Jan. 25, 1955 K. SVENSON 2,700,529

PIVOTED VALVE FOR NARCOSIS APPARATUS

Filed March 12, 1952

Fig. 1.

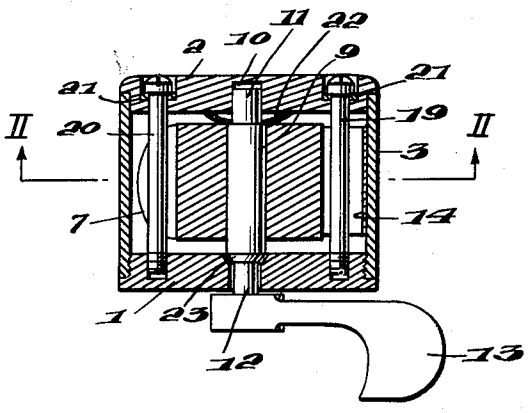
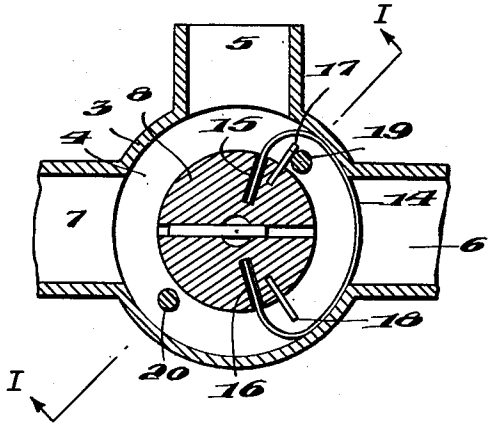


Fig. 2.



INVENTOR
KNUT SVENSON,

BY Robert B Larson
ATTORNEY

United States Patent Office

2,700,529

Patented Jan. 25, 1955

2,700,529

PIVOTED VALVE FOR NARCOSIS APPARATUS

Knut Svenson, Lidingo, Sweden, assignor to Svenska Aktiebolaget Gasaccumulator, Lidingo (near Stockholm), Sweden

Application March 12, 1952, Serial No. 276,197

3 Claims. (Cl. 251—177)

The present invention refers to a valve particularly suited for medical purposes and to a narcosis apparatus containing such a valve.

Prior valves of narcosis or breathing devices or the like have usually comprised gaskets of organic material, which have rendered sterilization of the elements of these devices difficult. This is because the heat or the solution used for the sterilization process is apt to influence the organic material and reduce the sealing capacity thereof.

The use of the ordinary plug type of valve in medical devices requires extremely precise grinding of the plug if satisfactory tightness is to be obtained. It is therefore only with great difficulty that such a device can be constructed with as small a leakage as is required in narcosis apparatus.

During surgical operations, in the course of which air and anesthetic is supplied to the patient from a narcosis apparatus, an interruption of the spontaneous breathing may occur, and it may be necessary to have immediate recourse to artificial breathing in order to avoid danger to the patient's life. It is therefore desirable to provide in a narcosis apparatus a valve answering to the requirements mentioned above, by means of which an artificial breathing device may be switched into connection with the breathing mask.

It is an object of the invention, therefore, to provide a simple and dependable valve usable for gases and practically free of leakage, which does not comprise any non-metallic elements.

Another object of the invention is to provide a narcosis apparatus, which enables momentary switching between a plurality of gas supply devices connected to a valve forming part of the apparatus, which is in its turn connected to a breathing mask.

The valve according to the invention comprises a casing, a valve chamber in the casing having at least one aperture, and an adjustable, resilient member in the chamber, which is adapted in one of its positions to close an aperture.

In a preferred embodiment, the aperture or apertures are positioned in a cylindrical portion of the wall of the chamber and the resilient member is rotatable on the axis of the cylindrical portion. The resilient member may comprise a curved leaf spring, which is adapted to press against the chamber wall. The leaf spring may be supported on a cylindrical supporting member, which is disposed coaxially and rotatably in a cylindrical valve chamber. The leaf spring may be supported by means of a pair of radial slots in the supporting member, one end of the leaf spring being inserted into each slot. The apertures may be three in number and the resilient member be adjustable so as to cover either any one of the apertures or any one of a pair of the apertures.

