

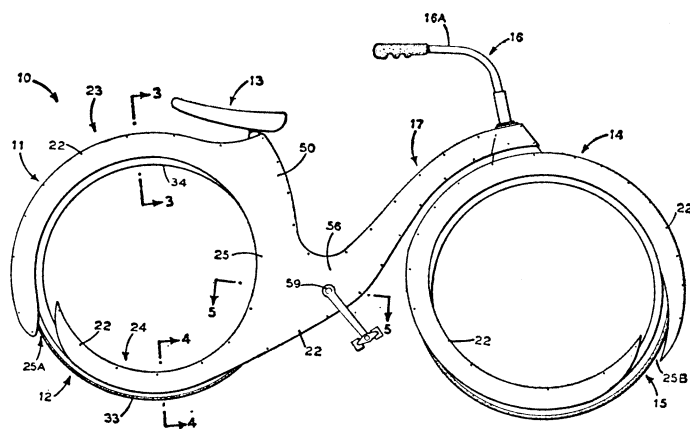
Current Patents

TRANSPORTATION

Look, Ma, No Tires!

A low-priced, plastic bicycle that has no axles, spokes, or tires, is the answer to the flat-tire problem, says inventor Arthur Lidov of New York.

The design, which received patent No. 3,329,444 last week, has rigid wheels that ride on rollers inside a



fender-like frame. Rubber mounts between the rollers and the frame take the road shocks that in conventional bicycles are absorbed by the tires.

Lidov, who belongs to a "four-bicycle family," says he invented the tire-less machine because "25 percent of the bike population in the country at any one time is down with flats," and he wanted to do something about it.

Using modern reinforced plastics for wheel and frame, he estimates the bicycle should cost around \$12 to make.

PROPULSION

Special Gear for Souped-up Rockets

More thrust per pound is always the goal for rocket engineers, and the result is that dangerous chemicals get mixed together as the power goes up.

A new device to guard against these dangers got patent No. 3,328,964 last week. It is a system of keeping dangerous additives separate from the main rocket until it is fired, then mixing them at the proper rate.

One application might be the addition of beryllium to the rocket fuel, a step that could increase solid rocket efficiency anywhere from five to 15 percent.

Beryllium is highly toxic, causing diseases of the lungs. This means that it couldn't be used in rockets set off in populated areas, but in second stage rockets, ignited in space, it could be useful.

The present invention, by Allen E. Williams, Leslie M. Dyson, and Lowell F. Matthies, could keep the toxic element from escaping in case the rocket was set off by accident. It would also help separate other exotic additives that engineers find could boost the rocket efficiency.

The patent was assigned to Thiokol Chemical Corp.

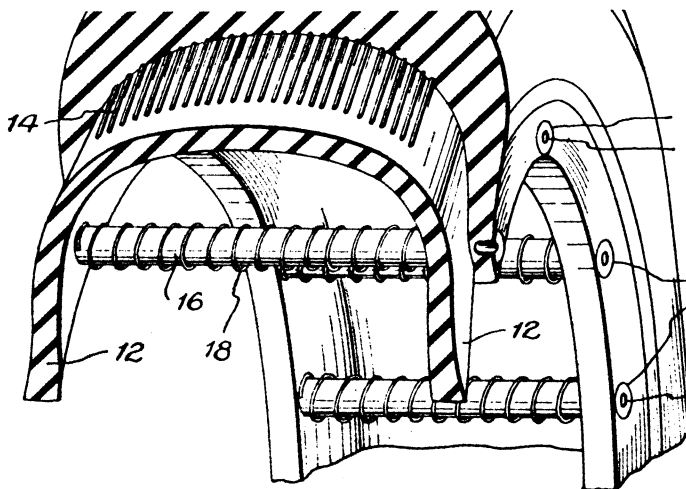
ENGINEERING

Airless Tire for Rough Roads

For back-country travel, where roads are more an idea than an actuality, pneumatic auto tires are a problem—they blow out and become useless.

Alfredo Roque, of Managua, Nicaragua, has developed a tire with wire reinforcement that fastens to the wheel rim and doesn't use air.

Airless tires aren't new, but they haven't caught on because designs up to now slip off the rim too easily. Roque's design, granted patent No. 3,329,192 last week,



has rods that fasten to pins on the wheel rim, eliminating the slip-off problem.

With good roads, the airless tire isn't too good because it can't take high speeds. But many roads, especially in Central America and other rugged areas, aren't good enough to build up much speed, anyway. There the durability of the new invention should pay off, according to the inventor.

FLUIDICS

Sleeker Switch Developed

Fluidic control devices use streams of air to carry information and, for example, open or close valves.

The basic switch is a Y-shaped passage with a pair of smaller control passages coming in from either side where the arms of the Y join. A stream of air comes up the base of the Y and goes out one of the arms; a tiny jet from the control passage can switch it to the other arm, which might connect to a valve, or to another switch.

One problem is that the valve, if stiff, could back up the flow of air and mess up the operation of the switch. So a vent is provided to allow the excess flow to escape.

Up to now the vent was put into the switch in the same plane as the flow of air. Since the escape vent had to be in a straight line, this made problems in keeping down the size of the device and orienting it properly.

A discovery, patented last week by Elmer L. Swartz and assigned to the U.S. Army, makes design easier. He found that the vent could be put in perpendicular to the plane flow, making it a lot easier to package the switch.

The patent is No. 3,329,152.