

Description

This invention relates to a water urinal.

A conventional urinal is provided with a valve for supplying flushing water to a bowl portion, that is, a flush valve or an electromagnetic valve. Such a valve is mounted exposed to the uppermost portion of a urinal body or the valve is received into a recessed portion formed in a wall surface on which a urinal is installed, and the recessed portion is covered by a cover.

However, in the case of the former, the valve itself is exposed, impairing the external appearance. In the case of the latter, since the valve is received into the recessed portion of the wall surface, its external appearance is good but it takes much time to form the recessed portion for receiving the valve and it is very cumbersome to provide piping for connecting a water pipe to the valve within a narrow recessed portion.

In addition, in the case of the latter, if a valve is causally received into the recessed portion as described above, there arises a problem that maintenance cannot be carried out from the outside.

In view of the foregoing, it is an object of the present invention to provide a urinal which is good in external appearance without a flushing water supplying valve being exposed and without an access means to the water supplying valve being recognizable as such.

It is advantageous that a urinal is provided which is readily installed without the necessity of forming a valve receiving recessed portion in a wall surface.

It is furthermore advantageous if a urinal of the type described above is provided in which one can repair and check the valve without removing the urinal or without breaking the wall surface.

For achieving the aforesaid objects, the urinal of the present invention comprises an electromagnetic valve for supplying flushing water to a bowl of the urinal. The valve is housed in a receiving space integrally formed in the urinal and the urinal includes a sensor for controlling the opening and closing of said valve. These features can all be found in FR-A-2 224 607 that is the nearest state of the art. The urinal of the present invention has said receiving space for the valve in an upper portion of the urinal. Said receiving space has an opening thereto at the front of the urinal and said opening has a removable cover on which said sensor is mounted.

Such a urinal enables a flushing water supplying valve to be received and concealed within a urinal body, eliminates the necessity of embedding a valve in a wall surface on which the urinal is installed, provides access to the valve via a removable cover on the urinal and positions the sensor in

a manner improving the external appearance of the cover. This enables the valve installed in the receiving space of the urinal body, to be maintained from the exterior by opening the opening. There are advantages that work such as removal of the urinal from the wall surface and breaking of the wall surface for repair and checking of the valve is eliminated.

Other objects and features of the present invention will become apparent from the ensuing description in connection with the accompanying drawings.

FIG. 1 is a partly cutaway side view showing one embodiment of a urinal according to the present invention; FIG. 2 is an enlarged sectional view showing a valve portion of the urinal; FIG. 3 is a sectional view taken on line III-III of FIG. 2; FIGS. 4 and 5 show a further embodiment of the urinal according to the present invention, FIG. 4 being a longitudinal sectional side view showing a valve portion, FIG. 5 being a sectional view taken on line V-V of FIG. 4; FIG. 6 is a longitudinal sectional side view showing a valve portion of a urinal according to a third embodiment of the present invention; and FIGS. 7 and 8 show a fourth embodiment of a urinal according to the present invention, FIG. 7 being a longitudinal sectional side view showing a valve portion, and FIG. 8 being a sectional view taken on line VIII-VIII of FIG. 7.

In a urinal A₁ shown in FIGS. 1 to 3, a receiving space 2 is formed in an upper portion of a urinal body a, and an electromagnetic valve 3 for supplying flushing water to the bowl portion 1 is received into the space 2, the urinal being installed on a wall surface B of a building.

The urinal body a is made of ceramics. The bowl portion 1 is largely opened to the front surface of the urinal, the bowl portion being provided at the bottom with a drain 4, the receiving space 2 being integrally formed at the upper portion of the bowl portion 1, the back of the urinal being placed in abutment with the wall surface B.

The receiving space 2 receives therein the electro-magnetic valve 3 for supplying flushing water to the bowl portion 1 and members and devices relevant thereto, the back of the space being open. By mounting the urinal body a on the wall surface B from the front surface thereof, a stop cock 8 connected to the end of a water pipe 12 and projected from the wall surface B, the electromagnetic valve 3 and a communication pipe 6 can be received into the receiving space 2.

The receiving space 2 is provided on the front surface side with an opening 10 which is open to the front surface of the urinal body a, the opening 10 being opened and closed by a cover 11.

The electromagnetic valve 3 is opened and closed by control of a sensor and sensor 7 re-

ceived into the receiving space 2, the valve having an inlet connected to a downstream of the stop cock 8 and an outlet being communicated to a flushing water passage 5 formed within the urinal body a by a communication pipe 6 at the uppermost portion of the bowl portion 1.

