

B. OAKES.
WATER CLOSET BEND.
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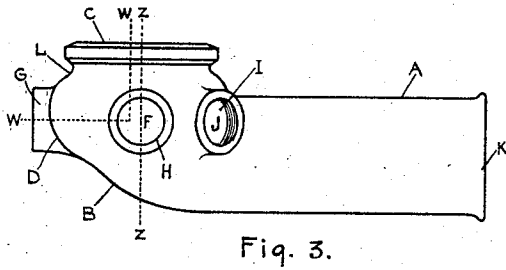


Fig. 3.

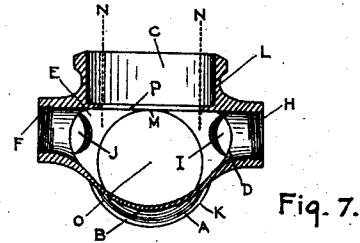


Fig. 7.

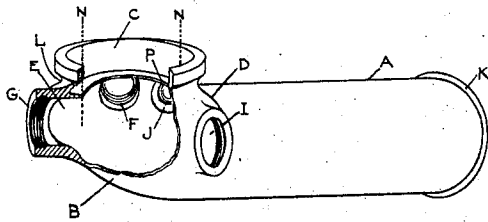


Fig. 4.

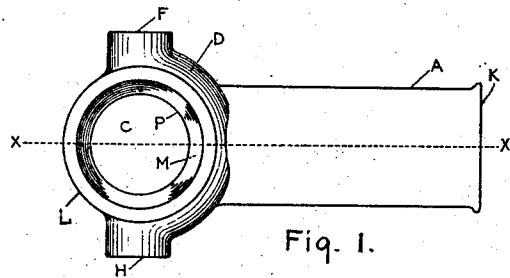


Fig. 1.

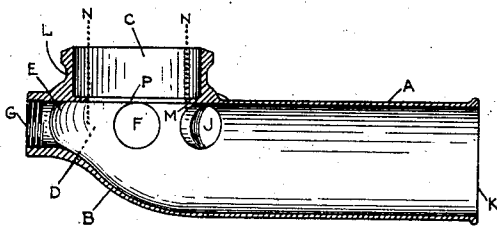


Fig. 6.

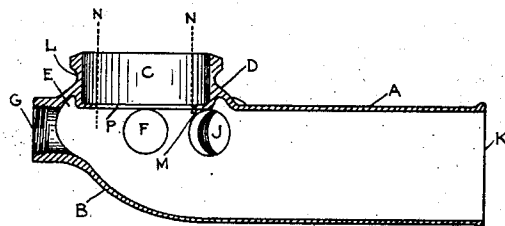


Fig. 8.

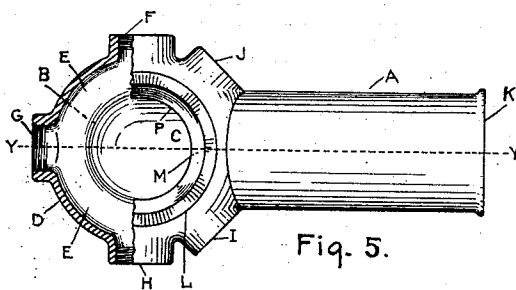


Fig. 5.

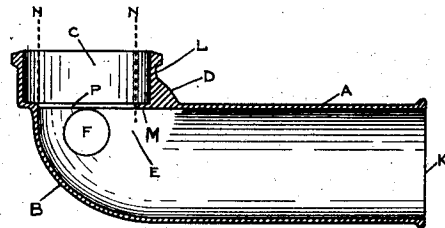


Fig. 2.

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WATER-CLOSET BEND.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BEN OAKES, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Water-Closet Bends, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in water closet bends, to be used in a drainage system of plumbing between the soil and vent pipe line and the water closet.

