Elbow Fitting with Integrated Mounting Flanges

Technical Field

This utility model relates to plumbing fittings, specifically to a pipe elbow fitting for faucet attachment, incorporating integrated mounting flanges. This design facilitates secure, screw-based attachment to a wall, enhancing stability and preventing undesirable vibration during fluid flow.

Background of the Utility Model

The field of plumbing and fluid conveyance systems frequently employs various pipe fittings to guide the flow of liquids or gases. Among these, pipe elbow fittings are of essential for changing the direction of pipelines. While the fundamental design of pipe elbows has seen continuous development over time, as exemplified by prior art such as US Patent No. 2155080 A, titled "Elbow and kindred pipe fittings", which focuses on manufacturing methods for non-ferrous elbows, ensuring durability and efficient fluid passage, a persistent challenge remains in effectively securing these fittings to structural elements like walls.

Traditional pipe installations often rely on separate mounting brackets or hangers to support pipe runs, including elbow fittings. These brackets are typically external components that clamp around the pipe or fitting, and then are themselves screwed or bolted to a wall. While functional, this approach introduces additional complexity in installation, requires multiple parts (the fitting, the bracket, and fasteners), and can sometimes lead to less rigid support, particularly at critical directional changes where forces from flowing fluids are concentrated. The slight play or movement between the separate bracket and the fitting can result in undesirable shaking or vibration, especially when water is actively flowing through the pipe, which can contribute to noise, wear and tear on the fitting, and potentially compromise the integrity of the faucet connection over time.

Another well-established concept in pipe joining is the use of flanges, as seen in US Patent No. 3418009A, describing "Flanged pipe joint." This prior art

demonstrates the conventional application of flanges for creating secure, leak-proof connections between two pipe sections or between a pipe and a component. In these applications, flanges are typically disc-shaped extensions with bolt holes, designed to be mated with another flange and secured by bolts, forming a robust connection within the pipeline itself. However, these traditional flanged joints are primarily for pipe-to-pipe or pipe-to-component interconnection and are not designed or configured for direct, integrated structural mounting to a wall or similar surface to provide stability against operational forces.

More recently, attempts have been made to address the general challenge of mounting pipe fittings. For instance, US Patent No. 11168812B2, titled "Pipe fitting mount", hints at solutions for directly mounting pipe fittings. While the specific details of this prior art may vary, such patents generally explore different ways to secure fittings to surfaces. However, many of these solutions still involve separate mounting elements or designs that may not be fully integrated into the fitting itself in a manner that optimizes for direct wall attachment via simple fasteners like screws, while specifically addressing the dynamic forces present during fluid flow in an elbow configuration.

Therefore, despite advancements in pipe fitting manufacturing and mounting accessories, there remains a need for an improved pipe elbow fitting that incorporates a straightforward mechanism for direct wall attachment. The existing solutions either do not offer integrated mounting or are not specifically optimized to provide the necessary stability for a high-stress component like an elbow, especially when subjected to the vibrations and forces caused by flowing water. The present utility model aims to address these deficiencies by providing a novel pipe elbow fitting with integrated mounting flanges, designed for simplified, secure, and stable wall fixation for faucet connection and thereby minimizing shaking and enhancing the reliability of plumbing installations.

Summary of the Utility Model

This utility model is a Polyvinyl Chloride (PVC) or Galvanized Iron (GI) pipe elbow fitting features integrated mounting flanges with pre-drilled holes. This innovative design allows the elbow to be directly and securely fixed to a

wall using screws, eliminating separate brackets. It significantly enhances stability, reducing shaking and vibration during fluid flow, which prevents stress on the faucet connection and improves overall system reliability.

Brief Description of the Drawings

Figure 1 is an isometric view of the pipe elbow fitting, illustrating the integrated mounting flange extending.

Figure 2 is a front elevation view of the pipe elbow fitting, showing the circular pipe opening and the symmetrical configuration of the integrated mounting flange,

Figure 3 is a side view of the pipe elbow fitting, showing the 90-degree bend of the elbow and the profile of the integrated mounting flange.

Figure 4 is a top plan view of the pipe elbow fitting, illustrating the overall footprint of the device.

Detailed Description

The drawings illustrate embodiments of the utility model and together with the description, serve to explain the principles of the utility model.

Figure 1 presents an isometric view of the pipe elbow fitting **1** with integrated mounting flanges **2a** and **2b**. This view displays the three-dimensional structure of the fitting, showcasing the cylindrical elbow section forming a 90-degree turn, characteristic of a standard pipe elbow. Extending outwardly perpendicularly from the outer curve of the elbow's body are two distinct, planar extensions forming the integrated mounting flanges **2a** and **2b**. Each extension of the flange is depicted with a circular hole **3a** and **3b**, positioned to receive fasteners, such as screws, for securing the fitting to a flat surface like a wall. This perspective illustrates how the flange is integrally molded or affixed to the elbow, appearing as a single, cohesive unit, rather than a separate, attachable component. The internal threading **4** and **5** for faucet

connection or pipe connection within the elbow's openings is also partially visible, depending on the specific design.

Figure 2 provides a front elevation view of the pipe elbow fitting **1**. In this perspective, the open end of the elbow is displayed, showing its circular cross-section where a pipe would be inserted. The integrated mounting flanges **2a** and **2b** is depicted symmetrically extending horizontally from both sides of the central elbow body. The two pre-drilled circular holes **3a** and **3b** in the flanges are visible, indicating the precise locations for mounting fasteners. This view emphasizes the compact profile of the fitting when viewed head-on, highlighting its readiness for direct surface attachment without protruding elements that might complicate installation in confined spaces. The symmetrical nature of the flange ensures balanced support when mounted.

Figure 3 illustrates a side elevation view of the pipe elbow fitting. This view focuses on the characteristic 90-degree bend of the elbow, showcasing the fluid path it provides for directional changes in a pipeline. The left integrated mounting flange **2a** is visible in profile, extending from the side of the elbow pipe fitting **1**. This perspective demonstrates the relatively thin yet secured nature of the flange and how it projects from the main body of the elbow. It helps to understand the depth and dimension of the mounting feature relative to the pipe's diameter and the elbow's curvature, indicating that the flange provides a stable platform for securing the fitting while maintaining a practical overall size.

Figure 4 presents a top plan view of the pipe elbow fitting. This overhead perspective offers a clear depiction of the overall footprint and arrangement of the integrated mounting flanges **2a** and **2b** relative to the elbow **1**. The two extensions of the flange are shown spreading out from the central elbow body. This view is particularly useful for understanding the spacing the overall width required for installation. It confirms the horizontal orientation of the flanges when the elbow is used for a vertical pipe run or a horizontal pipe run where the flange is mounted to a perpendicular surface. The smooth, continuous surfaces of the elbow and flanges further suggest a design optimized for manufacturing efficiency and structural integrity.