



CONNECTION APPARATUS FOR WATERWAY PIPE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a connection apparatus for a waterway pipe, and in particular to a connection apparatus which is capable of fabricating a length pipe by connecting a plurality of pipes each having a certain length.

2. Description of the Background Art

Generally, a waterway is used for continuously providing water from a river, a water reservoir, etc. to a rice field.

The waterway is formed by digging a certain area using a channel shape concrete.

Therefore, it takes lengthy time for forming the waterway, and the cost for forming the waterway is increased. In addition, the waterway is formed on the ground, and the nature and the environment are damaged.

In order to overcome the above-described problems, as shown in Figures 1 and 2, a plurality of metal pipes are used for forming a waterway. Recently, a pipe 100 of Figure 1 is generally used.

Namely, the pipes 100 each having a certain length are connected using a coupler 200. The coupler 200 surrounds each end of the pipes 100, and then the both ends of the coupler 200 are connected using a bolt 300 and a nut 400.

When connecting the both ends of the coupler 200, in a state that one of the bolt 300 and the nut 400 is fixed, the other one of the bolt 300 and the nut 400 is rotated. Therefore, it is difficult to maintain a fixed state of the same, and in addition,



a certain person is used for maintaining the fixed state of the same.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a connection apparatus for a waterway pipe which overcomes the problems encountered during a conventional coupler connection work.

It is another object of the present invention to provide a connection apparatus for a waterway pipe which is capable of automatically fixing one of a bolt and a nut which are used for connecting the both ends of a coupler, so that it is possible to easily rotate the other one of the bolt and the nut. Therefore, a person is not additionally used for fixing one of the bolt and the nut.

In order to achieve the above objects, there is provided a connection apparatus for a waterway pipe which includes a plurality of pipes each having both ends which are connected in series, a coupler having protruded both ends and a connection member having a plurality of connection grooves for surrounding the connection portions of the pipes, an engaging member which passes through the connection groove, and an engaging member having one end inserted into the connection groove and the other end contacting with one side of the connection member, so that the coupling member moves backwardly and forward by a rotation force of the engaging member, and the coupler is tightened and loosened.

The connection groove formed at the connection member is polygonal.

The engaging member includes a support member contacting with one side of the connection member, an engaging hole formed at a center portion of the support member and threadably engaged with the support member, and a rotation prevention member integrally formed with one side of the support member and

having an outer surface corresponding to an inner surface of a polygonal connection groove.

The rotation prevention member includes a vertical cut-away groove formed at both sides of the center portion of the same, and a fixing member inserted into the cut-away groove.

Additional advantages, objects and features of the invention will become more apparent from the description which follows.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given herein below and the accompanying drawings which are given by way of illustration only, and thus are not imitative of the present invention, and wherein:

Figure 1 is an exploded perspective view illustrating a state for connecting a conventional waterway pipe and connection portions using a coupler;

Figure 2 is a cross-sectional view illustrating a connection state of a conventional waterway pipe;

Figure 3 is an exploded perspective view illustrating a state for connecting a waterway pipe and connection portions of the same using a coupler according to a first embodiment of the present invention;

Figure 4 is an exploded perspective view illustrating a state for connecting a waterway pipe and connection portions of the same using a coupler according to a second embodiment of the present invention;

Figure 5 is a cross-sectional view illustrating a connection state of a first embodiment of the present invention; and

Figure 6 is a cross-sectional view illustrating a connection state of a second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments of the present invention will be explained with reference to the accompanying drawings.

As shown in Figures 3 and 5, a connection apparatus for a waterway pipe includes a coupler 20 which surrounds the connection portions of a pipe 10 which is connected.

The coupler 20 includes a connection member 21 having protruded both ends, and a plurality of connection grooves 22 are formed at a portion of the connection member 21. The construction of the coupler 20 is similar to the construction of the conventional coupler 200.

An engaging member 30(or bolt) passes through the connection groove 22 formed at the coupler 20. The engaging member 30 is fixed by an coupling member 40(or nut).

One end of the coupling member 40 is inserted by the connection groove 22, and the other end of the same contacts with one side of the connection member 21, so that the coupling member 40 moves forward and backwardly by the rotation force when rotating the engaging member 30. Therefore, the coupler 20 is tightened and loosened thereby.

As shown in Figures 3 and 5, the connection groove 22 of one side formed at the connection member 21 is polygonally formed. The coupling member 40 includes a support member 41 supported by one side of the connection member 21 and having an engaging hole 42 at its center portion for threadably

engaging with the engaging member 30, and a rotation prevention member 43 having an outer surface corresponding to an inner surface of the connection groove 22 and preventing a rotation by its polygonal structure.

As shown in Figures 4 and 6, the rotation prevention member 43 includes a vertical cut-away groove 44 at both sides of the center portion, and the fixing member 45 is inserted into the cut-away groove 44.

The operation of the present invention will be explained.

As shown in Figures 5 and 6, each pipe 10 is arranged in series, and then the coupler 20 surrounds the connection portions of the pipe.

When the installation preparation of the coupler 20 is completed, the engaging member 30 passes through the connection groove 22 formed at one side of the connection member, and the engaging member 30 is protruded from the outer side of the polygonal connection groove 22 formed at the connection member 21.

When the installation of the engaging member 30 is completed, the coupling member 40 which has the same function as the nut is installed to correspond with the engaging member 30 protruded to the other side of the connection member 21.

Namely, when the coupling member 40 is installed to correspond with the engaging member 30, the support member 41 formed at one end of the coupling member 40 contacts with the outer surface of the connection member 21, and the rotation prevention member 43 provided at one side is inserted into the polygonal connection groove 22 formed at the connection member 21 of the other side.

When the installation preparation of the connection apparatus for a waterway pipe according to the present invention is completed, as shown in Figures 5 and 6, one end of the engaging member 30 is rotated using a spanner, and the rotation prevention member 43 of the coupling member 40 inserted in the polygonal

connection groove 22 moves backwardly and forward by based on the prevented rotation.

Therefore, it is possible to easily install the coupler 20 for the connection of the pipes 10.

In the conventional art, since the waterway pipes are continuously connected using the coupler in a state that one of the bolt and the nut is fixed, and then the coupler is installed. The work process is complicated, and the work time is extended, and more workers are used. However, in the present invention, one of the bolt and the nut which is an engaging member is automatically fixed when engaging the both ends of the coupler, so that the other one of the bolt and the nut is easily rotated, and the workers for fixing the engaging member are not needed.

Although the preferred embodiment of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as recited in the accompanying claims.

What is claimed is:

1. In a connection apparatus for pipe, the improvement comprising:

a coupler for extending about longitudinally opposed ends of the pipes, the coupler having opposed connection members at opposite ends;

at least one opposed pair of connection grooves through the connection members, at least one of the connection grooves being non-circular;

an engaging member for projecting through the pair of connection grooves including the non-circular one of the connection grooves from an end that does not pass through the connection groove to an opposite end portion at the non-circular one of the connection grooves;

a coupling member for having the end portion of the engaging member threaded therethrough, one end inserted through the non-circular one of the connection grooves toward the one end of the engaging member and an opposite end for contacting an opposite side of the one of the connection members having the non-circular one of the connection grooves when the engaging member is rotated therefor, the one end having a non-circular profile then in the non-circular one of the grooves for preventing at least revolution of the coupling member relative to the one of the connection members when the engaging member is rotated and a pair of generally parallel grooves on opposite sides; and

a generally u-shaped fixing member having opposite legs for fixing in the grooves.

2. The apparatus of claim 1, wherein the non-circular one of the connection grooves is polygonal.