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ACTIVE CUPHOLDER WITH INCREASED SAFETY

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ACTIVE CUPHOLDER WITH INCREASED SAFETY

Technical task:

In a vehicle crash / rollover, cans / bottles may fly around and injure passengers. In some countries cupholders may therefore no longer be possible in the future due to higher legal requirements.

Initial situation:

Cupholders are known in vehicles at various places, besides "simple holes" there are also designs that have clamping mechanisms to hold bottles / cans better, examples are shown here.



However, none of the cup holders have actively controlled clamps that adjust their clamping force / holding force depending on the object to be held.

Solution

Active, intelligent cupholder that adjusts its clamping force depending on the object to be held and can also inform the user with a warning if it cannot be reached

In addition to cup holders, the idea can also be adopted for other holders.

- Determination of the weight of the object to be held (cup / can / bottle, ...) using any sensor, e.g. pressure sensor at the bottom of the cup holder
- Based on the weight, the necessary holding force can be determined which is required in driving mode / braking / rollover to hold the object securely
- If the holding force is not reached, the customer can be informed by means of a warning
 - e.g. object to be held is too heavy
 - Object to be held is too small
 - Holding mechanism would damage object too much (paper cup / can)
- The fixation can be realized by various mechanisms
 - Magnetic fixation (e.g. by special containers sold in original accessories)
 - Simple, switchable mechanical clamping elements (lateral lever positions as now, only actively controllable. Mechanical iris, ... e.g. controllable with electric motor)
 - Fixations with negative pressure are conceivable, but have various disadvantages (e.g. risk that it always "hisses" slightly)
- The fixation is released when the customer wants to take the object out of the cup holder. The increase in force caused by "lifting" the object is different from the increase in force during braking / crash, can be detected and thus the fixation can be released

