



US 20080134423A1

(19) **United States**
(12) **Patent Application Publication**
Ding

(10) **Pub. No.: US 2008/0134423 A1**
(43) **Pub. Date: Jun. 12, 2008**

(54) **BIDET WITH DUAL SOURCE WATER SUPPLY**

Publication Classification

(76) Inventor: **Yi Ding, Commack, NY (US)**

(51) **Int. Cl.**
E03D 9/08 (2006.01)
(52) **U.S. Cl.** **4/420.2**

Correspondence Address:
Law Office of Yang & Lan
Suite #504, 39-01 Main Street
Flushing, NY 11354

(57) **ABSTRACT**

Disclosed is a bidet apparatus. The apparatus includes a second water supply source in addition to a source utilizing existing hot and cold supply lines. Dependent on the situation, these two sources can independently or cooperatively supply the water to a spray head mounted on the underside of a toilet seat.

(21) Appl. No.: **11/548,335**

(22) Filed: **Oct. 11, 2006**

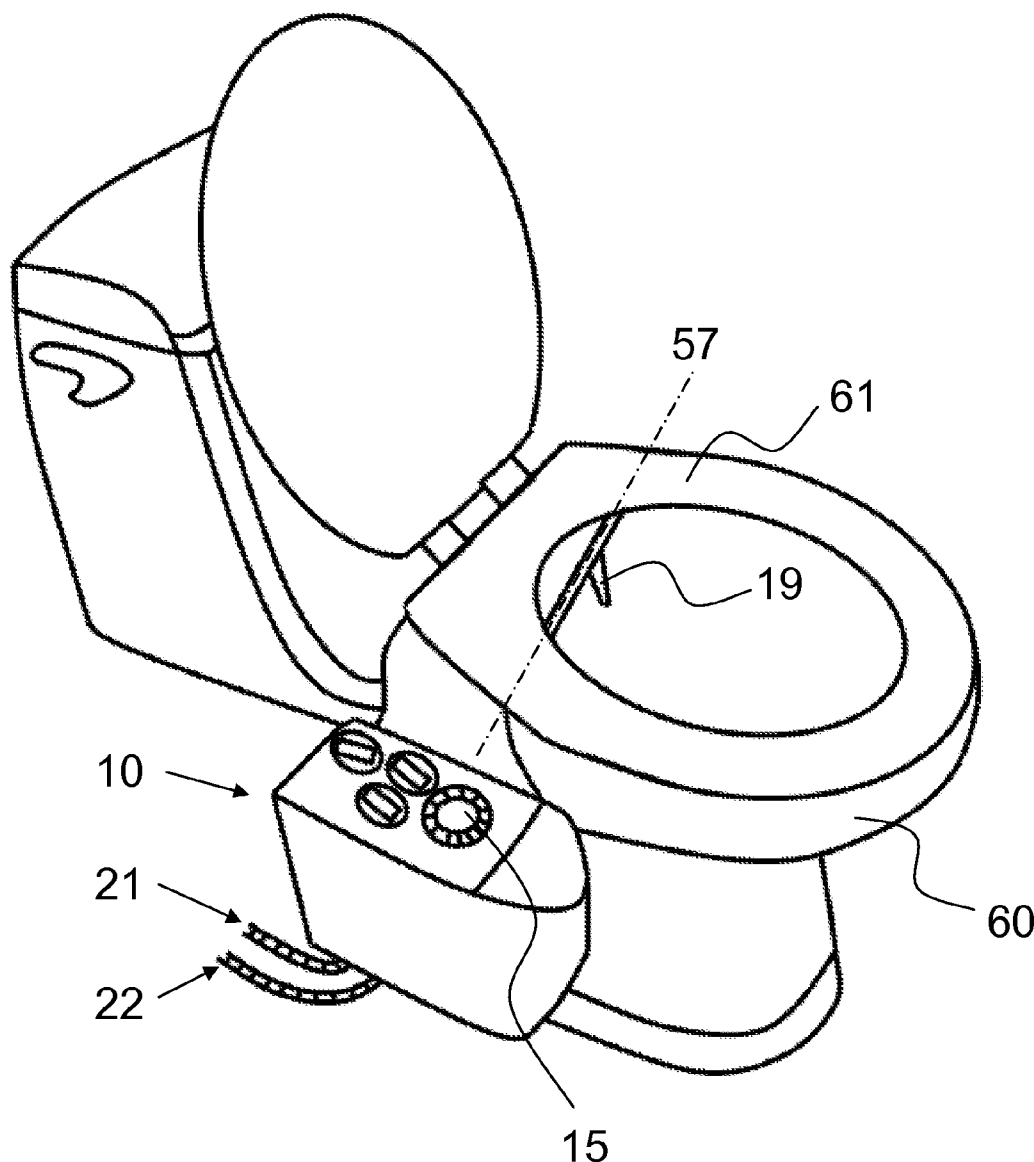


FIG.1

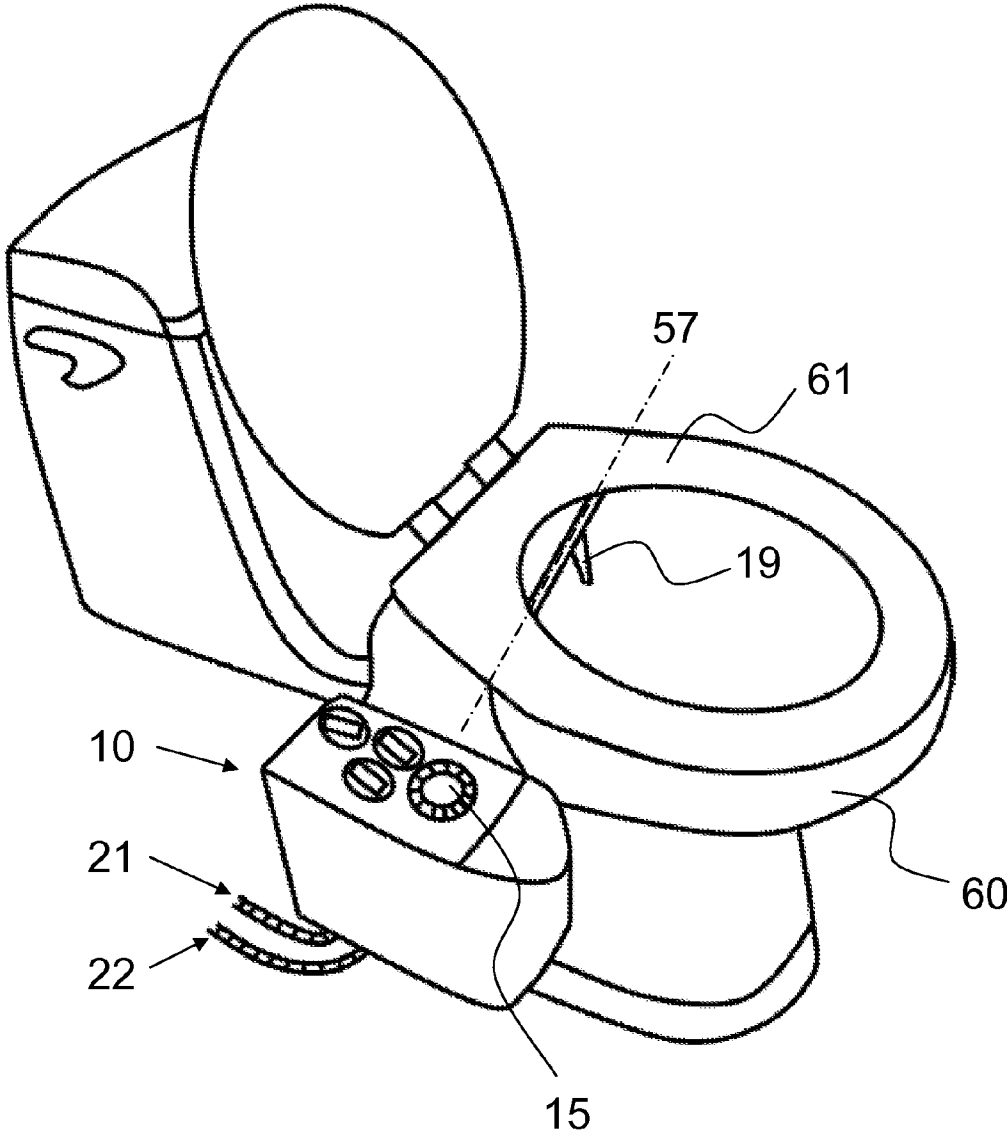


FIG.2A

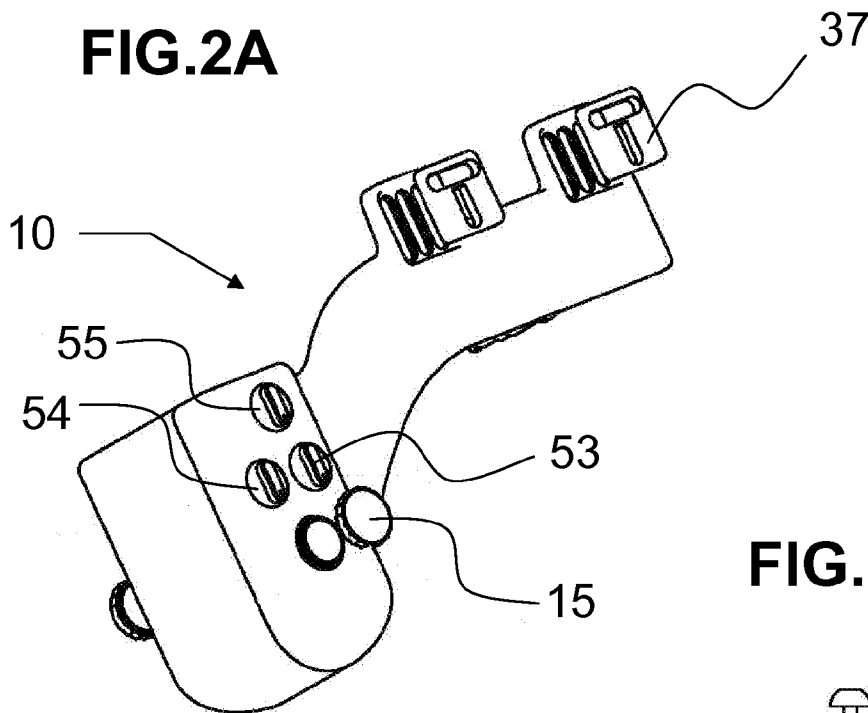


FIG.2C

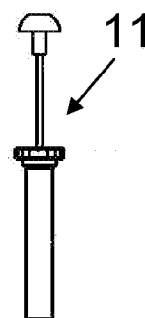


