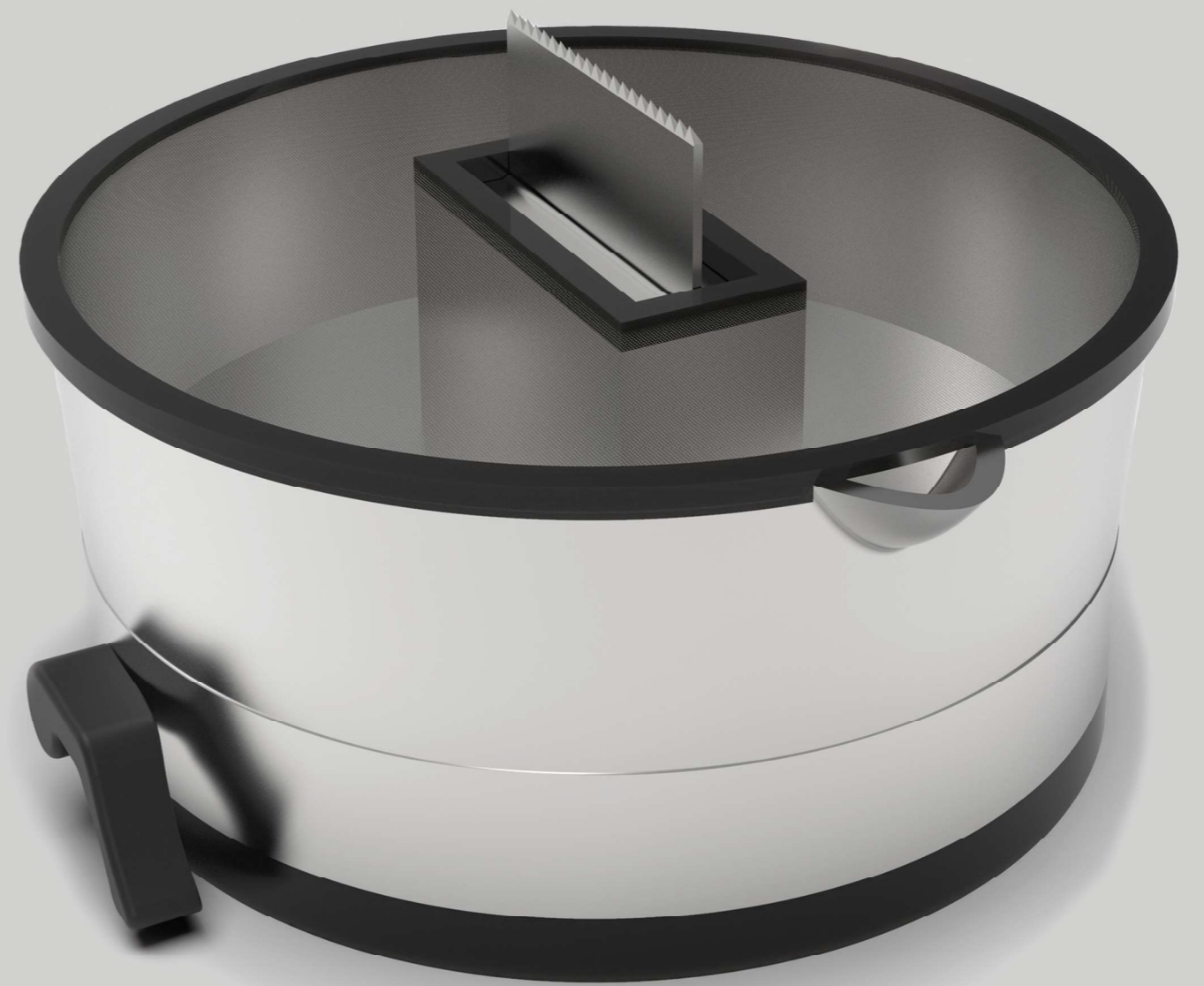


COCONUT DEHUSKER

A product to easily remove husk from a coconut and break it without wasting the coconut water



Significance of coconut in India

In India, coconut is considered as a symbol of prosperity, a blessing of nature, an auspicious object of ceremony, a useful item of handicraft and an essential ingredient for cooking.

