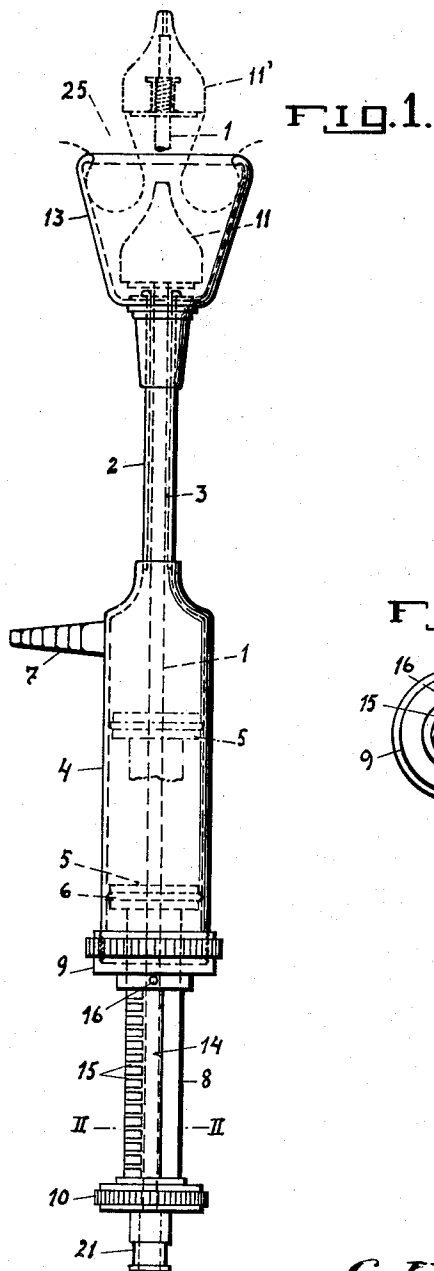


July 9, 1963

G. UDDENBERG
INSTRUMENTS FOR FLUID INJECTIONS INTO
THE UTERUS AND FALLOPIAN TUBES
Filed Feb. 9, 1961

3,096,764



INVENTOR.
G. Uddenberg
BY
Glasgow Downing Tebbell
ATTYS

1

3,096,764

INSTRUMENTS FOR FLUID INJECTIONS INTO THE UTERUS AND FALLOPIAN TUBES

Göran Uddenberg, Rangeltorpsgatan 49,
Göteborg, Sweden

Filed Feb. 9, 1961, Ser. No. 88,048

Claims priority, application Sweden Dec. 27, 1960
2 Claims. (Cl. 128—241)

This invention relates to instruments for fluid injections into the uterus and Fallopian tubes as well as for facilitation of uterus investigations.

The present invention is an improvement upon the invention described in my copending application filed March 30, 1959, Serial No. 802,714, now U.S. Patent No. 3,048,175, issued August 7, 1962.

It is an object of this invention to provide an instrument for the purpose mentioned above and which instrument will be able to be used with full effect in spite of a minimum of structural details and a conventional means for excluding air from the instrument.

A further object of this invention is to provide an instrument which is quick and easy to adjust in position as well as capable of being secured in different positions of insertion.

Still a further object of this invention is to provide an instrument capable of controlling the insertion pressure within the cervix mouth.

With these and other objects in view, the instrument consists of a vacuum acting suction cup having a mouth for enveloping and retaining of the cervix, said suction cup being connected at the bottom with an air exhaustion tube, an axially adjustable cannula tube disposed within the air exhaustion tube with a passageway for the air between the tubes, the cannula tube extending into the suction cup and being at its forward end provided with an axially bored end head to open up the cervix mouth, both tubes being rearwardly borne by a handle, said handle consisting of an air-passage housing for the air exhausted from the suction cup and provided with only one rear axially adjustable part at the handle attached to the cannula tube and slidably arranged for a direct axial movement to different positions between defined limits for the cannula end head, and said adjustable part coacting with a blocking device for the locking of said part in different desired insertion positions of the cannula tube head.

Referring to the accompanying drawing, which illustrates a preferred embodiment of the invention:

FIGURE 1 is a side view of the instrument with the end head shown in two different positions, and

FIGURE 2 a cross section of the instrument along the section line II—II in FIGURE 1.

The instrument consists of a cannula tube 1, which is encompassed or surrounded with a certain space or passageway, formed by an outer tube 2 in such a way that air is permitted to flow in this space 3 along the cannula tube. The outer tube 2 carries at its forward end a suction cup 13 preferably of transparent material, and is at its rear end fixed to a handle 4 with the space 3 being in communication with a transverse tube stub 7 attached to the handle, and during use of the instrument being connected to a vacuum pump (not shown), or a similar device for exhausting air from the suction cup. The cannula tube extends into the suction cup and carries at its forward end a head 11 of rubber or other flexible material, and the head is detachably secured to the tube end such as for instance by complementary screw threads. The end head preferably has the shape of a cone with its top end directed forward to open up the cervix mouth when in use. The head has a central axial bore to re-

2

ceive the cannula tube, and the outer end of the tube abuts against an inner seat in the bore preventing air from entering from the bore end and leaking along the outside of the cannula tube into the suction cup.