FIG.2B

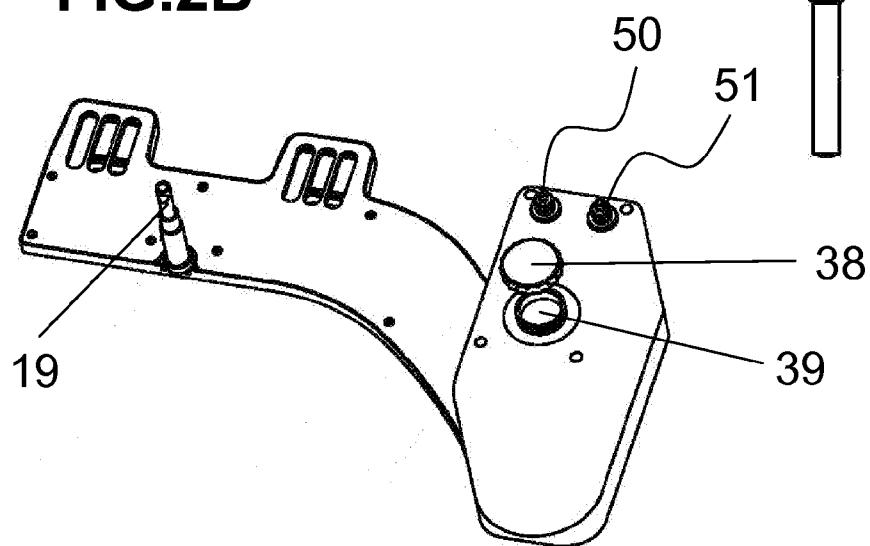


FIG.3

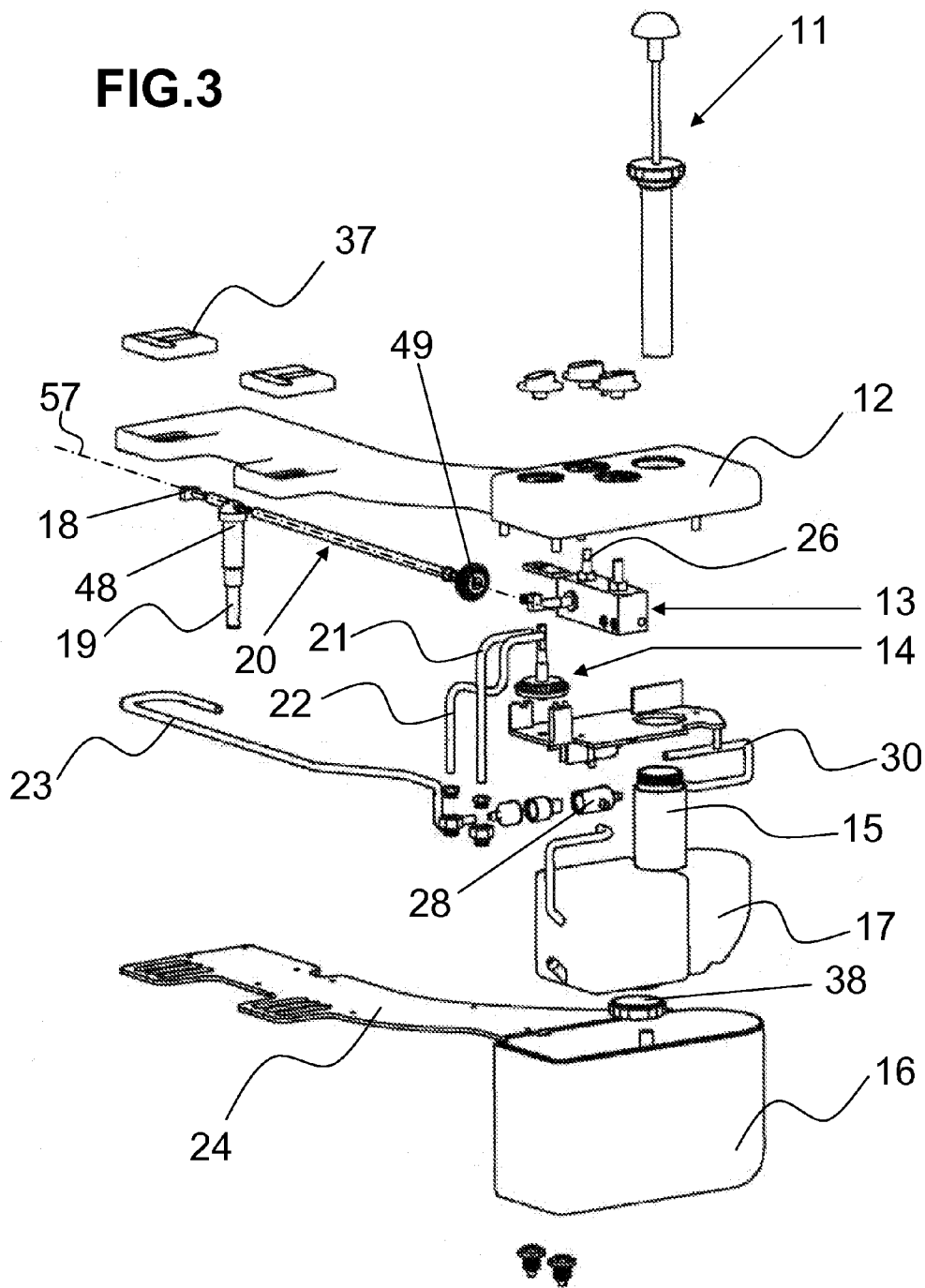


FIG.4

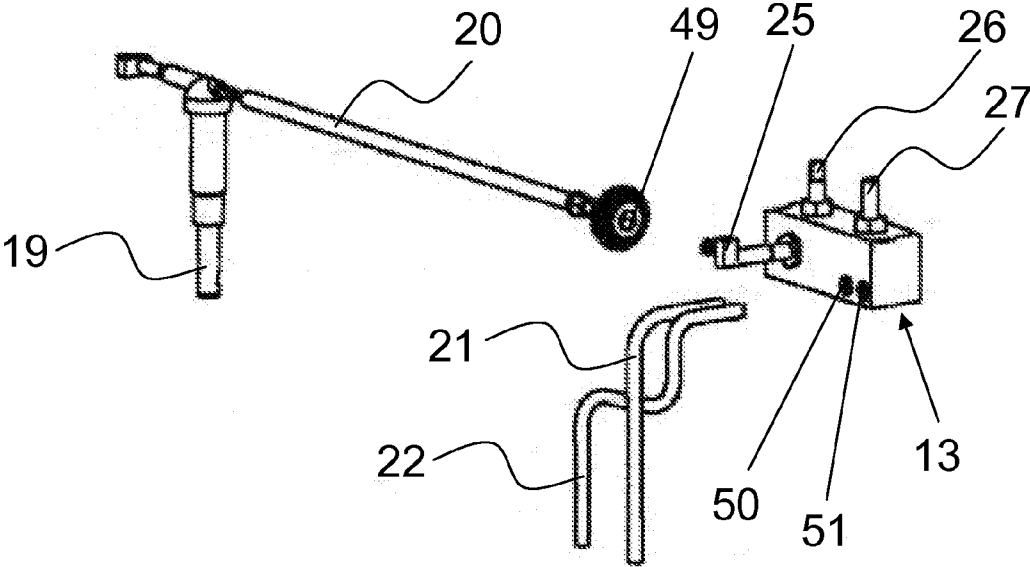


FIG.5

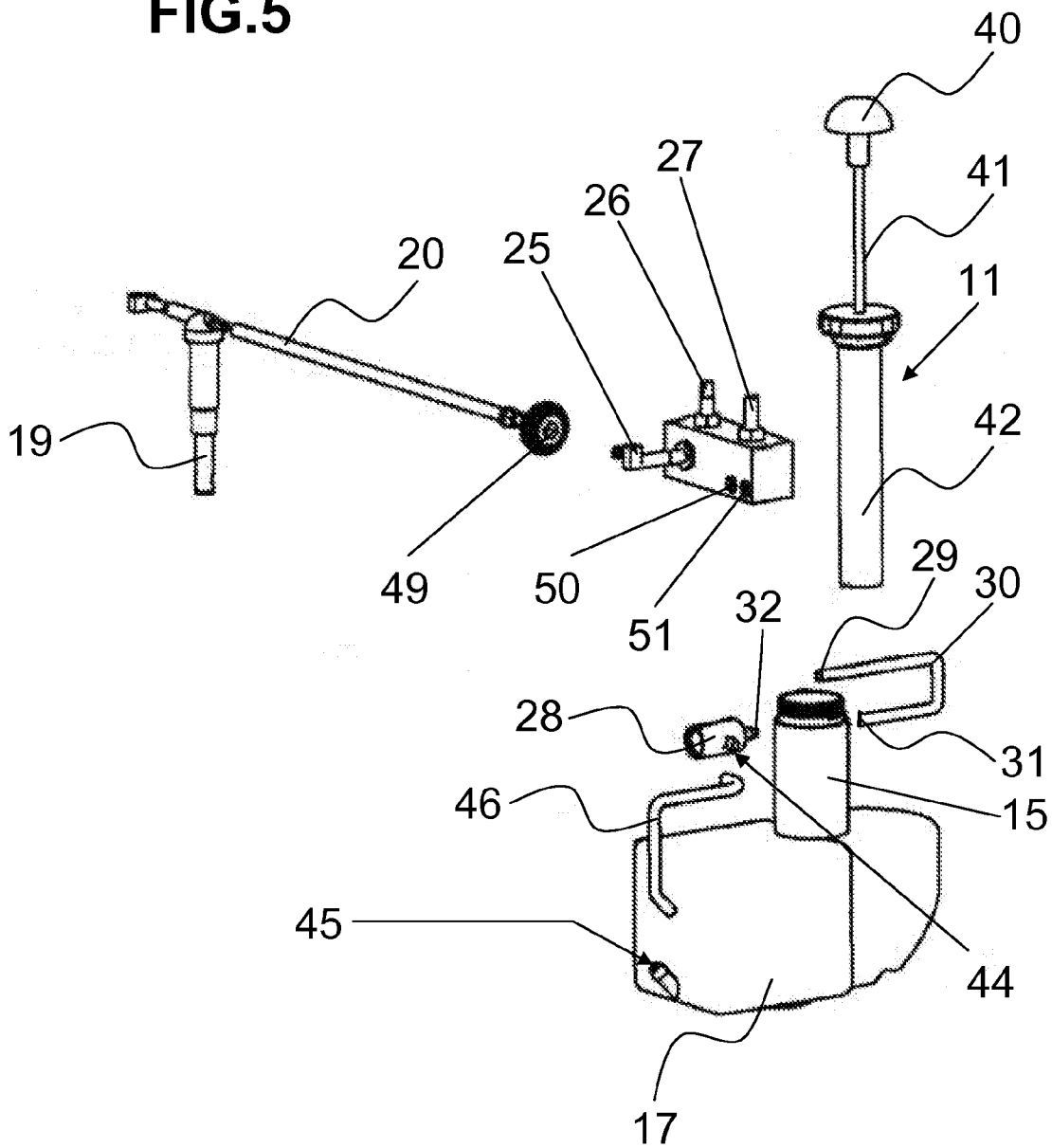


FIG.6

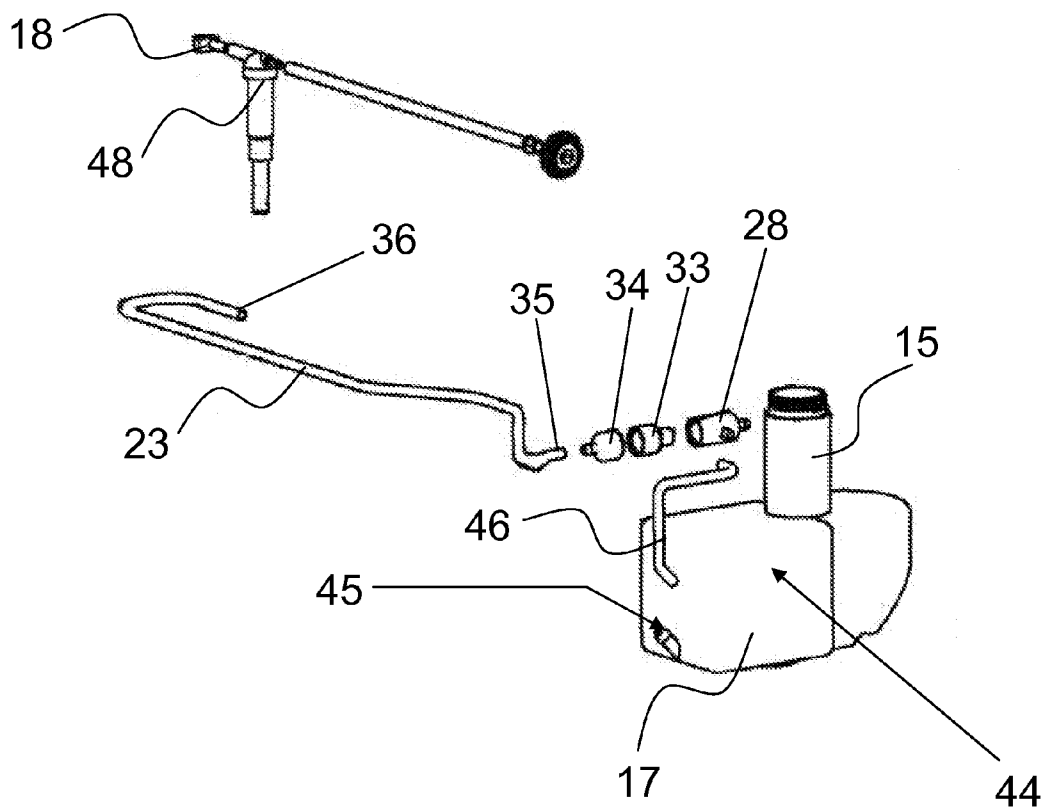


FIG.7

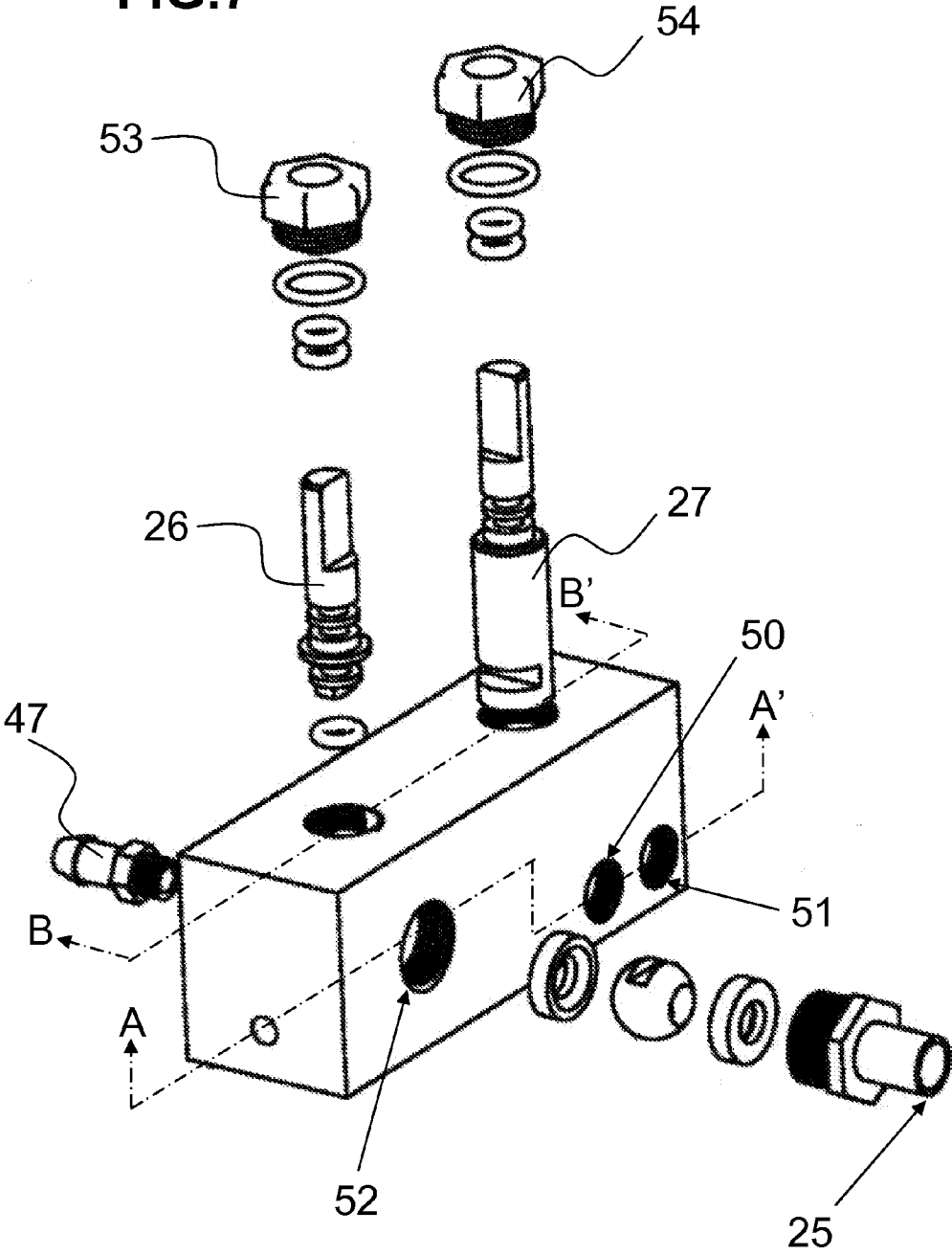


FIG.8A

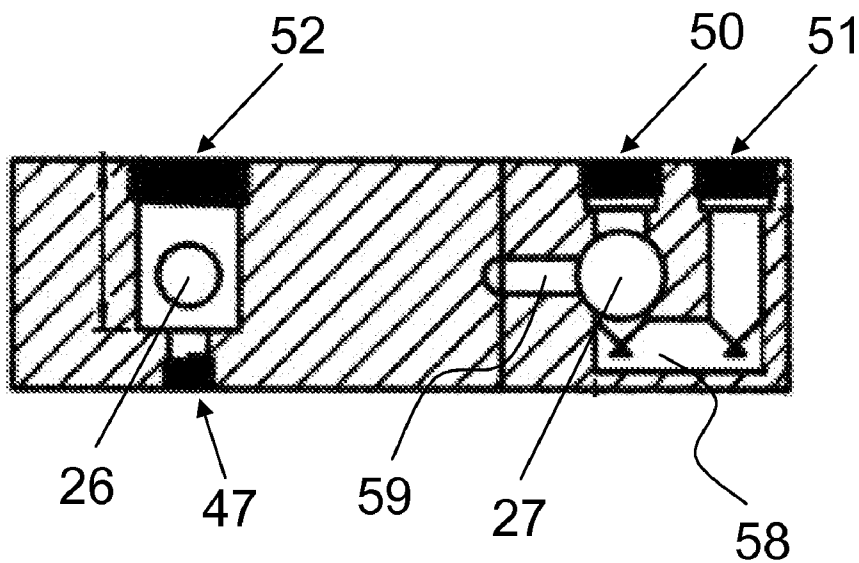


