

USE OF THE DP-2 APPARATUS FOR ARTIFICIAL VENTILATION OF THE LUNGS OF SMALL LABORATORY ANIMALS

V. A. Romanov

UDC 615.816.2

In experimental research on laboratory animals it is often necessary to use artificial respiration to maintain a constant level of oxygenation of the blood.

For this purpose the writer has used the 1957 model of the Soviet DP artificial respiration apparatus. An instrument of this design can be used to provide artificial respiration with active inspiration and expiration in man for a long time. During its operation, however, in order to ensure the necessary pressure for converting inspiration into expiration, the apparatus creates a pressure in the lungs of about +15 mm Hg, and during expiration a negative pressure of about -5 to -7 mm Hg, which is unsuitable for small animals.

The writer has made certain modifications to the design of this apparatus in order to make it satisfy his requirements.

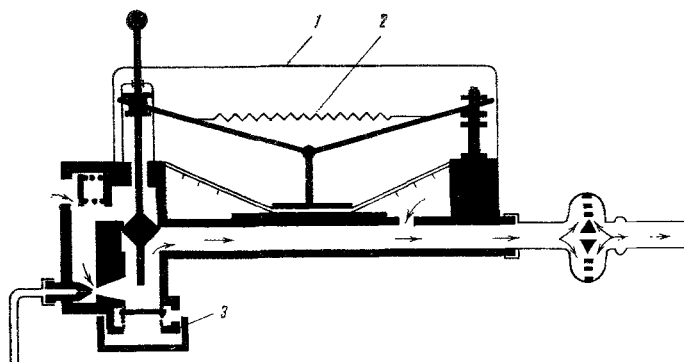


Fig. 1. Breathing self-regulator of the DP-2 artificial respiration apparatus. 1) Cover of breathing self-regulator; 2) spring producing movement of membrane via a system of levers; 3) ring regulating ratio between inspiration and expiration times.

The spring (2) in the breathing self-regulator (Fig. 1) was replaced by one with an elasticity 7.5 times greater. Air entering the breathing self-regulator was supplied by a PAI-2 valve-operated compressor. Measurements of the pressure on the output side of the apparatus during artificial respiration in laboratory animals (rabbits, cats) showed that the change-over from inspiration to expiration takes place at a pressure of +20 mm water.

The respiration rate can be regulated between 16 and 60 per minute by the air supply to the respirator and also by the ring (3).

Recordings of the partial pressure of oxygen in the brain tissues and of the general arterial pressure, made in a few experiments, showed that controlled respiration by means of the modified DP-2 apparatus does not significantly affect these values, and it can therefore be recommended for use in experiments on cats and rabbits.

Department of Diseases of the Ear, Throat, and Nose, Semipalatinsk Medical Institute. (Presented by Academician V. V. Parin.) Translated from *Byulleten' Éksperimental'noi Biologii i Meditsiny*, Vol. 69, No. 5, p. 125, May, 1970. Original article submitted November 6, 1969.

©1970 Consultants Bureau, a division of Plenum Publishing Corporation, 227 West 17th Street, New York, N. Y. 10011. All rights reserved. This article cannot be reproduced for any purpose whatsoever without permission of the publisher. A copy of this article is available from the publisher for \$15.00.