No. 770,539. PATENTED SEPT. 20, 1904.

G. F. RYAN.

SOIL PIPE FITTING.

APPLICATION FILED DEC. 27, 1902. RENEWED MAR. 14, 1904.

NO MODEL.

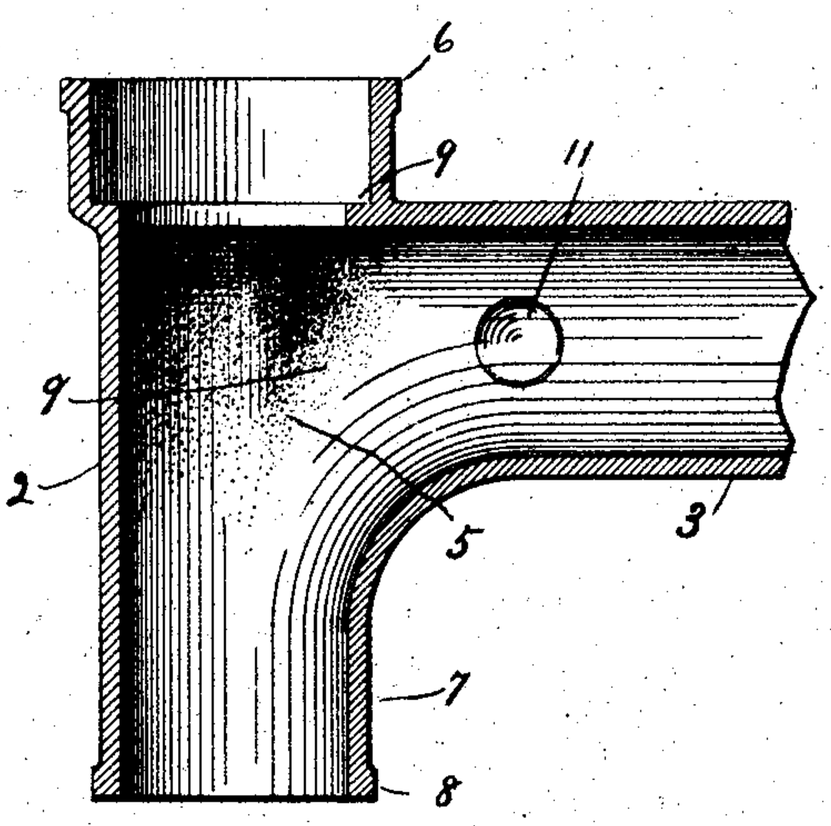

Fig. 1.

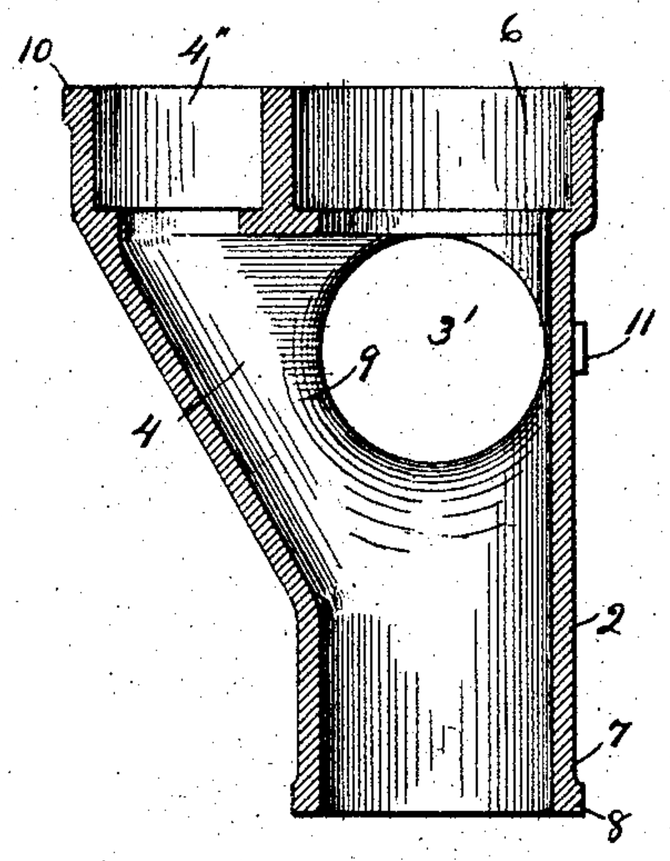

Fig. 2.

