Pipe Socket Adaptor

Description

This invention is related to a pipe socket adaptor which enables other apparatuses to be installed on the exterior walls of buildings through existing pipe sockets.

In some countries, residents of high-rise apartments use pipe sockets installed on exterior walls of buildings for clothes drying. The pipe sockets are generally hollow cylinders embedded in the exterior walls of the buildings. To dry clothes, residents simply insert the pole loaded with wet laundry into the pipe socket. However, such pipe sockets may also be used to hold other apparatuses in addition to being used to hold laundry pole only, by using properly designed adaptors. In this specification an adaptor is disclosed, with which other apparatus may be firmly mounted to the pipe socket, thus be installed on the exterior wall of the building.

Figure 1 illustrates a typical design of the pipe socket adaptor, which comprises an inner cylinder 101, a fence 102, a spacer ring 103 and a carrying rod 104. All of these components are integrated together by welding, screwing or other means. The fence has a first end connected to the inner cylinder and a second end open for receiving a pipe socket. The inner cylinder 101 may either be a tube or a solid rod, with a first end connected to the fence 102. There is at least one small hole 105 in the fence that passes through both the inner cylinder 101 and the fence 102. The small hole 105 may have thread inside it so that a screw bolt may be applied. There are one or more holes 106 of another type in the fence. Unlike hole 105, this type of holes 106 do not pass through the inner cylinder 101. They pass through the fence 102 only. This kind of holes 106 also has thread inside it for application of a screw bolt. Although not always required, it is generally better to have more than one such holes 106 in the fence. In Figure 1, only one of such holes 106 is visible. There should be other similar ones on the opposite side and bottom side. In addition to holes 105 and 106, there is one more hole 107 in the inner cylinder. A fastener (e.g. a rivet or bolt) is applied to pass through the hole 107 to fix the adaptor to the pipe socket.

Figure 2 is an exploded view of the adaptor. There is an opening 108 at the first end of the inner cylinder 101 to receive the spacer ring 103 and the carrying rod 104. There are at least one hole 109 in the spacer ring, and at least one hole 110 in the carrying rod. Both the holes 109 and 110 may have thread inside them. The holes 105, 109 and 110 are arranged to be aligned when the components are integrated, so that the same screw bolt should pass through all of them.

Figure 3 is a cross section view of the adaptor. The hole 105 passes through both the fence 102 and inner cylinder 101. The spacer ring 103 and the carrying rod 104 are fit into the inner cylinder 101 through the opening (108 in Figure 2) at its end, with the spacer ring 103 sandwiched between the inner cylinder 101 and the carrying rod 104. All of them are connected together by welding or other proper means. The holes 105 (in the inner cylinder and the fence), 109 (in the spacer ring) and 110 (in the carrying rod) are aligned, so that the same screw bolt will pass through all of these holes. The hole 106 in Figure 3 is of the same type as the one shown in Figure 1 as 106. The inner cylinder 101 and the fence 102 are

substantially concentric, with a narrow circular gap 111 between them. When the adaptor is mounted to the pipe socket, the pipe socket is slot into this narrow gap 111. The screw bolt in hole 106 is then tightened to push against the pipe socket to position the adaptor. The carrying rod 104 may either be in parallel to the inner cylinder 101, or have an angle formed between them if needed. A good way to form such an angle is to have the inner surface of the spacer ring 103 not in parallel to its outer surface (as shown in Figure 4 and Figure 5).

Figure 6 is a perspective view of a pipe socket embedded in the exterior wall of the building. The pipe socket is basically a hollow cylinder made of metal. For secure mounting of the adaptor to the pipe socket, two holes (112 and 113) may be formed in the pipe socket. To mount the adaptor to the pipe socket, the second end of the inner cylinder 101 is inserted into the pipe socket until the pipe socket touches the first end of the inner cylinder, as shown in Figure 7. The relevant cross section view is shown in Figure 8. As shown in the zoomed-in view in Figure 8, the hole 113 in the pipe socket is arranged to be aligned with the hole 107 in the inner cylinder 101, so that a fastener (e.g. a rivet or bolt) may pass through both the holes for secure mounting. Similarly, the hole 112 in the pipe socket is also arranged to be aligned with the holes 105, 109 and 110 in the adaptor so that one screw bolt may pass through all of these holes to further secure the adaptor onto the pipe socket. After the adaptor has been firmly attached to the pipe socket, other apparatus may then be properly connected to the carrying rod 104, thus be installed on the exterior wall of the building.

The number 101 always refers to the same component (i.e. the inner cylinder) throughout this specification and the drawings, so do the numbers 102, 103, 104, 105, 107, 109, 110, 112 and 113.

It should be mentioned that the above design may have many feasible variations. For example, the spacer ring or the carrying rod, or both of them could be excluded from the design. However, such changes or modifications should be regarded as within the scope of the inventive concept expressed herein.

Brief description of the drawings:

Figure 1 shows a perspective view of a pipe socket adaptor

Figure 2 shows an exploded view of a pipe socket adaptor

Figure 3 shows a cross section view of a pipe socket adaptor

Figure 4 shows a perspective view of the spacer ring

Figure 5 shows a cross section view of the spacer ring

Figure 6 shows a perspective view of a pipe socket on the exterior wall of a building

Figure 7 shows a perspective view of a pipe socket adaptor mounted to a pipe socket

Figure 8 shows a cross section view of a pipe socket adaptor mounted to a pipe socket

Claims:

(1) A pipe socket adaptor, comprising an inner cylinder and a fence, wherein the fence is surrounding the inner cylinder, with one end connected to the inner cylinder and the other end open for receiving a pipe socket.

(2) The adaptor as claimed in claim 1, wherein the fence has at least one hole in it for mounting of the adaptor to a pipe socket; and such a hole passes through both the fence and the inner cylinder.

(3) The adaptor as claimed in claim 1 or 2, wherein the fence has at least one hole in it for mounting of the adaptor to a pipe socket, and such holes pass through the fence only.

(4) The adaptor as claimed in any one of the proceeding claims, wherein the inner cylinder has at least one hole in it for mounting of the adaptor to a pipe socket with a fastener.

(5) The adaptor as claimed in any one of the proceeding claims, wherein the adaptor further comprises a carrying rod.

(6) The adaptor as claimed in claim 5, wherein the adaptor further comprises a spacer ring which is sandwiched between the inner cylinder and the carrying rod.

(7) The adaptor as claimed in claim 6, wherein the spacer ring has its inner surface not in parallel to its outer surface.