Instructions for Operating

CLEMENTS
PRECISION ANAESTHESIA
APPARATUS

Manufactured by

H. I. CLEMENTS & SON
CHARTERED ENGINEERS
SYDNEY — N.S.W. — AUSTRALIA
Established 1908
CORNER PACIFIC HIGHWAY AND BERRY ROAD
ST. LEONARDS
NEAR STATION, OPPOSITE ROYAL NORTH SHORE HOSPITAL
Instructions for operating the CLEMENTS "PRECISION" Anaesthesia Apparatus

1. The Apparatus consists of one unit (or, if desired, can be supplied in two units), comprising (1) a pressure pump fitted for suction and blowing, and (2) a vaporiser.

(1) The Blower consists of a special type pump driven by a constant speed alternating current induction motor. The motor requires a few drops of light oil in its two shafts every six months.

The air is taken in through (A), and passes through the blower under pressure, and this pressure is maintained by constant oil circulation, thereby maintaining perfect lubrication at all times.

This unit is supplied ready for use except that it contains no oil. Before use unscrew the cap of the oil tank (see illustration), lift gauge cone out, and pour in oil to "level" in oil tank, which can be seen by a small window in the bottom after gauge cone has been lifted out.

Every month the oil level must be checked and sufficient added to bring it up to "level" (see illustration). A light motor oil must be used such as Mobiloil "Arctic," "Castrol C.W.," liquid petrolatum, or "Albolene." The oil tank should be cleaned out, and the oil renewed at intervals of about six months, or whenever the oil becomes dirty.

(2) The Vaporising Unit consists of an Ether Chamber (E), superimposed on a Vaporising Chamber (B) enclosed in a water bath. The added heat is to make up that lost by the latent heat of evaporation of the ether, and to ensure immediate vaporisation of the ether drops as soon as they leave the Vaporiser Chamber (B) (see illustration). With temperature kept above boiling point of ether there is no possibility of ether-air mixture accumulating in the Vaporising Chamber (B), and very accurate control of the strength of the ether vapour is attained; also, a uniform and proper dosage is unerringly delivered to the patient.

At all times keep the Vaporiser Chamber (B) hot to the hand, then the ether drops will vaporise, and cannot condense in the Vaporiser Chamber (B). Consequently, if immediate delivery of valium Only to patient is indicated, it is only necessary to cut off ether drops by means of a small glass tube from the blower outlet (A), and pass these into the bottom of the Vaporising Chamber (B). The amount of air passing to vaporiser may be regulated by tap (T), through which excess air may be discharged. (By turning the ether tank (E) in the clockwise direction, it will unscrew at the joint beneath sight feed (S)). Into this air stream the ether is dropped by turning the handle (H). The rate of flow of the ether is determined by counting the number of drops to the minute. These drops can be seen through the glass of the Ether Sight Feed (S). The resultant mixture of Air and Ether is passed out through the Flow Meter (F). The body of this Flow Meter is calibrated by marks with the numeral 10, 5, 2 respectively against them. These represent litres per minute. The Ether-Air mixture then passes out by (G), whence it is delivered to the patient by means of a rubber tube to the end of which is attached the Nasal Y-tube and suitable catheters, or a McOll Tube, etc. The apparatus is supplied with a front and Safety Valve (N), which blows off at a pressure equal to 25 mm. of mercury. The Ether Chamber is supplied with a filler cap (R) on its top, as shown in illustration.

The Apparatus in Use.

BEFORE COMMENCING ANAESTHETIC, BE SURE to open Cock (Q) to drain off any ether which may be in Vaporiser Tank (B), due to Ether Control Lever (H) having been inadvertently turned on whilst machine was not in use or whilst air was not passing through Flow Meter (F).

INTRAPHARYNGEAL METHOD: The patient must first be anesthetised by ordinary face mask methods to the surgical stage of anaesthesia. The pharyngeal reflexes must be abolished, otherwise coughing will occur immediately on introduction of the tube. Place Heat Control Switch (L) in open position (normal temperature) and by adjusting the time of ether inhalation to cause ether drops to vaporise on issuing from Sight Feed Jet (S). Have the apparatus running before introducing the tube. IMPORTANT: Have air flowing through Flow Meter (F) before starting ether drops. Manoeuvre the air by-pass on until indicator arrives at the desired number of litres per minute as marked at the sid of air flow indicator (F), between 3 and 5 litres per minute. Then commence to drip ether. At first the rate of drip should be 120 drops per minute, and this should be gradually cut down at intervals. In operation lasting a long time a rate of 30/60 drops a minute is sufficient. The rate at which the Ether drip should be cut down varies with the type of operation and the type of patient. In very strong muscular and fat people, alcoholics, sickly men and boys, and girls with 15 to 20 years of age, the higher percentages are sometimes necessary for 15 to 20 minutes; also in such cases, to get to the abdominal sections, especially in the upper abdomen, where the maximum relaxation is necessary. The Anaesthetist must in all cases, of course, be guided by the ordinary signs of pupillary reflex, respiration, etc., but in the normal adult, when the flow meter is at 3 to 5 litres and the Ether drip at 60 or under, the patient is usually in the non-lethal zone. In small people or children, when the gauge stands at 3, the Ether drip must be proportionately cut down.

These instructions are, of course, only broad general principles. The anaesthetist must adjust the anaesthetic in accordance with the clinical signs manifested by each patient.

INTRARACHIAL DELIVERY: The preliminary induction must be carried on to deep surgical anaesthesia. The tracheal catheter is then inserted according to the methods described by Chevallier Jackson, and connected to the rubber tube attached to (Q). The apparatus must be running before this connection is made. The flow gauge (F) should register 2 to 4 litres per minute and the Ether drip will usually require to be cut down more rapidly than in the intrapharyngeal method, a period of about 20 minutes being all that is necessary usually to elapse before the Ether drip is at the rate of 40 drips per minute. This amount will hold the patient, in both the intrapharyngeal and intrarachial methods, in a perfect anaesthetic state for an hour; after that the rate of drip may, in many cases, be cut down still lower. The manometer (or safety valve) (N) limits the pressure to 25 mm. of mercury, due to intrarachial methods (or any manometer is supplied, it can be set to blow-off at any desired pressure between 3 mm. and 25 mm.).

NOTE: To ensure proper functioning of the apparatus, the main ether chamber must be air-tight. Be sure, therefore, that the filler cap of the...
ether chamber is always screwed down to make an air-tight joint. ALWAYS HAVE AIR FLOWING THROUGH VAPORIZER BEFORE ETHER DRIP IS TURNED ON, otherwise ether would accumulate in lower (vaporiser) chamber.

To use THE SUCTION APPARATUS, attach the tubing from the suction bottles to the intake (A) of the blower.

IMPORTANT: Heat is necessary to ensure proper volatilisation of the higher percentages. To provide this an electric heating element is fitted in a recess in the base of the aluminium alloy Vaporiser Chamber (B). At the beginning of the operation turn Heating Unit Switch (J) to “ON” position and leave on unless temperature rises (in summer) sufficiently to cause Ether drops to vaporise on issuing from Slight Reed Jet (S). Temperature will rise slowly. This heating unit has the additional advantage of delivering warm air, which is of benefit to the patient.

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