FIG.8B

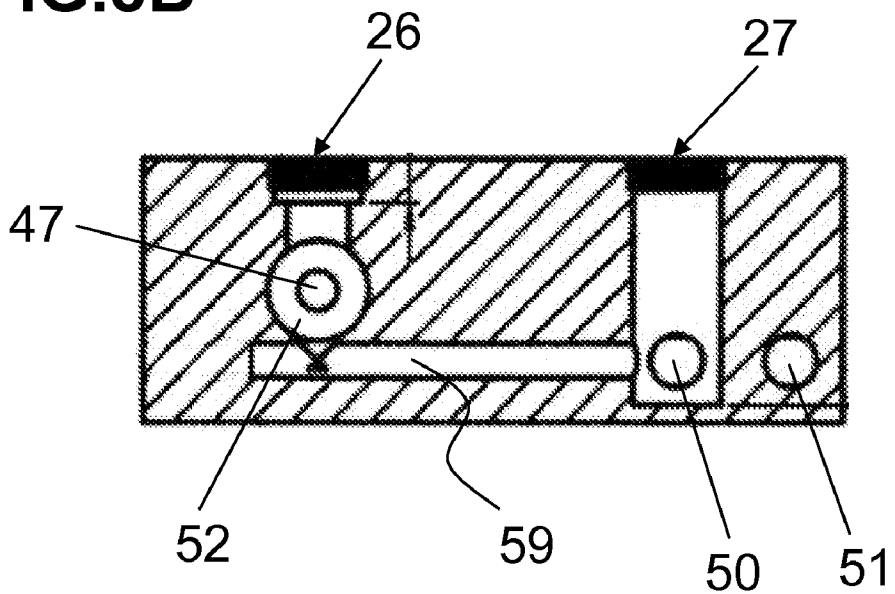
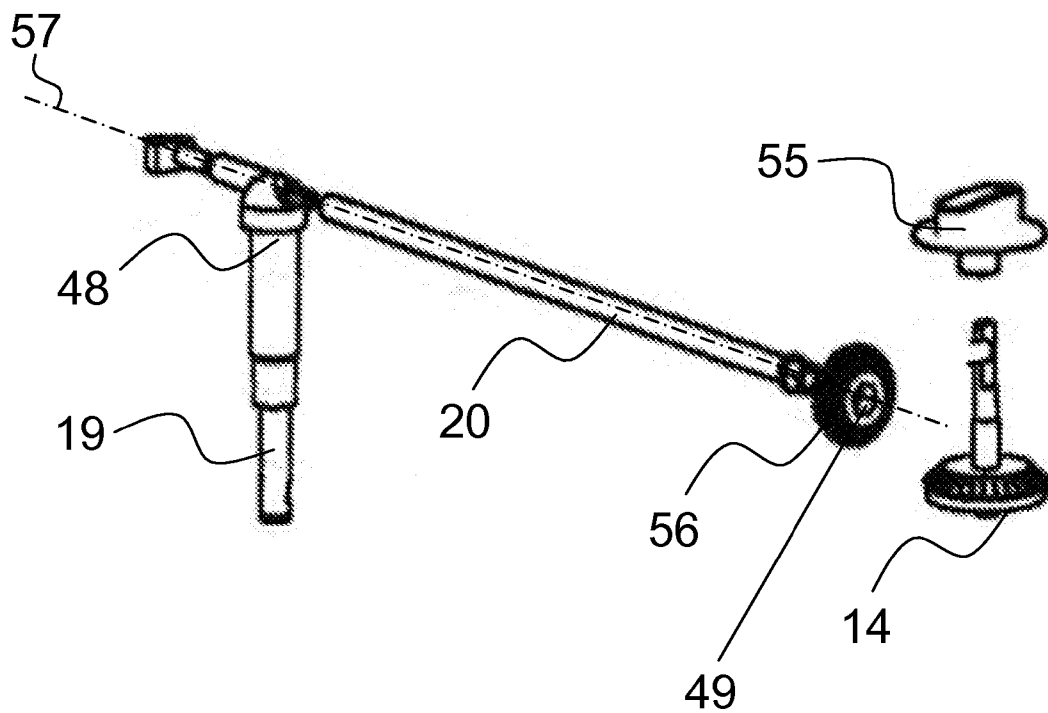


FIG. 9



BIDET WITH DUAL SOURCE WATER SUPPLY

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention is related to a bidet apparatus, particularly to a toilet bowl bidet attachment for rinsing a genital area of an individual.

