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WO-A-96/41058 DE-U1- 20 017 254

Touchless faucet and soap dispenser
Berührungsloser Wasserhahn und Seifenspender
Robinet et distributeur de savon sans contact

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Description

BACKGROUND OF THE INVENTION

Field of the invention

[0001] The present invention relates to an automatic faucet disposed inside a lavatory unit of an aircraft.

[0002] A faucet of this kind is known from the document WO 96/41058 A. This document discloses a wash station comprising a sink and a water dispensing faucet for selectively dispensing water into the sink.

[0003] The U.S. 2004/0227034 A1 discloses a lavatory complex for an aircraft. The lavatory complex includes a male lavatory facility and a female lavatory facility. The male lavatory facility includes stall units and may include urinals.

[0004] The DE 200 17 254 U1 refers to a faucet having a body and a operation element. The improvement consists in an LED light incorporated in the faucet.

[0005] In a lavatory unit of an aircraft, it is inefficient to have a faucet equipment and a liquid soap dispenser disposed separately around the very small wash basin, and it is also unsanitary to have the two equipments spaced apart since the soapy water dripping from the user’s hand makes a mess around the wash basin.

[0006] The present invention aims at solving the problems of the prior art.

[0007] In private commercial aircrafts, the space inside the aircraft such as the passenger cabin is a very important mounting space that generates profit, so they prioritize most in maximising the mounting of the cabin or cargo in order to ensure profit. Therefore, spaces such as the lavatory unit that do not directly generate profit are normally minimized. On the other hand, the lavatory unit of an aircraft is used by unspecified number of people, so in order to ensure that the lavatory is sanitary, it must include facilities equivalent to those of a lavatory on the ground which must be disposed within the very small space inside the lavatory. There is a faucet equipment and a liquid soap dispenser disposed around the very small wash basin, but they take up too much space on the already incapacitous wash stand, are not very user-friendly, and block the user’s view from confirming the washing status of the hands.

[0008] Further, since the prior art faucet is difficult to clean up, it may not be possible to ensure a sanitary condition. Even further, according to the prior art faucet the water temperature is difficult to confirm, the user may be injured by the hot water supplied through the faucet if the prior user of the lavatory has set the temperature too high.

[0009] Moreover, since there are a number of protruded objects disposed around the wash basin, when the aircraft receives impact due to turbulence or the like, which occurs quite often during normal flight of the aircraft, the passenger using the faucet may smash his/her hands or face suddenly against the faucet and be injured.

SUMMARY OF THE INVENTION

[0010] The present invention aims at providing an automatic faucet that solves the problems of the prior art mentioned above.

[0011] To comply with the objects of the invention, the faucet according to the invention is characterized in that

a) the automatic faucet body has semi-annular planar shape and is attached to a wall surface in front of a wash basin;

b) the liquid soap dispenser outlet is incorporated into the automatic faucet body, whereby it is disposed on a bottom left side of the automatic faucet body:

c) the faucet comprises a LED-light for the liquid soap dispenser outlet and a further LED-light for the water supply outlet; and

d) the faucet comprises a water temperature adjustment dial attached to a right end side of the automatic faucet body.

[0012] The automatic faucet according to the present invention comprises an automatic faucet body having a semi-annular planar shape and attached to a wall surface in front of a wash basin, a liquid soap dispenser outlet disposed on a bottom left side of the automatic faucet body, a reflective infrared sensor for the liquid soap dispenser outlet, an LED light for the liquid soap dispenser outlet, a water supply outlet disposed on a bottom right side of the automatic faucet body, a reflective infrared sensor for the water supply outlet, an LED light for the water supply outlet, and a water temperature adjustment dial attached to a right end side of the automatic faucet body.

[0013] The water temperature adjustment dial comprises an illumination means that changes color tone in response to the temperature of the water being supplied.

[0014] According to the above-mentioned arrangement, water or soap water can be fed without touching the faucet.

[0015] Moreover, since the hand of the user is illuminated while the water or liquid soap is supplied, the user can confirm the washing status easily.

[0016] Further, the LED light indicating the water temperature enables the user to visually confirm the status of the water temperature.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. 1 is an explanatory view showing the general structure of a lavatory unit of an aircraft;