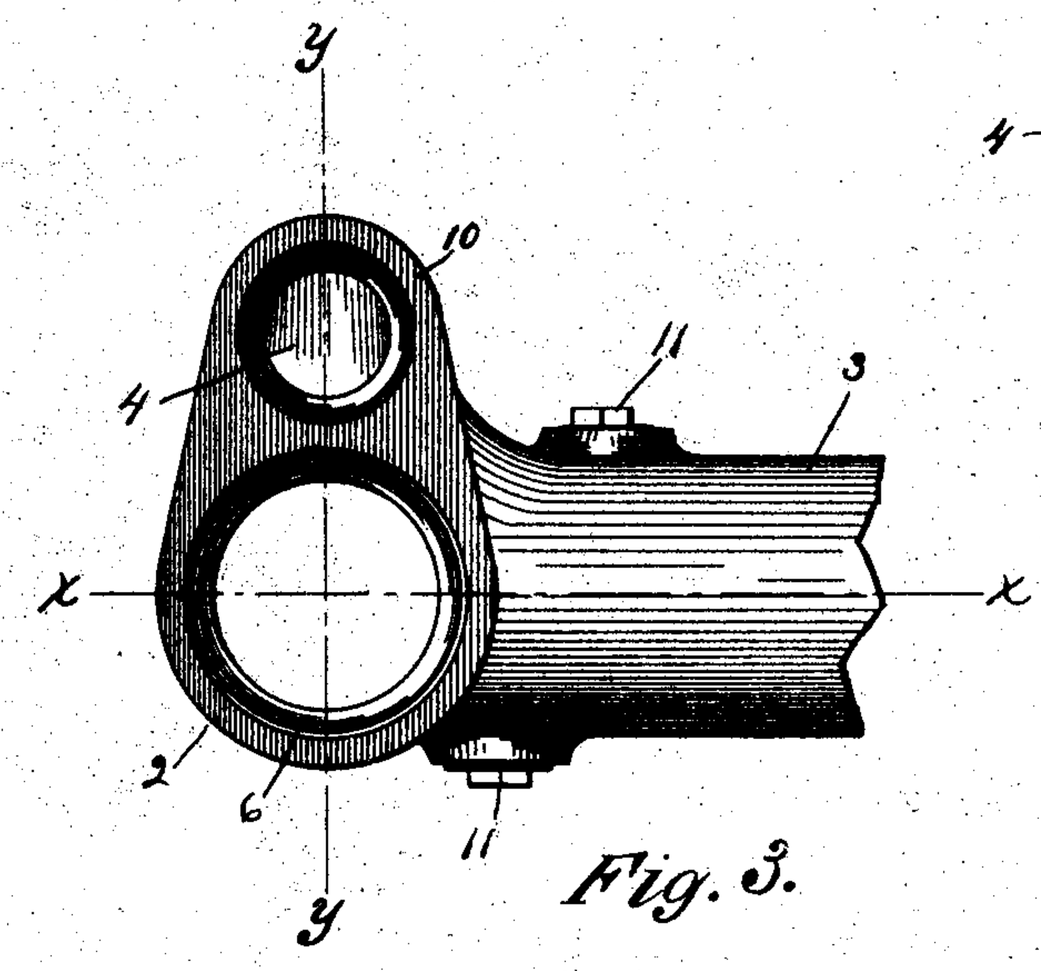

Fig. 3.

