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The present invention relates to an externally applied apparatus for obtaining an artificial erection of the male genital organ.

In the past, various devices have been developed to artificially produce an erection by inducing blood flow into the genital organ. Such devices generally include a hollow tube to accommodate the organ and means to create a partial vacuum within the tube. The resultant differential pressure then causes blood to flow into the organ and produce the erection. Upon removal of the tube, the erection is maintained by an elastic band or other means.

However, these devices in practice have tended to be complicated arrangements which are difficult to use, overly artificial, inordinately large in size, or generally awkward and cumbersome. Moreover, most such devices are not self-contained, and require external sources of vacuum pressure.

It is therefore an object of the present invention to provide an improved erection aid device which overcomes or substantially ameliorates at least some of the deficiencies of the prior art, or at least provides a viable alternative.

Accordingly, the invention provides an apparatus for obtaining an artificial erection of the male genital organ, said apparatus including an elongate generally tubular body partially defining a vacuum chamber adapted

to accommodate said organ in a distended condition said tubular body having an opening at one end to receive the organ and a substantially continuous peripheral rim adjacent said opening to seal the vacuum chamber around the organ, the other end of the body being substantially closed and including manually operable pump means adapted selectively and progressively to evacuate said vacuum chamber such that, in use, the resultant differential pressure causes blood to flow into the organ and induce an artificial erection, said pump means comprising valve means disposed such that a suction phase of the pump draws air from the vacuum chamber and an exhaust phase exhausts said air drawn from the vacuum chamber and resilient bias means cooperating with said valve means such that each suction phase of the pump is effected automatically by a bias force provided by the resilient bias means, and each return phase of the pump is effected manually against said bias force, whereby the maximum extent to which the vacuum chamber is evacuated tends to be limited by the maximum bias force of the resilient bias means.

Preferably, the pump means further comprises a pressure cylinder and a piston reciprocable within the cylinder. The valve means are preferably disposed such that axial displacement of the piston in a first direction corresponding to the suction phase of the pump draws said air from the vacuum chamber into the cylinder,

and displacement of the piston in an opposite direction corresponding to the return phase of the pump exhausts the air from with the cylinder whilst isolating the vacuum chamber.

5 Preferably, the resilient bias means are disposed to urge the piston toward a rest position corresponding to the end of the suction phase.

 The resilient bias means preferably comprise a compression spring disposed within the cylinder to urge
10 the piston toward the rest position.

 In one embodiment of the invention the pump means further includes a manually operable plunger connected with the piston and protruding outwardly from the cylinder whereby manual depression of the plunger effects
15 the exhaust phase of the pump against the bias force of the resilient bias means and subsequent release of the plunger effects the suction phase of the pump under the influence of the bias force of the resilient bias means.

 The valve means preferably comprises a cooperating
20 pair of pressure actuatable one way valves respectively associated with the cylinder and piston.

 The pump is advantageously housed within an end closure element releasably and sealingly engageable with a corresponding end portion of the tubular body so as to
25 define an end wall of the vacuum chamber, such that the pump is effectively integral with the assembled apparatus. The piston and cylinder axes preferably

extend transversely with respect to the longitudinal axis of the body of the apparatus to facilitate single handed manual operation of the pump.

Preferably also, the apparatus includes a
5 selectively operable pressure relief valve to vent the vacuum chamber to atmosphere and thereby release the apparatus after use.

Preferably, the open end of the body incorporates a generally cylindrical neck portion adjacent the rim, the
10 outer surface of which is adapted to receive an extended elastic band. In this configuration, the band can be manually slid from the end of the neck and positioned adjacent the base of the organ at the appropriate time with the apparatus substantially in place, so as to
15 restrict the outflow of blood and maintain the organ in the distended condition once the vacuum chamber is vented to atmosphere and the apparatus released.

In the preferred embodiment, the apparatus further includes an outer collar or transfer ring slidably
20 disposed on the tubular body to facilitate transfer of the elastic band onto the organ.

The tubular body is preferably transparent to permit the condition of the male organ to be viewed during operation of the apparatus, to ensure that correct
25 distension is achieved prior to the application of the elastic band and the subsequent relief of vacuum pressure within the chamber.

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is side elevation showing an apparatus for
5 obtaining an artificial erection according to the invention;

Figure 2 is a left-hand end view of the apparatus of Figure 1 showing the open end of the tubular body;

Figure 3 is a right-hand end view of the apparatus
10 of Figure 1 showing the closed end of the body; and

Figure 4 is an enlarged cut-away sectional view showing the pump and valve assembly.

Figure 5 is an enlarged cut-away sectional view showing the pressure relief valve.

