

The size of the cut-off may be so designed that the whole apparatus can be immersed in liquid air and the mercury frozen in place, thus reducing the vapor pressure of the mercury. Otherwise a liquid air trap may be inserted between the cut-off and the system to be evacuated.

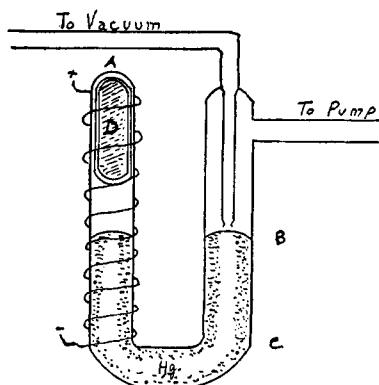


Fig. 1.—Electromagnetic vacuum cut-off.

The former procedure is practicable only when the additional volume of such a trap is detrimental. Care must be taken to adjust the volume of arm A so that the meniscus B will not descend below C when atmospheric pressure is admitted to the system. The apparatus acts as a rough vacuum gage as well as a cut-off. It has the following advantages over the usual design of "Y" cut-off. The quantity of mercury is small and may be completely de-gassed. No fresh mercury is being constantly exposed. When atmospheric pressure suddenly enters the system the mercury level will drop so rapidly that no mercury is blown into the vacuum canalization. Contrary to a stopcock there is no chance for outside leakage and no vapor pressure from stopcock grease.

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**Note in Reference to Platinum-Tungsten Welding.**—Platinum may be welded direct to tungsten by the following method. The tungsten is cleaned with sodium nitrite. Several coats of platinum are burned into the tungsten from a solution of lavender oil and platinum chloride. The platinum to be welded is then coated with borax and welded to the tungsten in an oxygen flame. This must be done quickly. Gold may very easily be welded to tungsten by first cleaning the latter with the sodium nitrite, then covering with borax and finally plunging the heated tungsten into a molten gold bead. The gold makes an excellent flux for platinum welding when baser metals are a disadvantage.

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