# An Electrically Actuated Gas Pressure Regulator

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## Introduction

An inexpensive gas pressure regulator that does not waste gas and readily adapts to the various pressures required in the laboratory is needed in chromatography and other systems of analyses where a constant gas pressure must be maintained. The regulators available allow the gas

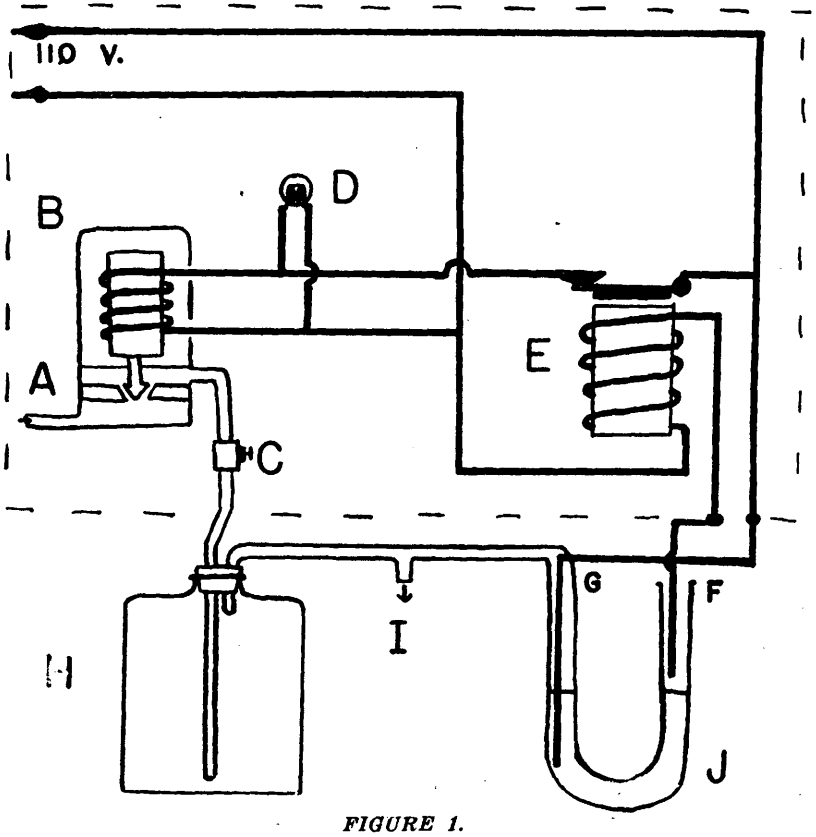


*FIGURE 1.*

stream to issue into the atmosphere when not being used to maintain the pressure. The resulting waste, and with certain gases harmful contamination, is undesirable. These regulators also require expensive vacuum tube circuits. The regulator to be described does not have these undesirable features.

## Description

The pictorial schematic is shown in Figure 1. The gas supply is connected to the regulator at (A). The valve (B) is a 110 Volt A. C. solenoid, spring loaded valve which is closed when no current is flowing. This particular valve is made by Skinner Electric, Norwalk, Conn., and has a maximum capacity of 50 pounds. The 110 Volt A. C. relay switch (E) is closed when no current flows. The light (D) indicates when the gas is issuing into the system. The adjustable needle valve (C) allows adjustment of the rate of gas flow into the buffer bottle (H), the system to be maintained at constant pressure (I), and the manometer-switch (J).

The manometer-switch consists of an ordinary mercury manometer with one iron wire (G) inserted the length of the tube and another (F) adjustable for the pressure desired. Iron wire is satisfactory since the mercury does not adhere to or amalgamate with it. With this switch the pressure may be maintained within $\pm 0.5$ mm. Hg.

In operation the gas flows until the mercury in the manometer contacts the wire (F) activating the relay switch (E) which breaks the circuit to the valve and hence stops the gas flow.

This pressure regulator may be constructed for about twenty-five dollars.