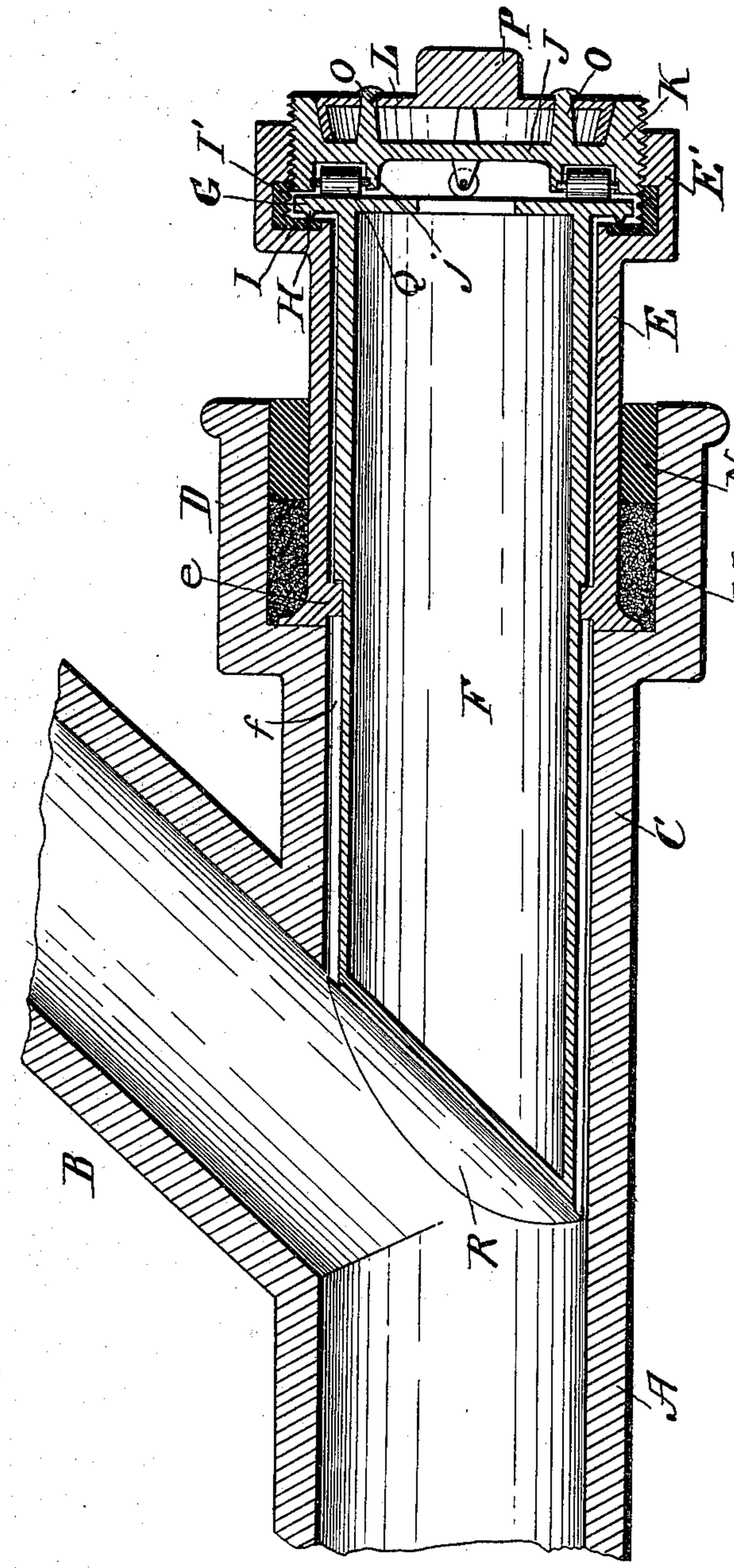
No. 735,470. PATENTED AUG. 4, 1903.

D. CRAIG.

CLEAN-OUT STOPPER FOR PIPES.

APPLICATION FILED APR. 28, 1902.

NO MODEL.



WITNESSES=

Frank S. Hartnett

Joseph T. Brennan

INVENTOR=

David Craig,

By Robert Cushman

his attorney.

No. 735,470. Patented August 4, 1903.

UNITED STATES PATENT OFFICE.

DAVID CRAIG, OF MELROSE, MASSACHUSETTS.

CLEAN-OUT STOPPER FOR PIPES.

SPECIFICATION forming part of Letters Patent No. 735,470, dated August 4, 1903.

Application filed April 28, 1902. Serial No. 104,959. (No model.)

To all whom it may concern:

Be it known that I, DAVID CRAIG, a citizen of the United States, and a resident of Melrose, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Clean-Out Stoppers for Pipes, of which the following is a specification.