The object of this invention is: to obtain a specially designed water closet bend, to which the water closet is connected to the main inlet. The bend is provided with an annular air chamber, extending horizontally around the main inlet, to prevent the formation of a vacuum in the bend or waste pipes connecting thereto and openings are made into the annular air chamber for the connecting of waste pipes from bath tubs, lavatories, sinks and other plumbing fixtures. The bend is so constructed that the openings for waste pipes enter the bend at the heel and points around the main vertical water flow through the main inlet, these openings connecting into the bend without danger of the main vertical flow striking and covering the orifice thereof and producing siphon action on the waste pipes.

To this end, my invention consists of a peculiar construction of a water closet bend with openings for the waste pipe to connect.

In the drawings: Figure 1 is a plan view of the bend; Fig. 2 is a cross section on the line $x-x$ Fig. 1; Fig. 3 is a side view of the bend with the by-pass extended to additional waste openings; Fig. 4 is a perspective of Fig. 3 with a portion cut away showing the interior; Fig. 5 is a plan view of Fig. 3, showing a portion cut away on the line $w-w$ Fig. 3; Fig. 6 is a cross section on the line $Y-Y$, Fig. 5, including the section cut away by line $w-w$, Fig. 3; Fig. 7 is a cross section on the line $Z-Z$, Fig. 3; Fig. 8 is a cross section similar to Fig. 6, showing an increased area in the air chamber.

In general construction, my improved water closet bend comprises a horizontal soil pipe, portion A, with an outlet opening K, which connects to the vertical soil and vent pipe line of a drainage system of plumbing, an up-turned portion B forming a bend or elbow with a main inlet opening C and a

hub L to receive a pipe or ferrule to conduct the discharge from the water closet into the main opening C. As illustrated in Fig. 1, the expanded or enlarged section has a wall D around the upper part of the up-turned portion B extending from the openings F and H around the up-turned portion B, terminating in the top portion of the bore of the horizontal portion A, between the neck or junction of the bend at M and the outlet opening K, forming a by-pass E for air to circulate to and from the waste opening from the top of the horizontal portion A above the plane of the axis O of the bore of the horizontal portion A and below the plane of the top of the bore of the horizontal portion A. As illustrated in Figs. 3 and 5, in the drawings, the up-turned portion B shows additional waste openings G, I, J, entering the wall D, the opening G entering the heel of the bend. The wall D surrounds the expanded or enlarged portion of the up-turned portion B, extending from opening G, around the discharge end P of the main inlet C, forming the annular air chamber or by-pass E, which extends entirely around the outer vertical flow lines N—N, and which terminates in the top portion of the bore of the horizontal soil pipe portion A, between the junction or neck of the bend at M and the out-let opening K, the discharge end P directing the main inlet flow through the center of the expanded or enlarged portion which forms the annular air chamber or by-pass E. This expanded wall portion D which extends horizontally around the end of discharge end P of the main inlet C, between the plane of the axis O of the bore of the horizontal soil pipe portion A, and the plane of the top of the bore of the horizontal portion A, forms a by-passage E for air between the outer wall D and the perpendicular lines N, N,—N, N, being the outer perpendicular line of the main water flow through the inlet opening C and through the discharge end P, this by-pass allowing the admission of air which comes from the main soil and vent line through the top portion of the bore of the horizontal portion A into the annular air chamber or by-pass E, and into the openings F, G, H, I and J, thus preventing a vacuum taking place in the waste pipes connected into the openings F, G, H, I and J, when the discharge of the water closet passes through the bend, thus protecting the traps connected to the waste

pipes from siphonic action by the discharge of the water closet.

The openings F, G, H, I and J are made in the outer wall D, and discharge direct into the annular air chamber or by-passage E, and direct into the main opening through the up-turned portion B, around the outer line of the main vertical flow N, N, as it passes into the up-turned portion B before said vertical flow is deflected "by the turn in the bend" into the horizontal soil pipe portion A. The orifice of the openings for waste pipe connections entering the outer wall D, are free from the vertical water flow through the expanded portion surrounded by the outer wall D. The hub L is to receive an inlet pipe or ferrule.

Figs. 1 and 2 illustrate a modification, the opening G, on the heel of the bend being left off the air chamber E running from the top of the bore of the horizontal portion A to the openings F and H only.

