

Fig. 1.—COHESION.

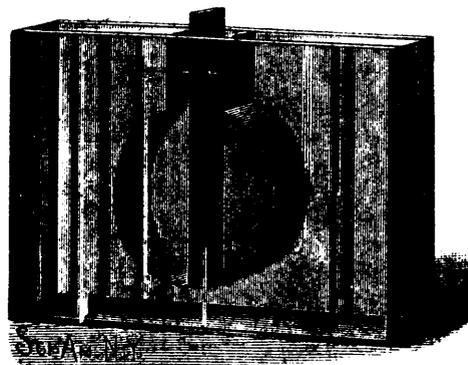


Fig. 2.—REDUCTION OF VOLUME BY MIXTURE.

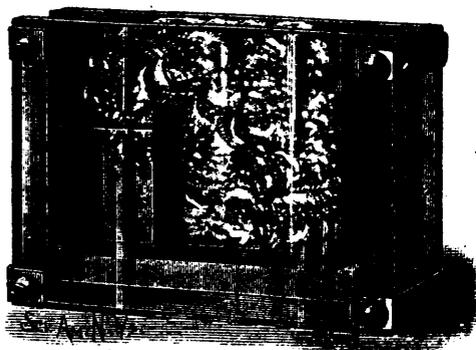


Fig. 3.—COTTON AND ALCOHOL EXPERIMENT.

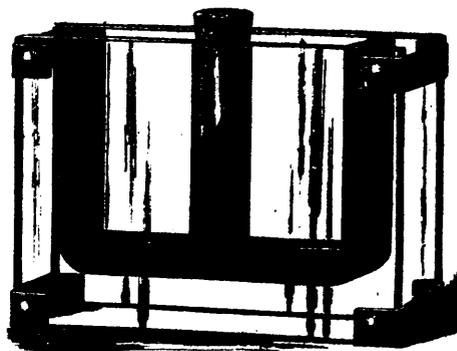


Fig. 4.—ABSORPTION OF GAS BY CHARCOAL.

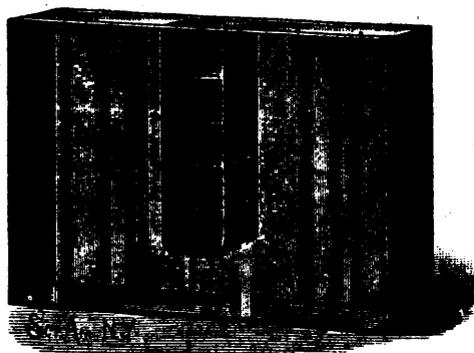


Fig. 5.—EQUILIBRIUM OF LIQUIDS.

soft rubber edges. Water is introduced into one division of the chamber, and slightly colored alcohol is placed in the other division. The water and the alcohol are level with a mark on the glass. On turning the partition, the water and alcohol mix, and the level of the mixture immediately falls some distance below the mark on the glass. After a thorough mixture of the liquids, the partition may be replaced in its first position.

By arranging a tank with a partition near one end, as shown in Fig. 3, the experiment in which a large amount of cotton is introduced into a vessel filled with alcohol, without causing it to overflow, may be repeated so as to show it on the screen. The smaller compartment of the tank is filled with alcohol, and in the larger compartment is placed a quantity of loose cotton. This is gradually transferred from the larger to the smaller compartment, by means of a pair of fine tweezers, without causing the alcohol to overflow.

The absorption of gases by charcoal is readily shown in the manner illustrated in Fig. 4. A glass tube, open at both ends, is dipped in mercury contained in the bottom of the tank. A cork is fitted to the upper end of the tube. Carbonic acid is poured into the tube, then a piece of freshly heated charcoal is dropped in, and the cork is instantly replaced. The charcoal absorbs the gas rapidly, creating a partial vacuum, which causes the mercury to rise in the tube to a considerable height.

In Fig. 5 is shown a tank containing four liquids of different densities, the densities decreasing from the bottom upward. This is simply the well known experiment of the "vial of four elements." The liquids are mercury, a saturated solution of carbonate of potash in water, colored alcohol, and kerosene oil. This simple experiment is very interesting when performed in the usual way; but when it is projected upon the screen, the struggle of the different liquids to regain equilibrium, after having been thoroughly stirred up, is striking.—*Scientific American*.