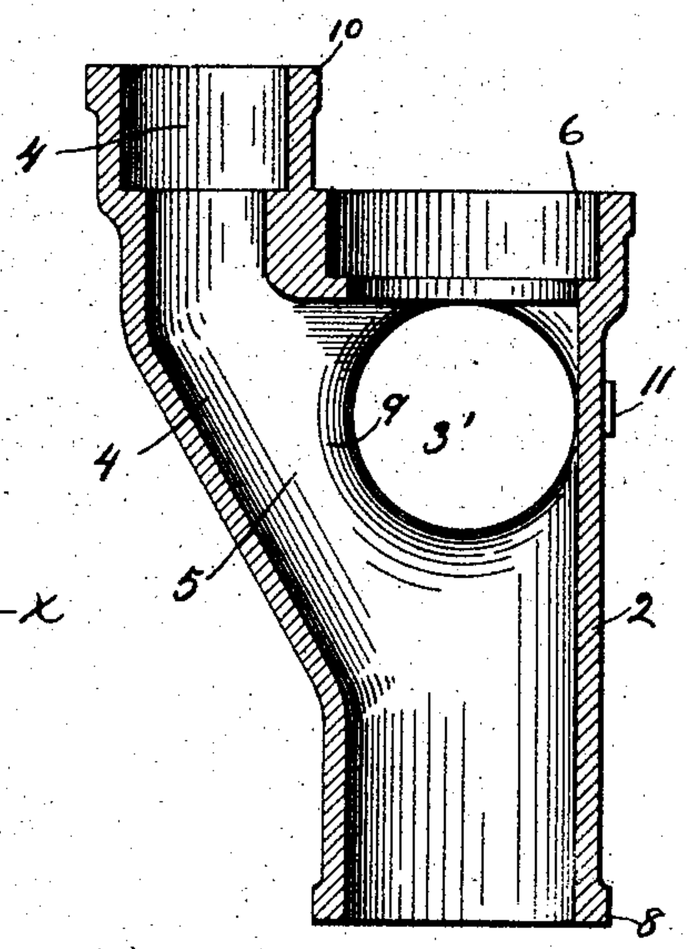

Fig. 4.

WITNESSES:

W. H. Cotton

J. W. Beckstrom

INVENTOR.

George F. Ryan.

BY Fred N. Bowersock

ATTORNEY.

No. 770,539. Patented September 20, 1904.

UNITED STATES PATENT OFFICE.

GEORGE F. RYAN, OF CHICAGO, ILLINOIS.

SOIL-PIPE FITTING.

SPECIFICATION forming part of Letters Patent No. 770,539, dated September 20, 1904.

Application filed December 27, 1902. Renewed March 14, 1904. Serial No. 198,114. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. RYAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Soil-Pipe Fittings, of which the following is a specification.

This invention relates to plumbing, and has particular reference to combination vent and revent fittings which provide the connection between the soil-pipe stack or main sewage-conduit of buildings and one or more lateral branches leading thereinto. The more common form of these fittings comprises a length or section of the soil-pipe stack provided with two short independent branches, a ventilating branch leading to the revent-stack, and a lateral drainage branch.

The object of this invention is to produce a fitting or coupling of this character which shall provide for direct discharge from a closet or drain into the main conduit with substantially but one change in direction of flow of the sewage, at the same time utilizing a portion of the liquid in process of discharge to flush the revent-stack connection.

A further object of my invention is to provide a chamber at the intersection of the ventilating and drainage branches with the main conduit to avoid apertures in the main pipe of the same diameters as those of the respective branches, which apertures provide circumferential edges to catch grease and soil to eventually clog one or more of the passages.

Heretofore these fittings have been constructed with the ventilating branch leading directly into the main sewer-pipe and the lateral drainage branch leading into the bottom or base of the ventilating branch, which construction while insuring the flushing of the base of the ventilating branch whenever there is a discharge through the lateral drainage branch necessitates a change in the direction of flow of the water and soil before reaching the main conduit. This is objectionable, inasmuch as bends or angles in the drainage-pipe, necessitating a change in the direction of flow therethrough, tend to facilitate the accumulation of soil and grease at the bend to eventually clog or choke the connections. Furthermore, in old constructions no effort seems to have been made to eliminate all obstructing edges and projections nor to remove all joints, as far as possible or practicable, from the actual union of the pipes to guard against accumulation of solid matter at said joints due to rough surfaces, cracks, or projecting edges. The ventilating-pipe or revent-stack is rarely if ever flushed, and being usually of cast-iron and continually exposed to dampness the interior surface rapidly oxidizes, the rust as it accumulates dropping off from time to time and lodging in what is termed the "pocket" at the base of the pipe, formed by the curve or bend in the pipe as it joins the main drainage-conduit. The revent-stack must, furthermore, be open to the atmosphere at the roof of the building and becomes a receptacle for all manner of solid foreign substances which generally find lodgment with the rust in said pocket. To flush this pocket or base of the revent-stack, it has been the custom to discharge the liquid from a lateral drainage branch thereinto, which accomplishes the object at the expense of a change of direction in the flow of the discharging soil and water, an objectionable feature, as hereinbefore explained.

The present invention is designed to provide for direct discharge into the main conduit of the major portion of the waste liquid matter, carrying therewith all of the waste solid matter, at the same time utilizing a portion of the liquid to flush the ventilating-pipe connection.

My invention consists generally in a combination vent and revent fitting or coupling comprising a portion of the main sewer-pipe, a revent-pipe leading thereinto at a suitable angle, and a lateral drainage branch leading directly into said main sewer-pipe, the latter being relatively located and the walls thereof being of a configuration to insure a portion of the liquid discharged therethrough entering the base of the revent-pipe connection or branch to provide for an occasional flushing of the same.