Coconut and Human Ego

The coconut fruit is also a symbol of human ego. The breaking of coconut is a representation of breaking one's ego and humbling oneself before God.

Replacement of Human sacrifice

There was a time when human and animal heads were smashed to appease God. It is when spiritual guru, Adi Shankaracharya denounced that inhuman practice on seeing no religious and spiritual significance in it and replaced it with an offering of the coconuts to fulfill their desires. The offering and breaking of coconut signifies that 'I offer myself at your feet.' Also, coconut was chosen as it seemed to resemble a human head.



Task analysis



Removing the husk



Breaking the shell



Extracting the flesh



Collecting the water

Dehusking/Removing the husk

Removing husk by hand: This method involves tearing the coconut husk by hand. It requires a lot of effort and takes around 7-10 minutes to remove the husk.

Removing husk using a screwdriver: This method is quiet commonly used. It involves first loosening the husk, especially the area around the crown with screwdriver and then removing the husk by hand. It requires comparatively lesser effort than removing by hand and it takes around 5-7 minutes.

Removing husk using tongs: In this method, a tong is used to grab the husk near the crown and peel it off. It requires comparatively lesser effort than peeling by hands but it takes around 5-10 minutes.

Removing husk by machete: This method is usually used by coconut vendors. For most people, this method is not suitable as not everyone has a machete or is able to use it. Using a machete, the husk can be removed within 1-3 minutes.



Breaking the shell

Breaking by striking on a stone: The coconut is struck on a stone in such a way that it breaks evenly. But in this way, some water is usually wasted.

Breaking by hitting on floor/surface: This method is good for dry coconuts as many times the coconut might get shattered by this method. This leads to most of the water being wasted.

Hitting many times by hammer, pestle, tongs, etc: In this method, the shell of coconut is struck many times on the same spot and this creates a small crack from which water can be drained. This way very little to no water is wasted.

Striking with a machete or cleaver: In this method, the shell of coconut is struck with a machete or a cleaver which creates a crack in the shell and the water is properly drained..



Collecting the coconut water

After breaking the coconut shell, the water is usually collected in a vessel and drunk after being filtered through a sieve to remove the little bits of husk that might come along with it.

Alternatively, some people make a small hole in the shell first to collect the water and then they proceed with breaking it..



Extracting the flesh

In the end, the flesh is scraped out from inside and is sometimes eaten raw or sometimes grated to be used in cooking.



Existing Products



Coconut Breaker

- Coconut is broken by striking it on the steel wedge.
- The wedge is attached to a stainless steel or ABS plastic bowl.
- It is quiet easy to use and splits the coconut properly.
- All the water is collected in the bowl and hence no water is wasted.
- The plastic ones are not very durable and break after some time.
- While using it, most of the people find it flimsy and noisy.
- Its price varies from ₹130-500.

Coconut Dehusker

- It is usually used in coconut plantations.
- Its height varies from 21-31 inches.
- Can remove the husk quiet easily.
- It is too heavy to be kept in a kitchen.
- Its price varies from ₹700-3500.



Major Users



Homemakers:

- South Indians, mostly Mahrashtrians and Keralites, use coconuts often in their dishes.
- Most of the people experience a lot of problem in removing the husk from the coconut.
- Breaking the shell is not very difficult for most, but reducing the wastage of its water is.



Restaurants:

- A lot of restaurants, mostly South Indian ones, use coconuts on a daily basis.
- They don't find removing the husk as challenging as they are quiet used to it.
- Some even claim to break the coconuts without wasting a drop of its water.

