

# An Outdoor Pipe Socket Adaptor

## Description

This invention is related to an outdoor 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, in addition to being used for holding laundry poles, such pipe sockets may also be used for holding other apparatuses through properly designed adaptors. In this specification a design of such an adaptor is disclosed. Through such an adaptor other apparatus may be firmly connected to the pipe socket, thus be installed on the exterior wall of the building.

Figure 1 illustrates a typical design of the outdoor pipe socket adaptor, which comprises a core 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 102 has a first end connected to the core and a second end open for receiving a pipe socket. The core 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 core 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 core 101. They pass through the fence 102 only. This kind of holes 106 has threads inside them for receiving of screw bolts. 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 core 101. 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 outdoor pipe socket adaptor. There is an opening 108 at the first end of the core 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 104. Both the holes 109 and 110 may have thread inside them. The holes 105, 109 and 110 are arranged to be collinear when the components are integrated, so that the same screw bolt should pass through all of them.

Figure 3 is a section view of the outdoor pipe socket adaptor. The hole 105 passes through both the fence 102 and the core 101. The spacer ring 103 and the carrying rod 104 are fit into the core 101 through the opening (108 in Figure 2) at the core's first end, with the spacer ring 103 sandwiched between the core 101 and the carrying rod 104. All of them are connected together by welding or other proper means. The holes 105 (in the core and the fence), 109 (in the spacer ring) and 110 (in the carrying rod) are collinear, 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 core 101 and the fence 102 are substantially

concentric, with a narrow circular gap 111 between them. When the outdoor pipe socket adaptor is connected 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 outdoor pipe socket adaptor. The carrying rod 104 may either be collinear with the core 101, or form an angle with the core 101 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 outdoor pipe socket adaptor to the pipe socket, two holes (112 and 113) may be formed in the pipe socket. To mount the outdoor pipe socket adaptor to the pipe socket, the second end of the core 101 is inserted into the pipe socket until the pipe socket touches the first end of the core, as shown in Figure 7. The relevant 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 core 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 outdoor pipe socket adaptor so that one screw bolt may pass through all of these holes to further secure the outdoor pipe socket adaptor to the pipe socket. After the outdoor pipe socket 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.

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. The core may also have other various shapes though it presents a cylindrical shape in the above example. Figure 9A shows a variation of the outdoor pipe socket adaptor, with its section view shown in Figure 9B. This outdoor pipe socket adaptor has holes similar to those shown in Figure 1, Figure 2 and Figure 3. Its core is combined with its carrying rod to form a whole, instead of being separate. The core and carrying rod may either be collinear or be non-collinear (as shown in Figure 9A and 9B). Instead of having a cylindrical shape, the core 901 has a horizontal-H shaped cross-section 920. Figure 10A shows another variation of the outdoor pipe socket adaptor, with its section view shown in Figure 10B. The core 1001 is simply a solid beam.

In addition to the above examples, the outdoor pipe socket adaptor may also have many other feasible variations. Such changes or modifications should be regarded as within the scope of the inventive concept expressed herein.

The number 101 always refers to the same component throughout this specification and the drawings, so do the numbers 102, 103, 104, 105, 107, 109, 110, 112, 113, 901 and 1001.

#### **Brief description of the drawings:**

Figure 1 shows a perspective view of an outdoor pipe socket adaptor

Figure 2 shows an exploded view of an outdoor pipe socket adaptor

Figure 3 shows a cross section view of an outdoor 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

- 5     Figure 7 shows a perspective view of an outdoor pipe socket adaptor mounted to a pipe socket

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

Figure 9A shows a perspective view of an outdoor pipe socket adaptor whose core possesses a horizontal-H shaped cross-section

- 10    Figure 9B shows a section view of an outdoor pipe socket adaptor whose core possesses a horizontal-H shaped cross-section

Figure 10A shows a perspective view of an outdoor pipe socket adaptor whose core is a solid beam

- 15    Figure 10B shows a section view of an outdoor pipe socket adaptor whose core is a solid beam

**Claims:**

- 5 (1) An outdoor pipe socket adaptor, connected to a pipe socket on the exterior wall of a building, comprising a core and a fence, wherein the fence is surrounding the core with a first end connected to the core and a second end open for receiving the pipe socket; and the core being inserted into the pipe socket.
- (2) The outdoor pipe socket adaptor as claimed in claim 1, wherein the fence has at least one hole that passes through both the fence and the core.
- (3) The outdoor pipe socket adaptor as claimed in claim 1 or 2, wherein the fence has at least one hole that passes through the fence only.
- 10 (4) The outdoor pipe socket adaptor as claimed in any one of the proceeding claims, wherein the core has at least one hole in it for mounting the outdoor pipe socket adaptor to a pipe socket with at least one fastener.
- (5) The outdoor pipe socket adaptor as claimed in any one of the proceeding claims, wherein the outdoor pipe socket adaptor further comprises a carrying rod.
- 15 (6) The outdoor pipe socket adaptor as claimed in claim 5, wherein the adaptor further comprises a spacer ring which is positioned between the core and the carrying rod.
- (7) The outdoor pipe socket adaptor as claimed in claim 6, wherein the spacer ring has its inner surface not in parallel to its outer surface.
- (8) The outdoor pipe socket adaptor as claimed in any one of the proceeding claims, wherein  
20 the core possesses a horizontal-H shaped cross-section.
- (9) The outdoor pipe socket adaptor as claimed in any one of the claims 1-7, wherein the core is a solid beam.