A drainer with quick drainage and improved structure has a drain body and a draining unit disposed in the drain body for stopping and draining water; the draining unit includes a base, a movable element, a rotatable element, a spring for ejection, an engaging ring element, an upper cover, and a rubber piece. The base has an inner tube in the middle, a periphery ring body, and a plurality of connecting ribs. The inner tube has a top end being higher than a top of the periphery ring body and an engaging space formed on the inner periphery thereof for the base to be disposed inside the drain body. The spring for ejection, the rotatable element, and the movable element are sequentially disposed in the inner tube and then the engaging ring element is mounted on the top end of the inner tube to form a movable unit for pressing with the upper cover mounted on the movable element and the rubber piece mounted on the periphery of the upper cover.
FIG. 1B
PRIOR ART
DRAINER WITH QUICK DRAINAGE AND IMPROVED STRUCTURE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention
[0002] The present invention relates to a drainer with quick drainage and improved structure, particularly to one that has a one-piece structure to withstand the strong compression impact when switching between a water draining status and a water stopping status.
[0003] 2. Description of the Related Art
[0004] FIGS. 1A-1C illustrated a bouncing rod type water draining device disclosed in Taiwanese Patent No. M277764. It includes a drain body 30 that has a draining unit 40 disposed therein for water draining and water stopping. The draining unit 40 includes an inner tube 41, a movable element 42, a rotatable element 43, a spring 44 for ejection, an engaging element 45, an upper cover 46, a rubber piece 47, and a spring 48 for compression. The inner tube 41 is screwed to be fixed in the drain body 30 and the movable element 42, the rotatable element 43, and the spring 44 for ejection are sequentially disposed in the inner tube 41 and fixed by the engaging element 45 at the bottom thereof, so as to compose a conventional bouncing type water draining device. The upper cover 46 is screwed on the movable element 42 and the rubber piece 47 is mounted on the upper cover 46; the rubber piece 47 further has a flange 471 on the periphery thereof. The spring 48 for compression is mounted around the movable element 42 and then is fixed by an engaging ring element 411 at the top of the inner tube 41 and a block 421 at the bottom of the movable element 42.
[0005] When the conventional bouncing rod type water draining device switches from a water draining status to a water draining status, the upper cover 46 would compress the spring 44 for ejection and the engaging element 45 has to withstand the rapidly increasing impact force from the spring 44. When applied to basins, the impact is less and bearable, but when applied to bathtubs, the impact made by footsteps may be too strong for the structure due to its assembled engagement design.
[0006] Besides, the stretching height h1 of the upper cover 46 is limited in such design; in other words, the time spent for water drainage is relatively long. Also, such design does not have a distance long enough therein for the bouncing operation to be completely performed, leaving a problem of unsound switching between the water draining status and water stopping status.

SUMMARY OF THE INVENTION

[0007] A primary object of the present invention is to provide a drainer with an improved structure to overcome the problem with a weak structure in the prior art.
[0008] Another object of the present invention is to provide a drainer that is able to perform quick drainage and to switch between draining and stopping status.
[0009] Yet another object of the present invention is to provide a drainer that is able to perform smooth drainage.
[0010] To achieve the object mentioned above, the present invention comprises a drain body and a draining unit disposed in the drain body for stopping and draining water; the draining unit including a base, a movable element, a rotatable element, a spring for ejection, an engaging ring element, an upper cover, and a rubber piece; wherein the base has an inner tube in the middle, a periphery ring body, and a plurality of connecting ribs; the inner tube having a top end being higher than a top of the periphery ring body and having an engaging space formed on the inner periphery thereof for the base being disposed inside the drain body; the spring for ejection, the rotatable element, and the movable element being sequentially disposed in the inner tube; then the engaging ring element being mounted on the top end of the inner tube, forming a movable unit for pressing with the upper cover mounted on the movable element and the rubber piece mounted on the periphery of the upper cover.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1A is an exploded view of a conventional drainer;
[0014] FIG. 1B is a sectional view of a conventional drainer in draining status;
[0015] FIG. 1C is a sectional view of a conventional drainer in stopping status;
[0016] FIG. 2 is an exploded view of the present invention;
[0017] FIG. 2A is a top plan view of a base of the present invention;
[0018] FIG. 3 is another exploded view of the present invention;
[0019] FIG. 4 is a sectional view of the present invention in draining status; and
[0020] FIG. 5 is a sectional view of the present invention in stopping status.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] Referring to FIGS. 2-5, the present invention mainly comprises a drain body 10 and a draining unit 20 disposed inside the drain body 10 for stopping and draining water. The draining unit 20 includes a base 21, a movable element 22, a rotatable element 23, a spring 24 for ejection, an engaging ring element 25, an upper cover 26, and a rubber piece 27.

