

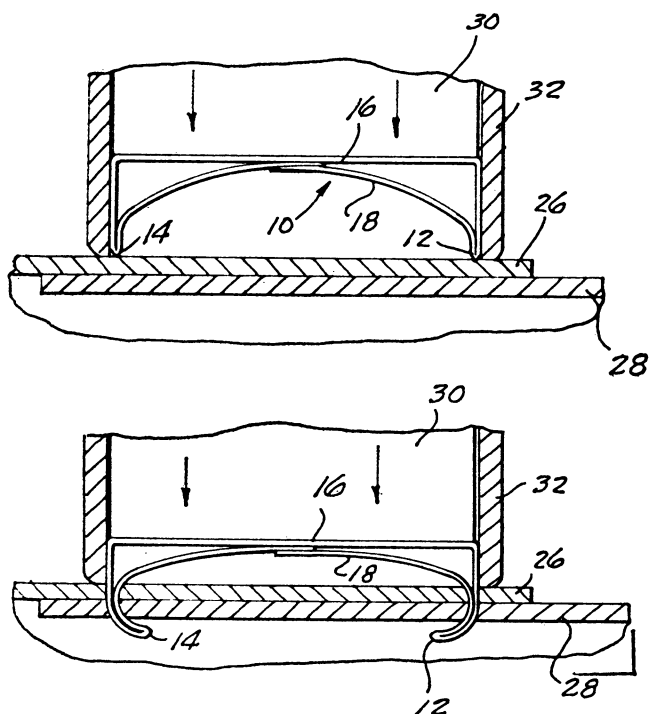
# Current Patents

## FASTENING

### Self Clinching Staple

The staple, king of the fastening world, has one defect—it needs an anvil on the back side of the material to bend the staple points so they will hold. In many applications, such as a closed or filled box, getting in the anvil of the stapler just isn't practical. A self-clinching staple, patented last week by Hoyt C. Kelsay of Raleigh, N. C., eliminates the anvil problem.

The new staple is shaped somewhat like a conventional one, but at the point ends the wires are doubled back inside the staple and form an arch touching the top again. As the staple is pushed into the material, the arches are forced closer to the main part of the staple.



This pulls the doubled points together, clinching the staple.

Inventor Kelsay claims the staple should be particularly useful in fastening cardboard boxes. PATENT 3,333,500

## FREEZE-DRYING

### Ice Lubricates Food Processor

Freeze-drying is a recently developed process for preparing foods in which the food is frozen and then put under high vacuum to draw out the ice. When treated by this process, the food doesn't lose its texture, as ordinary drying, and doesn't need refrigeration, as frozen foods do.

One problem is that the vacuum used in the process, can draw out the lubricants from processing equipment and mix them into the food, giving a bad taste.

To solve this problem, one food processor has developed a system of using ice for a lubricant. The principle is the same as that used in ice-skating, where the

pressure of the skate blade melts enough ice to form a thin film of water to glide on.

In the freeze-dry processor, moving parts are surrounded by refrigerating coils and a supply of water is pumped into the area of friction. The bearing temperature is regulated to maintain a layer of ice with a thin film of water on it. Any water that is evaporated by the vacuum won't affect the taste of the food. Frank G. Lamb, who was granted a patent for the invention last week, is chairman of the board of Lamb-Weston, Inc., food-processing firm in Portland, Ore. PATENT 3,333,907

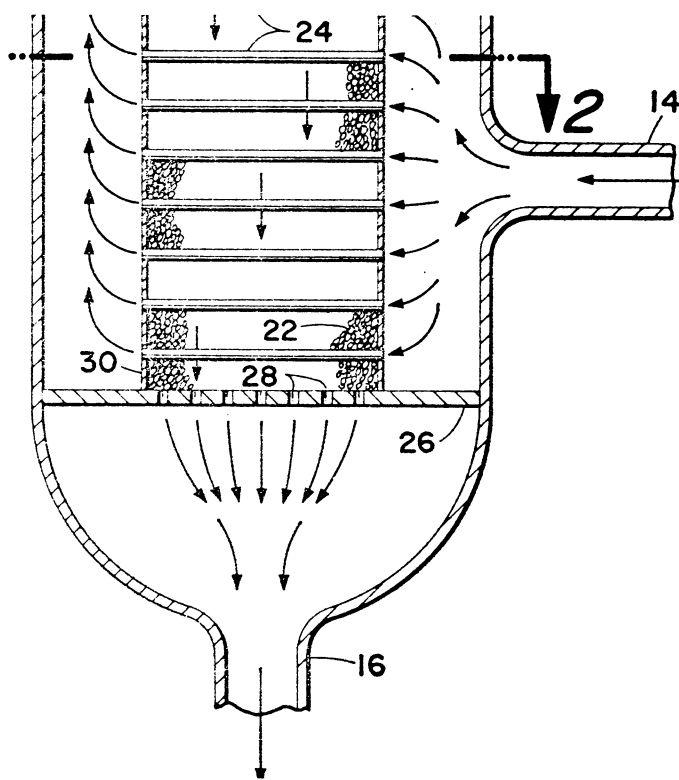
## CHEMISTRY

### Reactor Makes Nitric Oxide from Air

Many chemical processes require heat, and nuclear reactors are a prime source of it. So the idea of using fission as a heat source in chemical reactions is an intriguing one.

A particularly appropriate use, say David E. Deutsch and Stephen Kahn, would be in the production of nitric oxide from the nitrogen and oxygen in the air. This process is very difficult because the free nitrogen must be raised to above 2000 degrees C. before it will combine with oxygen, then the combined gas must be cooled very quickly to keep it from breaking down again.

In a reactor designed by Deutsch and Kahn and patented last week, the fragments of broken uranium atoms



in the reactor are used to heat the nitrogen to the needed temperature. The path of these flying fragments is extremely hot, but their range is short. Since the air is moving very fast, once a nitrogen-oxygen reaction takes place the combined molecule is quickly removed from the hot spot and the breakdown problem is eliminated.

Inventors Deutsch and Kahn assigned the patent to Aerojet-General Corp. PATENT 3,334,020