

## DISC OF SABU – STEAM MACHINE (ANCIENT EGYPTIAN TECHNIQUES)

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The disc of Sabu, the historical artifact, was discovered by the English Egyptologist Walter Brian Emery in 1936.

Fig.1



The tomb where the disc was discovered belonged to Sabu, the son of Pharaoh Anedjib.

According to the Egyptian custom, the tomb was full of household things: pottery and stone implements, copper pots for hygienic procedures, ox bones, arrows, ivory box and so on. The disc is dated back to c. 3100–3000 B.C.

The disc now is kept in the Cairo Museum (Egypt). There are various ideas about the purpose of the disc of Sabu:

- 1 - it is a vase of lotus shape;
- 2 - it is a dish for ritual or religious purpose;
- 3 - it is a support for a torch.

The appearance of the disc of Sabu has generated quite a different idea in me. According to its shape I have supposed that this thing was created by ancient Egyptians for the contact of air and water. To substantiate this idea I have made the dummy of this disc. I erected the vertical axis where the disc dummy was put and made the disc to move vertically with the help of ropes – up and down. Then I poured hot water in the vessel below. Fig.2



Based on the laboratory experiment conducted by me, the disc revealed quite an interesting property – it sprinkled steam from the hot water to the air in a very regular, quick and remote manner. Fig.3 a, b



10 times disc ascending from water was enough to fill the room with steam.

The disc design looks as follows:

- in the center of the disc there is the hole through which we have reeved the axis.
- the disc is slightly convex due to which the disc does not sink into the water completely but only by half. Fig. 4



As we see on the figure the ropes are loosened, so nothing holds the disc but the water.

This feature of the disc is rather important. The fact is that if the disc sinks, it will be hard to take it up as its weight will be added with the weight of water.

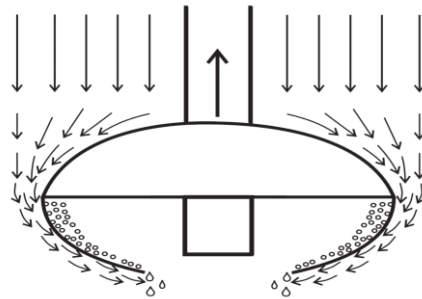
The disc's lower part immerses in the water. This is an obligatory condition as by this part the water is lifted up to air, sprinkles and vaporizes. Naturally we can ask, why the disc does not submerge in water in full?! – This takes place due to the convex center of the disc and because the disc vertically immerses down while the air accumulates between its center and water. Just this air prevents the disc from submerging. In my opinion this property of the disc is not occasional but the engineer who designed this disc made this quite intentionally.

- Look at the disc perimeter which has the shape folded towards the center lengthwise. (Fig. 1) This folded part of the perimeter immerses in the water and this folded part generates elevation of water drops in the air. The perimeter is not of only round shape but has three inner lobes which increase the length of the disc perimeter and, hence, the length of the contact of water and the disc thus increasing the quantity of water drops lifted in the air. Fig. 5



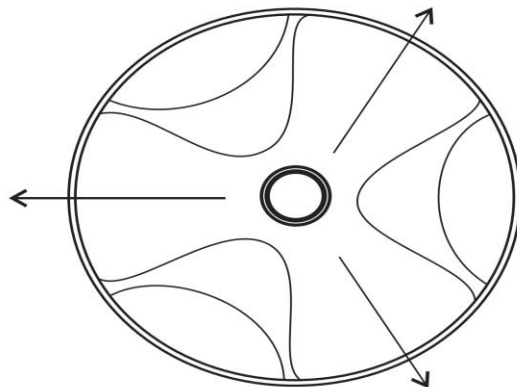
- Let's consider the last detail, three of a kind lobes. This detail of the disc is sinking into the water. When the disc is uplifted the disk top shall cut the encountering air.

Fig. 6



When contacting the top of the disc, the air moves to the disk edge where due to the shape ideally rounded for the air, the air is absorbed on the outer lobe plane in the center of the disc.