Fig. 8 also illustrates a modification showing the area of the air chamber or by-pass E increased.

What I claim is:

1. A water closet bend comprising a horizontal soil pipe portion with an outlet opening, and an upturned portion with a main inlet opening, openings for the connecting of waste pipes entering the heel and sides of said elbow portion, said bend having an expanded portion extending around the up-turned elbow from the said openings for waste pipes to and terminating in the top portion of the bore of the horizontal portion between the junction of the horizontal portion and the up-turned elbow, and the outlet end, said expanded portion forming a by-passage for air to circulate around the main vertical flow to the openings for waste pipes from the top portion of the bore of the horizontal portion, said by-pass running horizontally around the up-turned portion between the plane of the axis of the bore of the horizontal portion and the plane of the top of the bore of the horizontal portion; means for receiving a main inlet pipe, as and for the purpose described.

2. A water closet bend comprising a horizontal soil pipe portion with an outlet opening and an up-turned portion with a main inlet opening, openings for the connecting of waste pipes, said bend having a part of its up-turned portion expanded, forming an annular air chamber around the main inlet opening between the walls of said expanded part and the main inlet flow, said annular air chamber being between the plane of the axis of the bore of the horizontal soil pipe portion and the plane of the top of the bore of the horizontal soil pipe portion and terminating in the top of the bore of said horizontal soil pipe portion, said waste openings entering and discharging direct into said

annular air chamber, around the outer line of the main vertical flow, as said flow passes into the up-turned portion before said flow is deflected by the turn of the bend into the horizontal soil pipe portion, the orifice of said openings for waste pipes being free from the main vertical flow as it passes through the up-turned portion; means for receiving a main inlet pipe, as and for the purpose described.

3. A water closet bend comprising a horizontal portion with an outlet opening, and an up-turned portion with a main inlet opening, said bend so constructed that the end of the main inlet discharges into an enlarged section in the upper portion of the up-turned portion, said enlarged section being above the plane of the axis of the bore of the horizontal soil pipe portion, and extending horizontally around the up-turned elbow portion, below the plane of the top of the bore of the horizontal soil pipe portion, openings for waste pipe connections entering said enlarged section, said enlarged section forming an air chamber extending from said openings for waste pipes around the main vertical flow, said air chamber terminating in the top of the bore of the horizontal soil pipe portion, between the neck of the bend and the outlet end; means for receiving a main inlet pipe, as and for the purpose described.

4. A water closet bend comprising a horizontal soil pipe portion with an outlet opening and an up-turned portion with a main inlet opening, provided with a hub for caulking, openings for waste pipe connections entering into an expanded body portion extending horizontally around the up-turned portion between the plane of the axis of the bore of the horizontal soil pipe portion and the plane of the top of the bore of the horizontal portion, from said waste openings to and terminating in the top portion of the bore of said horizontal portion, said main inlet opening directing the main vertical flow through said expanded body portion, said expanded body portion forming an annular chamber for air to pass around said vertical flow between the outer perpendicular line of said vertical flow and the inner walls of said expanded body portion, said opening for waste pipe connections entering and discharging direct into said annular air chamber around and free from the said vertical flow, before said vertical flow is deflected by the turn in the bend into the horizontal soil pipe portion, said annular air chamber having communication with the main soil and vent line, as and for the purpose described.

5. A water closet bend having a horizontal portion with an outlet and an up-turned portion with a main inlet, said main inlet having its discharge end enter into the top

of an annular air chamber formed around the up-turned portion of the bend, and directing the main vertical flow through the center of said annular air chamber, said annular air chamber being below the plane of the top of the bore of the horizontal portion, and above the plane of the axis of the bore of the horizontal soil pipe portion, said annular air chamber terminating in the top portion of the bore of the horizontal soil pipe portion, openings for waste pipe connections entering the walls of said air chamber around the vertical flow through said air chamber, before said vertical flow is deflected into the horizontal soil pipe portion by the turn in the bend, said annular air chamber having communication with the main vertical vent line; means for receiving a main inlet pipe, as and for the purpose described.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."