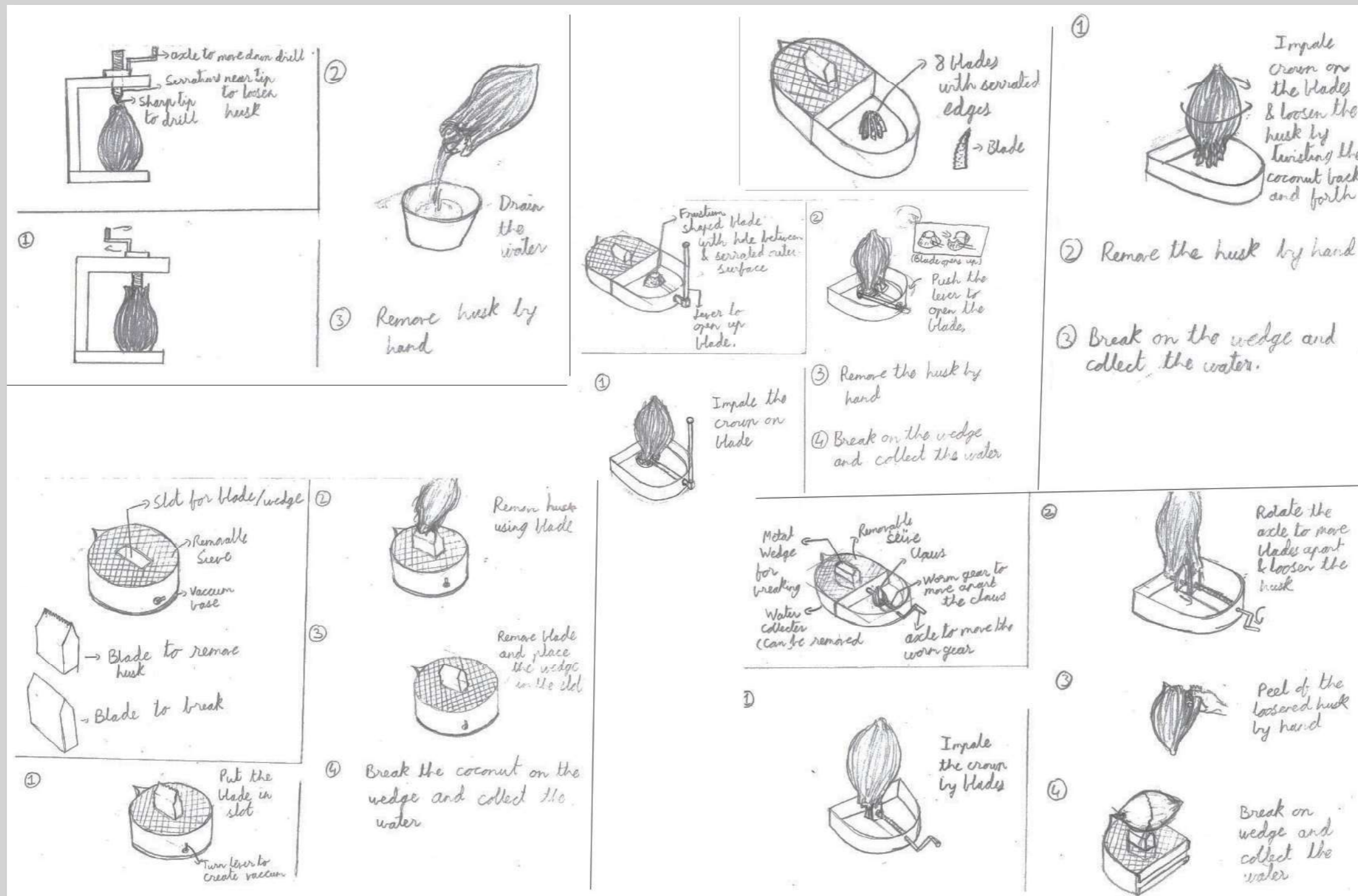


Temples:

- In most of the Indian temples, many devotees give coconuts as offerings to god.
- The flesh from the coconut along with the coconut water is used to make prasad.
- Removing the husk is a strenuous task and while breaking, a lot of water is wasted.

Insights:

- The task that people find most challenging is removing of the coconut husk.
- While breaking, most of the people try to minimize the wastage of its water.
- The existing coconut breaker is quiet effective in minimizing water wastage.
- For easy removal, the husk should be loosened from the crown or the sides.