The handle 4 consists of a cylinder, the forward end of which constitutes an air passageway between the outer tube 2 and the stub 7. A slidable piston 5 provided with a piston ring 6 of rubber or the like is positioned in the cylinder, and a piston rod 8 passes rearwardly out through a rear cover 9 threaded onto the cylinder. Exteriorly of the cylinder the piston rod is provided at the end with a knob 10 with an axially extended tube stub 21 shaped for instance for connection with a syringe (not shown) or for connection with any other fluid source. The piston rod 8 serves as a handle for the cannula tube 1, which is attached to the piston as well as to the piston rod, and, passing through the cylinder, also is in communication with the end tube stub 21. The piston rod is in the shown embodiment provided with a long axial groove 14, and a plurality of parallel cross grooves 15 extend peripherally from said axial groove a short distance, leaving between such grooves a row of teeth along one side of the groove 14 constituting a rack. A stop pin 16 is radially inserted through the cover 9 into the axial groove 14 without hindering axial movement of the piston rod into the cylinder for adjusting the cannula head into a desired position. When the adjustment is completed the piston rod is turned so that the stop pin enters the opposing cross groove 15, and in which position the cannula tube with its end head is locked by the position of the stop pin between two teeth. A turn backwardly of the piston rod will again free the same so that the cannula tube may easily be returned to its original position during a sliding movement of the stop pin along the axial groove 14.

The tube stub 7 for the air to be exhausted is preferably positioned at the forward end portion of the cylinder to permit the piston and the cannula tube head to have a comparatively long stroke.

When the instrument is to be used, it is preferable that the piston rod has been moved into the cylinder so that the end head of the cannula tube is positioned outside of the suction cup as indicated by 11' in FIGURE 1. This adjustment is accomplished very quickly and the head can easily be positioned a greater distance in the front of the suction cup. This is advantageous in that the free-lying head can be orientated into the mouth of the cervix without being hindered by the suction cup and be readily viewed through the transparent material of the cup. The mouth of the cervix very often has an inclined position in different directions and it is in such cases very difficult to enter the mouth without a previous straightening of the mouth. The head is now slightly inserted into the mouth and the suction cup is moved forward into contact with and grip around the annular muscle 25 of the cervix mouth, with this latter movement being the equivalent of a rearward movement of the cannula tube with the result that the piston is moved to its rear position in the cylinder. In this position the air is separated from the suction cup in a known manner passing through the space 3 between the outer tube 2 and the cannula tube 1 as well as through the forward portion of the cylinder and through the tube stub 7. Thus, a portion of the annular muscle 25 is successively drawn into the suction cup and tightens against the suction cup as well as against the cannula tube head preventing air from seeping into the mouth of the suction cup from the cervix, with the cup being firmly attached to the cervix. Simultaneously therewith a vacuum suction is present in front of the cannula piston, and this piston will on the rear surface be exposed to a forward pressure which will overcome the friction and facilitate the

3

moving of the cannula head into the desired position. The vacuum valve can easily be regulated in a known manner and the operator will, with his hand on the handle 4 feel, if he has to retain or assist the forward movement of the cannula tube. Hence, he can easily discern whether it is necessary to moderate the axial pressure against the cervix so as to prevent damage to the cervix. When the desired forward position of the cannula head has been reached, which can be determined by the position of the piston rod, the piston is locked in the manner described above, whereby the cannula head is retained in position during the introduction of a liquid or the like into the cervix. When the injection is completed air is permitted to pass into the suction cup to loosen the same and the instrument is removed. An exchange of the head can be quickly effected, which is of importance since different heads may be used for different persons.

The embodiment illustrated is not intended as a limitation, the scope of the invention being defined in the claims.

I claim:

1. An instrument for injecting fluids into the human uterus and Fallopian tubes, including an outer tube having opposite ends, a suction cup operably connected to one end of the outer tube with the suction cup being adapted to envelope and retain the cervix, a cannula tube of lesser diameter than the outer tube co-axially located within the outer tube and having opposite end portions with one of said end portions being located within the suction cup, a head on said one end portion of the cannula tube adapted to open the cervix, said head being provided with an axial bore for permitting the injection of fluid into the uterus, means providing a passageway between the suction cup and the outer tube to allow air to be exhausted from the interior of the suction cup into the space between the outer tube and the cannula tube for sealing the entry of air through the cup against the cervix, a cylinder having forward and rearward ends

4

and also defining a handle means, means for connecting the forward end of the cylinder to the other end of said outer tube, said cannula tube being of a length to extend substantially the entire length of the cylinder, a piston secured to the cannula tube within the cylinder, a piston rod attached to the other end portion of the cannula tube and slidable axially within said cylinder and projecting beyond the rearward end of the cylinder for moving said cannula tube and head to different injecting positions, said piston rod having an axial bore in communication with the cannula tube for connection to a source of injecting fluid, means communicating with the cylinder between the piston and the forward end for exhausting the air from the cylinder and the space between the outer tube and the cannula tube, and coacting means on the cylinder and piston rod for locking the piston rod, cannula tube and head in the desired injecting position.

2. The instrument as claimed in claim 1 in which said coacting means is defined by an axially extending groove of substantial length in said piston rod, a plurality of peripheral grooves extending laterally from and merging with said axial groove to provide a row of spaced parallel teeth, a stop pin on said cylinder extending radially into the axial groove and adapted upon rotation of the piston rod when the piston rod, cannula tube and head are in the desired injecting position to enter the short groove in registry with the pin to lock the piston rod, cannula tube and head in such position.

References Cited in the file of this patent

UNITED STATES PATENTS

933,578	Perkins	Sept. 7, 1909
1,221,084	Norris	Apr. 3, 1917
2,771,072	De Montauge	Nov. 20, 1956

FOREIGN PATENTS

107,714	Great Britain	July 12, 1917
---------	---------------	---------------