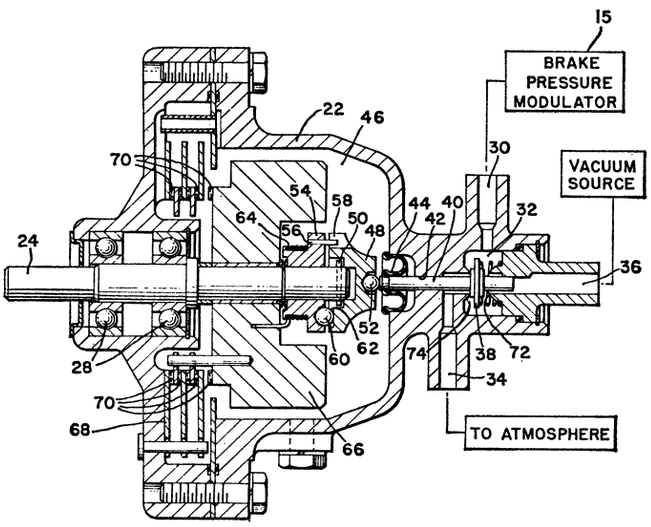
Current Patents

AUTOMOTIVE ENGINEERING

Nonskid Brake Device



A system for keeping brakes from locking up when pushed too hard was patented last week by Robert A. Horvath, who assigned patent No. 3,311,324 to General Motors Corp.

The device senses the point at which the car's wheels are about to skid and cuts off the brake pressure. This has the effect of automatically pumping the brakes, a good driving practice when a car starts to skid.

The new system, according to the inventor, overcomes one major difficulty with antiskid devices—the problem of adjusting for different road conditions. Most anti-locking systems measure either how fast the car is slowing down, or how fast the rate at which the wheels are turning falls off.

The system, based on wheel rotation, works well on slippery roads where braked wheels stop turning and cause skid. But on a good surface, the wheels slowing down will actually stop the car. And in that case, the anti-lock device would kick in before it was needed, and good braking power would be lost.

On the other hand, systems that measure deceleration of the vehicle are all right on good surfaces, but on a wet road the spinning wheels don't slow the car down enough to operate the antilock system.

Horvath's system senses both the wheel rotation deceleration and the vehicle deceleration, and doesn't operate unless both indicators signal a skid in the offing.

Storm Sewer Probe

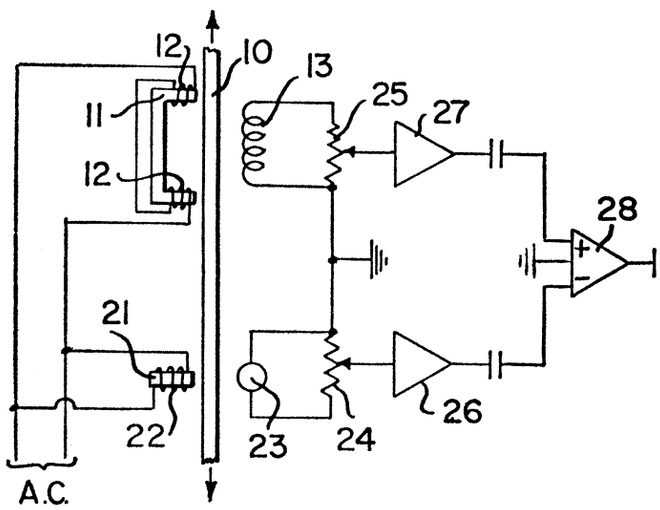
A small, rugged electric probe that can signal when a storm sewer is full of water received patent No. 3,311,722 last week. Inventors Harold L. Hammerschmidt and Kenneth J. Hutchings assigned rights to Automatic Control Co. of St. Paul, Minn.

Modern-day storm sewer systems, say the inventors, involve elaborate and complicated networks. Controllers need to know when sewers, particularly overflow branch sewers, are carrying water.

Most sensors in use at present have a control box fastened to the top inside of the sewer and wire probes sticking down to pick up water flow. These are fragile and break down often, according to the patent. The new device sits on the bottom of the sewer, and consists of a pair of contacts housed in a case. Normally the two contacts are insulated from each other. Water in the sewer connects the two, however, and the completed circuit closes a relay. Signals from a whole system of probes are radioed to a central control station, where various sewer lines can be opened or closed as needed.

METALLURGY

Strain Gauge for Sheet Steel



When rolling sheet steel, it is important to keep the tension on the sheet at an even rate, to keep it from snapping or being uneven in thickness.

A device for measuring the strain on steel sheets, based on the magnetic qualities of the metal, was patented last week by George F. Quittner of API Instruments Co., Chesterland, Ohio. The system works better than those that measure the pull on the rollers, which are fairly insensitive, according to Quittner, who assigned patent No. 3,311,818 to API. Another strain gauge, in which a small roller rides on the sheet and signals when the thickness varies, works well for other metals but not for stiff metals like steel, said Quittner.

The new gauge works on the principle that strain on a piece of steel alters the way in which the sheet affects a magnetic field. Although this has been known for a long time, Quittner discovered further that the effect was only in the direction of the strain.

To take advantage of this, an electromagnet is set up on one side of the sheet and a coil of wire on the other. The magnet sets up a magnetic field which penetrates the steel sheet to a certain extent, and is picked up by the coil. If the tension in the sheet increases, it reduces the amount of magnetic field that is absorbed by the steel, and the voltage in the sensing coil increases. Compressive strain reduces the voltage, according to the inventor.

The thickness of the steel sheet also affects the magnetic field, however, so another sensor has to measure that factor and compensate for it. Quittner's device does this by having another magnetic sensor set up to measure the magnetic field perpendicular to the direction of strain. Since changes in tension affect the field only in the direction of the strain, the perpendicular sensor doesn't pick them up, and measures only changes of thickness.