United States Patent [19]

Colonna

[11] **3,915,152**

[45] **Oct. 28, 1975**

[54] **BARIUM DEVICE**

[76] Inventor: **Jerry Colonna,** 221 Quincy Ave., "A", Long Beach, Calif. 90803

[22] Filed: **Nov. 15, 1974**

[21] Appl. No.: **524,142**

[52] **U.S. Cl.** ..... **128/2 R;** 128/227

[51] **Int. Cl.**[2] **A61B 5/00**

[58] **Field of Search** 128/2, 227, 230, 231, 224

[56] **References Cited**

UNITED STATES PATENTS

2,396,043	3/1946	Evans	128/230
2,538,215	1/1951	Stack	128/227
3,233,609	2/1966	Leucci	128/227
3,572,338	3/1971	Murray, Jr.	128/230 X

Primary Examiner—Richard A. Gaudet

Assistant Examiner—J. Yasko

[57] **ABSTRACT**

This device consists primarily of an assembly having lever means, barium supply means, valve means, piston means, squeeze bulb means and other components for providing a control system of barium in combination with air contrast for employment in the examination of patients.

1 Claim, 6 Drawing Figures

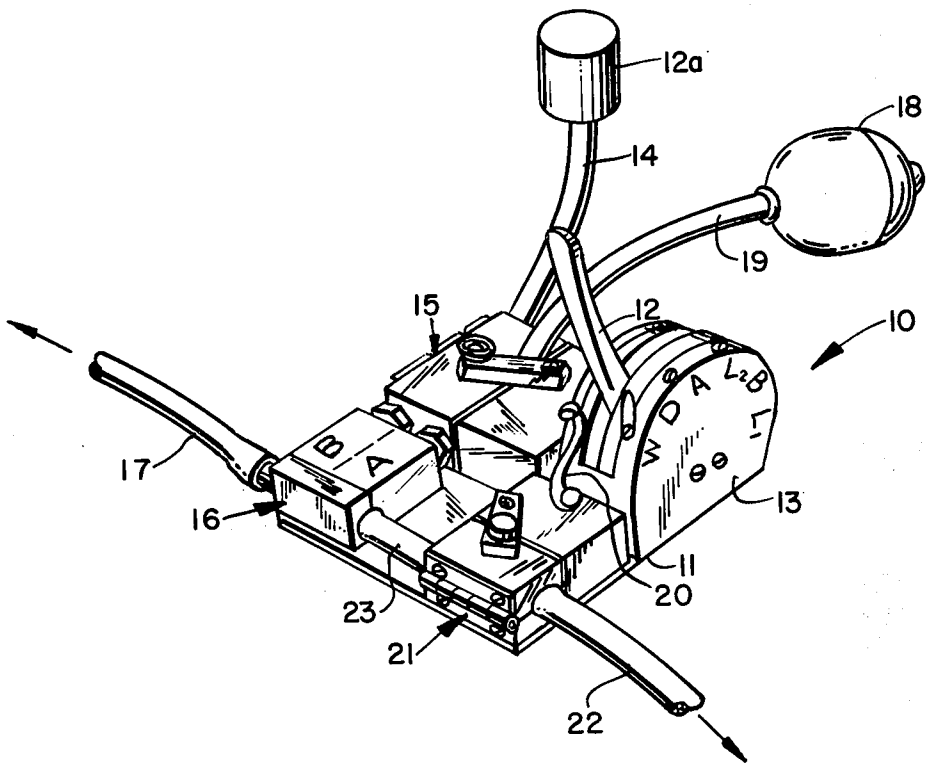


FIG. 1

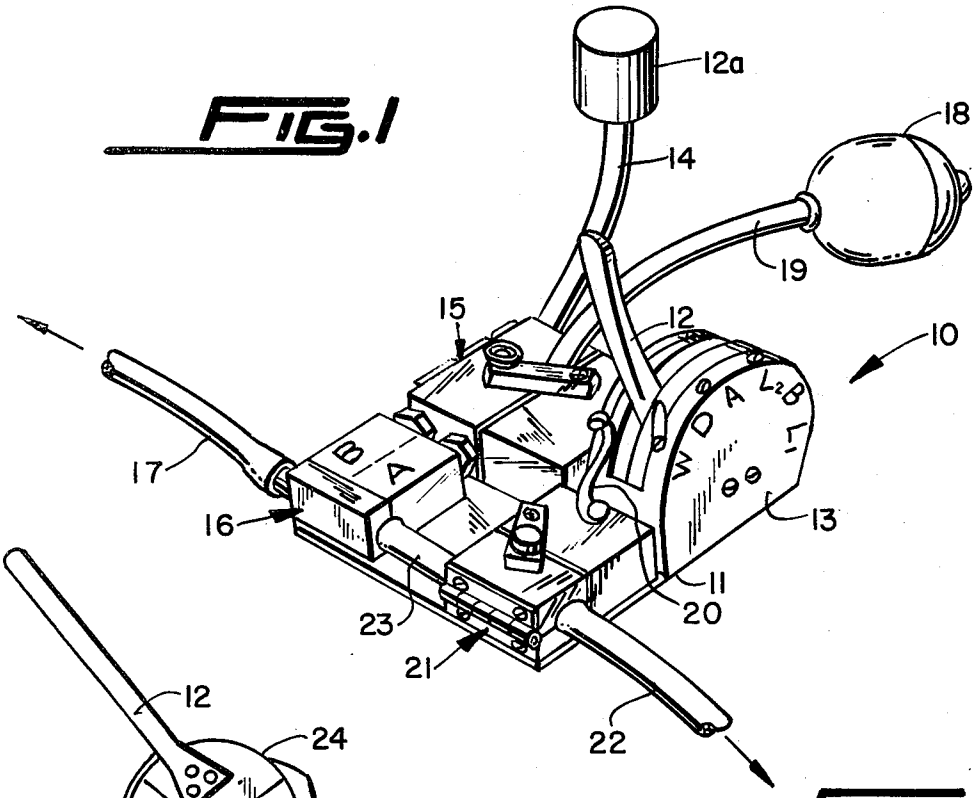


FIG. 3

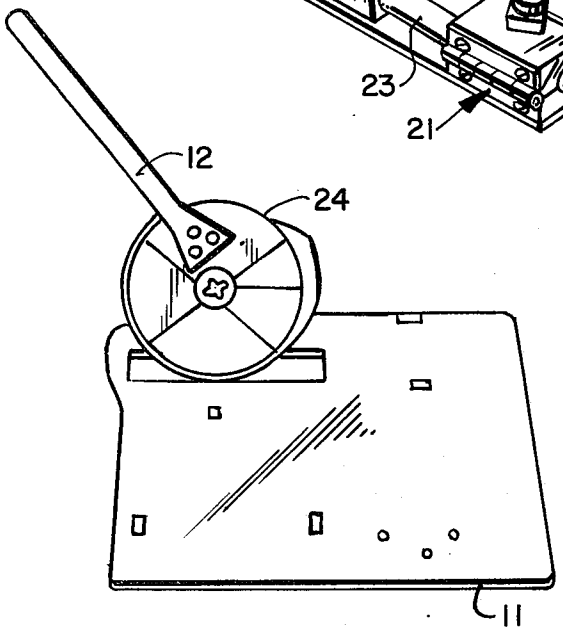
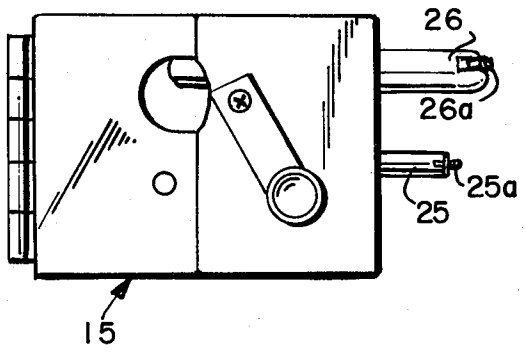


