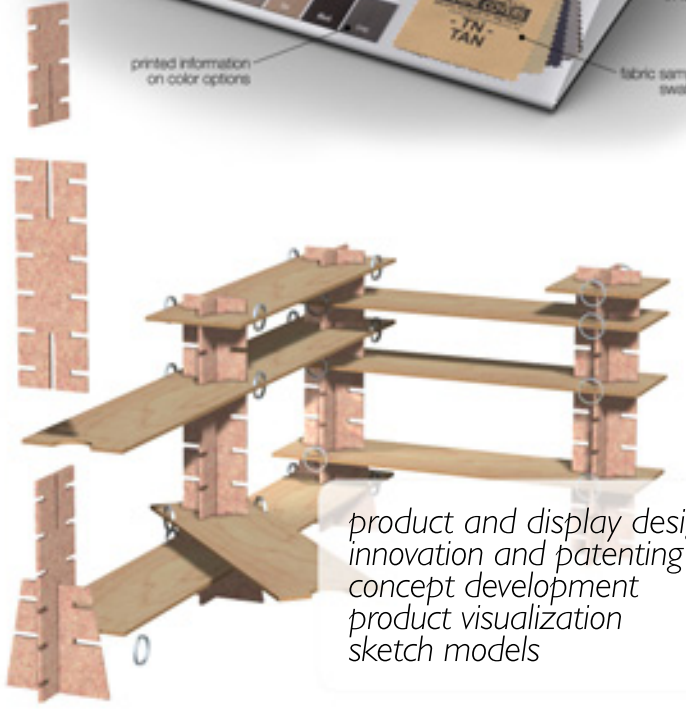
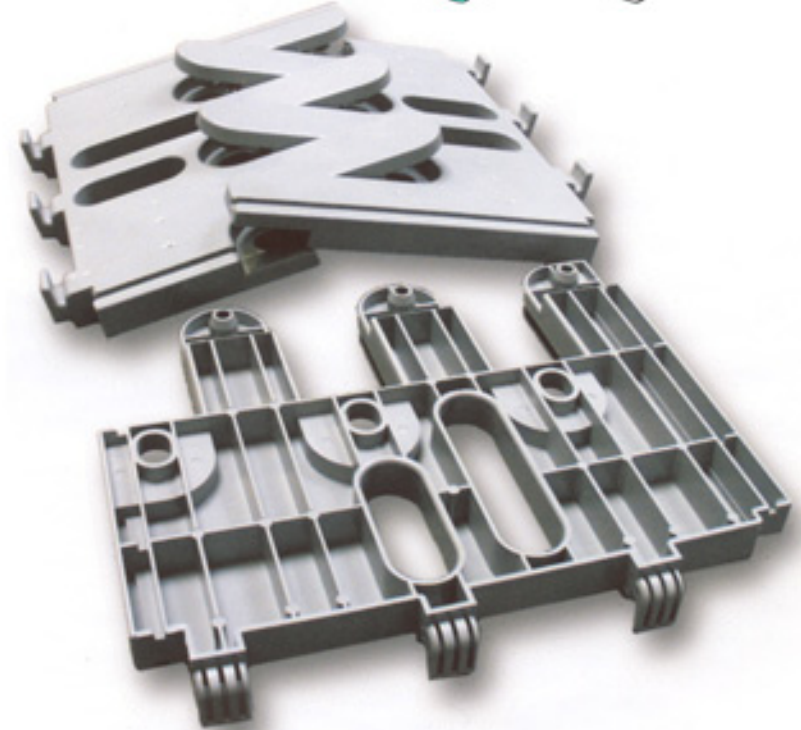
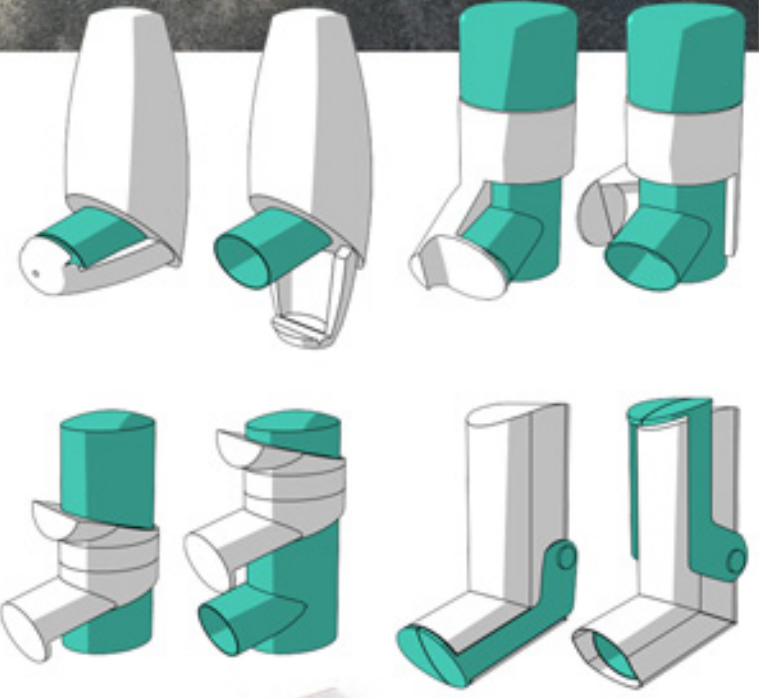
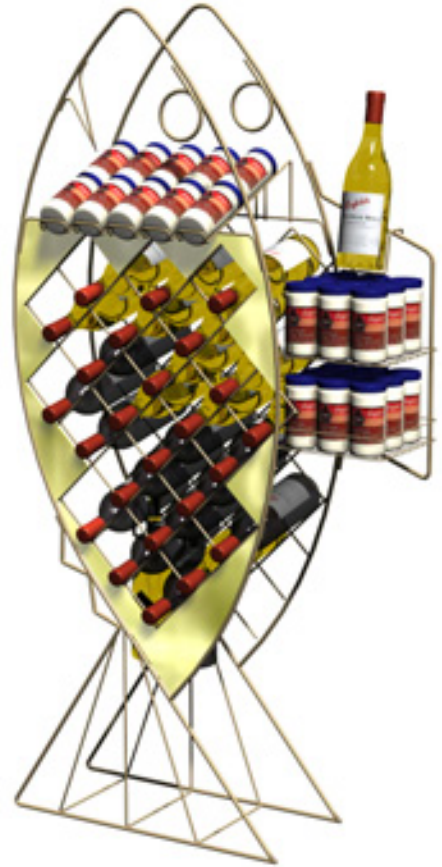


