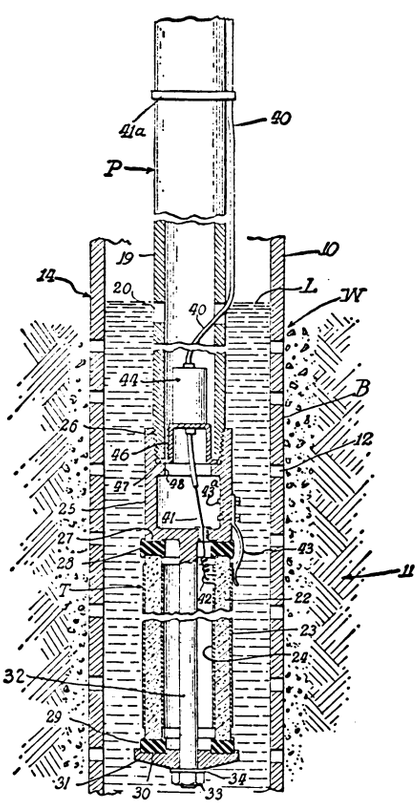
current patents

ACOUSTICS

Shaking out petroleum

A system that uses acoustical waves to increase the flow of oil wells has been patented by Albert G. Bodine of Van Nuys, Calif. According to the inventor, acoustical waves set up elastic vibrations in the oil-bearing rock formations, and this increases the flow pressure of the oil.

The system transfers continuous vibrational energy to the rock, rather than depending on bangs or shocks. A cylinder of barium titanate is lowered into a well; the cylinder is about half the diameter of the well casing, its length equal to or greater than the diameter of the well.



Electrical alternations in a circuit connected to the cylinder cause it alternately to contract and expand, and these vibrations are transmitted to the rock. The system, says the inventor, should be especially useful in formations that have many small pores in which oil flow has to overcome capillary forces.

Patent 3,378,075

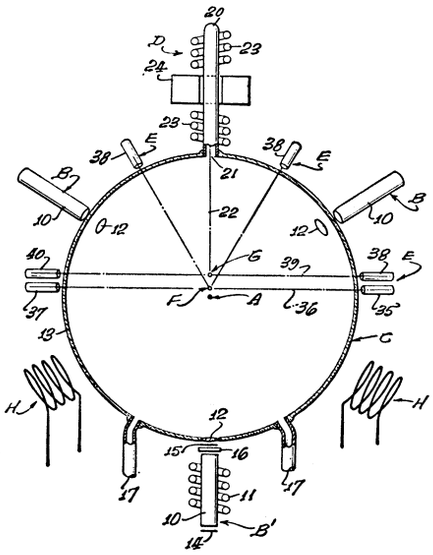
(see p. 420)

(Conutinued from p. 419)

FUSION

Thermonuclear test device

A device that uses focused laser beams to trigger minute thermonuclear fusion reactions has been patented by John R. B. Whittlesey of Santa Monica, Calif. The invention uses the radiation pressure of laser beams impinging from several directions to compress a specimen until it is hot enough for a thermonuclear reaction to start.



It has been estimated that focused laser beams can generate radiation pressure up to 15 million pounds per square inch.

Whittlesey's device consists of an evacuated chamber into which the lasers can shine. A dispenser at the top lets either solid pellets or liquid drops of substances such as deuterium or tritium fall into the chamber, past photoelectric cells which trigger the lasers. The resulting minute thermonuclear reaction takes place in an area visible to the experimenter. It could be useful in testing fusionable materials.

Patent 3,378,446

WEATHER CONTROL

De-fogging in warmth

A way of precipitating water out of the atmosphere to eliminate fog, clouds and even pending hailstones has been patented by researchers of the Dow Chemical Co.

Conventional processes, says Dow, require the suspended water droplets to be below freezing. The Dow process, which uses a spray mixture of hydrogen sulfide and one of five other chemicals, will work in temperatures up to about 70 degrees F. Also, the company says, the sprayed chemical droplets combine with the water droplets much more readily than do solid particles commonly used.

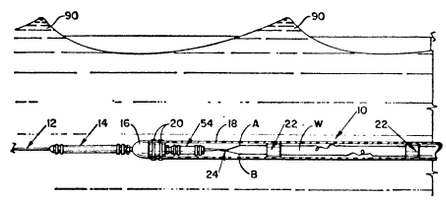
Patent 3,378,201

OCEANOGRAPHY

Improving the eel

One of the geologist's most valuable tools for investigating structures on or below the ocean floor is the hydrophone eel. This is an array of underwater listening devices, built into a cable that can be towed underwater by a ship to measure seismic impulses parallel to an undersea mountain range, for instance, instead of just at a single point.

In the majority of these eels, the hydrophones have been mounted across the axis of the cable, so that their vibration-sensitive "eardrums"



faced out to the sides. Such an arrangement, however, produces distorted data due to changes in the relative position of the different hydrophones in the water. This was aggravated by the bulky housings necessary for the instruments, which would cause eddies and swirling that would produce unwanted sounds in the water.

An improved eel, now in use by ESSA and the Navy, has been patented in which the hydrophones are contained within the cable itself and face forward and back. The cable is filled with liquid—fresh or salt water or a light silicon oil, depending on the desired buoyancy—which transmits the vibrations to the hydrophones just as though it were the sea itself. The low-frequency waves that such seismic instruments measure encounter little or no distortion from the cable wall, which is only an eighth of an inch thick.

The cable is only two and three-quarters inches in diameter, and is smooth with a rounded nose, so it produces very little turbulence and slides easily through the water; "in effect, like an eel," says inventor Stephen V. Chelminski, who assigned rights to Bolt Associates Inc., East Norwalk, Conn.

Patent 3,378,815