Medium Fidelity Prototype

- In middle of the body, there was a slot to fit the blade for dehusking.
- On other side of the blade was a wedge to crack the coconut shell.
- Three suction cups were fitted on the base to keep it from moving.
- The blade and the wedge were welded to a piece of Mild Steel.

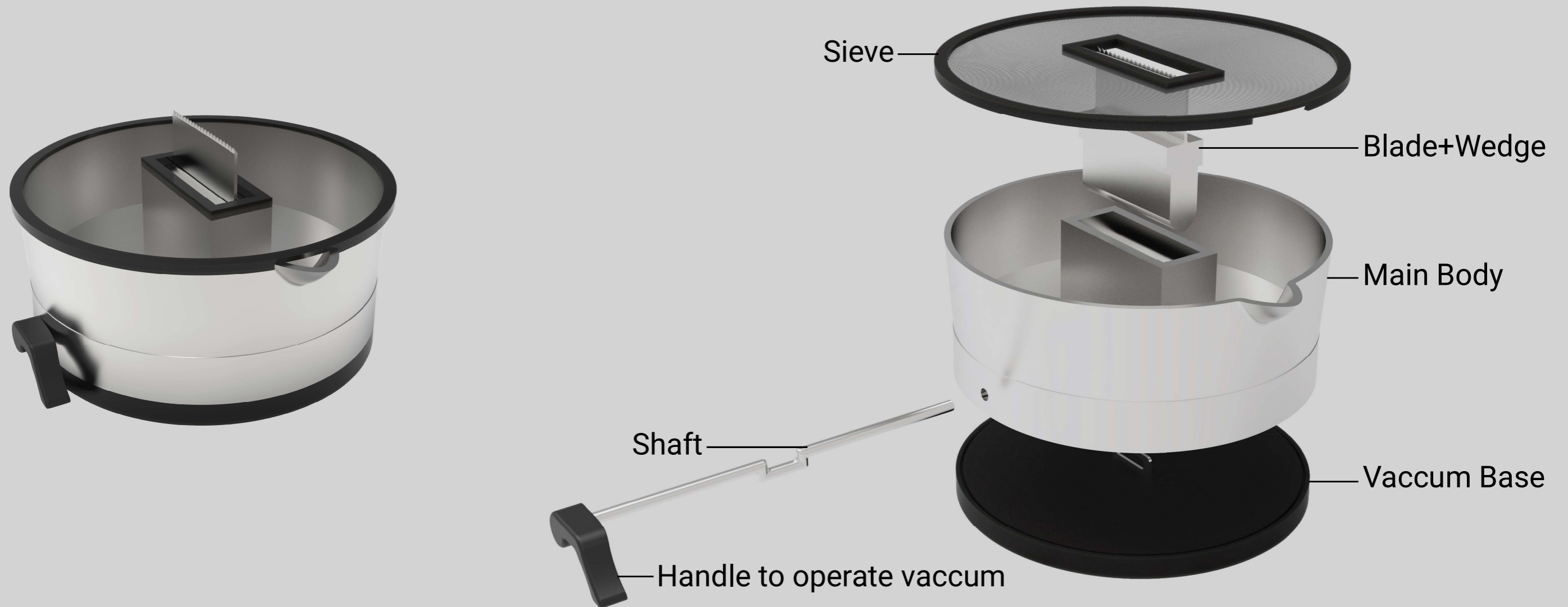


Testing

- The coconut was pushed on the blade on one of its side allowing the blade to impale the husk.
- When the blade had reached till the shell, the coconut was twisted back and forth a little.
- Then the coconut was removed from the blade and the husk could be easily removed by hand.
- The wedge, just like in existing coconut breakers, was able to crack the coconut with ease



Final Concept



- The main body, wedge and the blade would be made of stainless steel.
- A removable sieve attached to the top would prevent husk from falling in the water.
- The handle would be insert moulded on the shaft to operate the vacuum base.
- The main body would have a little spout to easily drain the coconut water