A NON-RETURN VALVE FOR USE WITH INTERMITTENT POSITIVE PRESSURE RESPIRATION DURING PAEDIATRIC SURGERY

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The non-return valve illustrated was constructed for use during intermittent positive pressure respiration for paediatric surgery; it is not designed for spontaneous respiration. With the exception of the metal side-tube it is made from perspex rod and tube of standard dimensions, and requires little machining. In its mode of function the valve bears a resemblance to the inspiratory side of the Ruben valve.

The valve consists of an outer cylinder with screw cap, and a spring-loaded piston which is a sliding fit and secures a gas-tight seal against the cylinder wall (fig. 1). The cylinder is machined in two sections and glued together as indicated in figure 2. The piston is deeper than the orifice of the side-tube to ensure that gases cannot spill from the inspiratory to the expiratory side during change-over.

The deadspace of the valve itself is only the capacity of the side-tube, 0.5 ml, and the expiratory resistance at an instantaneous flow of 12 l./min is 1.5 cm H₂O. In use, relaxation is produced by intramuscular suxamethonium, and the valve is attached to the endotracheal tube connector by a very short length of rubber tubing. Fresh gases are supplied via the distal end of a small double-ended latex bag (fig. 3). The valve can be dismantled easily for cleaning and it can be sterilized by the usual methods. It has been in use for three years and has proved completely satisfactory.

The valve is available from Talley Anaesthetic Equipment Ltd., 505 Liverpool Road, London, N.7.