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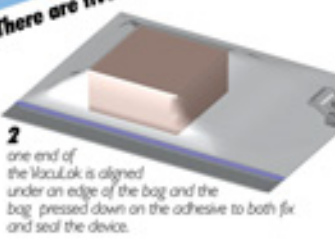




**VacuLok, an air extraction device for plastic bags**

Self-sealing "zip lock" bags are an essential part of most households, but much of the advantage of sealing food and other items in bags is lost if air remains inside. Commercial air removal and sealing machines are complex and expensive. This low cost Venturi tube based device is intended to match the zip lock bag in convenience and effectiveness.

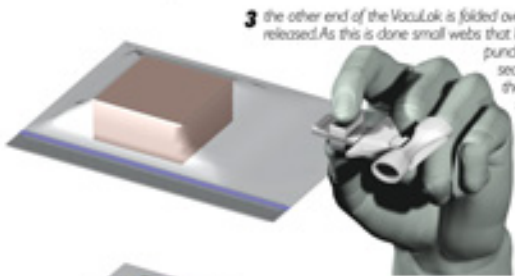
**There are five stages in the air extraction process:**



**1** one end of the VacuLok is aligned under an edge of the bag and the bag pressed down on the zip lock and seal the device.



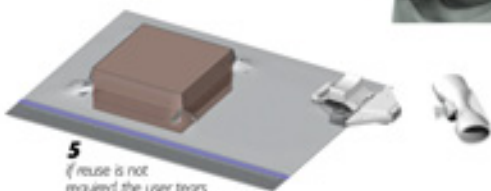
**2** a VacuLok is taken from its package and the protective paper stripped from the adhesive seals.



**3** the other end of the VacuLok is folded over and the flexible section squeezed and released. As this is done small webs that keep the flexible section in place bend the punch element cuts the bag and the adhesive sections contact and stick firmly around the holes; when the user stops squeezing the flexible section springs apart once more, opening the holes and allowing a free flow of air out of the bag.



**4** the user blows through the Venturi tube to extract air from the bag. This can also be done with an air supply.



**5** if reuse is not required, the user tears off the tube. As this is done, the internal one way elastomeric valve is pulled out in its tapered housing, squeezed by the ridged walls, and permanently closed.

- VacuLok:**
- is based on a Venturi tube, in which a constricted section produces higher air speed with consequent lower pressure
  - does not prevent reuse of the bag, with or without another VacuLok
  - allows removal of an item from a bag and extraction of air once more, either with a new VacuLok or by keeping the tube on the original
  - can be used in Third World, emergency, and outdoor situations
  - can be placed anywhere along the heat sealed perimeter of a bag
  - takes up little space once the tube has been broken off
  - can be used on any size of bag in most common thicknesses
  - can be used with a compressed air supply for high speed operation
  - helps teach basic aerodynamics

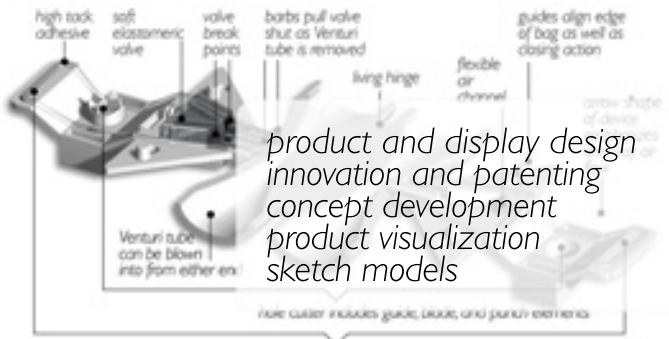
**question and answer:**

Q: Why not just make a suction tube?  
A: the Venturi tube device isolates the user from breathing what is in the bag which might be hazardous industrial materials or something they find distasteful such as the air around raw meat. Convenient pressurised air supplies are also more common than vacuum supplies; for example, a bicycle pump or air bed inflator in a household, a compressed air gun in a workshop, and canned air (for dust removal from keyboards) in an office. And of course there is nothing to stop the user putting a finger over one end of the Venturi tube and sucking on the other if they prefer using the device that way. A version of VacuLok to be used with a bellows type device (not shown) is in fact designed for suction only.

Q: what kind of bags are best?  
A: this requires testing but probably thin walled bags that conform easily to their contents as well as those with effective zip seals which will maintain the low pressure environment.

Q: how expensive will it be?  
A: it should be only a few cents, and ideally less than the cost of the bag used. No slides are required for the main mold for VacuLok, and the elastomeric seal can be extracted from another simple mold. Bearing in mind the vast numbers of bags used in homes and industry, the market should be large enough.

**anatomy of VacuLok:**



product and display design  
innovation and patenting  
concept development  
product visualization  
sketch models