

## The sample ice drilling on Waldemarbreen with Heucke Ice Drill – the demonstration

### Erich Heucke

*Commission for Glaciology, Bavarian Academy of Sciences, Munich, Grafting, Germany*

### Ireneusz Sobota\*

*Department of Cryology and Polar Research, Institute of Geography, N. Copernicus University, Toruń, Poland*

All the ablation poles on Kaffiøyra glaciers were drilled 10 m deep with a steam driven Heucke Ice Drill . Thanks it is possibility to install measurements points for the long time period. It is necessary for this kind of investigations.

The purpose of this contribution is to explain the characteristics of a newly developed ice drill which is particularly geared to the needs of glaciologists. It is primarily designed for drilling holes for ablation stakes and for measuring water levels or temperatures in firm areas. Its distinguishing features are its light weight, making it easy to carry even over long distances, and the variety of tasks to which it can be adjusted. Furthermore, it is easy to operate even by one person.

Water is heated in a boiler by two gas flames to produce steam, which flows through an insulated hose to a nozzle. When the valve is opened the issuing steam condenses, and the heat released in the process melts the ice. The heater is constructed in such a way that it can easily be adapted to any form of gas supply locally available. It can be used for drilling in ice as well as in firn. The maximum drilling depth is 13 m in ice and 30 m in firn; hole diameters range

from 25 to 45 mm. Mean drilling time is 16 min for 6 m, 35 min for 12 m in ice. The total weight is somewhat less than 16 kg, including all parts needed for drilling holes of 10 m in depth as well as the gas supply for one day. In recent years, devices of this type have been used successfully by scientists in various glaciated regions.



**Fig. 1.** Ice drilling with Heucke Ice Drill on glacier (photo M. Marciniak)

\* e-mail: irso@geo.uni.torun.pl

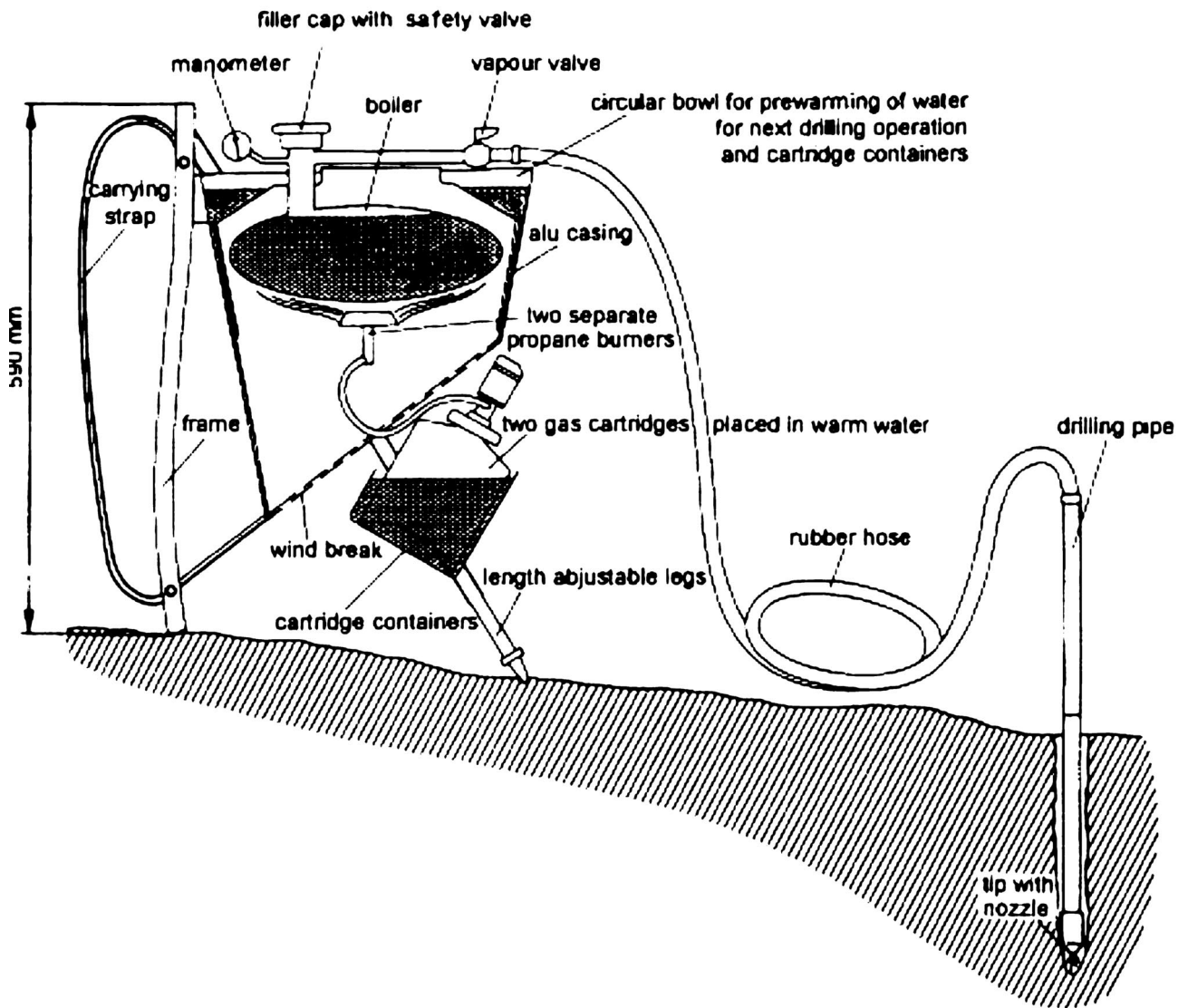


Fig. 2. Diagram of the entire drilling device