The invention comprises, further, a narcosis apparatus having a valve constructed in accordance with the above. In a preferred embodiment, the valve is connected to a breathing mask and is adapted to establish a connection between, on the one hand, the breathing mask, and, on the other hand, a selected one of a plurality of devices connected to the valve.

The essential constructional features of the valve according to the invention are illustrated in the drawing, Fig. 1 of which shows a longitudinal section of such a valve

along the line I of Fig. 2, and Fig. 2 of which shows a cross-section along the line II of Fig. 1.

As shown in the figures, the valve casing comprises a base **1**, a cover **2** and a cylindrical wall **3**. The interior of the casing forms a chamber **4**, the walls of which have a number of apertures **5**, **6**, **7**. Of these, the aperture **7** is connected with a breathing mask, not shown, and the apertures **5** and **6** each with a device for suppling air or anesthetic. For instance, the aperture **5** may be connected with a narcosis device of a known kind and the aperture **6** with an artificial breathing device.

The chamber **4** contains a valve member **8**, which is fast on a shaft **9** rotatably supported in the casing. The shaft **9** has a pin **11** journalled in a boring **10** in the cover **2** and a pin **12** journalled in the base **1**. Fastened to the pin **12** is a handle **13**, by means of which the valve member **8** can be turned on its axis.

A leaf spring **14** is inserted into radial slots **15** and **16** in the valve member **8** in such a way as to press resiliently against the cylindrical wall **3** of the chamber. In the position shown in Fig. 2 the leaf spring **14** covers the aperture **6**, the two apertures **5** and **7** being left uncovered so as to communicate mutually. Through turning of the valve member **8** by means of the handle **13** the spring can be made to cover the aperture **5**, whereby a connection is established between the apertures **6** and **7**.

A pair of pegs **17** and **18** are attached in the valve member **8** and limit the movement thereof, as is apparent from Fig. 2, so that the aperture **6** will be covered by the spring when the peg **17** contacts a bolt **19**, which is arranged to attach the cover to the valve casing. When the aperture **5** is covered by the leaf spring the peg **18** instead contacts the bolt **19**.

The cover is attached, besides by the bolt **19**, also by a bolt **20** diametrically opposed to the former. The bolts **19** and **20** are threaded into the base **1**, which is in its turn threaded to the wall **3**. The heads of the bolts rest on packing washers **21**, which may consist of copper or aluminium. The shaft **9** has a conical section **23**, which is held by means of a spring **22** between the cover **2** and the valve member **8** in tight abutment against a corresponding conical bevel in the base **1**. This reduces as much as possible leakage of the gas around the pin **12**.

It is obvious that the invention is not restricted to the embodiment shown but is capable of variation within the scope of the appended claims.

What I claim is:

1. A valve comprising a valve chamber having at least one aperture in the peripheral wall thereof, a valve member mounted movably in the chamber so as to press against the peripheral wall of the chamber, said valve member comprising, a supporting member movable in said chamber, said supporting member having a pair of slots therein, a thin resilient leaf spring having the ends thereof disposed in said slots and abutting the ends of said slots, said spring being bowed outwardly to engage and press against the peripheral wall of said valve chamber to conform to the contours thereof, and adapted to cover said aperture.

2. A valve as claimed in claim 1 wherein said supporting member is cylindrical and is disposed coaxially with and rotatable in the cylindrical valve chamber.

3. A valve as claimed in claim 1 wherein bolts pass through said valve chamber to serve as stops limiting movement of said supporting member.

References Cited in the file of this patent

UNITED STATES PATENTS

70,511	Bourden	Nov. 5, 1867
798,852	Weisell	Sept. 5, 1905
806,679	Kieser	Dec. 5, 1905
1,166,571	Bard	Jan. 4, 1916
1,176,886	Ermold	Mar. 28, 1916
2,105,331	Rasmussen	Jan. 11, 1938
2,164,057	Fink	June 27, 1939
2,431,593	Strike	Nov. 25, 1947