A SAFETY CHECK VALVE FOR LABORATORY VACUUM PUMP.*

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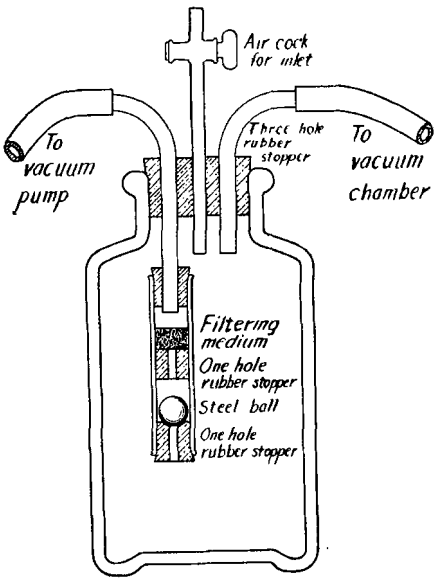
Laboratory workers, having occasion to use the Chapman, Richard or Sprengel forms of vacuum pump, have, no doubt, experienced difficulty in preventing the water from regurgitating into the vacuum chamber. The vacuum pumps, generally, are provided with a disc check valve, and, while new, this serves the purpose fairly well, but after some use the valve becomes congested with dirt and trouble ensues. The common remedy is to interpose a flask or bottle between the pump and principal chamber, thereby collecting the water which can readily be removed.

Under conditions of a varying water pressure the chamber for collecting water is insufficient and leads to exasperating results. Therefore, under pressure of necessity, the device here presented was constructed and used with very gratifying results.

A bottle, capacity one quart or more, is fitted with a three-hole rubber stopper and glass tubing, bent and inserted as seen in the diagram. On the end of the tubes leading to the vacuum pump, inside of the bottle, is fitted the check valve which can easily be constructed in a few minutes.



Cut a piece of glass tubing, from one-half to three-quarter inches in diameter and about four inches in length. Cut a cylindrical rubber stopper to fit inside of the glass tube; bisect it transversely, first boring a longitudinal hole. Any convenient filtering medium may be placed between these two stoppers, such as cotton or asbestos, before adjusting them in the tube about one inch from the top. Fit a one-hole stopper in the end of tube near the filter so that it may be connected with the tube to pump. Lastly, obtain a steel ball which will slip easily into the glass tube and fit a one-hole rubber stopper into the end of the tube. The inner end of the stopper must be so constructed as to form a tight seat to hold the ball. This may be readily accomplished by heating the ball on a wire gauze over a Bunsen flame and pressing the end of the stopper over the hot steel ball so that it is imbedded about half in the rubber.

It will be found that this valve will immediately check the influx of water to the bottle when the water pressure is released, at the same time maintaining absolutely the vacuum pressure in the system.

It is best to entirely remove the disc valve of the pump proper so that there will be an unobstructed opening for the air exhaust. In the event that the water is reasonably free from dirt the filter may be omitted.

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