FIG. 2



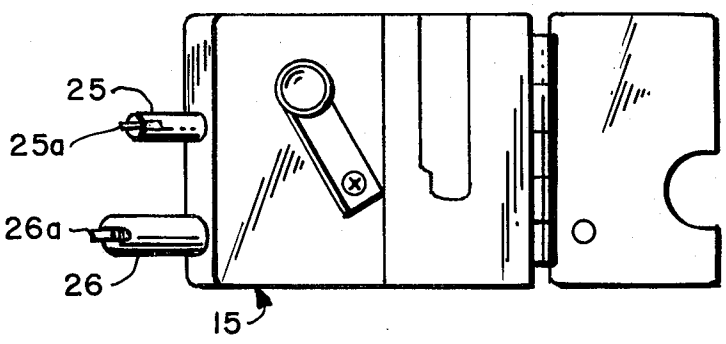
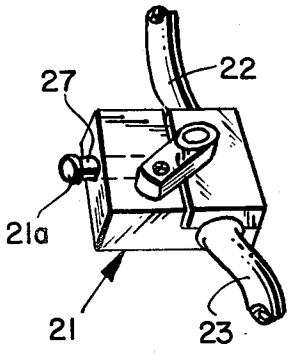


FIG. 4

FIG. 5



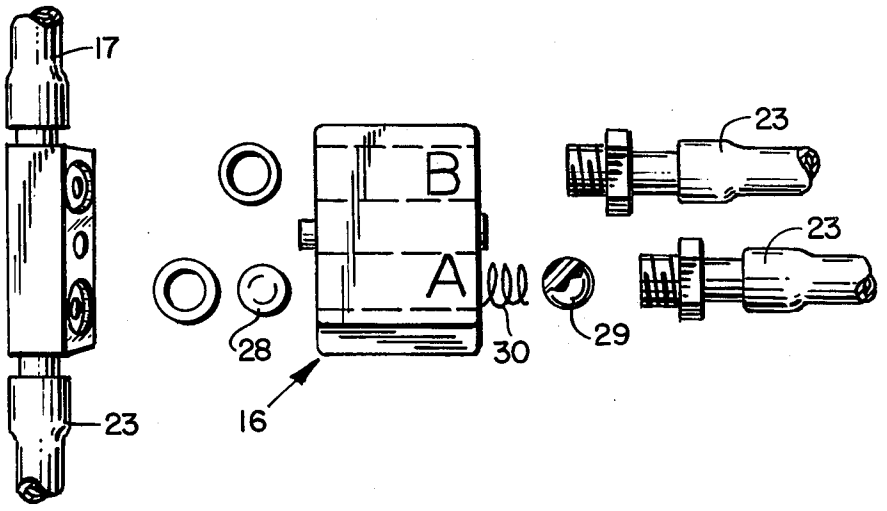


FIG. 6

BARIUM DEVICE

This invention relates to machines for the examination of patients and more particularly to a barium device.

It is therefore the principal object of this invention to provide a barium device which provides for a control system of barium application, in combination with air contrast, if desired to be employed in the examination of patients.

Another object of this invention is to provide a barium of the type described, which employs lever means, piston means, hose means, valve means, and air control means so as to assure that barium enters the colon thereby renderring the patient ready for X-rays.

A further object of this invention is to provide a barium device of the type described, which will be superior to those of the prior art, in that, the present invention provides a control system of both the combination of barium and air.

Other objects of the invention are to provide a barium device which is simple in design, inexpensive to manufacture, rugged in construction easy to use and efficient in operation.

These and other objects will be readily evident upon a study of the following specification and the accompanying drawings, wherein:

FIG. 1 is a perspective view of the present invention.

FIG. 2 is a perspective view of the lever and wheel combination of the device which controls the operation of the two pistons shown in FIGS. 3 and 4 of the drawings.

FIG. 3 is a plan view of the piston contained unit of the device, shown in closed position.

FIG. 4 is similar to FIG. 3, but shows the unit in open position.

FIG. 5 is a perspective view of another piston contained unit of the device.

FIG. 6 is an exploded perspective view of the unit of the device which has air valve means and washer means for controling the barium and air flow.