[0003] 2. Description of the Related Art

[0004] The use of bidets is common in many countries, but is less well known in the United States. This may be attributable several factors such as a general unfamiliarity with the apparatus, the additional cost associated with the same, space constraints for incorporation of the same into a toilet system or, merely, lack of habit for such personal hygiene.

[0005] Typically, bidets are incorporated into the water supply lines of a toilet system and are positioned adjacent to toilet seat whereby the flow, temperature and pressure of water can be regulated for discharge from nozzles mounted on the front and rear of the toilet seat.

[0006] A bidet is generally installed on a seat of a toilet stool so that a person sits to wash his/her genital and anal areas using washing water sprayed from washing and bidet nozzles without using toilet paper. The bidet generally includes one angle-adjustable nozzle for washing all private area or two separate nozzles, one for washing the anal area and another one for washing the genital area.

[0007] Based on the methods by which a desired water temperature is achieved, bowl bidets can be divided into two categories:

[0008] An electrical heating device is used to raise water temperature to certain degree. See U.S. Pat. Nos. 6,327,718, 5,421,039, 5,206,928, 5,090,067, 4,237,560, and 4,192,023. Conventionally, water heaters are further divided into a hot water storage type in which a fixed amount of water stored in a tank is at all times heated to and kept at a proper temperature by a heater and an instantaneous heating type in which supplied water is instantaneously heated such that hot water heated to a proper temperature is fed. The disadvantages of using electricity are obvious: the device itself is generally much more expensive; the operating cost is high; the maintenance cost is high; the device is subject to strict IECC safety standards and regulations.

[0009] Alternatively, a water supply assembly is connected to hot and cold water supply lines, and desired water temperature is achieved by adjusting the ratio between hot and cold water supply. See U.S. Pat. Nos. 7,065,802, 6,643,856, 6,321,396, 6,167,577, 5,953,766, 5,884,345, 5,652,971, 5,495,625, 5,384,919, 5,272,774, 4,995,121, and 4,197,594.

[0010] For instance, the U.S. Pat. No. 4,197,594 disclosed a bidet, which is adapted to fit on the lower surface of conventional toilet seats, and comprises (1) a base element, (2) a support element, including handle, rotatably secured to the base element, (3) an elongated fluid carrying arm extending from the support, and (4) a spray head. By rotating the handle, the spray head moves through a relatively shallow arc from a retracted position adjacent the lower surface of the seat at the rear thereof through an operative path beneath the opening in the seat. The axis of rotation of the support element and the configuration of the fluid-carrying arm are such that the focal point of the arc of the spray head is several inches above the plane of the seat.

[0011] However, a hot water supply line may not be always available, in which case users left with no other choice.

[0012] Accordingly, it is an object of the present invention to provide a bidet apparatus which overcomes one or more of the disadvantages of the prior art specified above.

[0013] It is another object of the present invention to provide such an apparatus which uses more than one hot water supply source.

[0014] It is a further object of the present invention to provide such an apparatus which allows users to make use of water that has been specially treated with scented material and/or herbs.

[0015] It is an additional object of the present invention to provide such an apparatus which is adapted for attachment to an existing conventional toilet bowl.

[0016] It is yet another object of the present invention to provide such an apparatus which provides good cleansing of the entire target area.

SUMMARY OF THE INVENTION

[0017] Accordingly, the present invention is a bidet apparatus adapted for use with a conventional toilet, which includes a toilet bowl and a toilet seat. Comparing to traditional bidets, the apparatus disclosed here includes a second water supply source in addition to a source utilizing existing hot and cold supply lines. Dependent on the situation, these two sources can independently or cooperatively provide the water supply.

[0018] In a preferred embodiment, the bidet comprises:

[0019] A. a mounting means for attaching the bidet on the toilet seat;

[0020] B. a first water supply means having an inlet connecting to existing hot and cold water supply lines and having an outlet;

[0021] C. a second water supply means comprising:
[0022] a tank having a body for storing fluid and a housing for receiving said pump and having an outlet;

[0023] D. a valve assembly comprising:
[0024] a mixing valve having an inlet end connecting to said outlet of said first water supply means and having an outlet end, said mixing valve being operative to selectively control the amount of hot and cold water input; and

[0025] a control valve having a first inlet end connecting to said outlet end of said mixing valve and having a second inlet end connecting to said second water supply means and having an outlet end, said control valve being operative to selectively control the rate of flow of water passing through the bidet;

[0026] E. a spray pipe mounted on the underside of said seat, said spray pipe having an inlet and an outlet;

[0027] F. conduit means for connecting said outlet of said control valve to said inlet of said spray pipe; and

[0028] G. a spray head connecting to the outlet of said spray pipe,

[0029] whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

BRIEF LIST OF REFERENCE NUMERALS UTILIZED IN THE DRAWING

- [0030]** 10—toilet bidet (10)
- [0031]** 11—pump (11)
- [0032]** 12—bidet top cover (12)
- [0033]** 13—valve assembly (13)

- [0034] 14—adjusting gear (14)
- [0035] 15—water tank inlet (15)
- [0036] 16—outer wall of bidet (16)
- [0037] 17—water tank (17)
- [0038] 18—extending line (18)
- [0039] 19—spray head (19)
- [0040] 20—gear shaft (20)
- [0041] 21—hot water line (21)
- [0042] 22—cold water line (22)
- [0043] 23—connecting line (23)
- [0044] 24—bidet bottom cover (24)
- [0045] 25—outlet connector of valve assembly 13 (25)
- [0046] 26—ball valve (26)
- [0047] 27—mixing valve (27)
- [0048] 28—T-connection part-1 (28)
- [0049] 29—outlet of siphon line 30 (29)
- [0050] 30—siphon line (30)
- [0051] 31—inlet of siphon line 30 (31)
- [0052] 32—first outlet of T-connection part-1 28 (32)
- [0053] 33—T-connection part-2 (33)
- [0054] 34—T-connection part-3 (34)
- [0055] 35—inlet of connecting line 23 (35)
- [0056] 36—outlet of connecting line 23 (36)
- [0057] 37—mounting assembly (37)
- [0058] 38—cap for drainage exit 39 (38)
- [0059] 39—drainage exit of water tank 17 (39)
- [0060] 40—handle of pump 11 (40)
- [0061] 41—plunger shaft (41)
- [0062] 42—plunger (42)
- [0063] 44—inlet of T-connection part-1 28 (44)
- [0064] 45—outlet of water tank 17 (45)
- [0065] 46—connecting line (46)
- [0066] 47—water tank inlet on valve assembly 13 (47)
- [0067] 48—drainage nozzle (48)
- [0068] 49—inlet of the channel of the gear shaft 20 (49)
- [0069] 50—cold water inlet (50)
- [0070] 51—hot water inlet (51)
- [0071] 52—outlet of valve assembly 13 (52)
- [0072] 53—open/close handle (53)
- [0073] 54—temperature adjusting handle (54)
- [0074] 55—spray head adjusting handle (55)
- [0075] 56—connecting gear (56)
- [0076] 57—rotating axis of gear shaft 20 (57)
- [0077] 58—passageway connecting to both hot water line 21 and cold water lines 22 (58)
- [0078] 59—passageway between mixing valve 27 and ball valve 26 (59)
- [0079] 60—toilet bowl (100)
- [0080] 61—toilet seat (101)

BRIEF DESCRIPTION OF THE DRAWINGS

- [0081] A more thorough understanding of the invention may be obtained by a study of the following detailed description taken in connection with the accompanying drawings in which:
- [0082] FIG. 1 is a perspective view showing the bidet housing mounted alongside a toilet seat.
- [0083] FIG. 2A is a top view showing the bidet along.
- [0084] FIG. 2B is a bottom view showing the bidet along.
- [0085] FIG. 2C is a perspective view showing the pump along.
- [0086] FIG. 3 shows an exploded assembly view of the parts of the bidet.

