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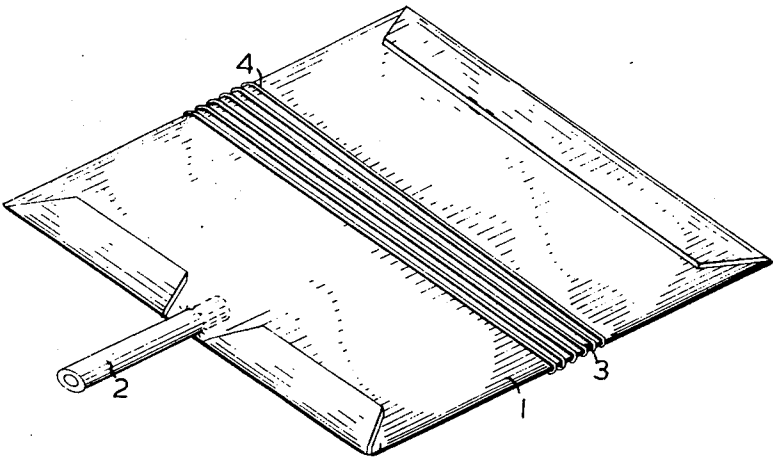
2,849,002 8/1958 Oddo..... 128/325
3,480,017 11/1969 Shute 128/344
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[54] **CERVICAL DILATOR**
2 Claims, 2 Drawing Figs.

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128/361
[51] Int. Cl.....**A61m 29/00,**
A61b 17/42
[50] Field of Search..... 128/344,
349 B, 361; 206/DIG. 30

[56] **References Cited**
UNITED STATES PATENTS
2,610,626 9/1952 Edwards..... 128/349 B UX

ABSTRACT: A cervical dilator comprising a fluidtight bag formed from a flexible material and insertable in a collapsed state into the cervical canal, inlet means in said bag for periodically introducing fluid under pressure to alternately inflate said bag whereby the wall of said bag radially expands to directly contact the walls of said canal and to deflate said bag so as to cause dilatation of the cervix and simulate effects of labor contraction, a portion of the wall of said bag intermediate the ends thereof being adapted to be more resistant to radial expansion whereby to form on inflation of said bag a constricted waist portion which accommodates the edges of the cervix.



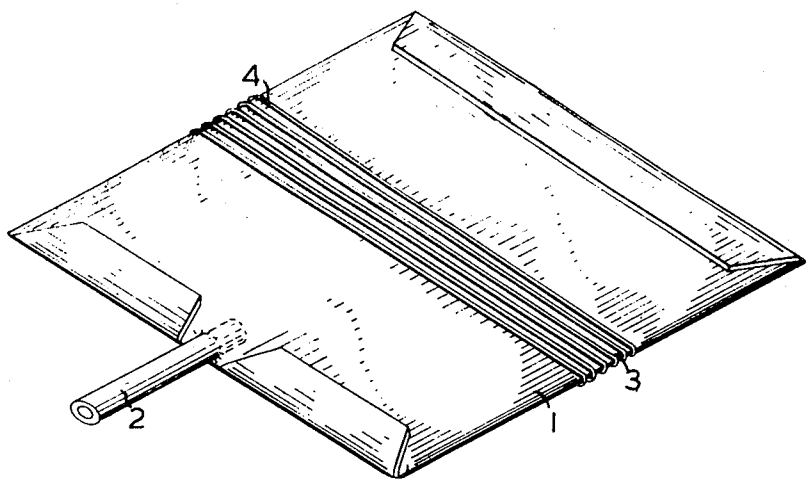


FIG. 1

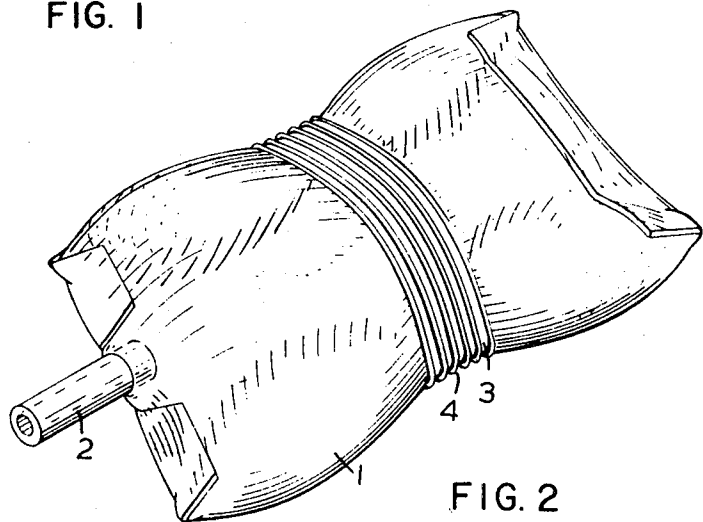


FIG. 2

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CERVICAL DILATOR

The present invention relates to a cervical dilator which is adapted to be inserted into the cervical canal and to cause upon inflation and deflation thereof dilation of the cervix so as to simulate the effect of labor contractions and thus hasten the processes of nature.

During labor, the cervix uteri dilates equally in all directions from a diameter of 0 to 10 centimeters under the pressure of intermittent uterine contractions transmitted through the presenting part (head, breech and/or forebag of water). This dilation permits passage of the baby from the uterine cavity through the pelvis to delivery. Nature however does not produce such labor pains in any regular or standard pattern, since the anatomical and physiological characteristics of all women vary, thus labor can be remarkably efficient and short or with noneffective contractions extremely protracted. The present invention provides a simple and relatively inexpensive device which will reproduce the effects of labor pains more efficiently and accurately regulating the dilation of the cervix from 0 to 10 centimeters with safety thus hastening the first stage of labor.

