What is claimed is:

1. A urinal connected to a horizontal branch pipe by a urinal discharge pipe, comprising:

a bowl portion for receiving a user's urine;

a discharge trap portion for discharging to the downstream side flush water or urine flowing in from a discharge opening formed on the bottom portion of this bowl portion;

a water supply means for supplying flush water to the bowl portion;

and a control means for controlling the supply of flush water to the bowl portion;

wherein the control means has:

a main flush mode for flushing the bowl portion which has received the user's urine and discharging urine in the discharge trap;

a first equipment flushing mode in which, after a main flush mode is executed, a part of the flush water flushes out the discharge horizontal branch pipe upstream of the connecting portion where the urinal discharge pipe is connected;

a second equipment flush mode in which, after the first equipment flushing mode has been executed, and after a predetermined time has elapsed during which it is assumed that flush water which has flushed the side upstream of the

connecting portion in the first equipment flushing mode will have flowed to downstream of the connecting portion, a part of the flush water flushes the upstream side of the connecting portion;

wherein in at least one of either the first equipment flushing mode or the second equipment flush mode, the value of the discharge water volume or of the discharge instantaneous flow volume discharged to the downstream side from the discharge trap portion shall be a value equal to or greater than the value of the discharge water volume or of the discharge instantaneous flow volume discharged to the downstream side from the discharge trap portion in the main flush mode, and in at least one of either the first equipment flushing mode or the second equipment flushing mode, a water line at a maximum height position inside the discharge horizontal branch pipe during discharge rises to a position higher than the water line at the maximum height position inside the discharge horizontal branch pipe during discharge in the main flushing mode.

2. The urinal of Claim 1, wherein the value of the discharge water volume or of the discharge instantaneous flow volume in the first equipment flushing mode shall be a value equal to or greater than the value of the discharge water volume or the discharge instantaneous flow volume in the main flush mode and, moreover, the value of the discharge water volume or of the discharge

instantaneous flow volume in the second equipment flushing mode shall be a value equal to or greater than the value of the discharge water volume or the discharge instantaneous flow volume in first equipment flushing mode.

3. The urinal of Claim 2, wherein the value of the instantaneous flow volume in the first equipment flushing mode shall be a value equal to or greater than the discharge instantaneous flow volume in the main flush mode and, moreover, the value of the instantaneous flow volume in the second equipment flushing mode shall be a value equal to or greater than the discharge instantaneous flow volume in the first equipment flushing mode.

4. The urinal of Claim 3, wherein in each of the main flush mode, the first equipment flushing mode, and the second equipment flush mode, the instantaneous supply flow volume to the bowl portion from the water supply means shall be approximately the same, and in each of the main flush mode, the first equipment flushing mode, and the second equipment flush mode the value of the instantaneous flow volume is determined in response to the head height of flush water temporarily pooled near the entrance to the discharge trap portion.

5. The urinal of Claim 1, wherein the control means, after execution of the main flush mode, repeatedly executes, at a predetermined time interval, the first equipment flushing mode and the second equipment flush mode executed after execution of the first equipment flushing mode.

6. The urinal of Claim 5, further having a sensing means for sensing a user using the urinal, wherein when the first equipment flushing mode or the second equipment flush mode is executed, if the sensing means senses the presence of a user, the control means stops the first equipment flushing mode or the second equipment flush mode, and if a user is sensed by the sensing means for a predetermined time or greater, the control means judges that the urinal has been used, and cancels execution of a subsequent first equipment protection flushing mode and second equipment protection flush mode, executing a main flush mode after the sensing means ceases to sense a user.

7. The urinal of Claim 6 in which, furthermore, when executing the first equipment flushing mode or the second equipment flushing mode, if the sensing means has sensed a user, the control means stops the first equipment flushing mode or the second equipment flushing mode, and when a user is sensed by the sensing means for less than a predetermined time, the control means

judges that the urinal is not being used, and subsequently resumes execution of the first equipment protection flushing mode or the second equipment protection flush mode.

8. The urinal of Claim 1, further comprising an electrolytic water flushing mode wherein, after the second flushing mode is executed, flush water into which electrolytic water has been injected is flowed into the discharge trap portion and the discharge horizontal branch pipe.

9. The urinal of Claim 1 further comprising an additional electrolytic water flushing mode for flowing flush water injected with electrolytic water into the discharge trap portion and the discharge horizontal branch pipe when the first flushing mode, the second flushing mode, or the first flushing mode and the second flushing mode are executed.