Communication between the outflow side of the electromagnetic valve 3 and the flushing water passage 5 can be carried out from the outside of the urinal body a through the opening 10 even after the urinal body a has been installed.

The cover 11 for opening and closing the opening 10 of the receiving space 2 cover the opening 10 from the front surface thereof and is fixed by screws to a stop plate 11b arranged internally of the space 2 and detachably mounted to the edge of the opening 10 together with the stop plate 11b.

The cover 11 has a central opened portion, and a case 11d for receiving the sensor 7 is detachably mounted from the front surface side thereof in the opening 11c and fixed by a magnet 11e, Fig. 3, to the cover 11.

Accordingly, when the cover 11 or case 11d is removed as indicated by the imaginary line of FIG. 2, the front surface of the space 2 is opened, and check and maintenance of the electromagnetic valve 3, the stop cock 8 and connections of piping can be easily carried out from the opening 10 or 11c, and the maintenance of the sensor 7 within the case 11d can be carried out at the same time.

The sensor 7 received into the case 11d is of a so-called infrared sensor device, which uses a battery 9 common to the electromagnetic valve 3, the sensor being secured to the case 11d by means of a fixing bolt 7b on the back side, and a sensing portion 7a on the front side is exposed from the front surface of the cover 11.

When the sensor 7 senses a user who stands in front of the urinal A to open the electromagnetic valve 3, flushing water from the water pipe 12 passes through the communication pipe 6 to flow into the flushing water passage 5. Water then flows along the peripheral wall of the bowl portion 1 from a number of outflow holes 5a bored in the passage 5 to clean the bowl portion 1.

The urinal A₁ can be installed on the wall surface B, and at the same time, the electromagnetic valve 3, the stop cock 8 and the communication pipe 6 can be completely received into the receiving space 2. Therefore, the external appearance when installed can be neatly set.

In the urinal A₁, the stop cock 8 and the electro-magnetic valve 3 received into the space 2 are supported by the water pipe arranged in the wall surface B. However, the stop cock 8 and the electromagnetic valve 3 may be mounted and supported in other ways. For example, as in a urinal A₂

shown in FIGS. 4 and 5, an inlet 8a of a stop cock 8 is fastened by nut to a through-hole a₂ made in an upper wall a₁ of a urinal body a whereby it is secured to the body a, and a water pipe 12' may be connected to the inlet 8a extending through the upper wall a₁.

Alternatively, as in a urinal A₃ shown in FIG. 6, an inlet 3a of the electromagnetic valve 3 is fastened by nut to a through-hole a₂ of an upper wall a of the urinal body a, and a water pipe 12' is connected to the inlet 3a of the electromagnetic valve 3 extending through the upper wall a₂ and a stop cock 8 may be mounted halfway of the water pipe 12'.

In an arrangement as in the above-described urinals A₂ and A₃ wherein the electromagnetic valve 3 or the electromagnetic valve 3 and the stop cock 8 are fixedly mounted on the urinal body a in the state wherein they are received into the space 2, the electromagnetic valve 3 and the stop cock 8 can be mounted during the manufacture. Therefore, it is possible to save time required for site execution when the urinals A₂ and A₃ are installed.

In a urinal A₄ shown in FIGS. 7 and 8, a stop cock 8 and an electromagnetic valve 3 which are connected in a connecting manner are received into a space 2, an outlet 3b of the electromagnetic valve 3 is directly connected to a base 5b provided on the upper wall of a flushing water passage 5, and an inlet 8a of the stop cock 8 and a water pipe 12 are connected by a flexible pipe 13.

According to the above-described urinal A₄, a communication pipe, between the electromagnetic valve 3 and the flushing water passage 5 is not required, and the flexible pipe 13 is used to provide a communication between the water pipe 12 and the stop cock 8. Therefore, work for communication between the water pipe 12 and the stop cock 8 during installation can be easily accomplished.

Claims

1. A urinal (2) including:
 - an electromagnetic valve (3) for supplying flushing water to a bowl (1) of the urinal;
 - said valve (3) being housed in a receiving space (2) integrally formed in the urinal;
 - the urinal including a sensor (7) for controlling the opening and closing of said valve (3);
 - characterized in that
 - said receiving space (2) for the valve (3) is in an upper portion of the urinal;
 - said receiving space (2) has an opening thereto at the front of the urinal;
 - said opening has a removable cover (11);
 - and
 - said sensor (7) is mounted on said cover



ceived into the receiving space 2, the valve having an inlet connected to a downstream of the stop cock 8 and an outlet being communicated to a flushing water passage 5 formed within the urinal body a by a communication pipe 6 at the uppermost portion of the bowl portion 1.

