

Collapse of Thick Hollow Cylinders by External Pressure

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1. **The elastic stress field.** The main purpose of this paper is to give a theoretical explanation of Bridgman's experimental results [1] on the collapse of closed hollow steel cylinders by external pressures sufficiently large to cause plastic flow. The shaded area in Fig. 1 represents a longitudinal section of the

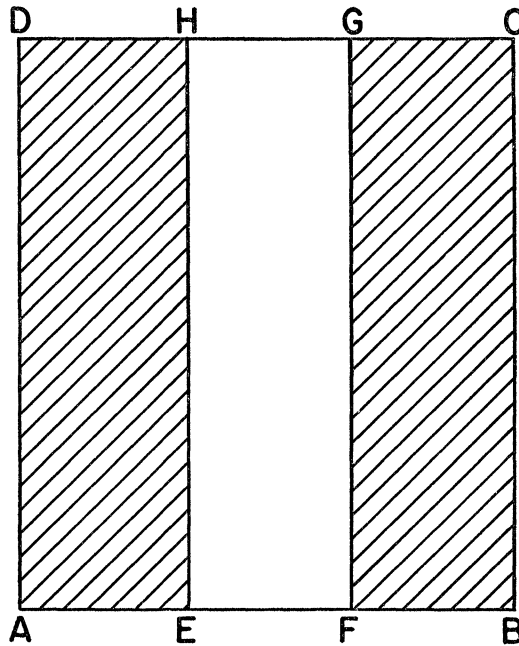


FIGURE 1.

cylinder under consideration. The ends of the cylinder are closed by hardened steel blocks indicated by the lines $AEFB$ and $DHGC$ in the figure. By interposing a sheet of lead .002 inches thick between the cylinder and the end blocks it was found that the frictional resistance due to the blocks could effectively be eliminated and that as a consequence the material flowed radially and symmetrically