FIG. 2 is an upper view of an automatic faucet for a
lavatory unit of an aircraft;
FIG. 3 is a front view of an automatic faucet for a lavatory unit of an aircraft;
FIG. 4 is an explanatory view showing the status of use of the automatic faucet for a lavatory unit of an aircraft; and
FIG. 5 is an explanatory view showing the status of use of the automatic faucet for a lavatory unit of an aircraft.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] FIG. 1 is an explanatory view showing the general structure of a lavatory unit of an aircraft to which the present invention is applied.
[0019] The lavatory unit denoted as a whole by reference number 1 has a lavatory body 10 formed for example of honeycomb panels.
[0020] The lavatory body 10 is formed of a bottom panel 12, a side panel 14 and the like, and has a retractable table 16 and an illumination device 18.
[0021] A lavatory bowl 40 and a housing 50 storing a dust box and the like are disposed inside the lavatory body 10. A wash stand 60 is provided on the upper portion of the casing 50, and a wash basin 70 is disposed at the center of the wash stand 60.
[0022] A door 52 through which trash is thrown in is attached to the upper surface of the wash stand 60.
[0023] A mirror 30 is attached to a wall panel 20 in front of the wash stand 60.
[0024] The automatic faucet 100 for a lavatory unit of an aircraft according to the present invention is disposed on an upper portion of a wash basin 70.
[0025] FIG. 2 is an upper view of the automatic faucet 100 for a lavatory unit of an aircraft, and FIG. 3 is a front view thereof.
[0026] The automatic faucet 100 for a lavatory unit of an aircraft has a body 110 formed by molding synthetic resin or metal. The body 110 has an annular shape that looks like an annular member cut substantially in half.
[0027] The body 110 has a liquid soap dispenser outlet 200 provided on the bottom left side when seen from the front side, and the dispenser outlet 200 is connected to a liquid soap dispenser tank via a valve not shown.
[0028] A reflective infrared sensor 210 for the liquid soap dispenser outlet and an LED light 230 for the liquid soap dispenser outlet are provided adjacent to the liquid soap dispenser 200.
[0029] Infrared waves are projected to the area denoted by reference number 220 from the reflective infrared sensor 210 for the liquid soap dispenser outlet, and when the hand of a user enters this range of infrared waves 220, a control unit not shown opens the valve and supplies a predetermined amount of liquid soap onto the user's hand. At this time, the LED light 230 for the liquid soap dispenser outlet is turned on to illuminate the user's hand.
[0030] A water supply outlet 300 is disposed on the bottom right side of the body 110, which is connected to a water tank via a valve not shown.
[0031] A reflective infrared sensor 310 for the water supply outlet and an LED light 330 for the water supply outlet are provided adjacent to the water supply outlet 300.
[0032] Infrared waves are projected to the area denoted by reference number 320 from the reflective infrared sensor 310 for the water outlet, and when the hand of a user enters this range of infrared waves 320, a control unit not shown opens the valve and supplies a predetermined amount of water on the user's hand.
[0033] At this time, the LED light 330 for the water outlet is turned on to illuminate the user's hand.
[0034] A water temperature adjustment dial 400 is provided at the right side end of the body 110. The user can adjust the temperature of the water supplied through the water supply outlet 300 by rotating the temperature adjustment dial 400.
[0035] An LED light for indicating the water temperature is provided near the temperature adjustment dial, and when the water temperature is low, for example, a blue colored LED is turned on, and when it is hot, a red colored LED is turned on. When the temperature is in the middle, the light intensity of the blue LED and the red LED are changed to vary the color tone gradually.
[0036] According to this function, the user can visually confirm the water temperature.
[0037] FIGS. 4 and 5 are explanatory views showing the status of use of the automatic faucet 100 for a lavatory unit of an aircraft according to the present invention.
[0038] In FIG. 4, when the user places his/her hand H under the liquid soap dispenser outlet 200, a predetermined amount of liquid soap LS is fed through the liquid soap dispenser outlet 200. At this time, the LED light is turned on to illuminate the area around the hand H.
[0039] In FIG. 5, when the user places his/her hand H under the water supply outlet 300, a predetermined amount of water W is fed through the water supply outlet 300. At this time, the LED light is turned on to illuminate the area around the hand H. An LED light for indicating the water temperature is disposed near the temperature adjustment dial 400, which is illuminated with a color tone corresponding to the temperature of the water being fed, enabling the user to visually confirm the water temperature by the color tone.
[0040] As described, the automatic faucet for a lavatory unit of an aircraft according to the present invention has a faucet and a liquid soap dispenser provided integrally, which have automatic valves that open and close by infrared sensors, and which is attached to the wall surface so as to enable efficient use of the space around the wash basin.
[0041] Furthermore, LED lights are provided near the water supply outlet and the liquid soap dispenser outlet, respectively, so as to illuminate the area near the hands during supply of water and liquid soap.
In addition, an LED light for indicating water temperature is disposed near the temperature adjustment dial, and by changing the color of the LED light from blue (corresponding to cold) to red (corresponding to hot), the status of the water temperature can be confirmed visually.

Projected objects such as levers are eliminated as much as possible, and a cover composed of a smooth connected curved surface is provided in order to facilitate cleaning, ensure a sanitary status, and reduce accidental injuries caused by turbulence and the like.