- [0087] FIG. 4 shows an exploded assembly view of the parts involving in using hot and cold water lines as water supply source.
- [0088] FIG. 5 shows an exploded assembly view of the parts involving in using water tank as water supply source with or without cold water line.
- [0089] FIG. 6 shows an exploded assembly view of the parts involving in draining water from the bidet.
- [0090] FIG. 7 shows an exploded assembly view of the valve assembly 13.
- [0091] FIG. 8A is a cross sectional view along the line A-A' of FIG. 6.
- [0092] FIG. 8B is a cross sectional view along the line B-B' of FIG. 6.
- [0093] FIG. 9 shows an exploded assembly view of the parts involving in rotating the spray head.

DESCRIPTION OF THE PREFERRED EMBODIMENT

- [0094] Referring now to FIGS. 1, 2A and 2B, the present invention is shown in an environment of a conventional toilet. The control unit of the bidet is designated generally at 10 and is seen to be mounted adjacent the toilet seat 61 of a toilet 60 within reach of the user. The mount of the unit 10 is achieved by mounting assemblies 37. Hoses 21, 22 are connected to hot water and cold water piping (not shown here) and are introduced into the inlets 50, 51, respectively at the bottom of the unit 10. The connections between hoses 21, 22 and water piping can be achieved easily with T-shaped connections, which are well known in the field of art. In addition, through an inlet 15, water is added to a water tank concealed within the unit 10. In use, water, from different sources, as will be explained hereinafter, passes through the unit 10 in a controlled fashion, as will be explained hereinafter, and through hoses, not seen, and into and out of a spray head 19, which is mounted at the rear of toilet seat 61.
- [0095] Referring to FIG. 2C, pump 11 is used to provide necessary water pressure when the water tank is used as the only water source, as will be explained hereinafter.
- [0096] In FIG. 3, the parts of the bidet are shown in an exploded view. Briefly speaking, the bidet 10 includes two water supply sources. The first one connects to existing hot and cold water supply lines and the second one utilizes a water tank as the source. The water tank 17 is concealed in the body of the unit 10. The two water supply sources are joined together at a valve assembly 13, which then connects to a channel buried in a gear shaft 20 and a spray head 19. A valve assembly 13 controls which water source should be used to supply water and the rate of water flow. In addition, the gear shaft 20 is rotatable about an axis 57, which is at a prescribed angle relative to the plane of the toilet seat 61 to which the apparatus 10 is attached. Residue or excess water in the bidet is drained through a connecting line 23, an extending line 18, and a drainage nozzle 48.
- [0097] Referring to FIGS. 3 and 4 in detail concerning the operation of the bidet apparatus and the water passageway, water is supplied to the apparatus from available hot and cold water hoses 21, 22. Hot and cold water is delivered to a valve assembly 13 through inlet 50 and 51 respectively. By adjusting a mixing valve 27 on the valve assembly 13, the hot and cold water is mixed in a prescribed ratio, which is set by the user through temperature adjusting handle 54, to achieve desired water temperature. When a ball-valve 26 turns open through a handle 53, mixed water flows out from a water

outlet connector 25 of the valve assembly 13 to the inlet 49 of a channel in the middle of a gear shaft 20. Mixed water is then dispensed through a spray head 19. The ball-valve 26 is also used to control the rate of water flow into the bidet and the rate of water dispensed through a spray head 19.

[0098] Referring to FIGS. 3, 5 and 7 in detail concerning the operation of the bidet apparatus and the water passageway, water is supplied to the apparatus only from a water tank 17. In this case, the ball-valve 26 is set to close through a handle 53. When the ball-valve 26 set to close, the passageway between inlets 50/51 and the outlet 52 is blocked while the passageway between a water tank inlet 47 and the outlet 52 is open (See FIG. 7). Warm water is filled in a water tank 17 through an inlet 15. A pump assembly 11 is then inserted into the inlet 15 to provide necessary water pressure. Under pressure generating by the pump 11, water flows out from outlet 45, through water line 46, into the T-connection 28 by its inlet 44, which further connects to a siphon line 30 at an inlet 31. The outlet 29 of the siphon line 30 connects to the water tank inlet 47 on valve assembly 13 (See FIG. 7). Through the outlet connector 25 of the valve assembly 13 and the channel in the middle of the gear shaft 20, water is finally dispensed through the spray head 19. Dependent on the force applying on the pump handle 40, the rate of water dispensed through the spray head 19 is controllable.

[0099] Referring to FIGS. 3, 5 and 7 again in detail concerning the operation of the bidet apparatus and the water passageway, water is supplied to the apparatus using both the water tank 17 and cold water supply line. In this case, the ball-valve is set to open through a handle 53. When the ball-valve 26 set to open, the passageway between inlets 50/51 and the outlet 52 is open while the passageway between a water tank inlet 47 and the outlet 52 is also open (See FIG. 7). Hot water is filled in a water tank 17 through an inlet 15. Due to siphon phenomenon, when water from the cold water line flows through the valve assembly 13, hot water is automatically drained from the siphon line 30 and mixed with cold water. Mixed water then passes the outlet connector 25 of the valve assembly 13 and the channel in the middle of the gear shaft 20 and dispensed through a spray head 19.

[0100] For medical or other purposes, the water tank 17 can be filled with water specially treated with scented material and/or herbs. Dependent on the availability of hot and cold water lines, different operation setting of the apparatus can be chosen as described above.

[0101] The siphon line 30 is very thin. As a result, without water pressured generated by the pump 11 and siphon phenomenon generated when water from cold water line flows by the valve assembly 13, water in the tank 17 cannot flow out and into other parts of the bidet apparatus.

[0102] Referring now to FIGS. 3, 6 and 7 in detail concerning the operation of the bidet apparatus and the water passageway, redual and excess water is drained from the apparatus. When the bidet is not in use, the ball-valve 26 is set to close. As described above, when the ball-valve 26 set to close, the passageway between inlets 50/51 and the outlet 52 is blocked while the passageway between a water tank inlet 47 and the outlet 52 is open (See FIG. 7). Water left in all lines of the bidet is removed through a T-connection set, consisting of 28, 33, and 34, a water line 23, an extending line 18, and a drainage nozzle 48.