Communication between the outflow side of the electromagnetic valve 3 and the flushing water passage 5 can be carried out from the outside of the urinal body a through the opening 10 even after the urinal body a has been installed.

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Accordingly, when the cover 11 or case 11d is removed as indicated by the imaginary line of FIG. 2, the front surface of the space 2 is opened, and check and maintenance of the electromagnetic valve 3, the stop cock 8 and connections of piping can be easily carried out from the opening 10 or 11c, and the maintenance of the sensor 7 within the case 11d can be carried out at the same time.

The sensor 7 received into the case 11d is of a so-called infrared sensor device, which uses a battery 9 common to the electromagnetic valve 3, the sensor being secured to the case 11d by means of a fixing bolt 7b on the back side, and a sensing portion 7a on the front side is exposed from the front surface of the cover 11.

When the sensor 7 senses a user who stands in front of the urinal A to open the electromagnetic valve 3, flushing water from the water pipe 12 passes through the communication pipe 6 to flow into the flushing water passage 5. Water then flows along the peripheral wall of the bowl portion 1 from a number of outflow holes 5a bored in the passage 5 to clean the bowl portion 1.

The urinal A₁ can be installed on the wall surface B, and at the same time, the electro-magnetic valve 3, the stop cock 8 and the communication pipe 6 can be completely received into the receiving space 2. Therefore, the external appearance when installed can be neatly set.

In the urinal A₁, the stop cock 8 and the electro-magnetic valve 3 received into the space 2 are supported by the water pipe arranged in the wall surface B. However, the stop cock 8 and the electromagnetic valve 3 may be mounted and supported in other ways. For example, as in a urinal A₂

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In a urinal A₄ shown in FIGS. 7 and 8, a stop cock 8 and an electromagnetic valve 3 which are connected in a connecting manner are received into a space 2, an outlet 3b of the electromagnetic valve 3 is directly connected to a base 5b provided on the upper wall of a flushing water passage 5, and an inlet 8a of the stop cock 8 and a water pipe 12 are connected by a flexible pipe 13.

According to the above-described urinal A₄, a communication pipe, between the electromagnetic valve 3 and the flushing water passage 5 is not required, and the flexible pipe 13 is used to provide a communication between the water pipe 12 and the stop cock 8. Therefore, work for communication between the water pipe 12 and the stop cock 8 during installation can be easily accomplished.

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 - an electromagnetic valve (3) for supplying flushing water to a bowl (1) of the urinal;
 - said valve (3) being housed in a receiving space (2) integrally formed in the urinal;
 - the urinal including a sensor (7) for controlling the opening and closing of said valve (3);
 - characterized in that
 - said receiving space (2) for the valve (3) is in an upper portion of the urinal;
 - said receiving space (2) has an opening thereto at the front of the urinal;
 - said opening has a removable cover (11);
 - and
 - said sensor (7) is mounted on said cover



(11).

A urinal according to Claim 1, wherein said valve (3) is connected and secured to a water supply pipe (12) projectingly installed on the wall surface (B), the urinal body (a) is secured to the wall surface (B), said valve (3) being inserted and received from the back side into said receiving space (2) of the urinal body, and an outlet of the valve (3) is communicated with a flushing water flowpassage (5) formed in the urinal body.

3. A urinal according to Claim 1, wherein the valve (3) is mounted and secured to the upper wall of the receiving space, an inlet side (8a) thereof extending the upper surface (a1) of the urinal body (a) directly or through a stop cock (8), and an outlet from the valve (3) being communicated with a flushing water flowpassage (5) formed in the urinal body.

4. A urinal according to Claim 1, wherein the valve (3) is mounted and secured to a bottom wall of said receiving space (2), an outlet thereof being directly connected to a flushing water flowpassage (5) formed in the urinal body adjacent to said bottom wall, and an inlet side (8a) being communicated with a water pipe (12) by means of a flexible pipe (13) within the receiving space (2).

