Description

APPARATUS FOR OPERATING SYRINGE PISTON

Technical Field

[1] The present invention relates to an apparatus for operating a syringe piston. More particularly, the present invention relates to an apparatus for operating a syringe piston, in which a syringe filled with medical cement is attached to a syringe mounting section and the syringe piston is moved downward without moving upward when a user rotates a piston press unit having a screw bar, so medical cement contained in the syringe can be extruded from the syringe with a constant pressure, so that a predetermined amount of medical cement can be precisely injected into a human body. The apparatus for operating the syringe piston according to the present invention can significantly improve quality and reliability of products, thereby providing consumers with high satisfaction and a good impression.

Background Art

[2] As generally known in the art, a syringe is a device for injecting a liquid medicine into a tissue of a living body. The syringe mainly includes a needle inserted into the tissue of the living body, a glass cylinder containing the liquid medicine, and a piston for applying a pressure to the liquid medicine. Recently, disposable plastic syringes have been extensively used in order to avoid diseases derived from the serum infection.

[3] Meanwhile, a medical treatment employing medical cement has been proposed so as to cure lesions, such as the fracture, amputation and necrosis of a bone. According to the above medical treatment employing the medical cement, an affected part is incised such that an operator can see an injured bone with the naked eye, and then the medical cement is injected into the lesion part. Otherwise, the operator checks the lesion part by observing the bone using an imaging device, and then injects the medical cement into the tissue of the patient using the syringe.

[4] However, the conventional syringe is rarely used due to the following reason.

[5] Specifically, when the medical cement is injected into the tissue of the patient, a relatively great pressure must be applied to the piston due to the physical property of the medical cement. However, it is very difficult to apply a constant pressure to the piston using hands, so that it is also very difficult to inject a precise amount of medical cement into the tissue of the patient.

Disclosure of Invention

Technical Problem

[6] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and embodiments of the present invention

provide an apparatus for operating a syringe piston, which includes a syringe mounting section for securely mounting a syringe and a piston press unit for pressing the syringe piston with a constant pressure.

[7] Embodiments of the present invention provide an apparatus for operating a syringe piston, in which a syringe filled with medical cement is attached to a syringe mounting section and the syringe piston is moved downward without moving upward when a user rotates a piston press unit having a screw bar, so medical cement contained in the syringe can be extruded from the syringe with a constant pressure, so that a predetermined amount of medical cement can be precisely injected into a human body.

[8] Embodiments of the present invention provide an apparatus for operating a syringe piston, which can significantly improve the medical technique.

[9] Embodiments of the present invention provide an apparatus for operating a syringe piston, which can significantly improve quality and reliability of products, thereby providing consumers with high satisfaction and a good impression.

Technical Solution

[10] According to an aspect of the present invention, there is provided an apparatus for operating a syringe piston, the apparatus comprising: a syringe mounting section for fixedly mounting a syringe, in which a screw hole is formed at an upper head part of the syringe mounting section; and a piston press unit having a screw bar, which is screw-coupled into the screw hole so that the syringe piston press unit is movable up and down along the screw hole, wherein the piston press unit presses a syringe piston with a constant pressure such that a predetermined amount of contents is precisely injected into a human body from the syringe; wherein the syringe mounting section is formed with a semicircular groove for detachably mounting the syringe while allowing a user to see an internal structure of the syringe mounting section from an exterior.

Brief Description of the Drawings

[11] The above and other objects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[12] FIG. 1 is a perspective view illustrating an apparatus for operating a syringe piston according to the present invention;

[13] FIG. 2 is a front view illustrating an apparatus for operating a syringe piston according to the present invention;

[14] FIG. 3 is a side view illustrating an apparatus for operating a syringe piston according to the present invention;

[15] FIG. 4 is a view illustrating an apparatus for operating a syringe piston according to the present invention, in which a piston press unit is not yet moved downward;

[16] FIG. 5 is a view illustrating an apparatus for operating a syringe piston according to

the present invention, in which a piston press unit is moved downward while pushing a syringe piston in the downward direction; and

[17] FIG. 6 is a perspective view illustrating an operational state of an apparatus for operating a syringe piston according to the present invention.