My invention further consists in a three-

branch fitting or coupling provided with a chamber at the union of a configuration to avoid circumferential edges, obstructions of any nature to the flow of sewage therethrough, and bends or angles in the pipes to cause any horizontal change of direction in said flow.

My invention further consists in the novel details of construction and in the peculiar arrangement and relative positions of the several parts, all as hereinafter described, and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a central vertical sectional elevation of a fitting or coupling embodying my invention substantially on the line *x x* of Fig. 3. Fig. 2 is a central vertical sectional elevation taken transversely on the line *y y* of Fig. 3. Fig. 3 is a top plan view of the same. Fig. 4 is a central vertical sectional elevation showing a slight modification in construction, hereinafter more fully described.

Referring now to the drawings in detail, numeral 2 refers to the main drainage portion of a coupling designed to connect the soil-pipe stack with the individual drainage and ventilating pipes.

3 refers to a lateral drainage branch, and 4 to the ventilating branch adapted to be connected or forming a part of the revent-stack leading to the atmosphere at the roof of the building. Heretofore in fittings of this character this ventilating-passage has been provided by an individual branch of smaller diameter than that of the main conduit 2, intersecting said main conduit at an angle of about forty-five degrees, the induction-aperture in the main pipe corresponding to a vertical section through the ventilating-pipe at that point. It will be noticed that in the construction shown that portion of the dividing walls or wall between the ventilating and main channels or passages immediately above the intersection thereof is removed or dispensed with, having the effect of vertically widening the mouth of the ventilating-conduit and rendering the base or pocket 4′ thereof accessible for the operation of flushing in the manner hereinafter described. Dispensing with a portion of the wall or walls at the acute angle of intersection has also the effect of providing a substantially triangular-shaped chamber 5, with which the vent-pipe proper communicates instead of directly with the main conduit, thereby avoiding, in connection with other advantages, a comparatively small and substantially sharp-edged aperture in the side of the main pipe.

The main portion 2 is provided with a hub 6, which serves as a seat for the fitting of the soil-pipe stack next above the one shown, while the lower end 7 is preferably provided with a narrow flange 8, adapted to be inserted into a hub corresponding to the hub 6 on the fitting below. The flange 8, fitting the interior of the hub, affords a narrow annular space between the connected parts, which may be filled with suitable packing or cement to form an air and water tight junction between this coupling and the one joined thereto.

It will be noted that the lateral drainage branch 3 leads directly into the main conduit at a point slightly above the intersection of the main and ventilating channels or passages with longitudinal axis in a plane substantially at right angles to the plane of said intersection. Furthermore, the axes of the main conduit and the drainage branch are in the same vertical plane, insuring direct discharge from said branch into the main channel with but the one change of direction of flow, the bottom of the drainage branch preferably tapering or curving at its mouth, Fig. 1, to make this change of direction more gradual instead of with substantially rectangular abruptness and avoiding a sharp edge or corner. As stated, a substantially triangular-shaped chamber 5 is formed at the intersection of the main and ventilating conduits, the drainage branch 3 leading directly into the top of that portion thereof which forms a part of the main channel or passage. As the remaining portion of said chamber forms the base or pocket of the ventilating-conduit, which it is one of the objects of this invention to keep free from deposits or accumulations of solid matter, instead of making the drainage branch 3 cylindrical at its intersection with the main conduit the side of said branch adjacent to said pocket or base is curved or flared at 9, thus widening the mouth of the passage or channel 3′ toward and to substantially conform in shape to said chamber 5, whereby a part of the liquid discharged through said branch will flow into and flush the base of the revent-pipe 4, at the same time permitting the discharge of the major portion of the liquid, carrying all of the soil therewith, directly into the main drainage-conduit.

The hub 10 of the revent-stack connection may be relatively in the same vertical position as the hub 6 of the portion of the fitting forming the main conduit, as shown in Fig. 2, or it may be located above the plane of the hub 6, as shown in Fig. 4. The object of this latter construction is to remove the joint as far as possible or practicable from the path of the sewage. In fact, once away from the pocket or base of the revent-stack, the occasional flushing of which is desirable and which I accomplish in the manner hereinbefore described, this invention is not limited to any particular shape, inclination, or extension of the ventilating-pipe connection. It will also be noted that I have shown a part of the lateral drainage branch 3 cut away. This is

done in order that I may not be limited to any particular length of such pipe or configuration of the end thereof. I may provide this branch with a hub similar to the hubs 6 and 10 with a suitable trap therein with bends or curves to change the direction of flow or with integral supporting means.