Patentansprüche

1. Ein Urinbecken (2) einschließend:
ein elektromagnetisches Ventil (3) für die Zufuhr von Spülwasser zu einer Schüssel (1) des Urinbeckens;
wobei das besagte Ventil (3) in einem im Urinbecken integriert ausgebildeten Aufnahmeraum (2) angeordnet ist;
wobei das Urinbecken einen Sensor (7) einschließt, um das Öffnen und Schließen des besagten Ventils (3) zu steuern;
dadurch gekennzeichnet, daß
der besagte Aufnahmeraum (2) für das Ventil (3) in einem oberen Teil des Urinbeckens liegt;
daß der besagte Aufnahmeraum (2) an der Vorderseite des Urinbeckens eine zu ihm führende Öffnung besitzt;
daß die besagte Öffnung eine abnehmbare Abdeckung (11) besitzt; und
daß der besagte Sensor (7) auf der besagten Abdeckung (11) angebracht ist.
2. Ein Urinbecken nach Anspruch 1, dadurch gekennzeichnet, daß das besagte Ventil (3) mit

einer auf der Wandoberfläche (B) überstehend installierten Wasserzufuhrleitung (12) verbunden und an dieser befestigt ist, daß der Urinbeckenkörper (a) an der Wandoberfläche (B) befestigt ist, wobei das besagte Ventil (3) von der Rückseite in den besagten Aufnahmeraum (2) des Urinbeckenkörpers eingeführt und aufgenommen wird, und daß ein Auslaß des Ventils (3) mit einem im Urinbeckenkörper gebildeten Spülwasserstromdurchlaß (5) in Verbindung steht.

3. Ein Urinbecken nach Anspruch 1, dadurch gekennzeichnet, daß das Ventil (3) an der oberen Wand des Aufnahmeraums angebracht und befestigt ist, wobei eine Einlaßseite (8a) von ihm sich unmittelbar oder über ein Absperrventil (8) zur oberen Oberfläche (a1) des Urinbeckenkörpers (a) erstreckt, und wobei ein Auslaß vom Ventil (3) mit einem im Urinbeckenkörper gebildeten Spülwasserstromdurchlaß (5) in Verbindung steht.

4. Ein Urinbecken nach Anspruch 1, dadurch gekennzeichnet, daß das Ventil (3) an einer Bodenwand des besagten Aufnahmeraums (2) angebracht und befestigt ist, wobei ein Auslaß von ihm unmittelbar mit einem an die besagte Bodenwand angrenzenden im Urinbeckenkörper gebildeten Spülwasserstromdurchlaß (5) verbunden ist, und wobei eine Einlaßseite (8a) durch ein flexibles Rohr (13) innerhalb des Aufnahmeraums (2) mit einem Wasserrohr (12) in Verbindung steht.

Revendications

1. Urinoir (2) comportant:
une électrovanne (3) pour envoyer de l'eau de chasse dans une cuvette (1) de l'urinoir;
ladite électrovanne (3) étant logée dans un espace de réception (2) moulé d'une seule pièce avec et dans l'urinoir;
l'urinoir comprenant un détecteur (7) pour commander l'ouverture et la fermeture de ladite vanne (3);
urinoir caractérisé
par le fait que ledit espace de réception (2) pour la vanne (3) se trouve dans une portion supérieure de l'urinoir;
par le fait que ledit espace de réception (2) a son ouverture à l'avant de l'urinoir;
par le fait que ladite ouverture présente un couvercle amovible (11); et
par le fait que ledit détecteur (7) est monté sur ledit couvercle (11).



2. Urinoir selon la revendication 1, dans lequel ladite vanne (3) est reliée, et fixée, à une conduite (12) d'arrivée de l'eau installée, en débordement, sur la surface (B) de la paroi, dans lequel le corps (a) de l'urinoir est fixé à la surface (B) de la paroi, ladite vanne (3) étant insérée, et logée, depuis la face arrière, dans ledit espace de réception (2) du corps de l'urinoir et dans lequel une sortie de la vanne (3) communique avec un passage (5) d'écoulement de l'eau de chasse formé dans le corps de l'urinoir. 5 10
3. Urinoir selon la revendication 1, dans lequel la vanne (3) est montée, et fixée à la paroi supérieure de l'espace de réception, son côté entrée (3a-8a) passant à travers la surface supérieure (a1) du corps (a) de l'urinoir, directement ou par l'intermédiaire d'un robinet d'arrêt (8), et la sortie de la vanne (3) communiquant avec un passage (5) d'écoulement de l'eau de chasse formé dans le corps de l'urinoir. 15 20
4. Urinoir selon la revendication 1, dans lequel la vanne (3) est montée, et fixée, à une paroi inférieure dudit espace de réception (2), sa sortie étant directement reliée à un passage (5) d'écoulement de l'eau de chasse formé dans le corps de l'urinoir près de ladite paroi inférieure, et son côté entrée (8a) étant relié avec une conduite d'eau (12) au moyen d'une conduite flexible (13) à l'intérieur de l'espace de réception (2). 25 30

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