[0022] The base 21 has an inner tube 211 in the middle, a periphery ring body 212, and a plurality of connecting ribs 213. The inner tube 211 has a top end arranged higher than a top of the periphery ring body 212. The connecting ribs 213 are spirally arranged and each of which further has a
guiding concave arranged thereon. The inner tube 211 further has an engaging space 214 formed on the inner periphery thereof. The drain body 10 has inner screw threads 101 arranged therein and the periphery ring body 212 has outer screw threads 215 arranged on the periphery thereof for engaging the base 21 and the drain body 10, therefore disposing the base 21 inside the drain body 10. Then the spring 24 for ejection, the rotatable element 23, and the movable element 22 are sequentially disposed in the inner tube 211 and the engaging ring element 25 is mounted on the top end of the inner tube 211, forming a movable unit for pressing 20u. The movable element 22 has a protrusion end 221 on the top thereof that has a threaded periphery 222. At the bottom periphery of the upper cover 26 a hole 261 is arranged thereon, and the hole 261 has screw threads 262 arranged therein for engaging the threaded periphery 222, therefore fixedly mounting the upper cover 26 on the movable element 22. The rubber piece 27 is mounted on the periphery of the upper cover 26 and further has a flange 271 formed around the periphery thereof.

[0023] With structures disclosed above, when the present invention switches a water draining status as shown in FIG. 4 to a water stopping status as shown in FIG. 5, the spring 24 for ejection would increase the tension on the bottom of the inner tube 211; since the inner tube 211 has the bottom thereof designed to be formed in one-piece, it has a structure strong enough for the increasing tension. Also, even if the present invention is applied to bathtubs and is compressed by footsteps, the structure is still strong enough for the stepping impact.

[0024] Moreover, the inner tube 211 has the top end thereof arranged higher than the top of the periphery ring body 212, resulting in the upper cover 26 in water draining status being ejected higher as the movable element 22 reaching a higher point, lengthening the height h2 of the upper cover 26 and increasing the speed of water drainage. Also, the inner tube 211 has a longer distance therein for the movable unit for pressing 20u to have longer distance for operation. Consequently, the present invention has a feature of smooth switching between a water draining status and a water stopping status. On the other hand, the connecting ribs 213 are spirally arranged and have guiding concaves thereon, which is able to assist in water drainage during the operation, making it another feature of the present invention.

[0025] Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.

What is claimed is:

1. A drainer with quick drainage and improved structure, comprising a drain body and a draining unit disposed in the drain body for stopping and draining water; the draining unit including a base, a movable element, a rotatable element, a spring for ejection, an engaging ring element, an upper cover, and a rubber piece;

wherein the base has an inner tube in the middle, a periphery ring body, and a plurality of connecting ribs; the inner tube having a top end being higher than a top of the periphery ring body and having an engaging space formed on the inner periphery thereof for the base being disposed inside the drain body; the spring for ejection, the rotatable element, and the movable element being sequentially disposed in the inner tube; then the engaging ring element being mounted on the top end of the inner tube, forming a movable unit for pressing with the upper cover mounted on the movable element and the rubber piece mounted on the periphery of the upper cover.

2. The drainer with quick drainage and improved structure as claimed in claim 1, wherein the connecting ribs are spirally arranged.

3. The drainer with quick drainage and improved structure as claimed in claim 2, wherein each connecting rib further has a guiding concave arranged thereon.

4. The drainer with quick drainage and improved structure as claimed in claim 1, wherein the drain body has inner screw threads arranged therein and the periphery ring body has outer screw threads arranged on the periphery thereof for engaging the base and the drain body, therefore disposing the base inside the drain body.

5. The drainer with quick drainage and improved structure as claimed in claim 1, wherein the movable element has a protrusion end on the top thereof that has a threaded periphery for engaging inside screw threads arranged at the bottom periphery of the upper cover, therefore fixedly mounting the upper cover on the movable element.

6. The drainer with quick drainage and improved structure as claimed in claim 1, wherein the rubber piece has a flange formed around the periphery thereof.

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