My invention relates to clean-out fittings for pipes; and its chief object is to provide a removable stopper or plug for the dead-end branch of a branched drain-pipe, adapted to prevent the fouling of said dead end by the entrance and lodgment therein of solid or partially solid matter.

Further objects of my invention will be hereinafter pointed out.

A drain-pipe is often fitted with a Y or T either when it is desired to provide for a future branch or in lieu of a bend or elbow. In either case the unused branch, known as a "dead end," must be tightly closed and sealed to prevent the escape or leaking of the fluids within the drain-pipe. For this purpose fittings of various sorts have been secured and sealed to the extremity of the dead end, but none of the fittings heretofore in use have made provision for closing the entire bore of the dead end and preventing the lodgment of solid matter therein. The result is that the dead-end branch quickly becomes filled with solid matter, which lodges therein as the contents of the pipe pass through the open branch. This accumulation of foul matter in the dead end is a source of trouble both by reason of the gases generated thereby and by reason of the tendency of the accumulated matter, if it projects at all into the open passage, to accumulate other solid matter, and so impede the flow through the open branch and eventually to clog it up. To overcome these difficulties I have invented the device illustrated in the accompanying drawing. The figure of said drawing shows in longitudinal section a Y of pipe having my improved stopper or plug.

In said drawing, A represents a section of a drain-pipe in the form of a Y, having an open branch B and a dead end C, at the outer end of which is the usual hub D. Fitted within said hub D is the extension-fitting E, having at its outer end the hub E′, threaded interiorly. The extension-fitting E is sealed within the hub D by means of a calking material, such as oakum, packed tightly between the fitting E and the hub D, as shown in the drawing at M, and a layer of soft metal, such as lead, as shown in the drawing at N, which is run into the space between the fitting E and the hub D upon the calking material M in a molten condition.

F represents a stopper which completely fills the bore of the dead-end branch. The inner face R of said stopper F presents a grooved surface and forms a continuation of the bore of the open branch B of the pipe, the result being that so far as the open passage within the pipe is concerned the Y is converted into an elbow or bend. The stopper F is preferably tubular in form, having its inner end closed, as shown at R, but it may be solid without departing from the spirit of my invention and may be cast in iron, brass, or other suitable metal.

At the outer end of the stopper F is the flange G, which overlies the shoulder of the hub E′ and is provided on its inner face with the sealing projection H, which extends completely around the flange G, forming an annular projection. Sunk within the shoulder of the hub E′ and extending part way from the shoulder to the outer end of said hub is a sealing material composed of lead or similar soft metal, the part of which located in the shoulder of the hub at I forms a seat for the sealing projection H and the part of which extending toward the end of the hub E′, as shown at I′, assists in forming the seal, as will hereinafter be more specifically pointed out.

To secure the stopper F firmly in position, I have provided a threaded plug adapted to be screwed within the interiorly-threaded hub E′, consisting of a circular diaphragm J, provided at its periphery with an exteriorly-threaded collar K, substantially deeper than the thickness of the diaphragm J and forming therewith a cup on either side of said plug, as shown in the drawing. L is a cover for the outer cup, fitting tightly over said cup and secured thereto by the rivets O, which are integral with the diaphragm J. The cover L is provided with the nut P or other suitable means by which the threaded plug may

be screwed within the hub E′. A plug thus constructed has all the advantages of the strength and dimensions of a solid plug, but affords a saving of material and weight. On the inner face of said threaded plug I have provided rollers Q, which may be supported at one end by the collar K and at the other by lugs *j*, provided for the purpose. The object of these rollers is to lessen the friction between the threaded plug and the end of the stopper F when the threaded plug is screwed into position, and thus allow the sealing projection H to be tightly urged against its seat J without tending to turn the stopper F within the bore of the dead-end branch.

To further provide against the rotation of the stopper F within the bore of the dead-end branch and to insure the proper positioning of the rounded groove R of the inner end of the stopper F with relation to the bore of the open branch B, I have provided the feather *e* upon the extension-fitting E and the longitudinal groove therefor, *f*, upon the surface of the stopper F. A similar feather and groove are shown on the opposite side, but one will serve.

In addition to the seal provided by the sealing projection H and its seat I, the seal is further perfected by the operation of the threaded plug and the soft-metal bushing I′, sunk within the bore of the hub E′. As the threaded plug enters the hub E′ and meets the lead bushing I′ the latter is compressed slightly inwardly and forced between the threaded plug and the flange G of the stopper F, thus forming a seal and giving additional security to the seal between H and I, or if it is desired to use the threaded plug merely to close the end of a pipe and to dispense with the stopper F the soft-metal bushing I′, countersunk within the hub E′, and the threaded plug screwed therein will seal the pipe end. The soft-metal bushing being more ductile and malleable than the hub E′ will be compressed between the shoulder of the hub E′ and the threaded plug, forming a perfect seal.