In my Canadian application No. 958,955 I have disclosed and claimed such a cervical dilator which comprises a fluid-tight container formed from a flexible material and insertable in a collapsed state into the cervical canal, inlet means in said container for intermittently introducing fluid under pressure to alternately inflate said container such that a peripheral radial wall of said container expands radially to directly contact the walls of said canal and deflate said bag so as to cause dilatation of the cervix and simulate the effects of labor contractions, the ends of the container being adapted to limit axial expansion of said container during inflation. In particular, in my copending Canadian application the ends of the container are adapted to substantially prevent axial expansion of the container on inflation thereof, essentially all the expansion of the container during the dilatation being in a radial direction as axial expansion of the container causes expansion of the container into the uterus of the pregnant women, thereby hindering to a substantial extent the delivery of the baby which is undesirable.

Further, the container has a waist portion intermediate the ends thereof and particularly equidistant from the ends thereof which waist portion is of reduced radial dimension for the location of the edges of a cervical os. This allows for the proper positioning of the cervical dilator in the cervical canal when used in simulating the effects of labor contraction.

It has now been found according to the present invention that by adapting the waist portion intermediate the ends of the container or bag so as to be more resistant to radial expansion than the remainder of the walls of the bag, on inflation of the bag the waist portion is constricted and thus at all times accommodates the edges of the cervical os and prevents the bag when under inflation from moving axially into or out of the uterus which is undesirable and thus allows only radial expansion and contraction of the walls of the bag to take place.

According to the present invention therefore there is provided a cervical dilator comprising a fluidtight bag formed from a flexible material and insertable in a collapsed state into the cervical canal, inlet means in said bag for periodically introducing fluid under pressure to alternately inflate said bag whereby the wall of said bag radially expands to directly contact the walls of said canal and deflate said bag so as to cause dilatation of the cervix and simulate effects of labor contraction, a portion of the wall of said bag intermediate the ends thereof being adapted to be more resistant to radial expansion thereby to form on inflation of said bag a constricted waist portion which accommodates the edges of the cervix.

The bag which is suitable made of a relatively heavy gauge

plastic material such as polyvinyl chloride suitably has embedded in the waist portion a relatively inextensible fiber such as cotton fiber which provides the necessary resistance to expansion of the waist portion which waist portion is suitably equidistant from the ends of the bag and thus on inflation of the bag the waist portion is constricted to accommodate the edges of the cervix.

As with the cervical dilator of my Canadian application No. 958,955 the ends of the bag are adapted to restrict axial expansion of the bag during inflation and desirably the ends of the bag allow substantially no axial expansion of the bag on inflation thereof.

Inflation and deflation of the bag may suitably be effected by periodically discharging fluid under pressure from a pressure means into said bag through the inlet means, the pressure means being suitably a hydraulic pressure means, the fluid being suitably water. Thus the present invention also provides in combination with the aforesaid cervical dilator of the present invention means for periodically discharging fluid under pressure into said bag through said inlet means to effect inflation or deflation thereof.

The present invention will be further illustrated by way of the accompanying drawings in which

FIG. 1 is a perspective view of a deflated cervical dilator according to a preferred embodiment of the present invention, and

FIG. 2 is a similar view of the cervical dilator of FIG. 1 in the inflated state.

Referring to the accompanying drawings, the cervical dilator comprises a bag 1 formed from a flexible plastic material such as polyvinyl chloride sealed along the top and bottom edges thereof so that there is no appreciable axial expansion of the bag on inflation thereof and having an inlet 2 for the periodic introduction of water under pressure into the bag 1 to effect radial inflation and deflation thereof. The bag 1 has a waist portion 3 which has a continuous thread 4 embedded therein which restricts radial expansion of the waist portion 3 on inflation of the bag 1 (see FIG. 2) thus providing accommodation for the edges of the cervix during expansion of the bag 1 and as such avoiding the tendency of the bag 1 to move axially with respect to the cervix during inflation thereof.

I claim:

1. A cervical dilator comprising a flattenable, closed end, tubular fluidtight bag formed from a flexible plastic material and insertable in a collapsed state into the cervical canal, inlet and outlet means in said bag for allowing intermittent introduction of fluid under pressure to alternately inflate said bag such that the peripheral tubular sidewall of said bag radially expands to directly contact the walls of said canal and deflate said bag so as to cause dilatation of the cervix and simulate effects of labor contraction, a portion of the peripheral wall of said bag intermediate the ends thereof including relatively inextensible reinforcing means which extend circumferentially of the peripheral wall in radially restraining engagement therewith so as to cause said portion of said peripheral wall to be more resistant to radial expansion than the remainder of said peripheral wall whereby to form on inflation of said bag a constricted waist portion having substantially the same girth when said bag is inflated as when said bag is in said collapsed state and which locates and retains the edges of the cervix when said bag is inflated, the ends of said bag defining substantially the extremities of said dilator and being reinforced by being folded transversely and sealed to limit axial expansion of said bag during inflation.

2. The cervical dilator of claim 1 wherein the bag peripheral wall is formed from polyvinyl chloride and relatively inextensible reinforcing means is a continuous textile thread imbedded in said portion of the peripheral wall.

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