

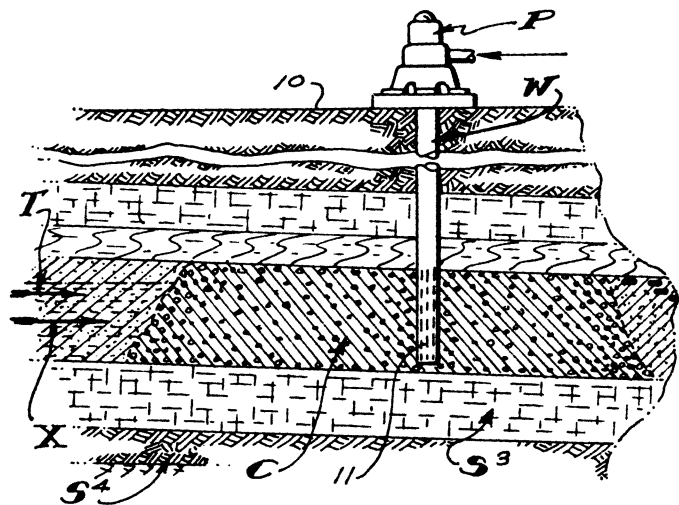
current patents

HYDROLOGY

Pumped-in dam to protect fresh water

In coastal areas, when fresh water is pumped in large quantities from underground water-bearing formations, the pressure often becomes low enough in the aquifers that salt water from the ocean can leak in and contaminate the fresh.

Several ways of preventing this have been tried, but with limited success. One method, now in use in southern



California, uses a second well in addition to the one through which the fresh water is being extracted. Fresh water is pumped down this second well both to maintain pressure in the aquifer and to keep a current flowing against the incoming salt water. This is obviously less than ideal, however, since the whole idea is conservation of limited fresh water.

Now a pair of California inventors have patented an idea which may show promise: It consists of pumping a dam down a well to block off the contamination. A series of holes is drilled in a line between the fresh water supply and the incoming salt water. A slurry of clay or other non-water-soluble material is pumped down the first hole, while fresh water is removed from the second in conventional fashion. Then the process is shifted so that slurry goes down the second hole and fresh water comes up the third, and so on until a wall has been built blocking the aquifer off from the salt water.

The idea would require a lot of solid material, admits Winfield S. Payne Jr. and Marion Dudley Hughes of Long Beach, Calif., but the drilling mud used in oil wells provides an obvious source. Its use would also relieve the oilmen of the cost of disposing of it.

Patent 3,380,522

ELECTROCHEMISTRY

Doping semiconductors

In the technology of semiconductors it is often necessary to introduce or remove impurities—atoms that do not belong to the chemical composition of the semiconductor material. A new invention uses an electrochemical method to achieve this, and, it is claimed, avoids the drawbacks of previous techniques.

The semiconductor to be treated is placed between a chemically inert electrode on one side and, on the other, the combination of a metallic ionic conductor in which electric current is carried by motion of ions through the substance and an electrode made of the same material that is the metal component of the ionic conductor.

With proper manipulation of voltages across this circuit, impurity ions can be made to diffuse out of the semiconductor into the organic conductor, or vice versa. Kurt Walter Weiss of Emmasingel, Eindhoven, the Netherlands, assigned rights to North American Philips Co., Inc., in New York.

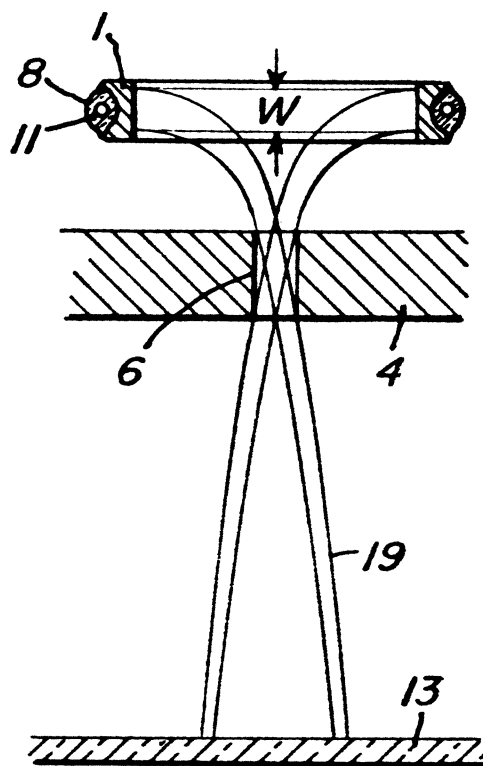
Patent 3,380,902

ELECTRONICS

Improving cathode ray tubes

The cathodes that produce electrons in electron guns such as television picture tubes also produce heat and light. These can reduce the devices' sensitivity if they reach the electrons' targets. Also, the cathode's life can be shortened by back-bombardment of ions produced in the electron optics.

Complicated baffles have been used to stop the un-



wanted radiation, but these require elaborate bending electrodes to zigzag the electrons around the baffles. A system that does away with the baffles has been invented by Charles L. Andrews of Albany, N. Y.

He uses a doughnut-shaped cathode and a single electrically charged shielding plate with a hole in line with the cathode. The system's geometry is such that the electrons emitted by the cathode reach their target, while the shield protects the target from extraneous radiation and the cathode from rebounding ions.

Patent 3,381,160

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