It will be seen that the fitting embodying my invention may be adapted to any drain-pipe having a dead end and that the inner face of the stopper F, which is provided with a rounded groove to conform to the bore of the open branch, may be adapted to a T or a T-Y or to a pipe having more than one branch entering at the same point by simply fashioning the inner end of the stopper F so as to conform to a continuation of the bore of the open pipe. It will also be seen that without departing from my invention the hub D of the dead end of a T or Y may be threaded and the stopper and plug inserted directly therein, as above described with reference to hub E′, without the use of an extension-fitting E. This would require special preparation of the dead end, whereas by using the extension-pipe E, I provide a self-contained fitting which may be applied to any dead end in common use.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a branched pipe having an open branch, a dead-end branch, and a hub at the outer end of the dead-end branch, of a stopper substantially filling the bore of said dead-end branch having at its outer end a flange provided with a sealing projection, a soft-metal seat for said sealing projection in the shoulder of the hub, and means for holding said stopper securely in sealing position, substantially as described.

2. The combination with a branched pipe having an open branch, a dead-end branch, and an interiorly-threaded hub at the outer end of the dead-end branch, of a stopper substantially filling said dead-end branch, and means for holding said stopper securely in position, consisting of a threaded plug adapted to screw into the hub and against the top of the stopper, substantially as described.

3. The combination with a branched pipe having an open branch, a dead-end branch, and an interiorly-threaded hub at the outer end of the dead-end branch, of a stopper substantially filling said dead end, a threaded plug adapted to screw into the hub and to hold said stopper in its position, and rollers between said threaded plug and the stopper, substantially as described.

4. The combination with a branched pipe, having an open branch and a dead-end branch, of an extension-fitting sealed to said dead-end branch and a stopper substantially filling the bore of the extension-fitting and of the dead-end branch, and sealed to the fitting, substantially as described.

5. The combination with a branched pipe having an open branch, and a dead end terminating in a hub, of an extension-fitting tightly sealed within said hub, and a stopper substantially filling the bore of said extension-fitting and of said dead end, and sealed to said fitting, substantially as described.

6. The combination with a branched pipe having a dead-end branch and an open branch, of a stopper substantially filling said dead-end branch having a closed inner end in the form of a rounded groove forming a continuation of the bore of the open branch, and means for preventing the rotation of said stopper within said dead-end branch, substantially as described.

7. The combination with a branched pipe having a dead-end branch and an open branch, of a stopper substantially filling said dead-end branch having a closed inner end in the form of a rounded groove forming a continuation of the bore of the open branch, and means for preventing the rotation of said stopper within said dead-end branch, consisting of a feather and groove, substantially as described.

8. The combination with a branched pipe

having an open branch, and a dead-end branch terminating in a hub the interior surface of which is threaded and is provided with a lead bushing extending part way from the shoulder to the outer end of the hub, of a stopper substantially filling said dead-end branch, having at its outer end a flange fitting closely within said hub and overlying the shoulder of said hub, and a threaded plug adapted to screw within said hub and compress said lead bushing between said plug and said flange thereby sealing the latter to said hub, substantially as described.

9. The combination with a branched pipe having an open branch B, a dead end C, and a hub D at the end of said dead end of an extension-fitting E tightly sealed within said hub, an interiorly-threaded hub E′ at the outer end of the extension-fitting E, a stopper F completely filling said dead-end branch and provided at its outer end with a flange G overlying the shoulder of said hub E′, an annular sealing projection H upon said flange G, a lead seat I in the shoulder of the hub E′ for said projection H, a threaded plug screwed within the hub E′ and adapted to hold said stopper F in position, and means for preventing the rotation of said stopper F consisting of a feather *e* and groove *f*, substantially as described.

10. The combination with a drain-pipe having at its end an interiorly-threaded hub, of a clean-out fitting for said end adapted to be screwed within said threaded hub comprising a circular diaphragm provided at its periphery with an exteriorly-threaded collar forming with said diaphragm a cup in the outer face of said fitting, a cover rigidly secured over said cup, and a nut or its equivalent upon said cover, substantially as described.

11. The combination with a pipe having at its end an interiorly-threaded hub, of a soft-metal bushing countersunk within the inner end of the bore of said hub, and a threaded plug adapted to be screwed within said hub and to compress said soft-metal bushing forming therewith a seal.

Signed by me at Boston, Massachusetts, this 17th day of April, 1902.

DAVID CRAIG.

Witnesses:
FRANK S. HARTNETT,
JOSEPH T. BRENNAN.