[0103] With reference to FIGS. 2B and 3 of the drawings, the water tank 17 has its own drainage exit 39 covered by a cap 38.

[0104] With reference to FIGS. 3, 7, 8A and 8B of the drawings, the structure of the valve assembly 13 is illustrated in details. The valve assembly 13 houses two independent valves—mixing valve 27 and ball valve 26, two inlets 50 and 51 connecting to existing water lines, one inlet 49 connecting to the water tank 17 through the siphon line 30, and one outlet 52. Hot and cold water lines are connected to the mixing valve 27 through inlets 50 and 51 respectively. When the position of the temperature adjusting handle 54 is changed, the mix ratio between hot water and cold water is altered so that a comfortable water temperature could be achieved. Mixed water then flows through the passageway 59 to the ball valve 26. The ball valve 26 is an open/close type valve. When it is open, water is allowed to flow from the passageway 59 to the outlet 52. When it is close, water flow between the passageway 59 and the outlet 52 is blocked. In comparison, the passageway between the inlet 49 and the outlet 52 is always open, independent on the status of the ball valve 26.

[0105] FIG. 9 demonstrates how the direction of the spray head 19 is adjusted. When a handle 55 is turned, so is the adjusting gear 14, which in turn contacts and rotates a connecting gear 56. Through the gear shaft 20, the spray head 19 is then rotated about an axis 57.

[0106] The gear shaft 20 is hollow, and is connected at one end 49 to the outlet connector 26 of the valve assembly 13, and is connected at another end to the spray head 19 so that there is a fluid connection from the valve assembly 13 through the gear shaft 20 to the spray head 19.

[0107] In the preferred embodiment, two functionally independent valves—mixing valve 27 and ball valve 26—are combined into a single valve assembly 13. However, it is conceivable that separate multiple valves can be used to achieve the same functionalities.

[0108] In the preferred embodiment, the water line 46 is upstream of the valve assembly 13. However, it is conceivable that such connection can be arranged to somewhere downstream of the valve assembly 13.

[0109] In the preferred embodiment, the gear shaft 20 serves two roles—connecting the valve assembly 13 and the spray head 19, and adjusting the direction of the spray head 19.

[0110] However, it is conceivable that separate parts can be used to achieve the same functionalities.

[0111] In the preferred embodiment, the water tank 17 is enclosed inside of the bidet unit 10. However, it is conceivable that a container outside of the bidet unit can be used to serve the same functionality.

[0112] In the preferred embodiment, the pump 11 is used to generate water pressure needed. However, it is conceivable that other types of pressure-generating means or means of lifting the water tank to certain height can be used to serve the same purpose.

[0113] Therefore, we declare that although an exemplary embodiment of the invention has been disclosed herein for purposes of illustration, it should be understood that various changes, modifications and substitutions might be incorporated in such embodiment without departing from the spirit of the invention as defined by the claims which follow.

What is claimed is:

1. A bidet adapted for use with a conventional toilet which includes a toilet bowl and a toilet seat, comprising:

- A. a first water supply means;
- B. a second water supply means comprising a tank;
- C. a valve assembly means connecting to both said first water supply means and said second water supply means; and
- D. a spray head means connecting to said valve assembly means,

wherein said first water supply means introduces fluid from existing hot and cold water lines to said valve assembly means and said second water supply means introduces fluid from said tank and said spray head is mounted on the underside of the toilet seat and whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

2. A bidet according to claim 1, further comprising a means for adjusting the direction of said spray head.

3. A bidet according to claim 1, said second water supply means further comprising a pressure generating means, wherein said first water supply means introduces fluid from existing hot and cold water lines to said valve assembly means and said second water supply means introduces fluid from said tank under pressured generated by said pressure generating means and said spray head is mounted on the underside of the toilet seat and whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

4. A bidet according to claim 3, further comprising a means for adjusting the direction of said spray head.

5. A bidet according to claim 3, wherein said pressure generating means comprises a pump.

6. A bidet according to claim 5, further comprising a means for adjusting the direction of said spray head.

7. A bidet adapted for use with a conventional toilet which includes a toilet bowl and a toilet seat, comprising:

A. a mounting means for attaching the bidet on the toilet seat;

B. a first water supply means having an inlet connecting to existing hot and cold water supply lines and having an outlet;

C. a second water supply means comprising:
a tank having a body for storing fluid and a housing for receiving said pump and having an outlet;

D. a valve assembly comprising:
a mixing valve having an inlet end connecting to said outlet of said first water supply means and having an outlet end, said mixing valve being operative to selectively control the amount of hot and cold water input; and
a control valve having a first inlet end connecting to said outlet end of said mixing valve and having a second inlet end connecting to said second water supply means and having an outlet end, said control valve being operative to selectively control the rate of flow of water passing through the bidet;

E. a spray pipe mounted on the underside of said seat, said spray pipe having an inlet and an outlet;

F. conduit means for connecting said outlet of said control valve to said inlet of said spray pipe; and

G. a spray head connecting to the outlet of said spray pipe, whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

8. A bidet according to claim 7, further comprising a means for adjusting the direction of said spray head.

9. A bidet according to claim 7, said second water supply means further comprising a pressure generating means, wherein said second water supply means introduces fluid from said tank under pressured generated by said pressure generating means whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

10. A bidet according to claim 9, further comprising a means for adjusting the direction of said spray head.

11. A bidet according to claim 9, wherein said pressure generating means comprises a pump.

12. A bidet according to claim 11, further comprising a means for adjusting the direction of said spray head.

13. A bidet adapted for use with a conventional toilet which includes a toilet bowl and a toilet seat, comprising:

A. a first water supply means;

B. a second water supply means comprising a tank;

C. a valve assembly means connecting to both said first water supply means and said second water supply means; and

D. a spray head means connecting to said valve assembly means,

wherein said first water supply means introduces fluid to said valve assembly means, wherein said fluid always under pressure in said first water supply means, and said second water supply means introduces fluid from said tank and said spray head is mounted on the underside of the seat and whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

14. A bidet according to claim 13, further comprising a means for adjusting the direction of said spray head.

15. A bidet according to claim 13, said second water supply means further comprising a pressure generating means,

wherein said first water supply means introduces fluid to said valve assembly means, wherein said fluid always under pressure in said first water supply means, and said second water supply means introduces fluid from said tank under pressured generated by said pressure generating means and said spray head is mounted on the underside of the seat and whereby said first water supply means and said second water supply means can either independently or cooperatively supply water to said spray head.

16. A bidet according to claim 15, further comprising a means for adjusting the direction of said spray head.

17. A bidet according to claim 15, wherein said pressure generating means comprises a pump.

18. A bidet according to claim 17, further comprising a means for adjusting the direction of said spray head.

* * * * *