15 Referring to the drawings, wherein corresponding features are denoted by corresponding reference numerals, the invention provides an apparatus 1 for obtaining an artificial erection of the male genital organ, (not shown). The apparatus includes an elongate tubular body
20 2 partially defining a vacuum chamber 3 adapted to accommodate the male organ in an erect or distended condition. The body includes an opening 4 at one end to receive the organ and a continuous annular peripheral rim 5 surrounding the opening to substantially seal the
25 vacuum chamber 3 around the organ, against the body of the user. The open end of the body further incorporates a generally cylindrical neck portion 7 adjacent the rim,

the outer surface of which is adapted to slidably receive an extended elastic band (not shown). A transfer ring 8 is slidably disposed on the tubular body to facilitate transfer of the elastic band from the neck portion of the body onto the distended organ, as described in more detail below. A reduction insert 9 allows the effective inner diameter of the vacuum chamber to be reduced if necessary.

The other end of the body is substantially closed and incorporates a manually operable pump mechanism 10 adapted selectively and progressively to evacuate the vacuum chamber 3. The pump 10 comprises a pressure cylinder 15, a piston 16 manually reciprocable within the cylinder, and a cooperating pair of pressure actuable one-way flap valves 17 and 18 respectively associated with the cylinder 15 and the piston 16. The piston includes a manually operable plunger 20 protruding outwardly from the cylinder, and resilient bias means in the form of a compression spring 22 disposed within the cylinder. The spring is disposed resiliently to urge the piston toward a rest position corresponding to the end of a suction stroke. In this position, the plunger protrudes to a maximum extent from the cylinder.

The pressure actuable one-way flap valves 17 and 18 are disposed such that outward axial displacement of the piston 16 by the compression spring 22 in a direction corresponding to the suction stroke of the pump draws a

corresponding volume of air into the pressure cylinder 15 from the vacuum chamber 3 through passage 23. It should be appreciated that for ease of illustration, passage 23 is shown rotated through 90° in figure 4. At the same time, air behind the piston from the previous stroke is exhausted through ports 23A. Displacement of the piston in the opposite direction in a return stroke by manual depression of the plunger 20 against the bias force of the spring allows the air within the pressure cylinder to pass the piston through vents 24 whilst the vacuum chamber is isolated by valve 17. The pumping cycle is thus repeated until the chamber has been evacuated to the required vacuum pressure. Accordingly, each suction stroke is effected automatically by the spring, and each return stroke is alternately effected manually by depression of the plunger, against the bias force of the spring. In this way, it will be appreciated that the maximum extent to which the vacuum chamber is evacuated by the pump is normally limited by the maximum compressive bias force of the spring. This provides an inherent safety feature, limiting the maximum vacuum pressure which can be applied.

Preferably the spring is adapted such that the vacuum pressure produced in the chamber is between 20cm and 50cm of mercury.

Ideally, the maximum vacuum pressure required to achieve satisfactory results is around 40 cm mercury

vacuum, and the spring is designed to produce this without injury by automatically limiting the piston stroke as the optimum pressure is approached. However, if necessary, the vacuum pressure may be further
5 increased by manually withdrawing the piston to produce a full suction stroke.

Pressure is released by manually operable relief valve assembly 25, which is best seen in figure 5. It will be apparent that anticlockwise rotation of the valve
10 member 26 withdraws needle 27 from sealing engagement with complementary valve seat 28 to vent the vacuum chamber to atmosphere.

As best seen in figures 4 and 5, the pump mechanism and relief valve assembly are housed within an end
15 closure element 30 which is threadedly engageable with a complementary threaded portion formed on the corresponding end of the tubular body. An intermediate O-ring 31 ensures that a proper seal is maintained. The closure element thus defines a removable substantially
20 closed end wall of the vacuum chamber, such that the pump is effectively integral with the assembled apparatus. The co-linear piston and cylinder axes extend transversely with respect to the longitudinal axis of the tubular body, to minimise the size of the apparatus and
25 facilitate manual operation of the pump.

Turning now to describe the operation of the device, the hand pump is first attached to the threaded

end section of the tubular body, ensuring that the rubber O-ring is properly seated. The pressure relief valve is closed by tightening into the body of the pump. Next, the transfer ring 8 is positioned onto the body, with the larger diameter end facing the pump. If necessary, a reduction insert 9 is fitted into the open end of the cylindrical body to reduce the effective diameter of the vacuum chamber. An elastic ring or band is fitted around the neck of the body, adjacent the open end of the apparatus. A suitable lubricant is then applied to the inside of the vacuum chamber particularly around the sealing rim, as well as to the elastic band. Once this initial set up procedure is completed, the genital organ is inserted into the open end of the tube and the apparatus pressed lightly against the body of the user such that the peripheral rim 5 seals the open end of the vacuum chamber around the organ. With the apparatus thus in position, the plunger of the pump is alternately depressed and released. During each suction stroke, as the plunger is pushed outwardly automatically by the spring, the one-way cylinder valve 17 opens whilst the cooperating piston valve closes such that air is progressively drawn into the cylinder from within the vacuum chamber through passage 23. Each return stroke is effected manually by depression of the plunger as previously described, whereby cylinder valve 17 is closed to isolate the vacuum chamber, and cooperating piston

valve 18 is opened to exhaust the air from within the pressure cylinder past the piston to atmosphere through vents 24. This pumping cycle is repeated a number of times until the resultant vacuum pressure within the chamber causes blood to flow into the erectile tissue of the organ so as to induce an erection.