Furthermore, by integrating the faucet body, cover and mounting seat which are normally disposed individually, the total weight of the equipment can be reduced, which is one of the major issues in an aircraft.

**Claims**

1. An automatic faucet for a lavatory unit of an aircraft comprising:
   - an automatic faucet body (110);
   - a liquid soap dispenser outlet (200);
   - a reflective infrared sensor (210) for the liquid soap dispenser outlet (200);
   - a water supply outlet (300) disposed on a bottom right side of the automatic faucet body (110);
   - a reflective infrared sensor (310) for the water supply outlet (300);
   - a) the automatic faucet body (110) has a semi-annular planar shape and is attachable to a wall surface in front of a wash basin (70);
   - b) the liquid soap dispenser outlet (200) is incorporated into the automatic faucet body (110), whereby it is disposed on a bottom left side of the automatic faucet body (110);
   - c) the faucet comprises a LED-light (230) for the liquid soap dispenser outlet (200) and a further LED-light (330) for the water supply outlet (300); and
   - d) the faucet comprises a water temperature adjustment dial (400) attached to a right end side of the automatic faucet body (110).

2. The automatic faucet for a lavatory unit of an aircraft according to claim 1, wherein the water temperature adjustment dial (400) has an illumination means that changes color tone in response to the temperature of the water being supplied.

**Patentansprüche**

1. Automatischer Wasserhahn für eine Toiletteneinheit eines Flugzeugs, mit
   - einem automatischen Wasserhahnkörper (110);
   - einem Flüssigseifenspender-Auslaß (200);
   - einem Reflexionsinfrarot-Sensor (210) für den Flüssigseifenspender-Auslaß (200);
   - einem Wasserzufuhr-Auslaß (300) an der unteren rechten Seite des automatischen Wasserhahnkörpers (110);
   - einem Reflexionsinfrarot-Sensor (310) für den Wasserzufuhr-Auslaß (300);

   dadurch gekennzeichnet, dass
   a) der automatische Wasserhahnkörper (110) eine halbkreisförmige, ebene Form aufweist und an einer Wandfläche vor einem Waschbecken (70) montierbar ist;
   b) der Flüssigseifenspender-Auslaß (200) ist in den automatischen Wasserhahnkörper (110) integriert, so dass der Auslaß an der unteren linken Seite des automatischen Wasserhahnkörpers (110) angeordnet ist;
   c) der Wasserhahn umfasst ein LED-Licht (230) für den Flüssigseifenspender-Auslaß (200) und eine weitere LED-Licht (330) für den Wasserzufuhr-Auslaß (300); und
   d) der Wasserhahn umfasst ein Wassertemperatur-Einstellorgan (400) an der rechten Endseite des automatischen Wasserhahnkörpers (110).

2. Automatischer Wasserhahn für eine Toiletteneinheit eines Flugzeugs gemäß Anspruch 1, dadurch gekennzeichnet, bei der das Wassertemperatur-Einstellorgan (400) eine Beleuchtung aufweist, die den Farbton entsprechend der Temperatur des zugeführten Wassers einstellt.

**Revendications**

1. Robinet automatique pour une unité de toilettes d’un avion, comprenant :
   - un corps de robinet automatique (110) ;
   - un orifice de sortie de distribution de savon liquide (200) ;
   - un capteur d’infrarouges réfléchissant (210) pour l’orifice de sortie de distribution de savon liquide (200) ;
   - un orifice de sortie de délivrance d’eau (300) disposé sur un côté inférieur droit du corps de robinet automatique (110) ;
   - un capteur d’infrarouges réfléchissant (310) pour l’orifice de sortie de délivrance d’eau (300) ;

   caractérisé en ce que :

a) le corps de robinet automatique (110) a une forme plane semi-annulaire et peut être fixé à une surface de paroi devant un lavabo (70) ;
b) l’orifice de sortie de distribution de savon liquide (200) est incorporé dans le corps de robinet automatique (110), et il est disposé sur un côté inférieur gauche du corps de robinet automatique (110) ;
c) le robinet comprend une lumière à diode(s) électroluminescente(s) (230) pour l’orifice de sortie de distribution de savon liquide (200) et une autre lumière à diode(s) électroluminescente(s) (330) pour l’orifice de sortie de délivrance d’eau (300) ; et
d) le robinet comprend une molette de réglage de température d’eau (400) fixée à un côté d’extrémité droit du corps de robinet automatique (110).

2. Robinet automatique pour une unité de toilettes d’un avion selon la revendication 1, dans lequel la molette de réglage de température d’eau (400) comporte des moyens d’éclairage qui changent de tonalité de couleur en réponse à la température de l’eau qui est délivrée.
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 9641058 A [0002]
- DE 20017254 U1 [0004]