Best Mode for Carrying Out the Invention

[18] Hereinafter, an apparatus for operating a syringe piston according to a preferred embodiment of the present invention will be described with reference to FIGS. 1 to 6.

[19] In the following description of the present invention, a detailed description of known functions and configurations incorporated herein will be omitted when it may make the subject matter of the present invention rather unclear.

[20] In addition, terms used in the following description of the present invention are prepared in view of functions thereof, so they will be changed depending on intention of manufactures or custom. Thus, definition of the terms must be determined based on the whole content of the specification.

[21] The present invention provides an apparatus for operating a syringe piston, which mainly includes a syringe mounting section 10 for securely mounting a syringe 30 and a piston press unit 20 for pressing a syringe piston 31 with a constant pressure. The syringe 30 filled with medical cement is attached to the syringe mounting section 10 and the syringe piston 31 is moved downward without moving upward when a user rotates the piston press unit 20 having a screw bar, so medical cement contained in the syringe 30 can be extruded from the syringe 30 with a constant pressure, so that a pre-determined amount of medical cement can be precisely injected into a human body. Hereinafter, the structure of the present invention will be described in more detail.

[22] The syringe mounting section 10 is formed with a semicircular groove 13 for detachably mounting the syringe 30 while allowing a user to see the internal structure of the syringe mounting section 10 from an exterior. A diameter "A" of an intermediate portion of the semicircular groove 13 is larger than a diameter "a" of a lower tip portion of the semicircular groove 13, so the syringe 30 is press-fitted into the semicircular groove 13 while generating a "click" sound, so that the syringe 30 can be prevented from being easily separated from the semicircular groove 13.

[23] In addition, the syringe mounting section 10 is formed with a locking slot 14, into which an upper end portion of the syringe is fixedly inserted.

[24] A handle 21 is provided at an upper end portion of the piston press unit 20. The handle 21 is provided at an outer peripheral surface thereof with a knurling section 22 so as to allow a user to easily rotate the handle 21.

[25] In addition, a polygonal mark section 23 is provided at a lower end portion of the handle 21. Figures, characters or symbols are formed in the polygonal mark section 23

so as to allow the user to rotate the piston press unit 20 corresponding to an amount of medical cement to be discharged from the syringe 30.

[26] In particular, according to the present invention, the pitch of a screw bar 24 and a screw hole 12 is established such that 100ml of contents can be discharged from the syringe 30 as the user rotates the piston press unit 20 one time.

[27] Meanwhile, the structure of the present invention can be variously modified and changed.

[28] In addition, the present invention is not limited to the above embodiment, and those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

[29] Hereinafter, the operation and effect of the present invention having the above structure will be described.

[30] First, the user fills the syringe 30 with contents. At this time, the contents refer to a medicine liquid, which is injected into a tissue of a living body. According to the present invention, the contents preferably include medical cement used for curing lesions, such as the fracture, amputation and necrosis of a bone.

[31] As shown in FIG. 4 and 5, the syringe 30 filled with the medical cement is attached to the syringe mounting section 10 in use. Since the syringe mounting section 10 is formed with the semicircular groove 13, about half of the syringe 30 is accommodated in the syringe mounting section 10. In addition, as shown in FIG. 2, since the diameter "A" of the intermediate portion of the semicircular groove 13 is larger than the diameter "a" of the lower tip portion of the semicircular groove 13, the syringe 30 is press-fitted into the semicircular groove 13 while generating a "click" sound, so that the syringe 30 can be prevented from being easily separated from the semicircular groove 13.

[32] When the syringe 30 is press-fitted into the semicircular groove 13, an upper protrusion of the syringe 30 is fixedly fitted in the locking slot 14. Thus, the syringe 30 can be prevented from slidably moving out of the semicircular groove 13 when the syringe piston 31 is pressed with a constant pressure.

[33] After the syringe 30 filled with the medical cement has been press-fitted into the syringe mounting section 10, the piston press unit 20 is coupled with the syringe mounting section 10.

