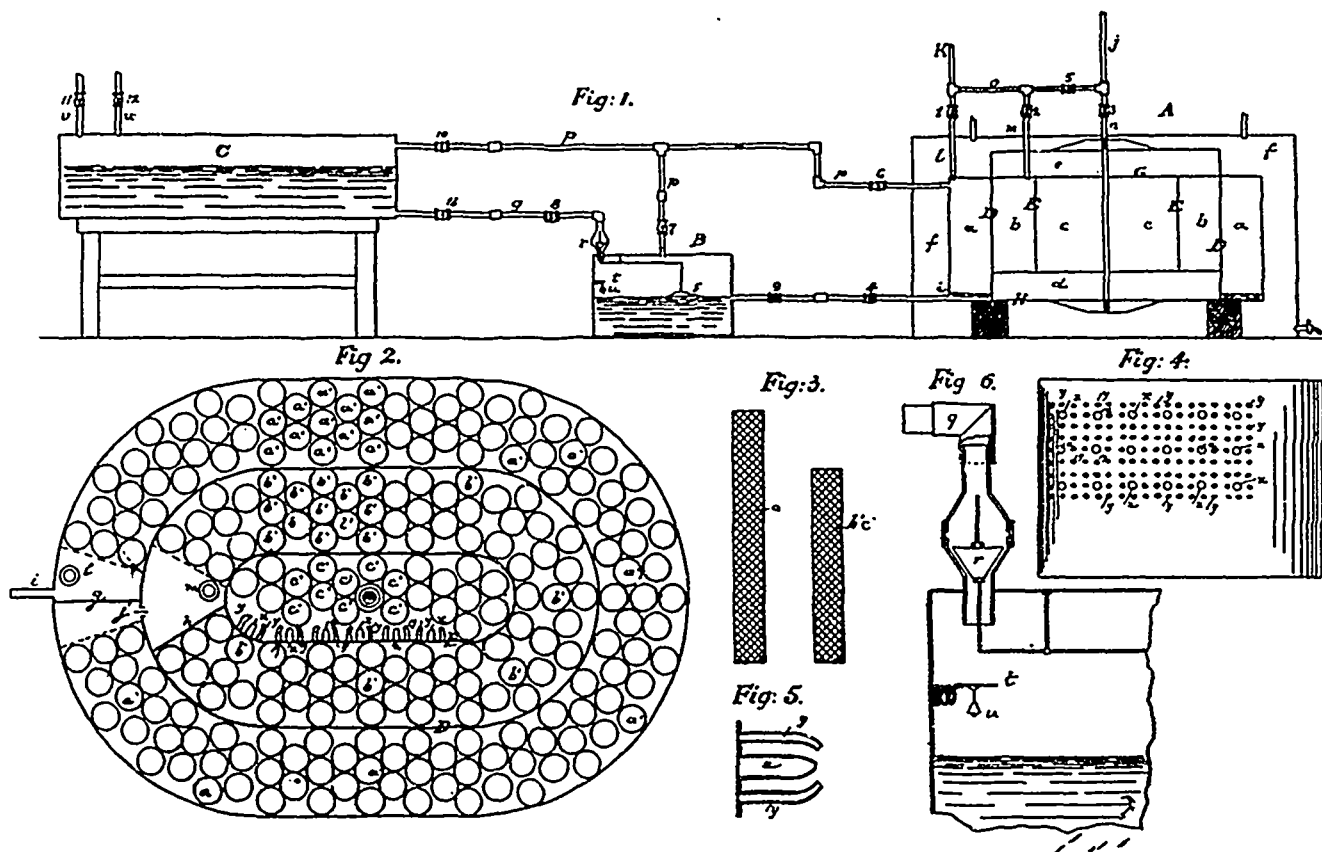


The mechanical appliances used in this process are:—An enriching chamber in the outer circle of a copper tank, and means for introducing a quantity of oil from one pint to three gallons, per 1,000 feet of gas (each pint raising the efficiency of the gas by one candle-power, per thousand feet); a mixing and chilling chamber on a raised platform thoroughly insulated; an attrition chamber within, with suitable feeds, inlets and outlets.

the space under the platform is filled with the non-conductor, such as pulverized charcoal, sifted ashes, or asbestos cement. The partition *DE* between the chambers is soldered gas tight to the cover *G*, and rest on a coarse heavy cloth covering the bottom of the chambers.

The gas or air to be treated enters the enriching chamber *a* at the top through a pipe *Z* provided with a cock, and by means of a gas-tight partition *g* near the



The diagram will help to show the plan of construction. Figure 1 is a vertical section of the whole apparatus. Figure 2 is a sectional plan on a larger scale, showing the arrangement of the cylinders in the several chambers. Figure 3 is a separate view of one of the cylinders of the outer chamber, and of one of the cylinders of the middle and inner chambers. Figure 4 is a front elevation of the innermost chamber, showing the arrangement of the tubes through which the gas or air passes from the middle chamber into the innermost chamber. Figure 5 is a vertical section on a larger scale, taken through the centre of the central tube of the groups of tubes. Figure 6 is a detail view in vertical section on a larger scale, showing the inlet valve and the bell of the feed box. The same letters and figures of reference indicate the same parts in the various figures here drawn.

The machine *A* is divided into three concentric chambers *a, b, c* by internal partition *DE*. The outer chamber *a* is the enriching chamber; the middle *b* is the mixing chamber, and the inner chamber *c* is the friction or atomizing chamber. Each chamber is filled with perforated metal cylinders *a', b', c'*, placed close together. The cylinders in the outer chamber are filled with absorbent material, such as porous wood fibre; those in the middle chamber are filled with mixing and stripping material, such as mineral wool, and those in the innermost chamber are filled with an imperfect conductor of heat, such as charcoal. The cylinders of the middle and inner chamber are supported on a raised platform *d* and reach to the top *G* of the machine, and

inlet the gas or air is compelled to traverse the whole extent of the chamber to reach the passage *X*, through which it enters the mixing chamber *b*, wherein a partition similar to that in the enriching chamber compels it to pass through that to the inner chamber *c*, which it reaches by way of the group of tubes. The mouths of all the tubes are flattened, and have their ends slightly bent inwards, so that the gas jets impinge on the central jet coming from the central tube. From the central chamber the gas passes through perforations with an outlet pipe *u*, and thence to the burners through the pipe *Y*. A direct inlet pipe *m* is provided for the gas or air, so as to increase or decrease the illuminating power at pleasure. The pipes are connected by a cross pipe *o*, provided with a cock *s*, so that gas can be made to pass to the burners without entering the machine. The chamber *c* on the upper side of the cover *G* and the chamber under the platform *d* are filled with non-conducting material by which the temperature of the water in the water jacket *f* is prevented from affecting the temperature in the chambers *b, c*, in which a low temperature is produced by the passage through them of gas kept cold by the atomization of oil from the chamber *a*. The machine is entirely submerged in the water jacket *f*. The oil is fed through a pipe *i* provided with cocks *4* and *9*. One end of the pipes connects with the feed box *B* and the other passes through the water jacket into the outer chamber. Oil is fed from the reservoir *C* to the feed box *B* through a pipe filled with a conical inlet valve *r*, preferably of carbonized silk