According to this invention, a barium device **10** is shown to consist of a base **11** of which extending lever **12** controls the function of the device **10.** Barium is kept in a reservoir **12***a* mounted on an IB stand (not shown) above device **10,** the barium flowing by gravitational means downward. When device **10** is put into use, lever **12** is moved from the locked position L1 as shown on face **13** and is set to the letter B upon face **13.** Barium is then allowed to flow through rubber surgical tube, identified as **14,** through **15** and into the section labeled B of unit **16.** The fluid continues to flow into surgical tube **17,** into the patient, in order to assure that barium enters the colon, an air contrast system is employed. This is accomplished as follows:

Lever **12** is moved to position A upon face **13** of device **10,** after which the barium flow ceases and air is introduced into the syste. Through means of surgical tube **17,** air is pumped by means of squeeze bulb **18** attached to tube **19,** the air being forced through section A of unit **16,** and into tube **17** wherein it enters into the patient. Upon allowing the desired amount of barium to enter into the patient, the patient is ready to be X-rayed. At this point lever **12** is moved to a locked position **12** upon the face **13.** Upon ecompletion of the X-raying, lever **12** is moved to the position D upon face **13,** and lock lever **20** is moved to set position, so as to prevent further movement of lever **12.** The lever **12** action at position D on face **13** allows all of the barium to drain from the patient through units **16** and **21** through tube **22,** to a collection receptacle (not shown). Upon completing the discharge of barium from the patient, lever **12** is unlocked and moved to the position W upon face **13.** The above mentioned wash position allows the barium from the barium reservoir **12***a* to flow through the surgical tube **23** connected to units **15, 16** and **21** to the collection receptacle. In order to assure that a clear flow of barium results from the reservoir **12***a,* to the collection receptacle, the squeeze bulb **18** is pumped from time to time, the resulting action serving to essentially clean the device **10** and prepare it for another operation.

To further describe device **10** in detail, FIGS. **3** and **4** show the unit **15** (open and closed) respectively and FIG. **2** shows the lever **12** uncovered. As is shown in FIG. **2,** lever **12** is secured fixedly to an isometric wheel **24** mounted on the colonic device **10,** base **11,** by means of a column support (not shown). This lever **12** by circular motion, controls the operation of two pistons **25** and **26** as shown in FIGS. **3** and **4** of the drawings. The pistons **25** and **26** in effect, apply direct pressure on the surgical tubing within which will contain air or barium. The function of unit **21** is such, that when lever **12** is at position B, on face **13,** the piston **27** of this unit **21,** compresses against the surgical tubing enclosed in the system so that the barium flows to the patient. When the lever **12** is moved to positions L1 and L2 and A, the unit **21** still remains closed. When lever **12** is moved to the position D (drain) and W (wash), piston **27** is released and allows fluid to flow out of device **10** and into the collection receptacle.

Referring to FIG. **6** of the drawing, the letter B indentifies the upper part of the unit where barium is allowed to flow when desired. The lower portion represents the air contrast aspect A. When the squeeze bulb **18** is employed to pump air into the patient, a rubber washer **28** and a nylon ball **29** with spring **30** means, prevents air from returning through the system. Washer **28** will prevent barium from backing into the air system.

It shall be noted that the wheel disc **24** secured fixedly to lever **12** has an inner disc attached that is flat in certain areas and recessed in others. When the control lever **12** is moved from one position to the next, the disc on the inner surface, in turn, controls the side movement of the pistons **25** and **26.** The larger outer wheel **24** controls the movement of the piston **27** as shown in FIG. **5** of the drawings.

It shall be further be noted that the ends of the pistons **25** and **26** of FIGS. **3** and **4,** are provided with a wheel bearing **25a** and **26a** respectively, the said bearings serving to reduce friction and will rotate when the control lever **12** is moved from one position to the other. The piston **27** of unit **21,** includes a surface cap **21a.**

What I claim is:

1. A barium device, comprising base means for mounting air and barium control means, lever and wheel means pivotably carried within said device for controlling the barium fluid and air, said control lever is fixedly to said wheel which is isometric, said wheel having face means of different levers for controlling the fluid and air means through said device, hose and reservoir means secured to said base providing for gravitational feed means of said barium fluid, an air squeeze bulb secured to said device providing for air entering

said device, tube means connecting piston devices carried upon said base and valve means with washer means for controlling the flow of fluid and air, said air squeeze bulb is secured to tube means, fixedly, for producing air within said device and fluid is urged out of the output tube of said device into the patient by said lever control means pivotably carried on the interior of said device, said wheel of said lever being secured to post means secured fixedly to said base of said device and locking lever means of said device is pivotably secured to the unit of said device having a pair of pistons, each of said pistons including a pivotable wheel bearing for reducing friction during the operation of said device.

* * * * *