wall of a climatic chamber, a cell, a lid, a ceiling, etc.
- Ergonomic applications in which the individual adjustment of an apparatus is desired