

FIG. 1. A new and inexpensive device for delivering a topical local anesthetic.



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### Hazard of Separate Low and High Flow O<sub>2</sub> Flowmeters: An Interim Solution

*To the Editor:*—The publication of the American National Standard on Minimum Performance and Safety Requirements for Components and Systems of Continuous Flow Anesthesia Machines for Human Use Z79.8.1979\* drew attention once again to the hazards in present day anesthesia apparatus. The successful legal suits against hospitals for failing to remove from use apparatus incorporating documented hazards led to the recommendation that hospitals update their apparatus without delay.<sup>1</sup>

Mazze<sup>2</sup> reported the anoxic death of a healthy 45-year-old man scheduled for hemorrhoidectomy. The

anesthesia machine was equipped with two separate O<sub>2</sub> flowmeters, one calibrated in milliliters, the other in liters. The wrong O<sub>2</sub> flowmeter was used, resulting in 4 l of N<sub>2</sub>O being delivered with 200 ml of O<sub>2</sub>, rather than 2 l of O<sub>2</sub>.

Unfortunately many hospitals have many apparatus incorporating this hazard. Even though one large self-insured hospital organization estimated it would be less expensive to replace 200–300 obsolete gas machines than to settle another suit for anoxic brain damage, the individual hospital may have budget difficulty in replacing all such apparatus immediately.

As a temporary measure pending their phased replacement we have fitted guards to the low flow O<sub>2</sub> and N<sub>2</sub>O controls on our Ohio<sup>®</sup> 2000 model apparatus. The

\* American National Standards Institute, 1430 Broadway, New York, New York 10018.

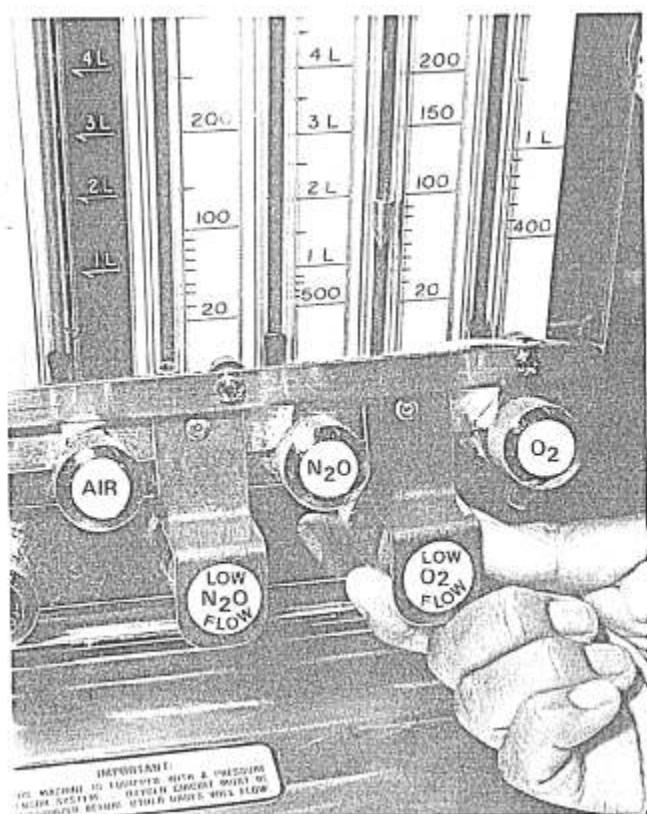


FIG. 1. Guards attached to the low flow controls for N<sub>2</sub>O and O<sub>2</sub> to alert the user to the flowmeter being used.

guards do not prevent the use of these controls, but the user receives a tactile reminder each time the low flow control is adjusted (fig. 1). The hospital's Engineering Department made the guards from 1-mm thick stainless steel and pop rivetted them onto the frame of the plastic flowmeter shield. A similar pattern could be made for the Ohio® DM 5000 or other apparatus where it may be needed.

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### Cardiopulmonary Resuscitation of Late-Pregnant Women

*To the Editor:*—Cardiac arrest may result from the accidental intravascular injection of more than the test-dose of 0.75 per cent bupivacaine during attempted extradural block. I have detailed information on five such complications occurring in healthy gravidae scheduled for cesarean section. Characteristically, there was a short grand mal seizure followed by disappearance of pulse and blood pressure. All five women required external cardiac compression for more than 10 minutes. In three, the infant was delivered with dispatch, and the mothers survived, two with no after-effects but amnesia. In the other two gravidae, delivery of the fetus was delayed for several minutes; both mothers suffered irreversible brain damage.

Cardiac compression is accomplished most efficiently with the patient supine on a hard surface. In late-pregnant women, however, this position is associated with

aortocaval compression and resultant decrease in venous return to the heart. Therefore, delivery of the infant will improve maternal circulation promptly and significantly. If immediate delivery cannot be undertaken safely, expert uterine displacement must be undertaken without delay; manual displacement (to the left and slightly cephalad) is most rational in such a situation.

Prompt delivery of the infant should be considered part of cardiopulmonary resuscitation of late-pregnant women.

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