I have shown my fitting provided with emergency apertures closed by suitable plugs 11 11, which may be removed when desired to afford access to the interior of the drain for the purpose of discharging a stream of water under high pressure thereinto or to permit of the insertion of a steam-tube in case of the pipes freezing up or other like purposes. Two plugs are preferably provided, one on each side of the fitting, to afford easy access from either side and to facilitate the various cleaning operations commonly resorted to by plumbers.

Many modifications of the minor details of my improved fitting will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific details of construction herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a main sewer-conduit, of a sewage branch and a revent branch both entering the sides of said main conduit, said revent branch having its opening into said main sewer-conduit arranged with the lower portion of its wall at said opening within the path of flow from said branch sewage-conduit, whereby the interior of the end of the revent branch is flushed by the discharge from said sewage branch.

2. A soil-pipe fitting comprising a section of the main sewer-conduit, a ventilating-conduit and a lateral drainage branch separately tapping the vertical side of said main conduit, the mouths of the ventilating-conduit and drainage branch being enlarged toward each other, whereby the base of the former is flushed by the latter.

3. A soil-pipe fitting comprising a section of the main sewer-conduit, a ventilating-conduit leading thereinto, and a lateral drainage branch leading directly into the main conduit at relatively the same vertical position as the mouth of said ventilating-conduit, and the mouth of said lateral drainage branch being widened in the direction of said mouth of the ventilating-conduit, whereby a portion of the liquid matter discharged through said lateral branch will enter the base of said ventilating-conduit.

4. A soil-pipe fitting comprising a section of the main sewer-conduit, a ventilating-conduit leading thereinto at a suitable angle and forming a triangular-shaped chamber at the union, and a lateral drainage branch leading directly into that portion of said chamber which forms a part of the main sewage-channel.

5. A soil-pipe fitting comprising a section of the main sewer-conduit, a ventilating-conduit leading thereinto at a suitable angle and forming a triangular-shaped chamber at the union, and a lateral drainage branch leading directly into the top of that portion of the chamber which forms a part of the main drainage-channel, the mouth of said lateral drainage branch being widened in one direction to insure the flushing of the entire surface of the side walls of said chamber.

6. A soil-pipe fitting comprising a section of the main sewer-conduit, a portion of said conduit being enlarged laterally in one direction to provide an interior chamber and said enlarged portion being provided with a suitably-hubbed aperture for pipe connection therewith, and a lateral drainage-conduit leading into the top of said chamber, the mouth of said lateral conduit being widened to insure the flushing of the entire surface of the side walls of said chamber.

7. A soil-pipe fitting comprising a section of the main sewer-conduit, a portion of the wall of said conduit being enlarged laterally in one direction to provide an interior chamber and said enlarged portion being provided with a suitably-hubbed aperture for pipe connection therewith, and a lateral drainage-conduit leading directly into the top of that portion of said chamber which forms a part of the main sewage-channel, the mouth of said lateral conduit being widened in one direction to insure the flushing of the entire surface of the side walls of said chamber.

8. A soil-pipe fitting consisting of a main sewer-conduit tapped in separate places by a drainage branch and a ventilating branch, the latter terminating in a flared mouth or enlarged chamber at the junction and laterally of said conduit and branches.

9. A soil-pipe fitting comprising a vertically-disposed main sewer-conduit tapped in different portions by a lateral drainage branch and a lateral ventilating branch and said lateral and ventilating branches being provided at their junction with an enlarged chamber forming the mouth of said ventilating branch.

10. A soil-pipe fitting comprising a vertical main sewer-conduit, a horizontal drainage and a vertical ventilating branch both leading into the side of said main conduit, and an enlarged chamber in one side of said conduit at the junction of said branches.

11. A soil-pipe fitting comprising a main sewer-conduit, a lateral drainage branch and a lateral ventilating branch entering the side of said main conduit in different planes and provided at their junction with an enlarged

chamber formed in one side of said main conduit by the flared mouths of said branches.

12. An integral soil-pipe fitting consisting of a main sewer-conduit tapped by a drainage branch and a ventilating branch meeting in said main conduit at right angles to each other and both laterally disposed with relation to said main conduit, the mouth of said ventilating branch being flared or enlarged and forming a chamber at the junction of said conduit and branches.

In testimony of the foregoing I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE F. RYAN.

Witnesses:
J. W. BECKSTROM,
T. E. STEWART.