On the other hand, on the inner side of a "lobe", where a few seconds before the water droplets was flowing and, consequently, air and water drops contacted on the lobe edges, water sprinkles and vaporizes. Let's focus on the layout of lobes. Fig. 7

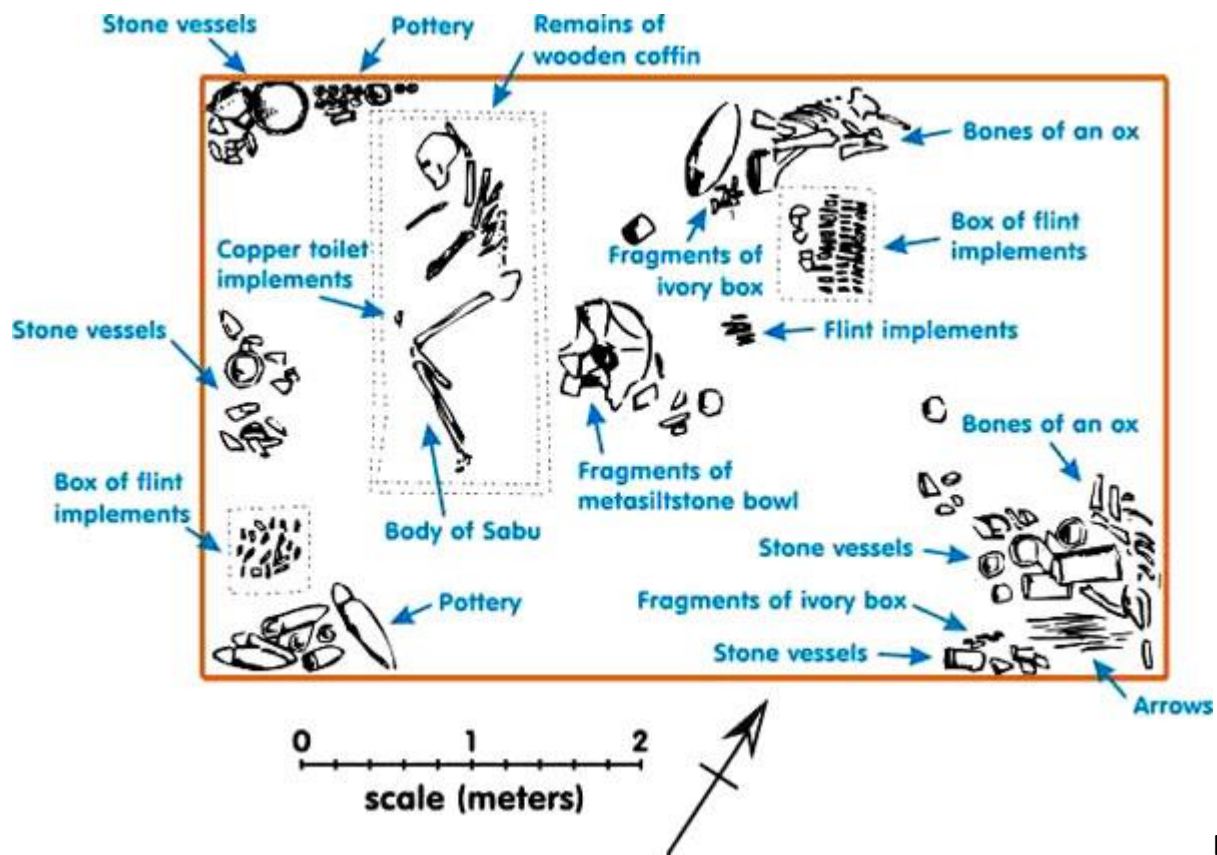


Their centers are 120 degrees away from each other, hence, air, water and steam particles are driven from one lobe towards the opposite free space.

Given the above, the structure resembles a steam machine using which we can generate steam from hot water quickly, conveniently and remotely.

According to historians, the ancient Egyptians paid great attention to the hygiene of the body, as well as they use water for treatment of various diseases. They made warm vapor inhalations and facial masks. It cannot be ruled out that the then men could use the hot steam for such purposes, which are not known by us.

Among the items found in the Sabu tomb there are presented the items of personal care which are referred to as the COPPER TOILET IMPLEMENTS, see Figure 8. It is possible that the Sabu disc was used for the personal hygiene. Fig. 8



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