[34] That is, the screw bar 24 is screw-coupled into the screw hole 12 formed at the center portion of an upper head part 11 of the syringe mounting section 10. At this time, as mentioned above, the pitch of the screw bar 24 is predetermined such that 100ml of contents can be discharged from the syringe 30 as the user rotates the piston press unit 20 one time.

[35] In detail, if the user rotates the piston press unit 20, a lower tip portion of the piston press unit 20 makes contact with an upper end portion of the syringe piston 31 as shown in FIGS. 4 and 6. In this state, if the user further rotates the piston press unit 20, the piston press unit 20 moves down together with the syringe piston 31 so that the content (medical cement) filled in the syringe 30 is extruded from the syringe 30. Thus, the medical cement can be injected into a tissue of a patient.

[36] According to the present invention, the syringe 30 filled with medical cement is attached to the syringe mounting section 10 and the syringe piston 31 is moved downward without moving upward when the user rotates the piston press unit 20 having the screw bar, so medical cement contained in the syringe 30 can be extruded from the syringe 30 with a constant pressure, so that a predetermined amount of medical cement can be precisely injected into a human body. Thus, the present invention can significantly improve the medical technique.

[37] Meanwhile, since the handle 21 is provided at the outer peripheral surface thereof with the knurling section 22, the user can easily rotate the handle 21 without being slid from the handle 21.

[38] In addition, since the polygonal mark section 23 is provided at the lower end portion of the handle 21, the user can properly rotate the piston press unit 20 corresponding to the amount of medical cement to be discharged. That is, the user can adjust the rotation degree of the piston press unit 20 based figures marked on the polygonal mark section 23. For instance, if it is necessary to inject 50ml of contents into the tissue of the patient, the user simply rotates the piston press unit 20 by an angle of 180(that is, the user rotates the piston press unit 20 until a figure "3" is marked at a front of the polygonal mark section 23).

[39] The apparatus for operating the syringe piston according to the present invention can be mainly used for medical purposes. Of course, the apparatus of the present invention can be used at home and in industrial fields.

Industrial Applicability

[40] As described above, the present invention provides the apparatus for operating the syringe piston, which includes the syringe mounting section for securely mounting the syringe and the piston press unit for pressing the syringe piston with a constant pressure. In particular, the syringe filled with medical cement is attached to the syringe mounting section and the syringe piston is moved downward without moving upward when the user rotates the piston press unit having the screw bar, so medical cement contained in the syringe can be extruded from the syringe with a constant pressure, so that a predetermined amount of medical cement can be precisely injected into a human body. As a result, the apparatus for operating the syringe piston according to the

present invention can significantly improve quality and reliability of products, thereby providing consumers with high satisfaction and a good impression.

Claims

[1] An apparatus for operating a syringe piston, the apparatus comprising:
a syringe mounting section for fixedly mounting a syringe, in which a screw hole is formed at an upper head part of the syringe mounting section; and
a piston press unit having a screw bar, which is screw-coupled into the screw hole so that the syringe piston press unit is movable up and down along the screw hole, wherein the piston press unit presses a syringe piston with a constant pressure such that a predetermined amount of contents is precisely injected into a human body from the syringe; wherein the syringe mounting section is formed with a semicircular groove for detachably mounting the syringe while allowing a user to see an internal structure of the syringe mounting section from an exterior.

[2] The apparatus as claimed in claim1, wherein a diameter of an intermediate portion of the semicircular groove is larger than a diameter of a lower tip portion of the semicircular groove, so the syringe is press-fitted into the semicircular groove while generating a "click" sound, so that the syringe is prevented from being easily separated from the semicircular groove.

[3] The apparatus as claimed in claim 1, wherein the syringe mounting section is further formed with a lock slot, into which an upper end portion of the syringe is fixedly inserted.

[4] The apparatus as claimed in claim 1 wherein the piston press unit is provided at an upper end portion thereof with a handle and a knurling section is formed at an outer peripheral surface of the handle so as to allow a user to easily rotate the handle without being slid from the handle.

[5] The apparatus as claimed in claim 4 wherein a polygonal mark section is provided at a lower end portion of the handle, and figures are formed in the polygonal mark section so as to allow the user to rotate the piston press unit corresponding to an amount of contents to be discharged from the syringe.