At the appropriate time, the elastic band (not shown) extended around cylindrical neck 7 is slid along the neck of the tube using the transfer ring 8, over the rim and positioned adjacent the base of the organ with the apparatus substantially in place. This restricts the outflow of blood and so maintains the organ in the distended condition. The vacuum chamber is then vented to atmosphere if necessary by manual operation of pressure relief valve 25 to release the apparatus.

In the preferred embodiment, the tubular body is fabricated from a substantially transparent plastics material to permit the condition of the organ to be viewed during the operation of the apparatus. This ensures that correct distension is achieved prior to the application of the elastic band.

Although the invention has been described with reference to a specific example, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.



CLAIMS-

1. An apparatus for obtaining an artificial erection of the male genital organ, said apparatus including an elongate generally tubular body partially defining a vacuum chamber adapted to accommodate said organ in a distended condition said tubular body having an opening at one end to receive the organ and a substantially continuous peripheral rim adjacent said opening to seal the vacuum chamber around the organ, the other end of the body being substantially closed and including manually operable pump means adapted selectively and progressively to evacuate said vacuum chamber such that, in use, the resultant differential pressure causes blood to flow into the organ and induce an artificial erection, said pump means comprising valve means disposed such that a suction phase of the pump draws air from the vacuum chamber and an exhaust phase exhausts said air drawn from the vacuum chamber and resilient bias means cooperating with said valve means such that each suction phase of the pump is effected automatically by a bias force provided by the resilient bias means, and each return phase of the pump is effected manually against said bias force, whereby the maximum extent to which the vacuum chamber is evacuated tends to be limited by the maximum bias force of the resilient bias means.
2. An apparatus according to claim 1 wherein said pump means further comprises a pressure cylinder and a piston



reciprocable within the cylinder, said valve means being disposed such that axial displacement of the piston in a first direction corresponding to the suction phase of the pump draws said air from the vacuum chamber into the cylinder, and displacement of the piston in an opposite direction corresponding to the return phase of the pump exhausts the air from with the cylinder whilst isolating the vacuum chamber.

3. An apparatus according to claim 2 wherein said resilient bias means are disposed to urge the piston toward a rest position corresponding to the end of the suction phase.

4. An apparatus according to claim 3 wherein said resilient bias means comprises a compression spring disposed within the cylinder to urge the piston toward said rest position.

5. An apparatus according to any one of claims 2 to 4 wherein said pump means further includes a manually operable plunger connected with the piston and protruding outwardly from the cylinder such that manual depression of the plunger effects the exhaust phase of the pump against the bias force of the resilient bias means and such that subsequent release of the plunger effects the suction phase of the pump under the influence of the bias force of the resilient bias means.

6. An apparatus according to any one of claims 2 to 5 wherein said valve means comprises a cooperating pair of



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pressure actuatable one way valves respectively associated with the cylinder and piston.

7. An apparatus according to any of claims 2 to 6 wherein the bias means is adapted to produce a maximum vacuum pressure within the vacuum chamber corresponding to between 20 cm and around 50 cm of mercury.

8. An apparatus according to claim 7 wherein the resilient bias means is designed to produce a maximum vacuum pressure within the vacuum chamber corresponding to around 40 cm of mercury.

9. An apparatus according to any one of claims 1 to 8 wherein the pump means is housed within an end closure element releasably and sealingly engageable with a corresponding end portion of the tubular body so as to define an end wall of the vacuum chamber such that the pump is effectively integral with the assembled apparatus.

10. An apparatus according to claim 9 when dependent upon any one of claims 2 to 8 the piston and cylinder axes extend transversely with respect to a longitudinal axis of the body to facilitate single handed operation of the pump.

11. An apparatus according to any one of the preceding claims, further including a selectively operable pressure relief valve to vent the vacuum chamber to atmosphere.

12. An apparatus according to any one of the preceding claims wherein the open end of the body incorporates a generally cylindrical neck portion adjacent the rim, the



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outer surface of which is adapted to receive and locate an extended elastic band, the band being adapted, in use, to be slid from the end of the neck, over the rim, and positioned adjacent the base of the organ with the apparatus substantially in place so as to restrict the outflow of blood and maintain the organ in the distended condition once the apparatus is released.

13. An apparatus according to claim 12 wherein the tubular body has a substantially cylindrical outer surface adapted slidably to receive a transfer ring to facilitate transfer of the elastic band onto the organ.

14. An apparatus according to any one of the preceding claims, further including a reduction element adapted for insertion into the tubular body so as to reduce the effective internal diameter thereof adjacent the rim.

15. An apparatus according to any one of the preceding claims wherein the tubular body is substantially transparent to permit the condition of the organ to be viewed during operation of the apparatus.

16. An apparatus according to claim 15, being composed substantially of a plastics material.

17. An apparatus for obtaining an artificial erection of the male genital organ, said apparatus being substantially as hereinbefore described with reference to the accompanying drawings.