

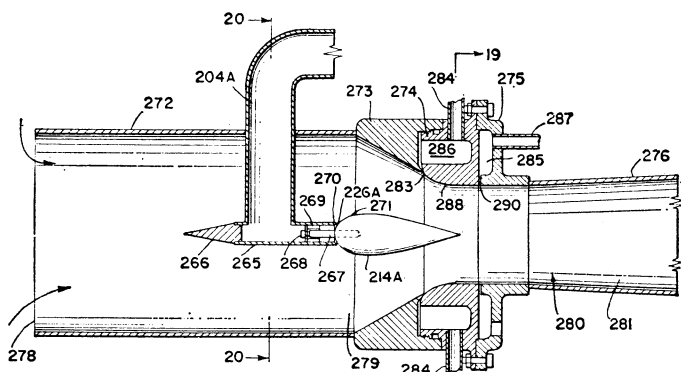
Current Patents

ENGINEERING

Pumps and Propulsion

The Coanda effect is a property of fluids coming out of a narrow passage into a wider one. The effect states that the stream will attach itself to one side of the wider passage, rather than spreading over the whole surface. It is becoming the base of a whole new technology, with applications including carburetors without moving parts to computers without electronics.

Last week Henri Coanda, the French engineer who



identified the effect, received a U.S. patent for a whole range of applications of the phenomenon, from fluid pumps to ship and land propulsion systems.

In the Coanda nozzle, a narrow passage and a wide passage join at a narrow angle, and the wall of the combined passage curves off in the shape of a parabola, on the side where the narrow passage enters. A high-pressure stream through the narrow passage, bending around the parabola-shaped wall, creates an area of low pressure in the rest of the combined passage.

If fluid is present at the entrance of the wider passage, then the low pressure sucks it up into the combined part of the nozzle. This movement of large amounts of fluid, controlled by the small jet in the narrow passage, is used by Coanda as a pump, in one application.

If the fluid is relatively stationary, as in the sea, then the Coanda effect could be used to push the nozzle—with any boat attached to it—through the water.

Coanda assigned his propulsion and pump patents to Huyck Corp. of Rensselaer, N.Y. Patent 3,337,121.

AGRICULTURE

Mulch from Sugar Cane

Sugar cane stalks, after the sugar has been pressed out, are useless and bulky left-overs. But a new method of treating them, patented last week, turns them into a useful mulch and soil conditioner.

The new process, invented by Harry M. May of Jackson, Miss., and Harry A. Nadler Jr., of Thibodaux, La., involves compressing the stalks, called bagasse, in bales, and letting them weather for about 60 days. The weathering dries out the bagasse and makes its chemical composition more uniform. Then nitrogen is added to the mixture, and the bales are chopped up into uniform size.

The inventors found that, besides being useful as regular garden mulch, the bagasse could be mixed with wood fibers to form an anti-erosion material. They say

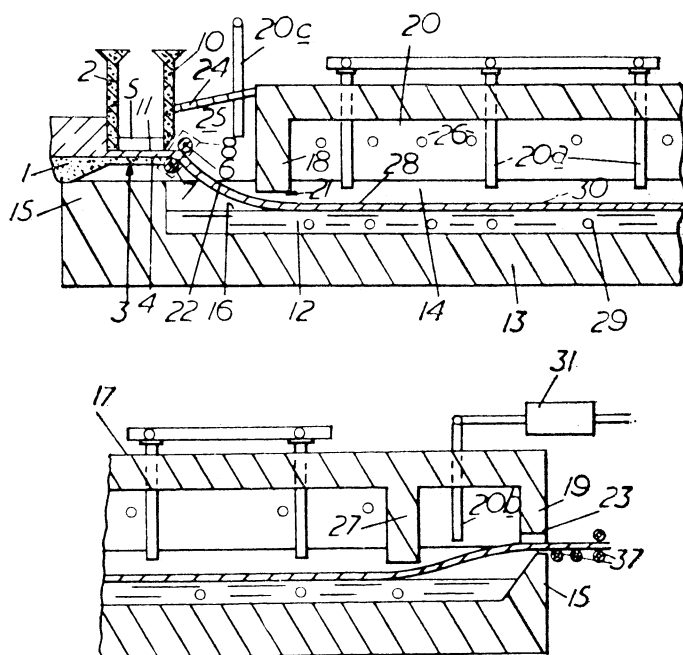
that the wood alone tends to wash away, but in combination with bagasse mulch it has much better staying power. Patent 3,337,326.

GLASS MAKING

Float Process Described

Glass manufacture has been revolutionized in recent years by a process that eliminates costly grinding and polishing steps. The method consists of floating the molten glass onto a bath of liquid metal and letting it harden on that smooth surface. Its developers, Pilkington Bros. Ltd., have carefully guarded details of the process.

Last week two U.S. patents were assigned to the British firm, revealing ways in which a major problem



in the process—contamination of the metal bath—is licked.

At the heat necessary to keep the metal, tin or a tin alloy, melted, oxygen can react with the metal to form an oxide. Specks of tin oxide can be deposited on the glass, causing flaws.

Most of the atmosphere above the tin bath is kept clear of oxygen by forcing nitrogen gas into the huge annealing chamber. But oxygen still gets in as glass enters the bath from the melting furnace, and as it exits at the other end.

According to an invention by Charles R. Taylor, granted one patent, hydrogen gas mixed in with the nitrogen will eliminate most of the oxygen problem. The hydrogen, in concentrations of from two to 10 percent at either end of the bath and less than three percent in between, reacts faster with oxygen than the tin does, and forms water.

Some impurities, such as sulfur, in the tin bath can also cause trouble. A method for eliminating this problem consists of adding small traces of magnesium to the tin. The trace elements react with the sulfur and form compounds that will dissolve in the glass without causing trouble. The inventors are David G. Loukes and John G. Banner. Patents 3,337,322 and 3,337,323.