What is claimed is:

1. A urinal connected to a horizontal branch pipe by a urinal discharge pipe, comprising:

a bowl portion for receiving a user's urine;

a discharge trap portion for discharging to the downstream side flush water or urine flowing in from a discharge opening formed on the bottom portion of this bowl portion;

a water supply means for supplying flush water to the bowl portion;

and a control means for controlling the supply of flush water to the bowl portion;

wherein the control means has:

a main flush mode for flushing the bowl portion which has received the user's urine and discharging urine in the discharge trap;

a first equipment flushing mode in which, after the main flush mode has been executed, a part of the flush water flushes out a discharge horizontal branch pipe upstream of a connecting portion where the urinal discharge pipe is connected;

a second equipment flush mode in which, after the first equipment flushing mode has been executed, and after a predetermined time has elapsed during which it is assumed that flush water which has flushed the side upstream of the

connecting portion in the first equipment flushing mode will have flowed to downstream of the connecting portion, a part of the flush water flushes the upstream side of the connecting portion;

wherein in at least one of either the first equipment flushing mode or the second equipment flush mode, the value of a discharge water volume or of a discharge instantaneous flow volume discharged to the downstream side from the discharge trap portion shall be a value equal to or greater than the value of the discharge water volume or of the discharge instantaneous flow volume discharged to the downstream side from the discharge trap portion in the main flush mode,

the value of the discharge water volume or of the discharge instantaneous flow volume in the first equipment flushing mode shall be a value equal to or greater than the value of the discharge water volume or the discharge instantaneous flow volume in the main flush mode and, moreover, the value of the discharge water volume or of the discharge instantaneous flow volume in the second equipment flushing mode shall be a value equal to or greater than the value of the discharge water volume or the discharge instantaneous flow volume in first equipment flushing mode,

and in at least one of either the first equipment flushing mode or the second equipment flushing mode, a water line at a maximum height position inside the

discharge horizontal branch pipe during discharge rises to a position higher than the water line at the maximum height position inside the discharge horizontal branch pipe during discharge in the main flushing mode.

2. The urinal of Claim 1, wherein the value of an instantaneous flow volume in the first equipment flushing mode shall be a value equal to or greater than the discharge instantaneous flow volume in the main flush mode and, moreover, the value of the instantaneous flow volume in the second equipment flushing mode shall be a value equal to or greater than the discharge instantaneous flow volume in the first equipment flushing mode.

3. The urinal of Claim 2, wherein in each of the main flush mode, the first equipment flushing mode, and the second equipment flush mode, an instantaneous supply flow volume to the bowl portion from the water supply means shall be approximately the same, and in each of the main flush mode, the first equipment flushing mode, and the second equipment flush mode the value of the instantaneous flow volume is determined in response to a head height of flush water temporarily pooled near an entrance to the discharge trap portion.

4. The urinal of Claim 1, wherein the control means, after execution of the main flush mode, repeatedly executes, at a predetermined time interval, the first equipment flushing mode and the second equipment flush mode executed after execution of the first equipment flushing mode.

5. The urinal of Claim 4, further having a sensing means for sensing a user using the urinal, wherein when the first equipment flushing mode or the second equipment flush mode is executed, if the sensing means senses the presence of a user, the control means stops the first equipment flushing mode or the second equipment flush mode, and if a user is sensed by the sensing means for a predetermined time or greater, the control means judges that the urinal has been used, and cancels execution of the first equipment protection flushing mode and second equipment protection flush mode, executing the main flush mode after the sensing means ceases to sense a user.

6. The urinal of Claim 5 in which, furthermore, when executing the first equipment flushing mode or the second equipment flushing mode, if the sensing means has sensed a user, the control means stops the first equipment flushing mode or the second equipment flushing mode, and when a user is sensed by the sensing means for less than a predetermined time, the control means

judges that the urinal is not being used, and subsequently resumes execution of the first equipment protection flushing mode or the second equipment protection flush mode.

7. The urinal of Claim 1, further comprising an electrolytic water flushing mode wherein, after the second flushing mode is executed, flush water into which electrolytic water has been injected is flowed into the discharge trap portion and the discharge horizontal branch pipe.

8. The urinal of Claim 1 further comprising an additional electrolytic water flushing mode for flowing flush water injected with electrolytic water into the discharge trap portion and the discharge horizontal branch pipe when the first flushing mode, the second flushing mode, or the first flushing mode and the second flushing mode are executed.