April 6, 1965 S. PRINCE 3,176,724

PLUMBER'S COMBINATION PLUG AND PENETRATION-FORMING DEVICE

Filed Sept. 27, 1962

FIG. 1

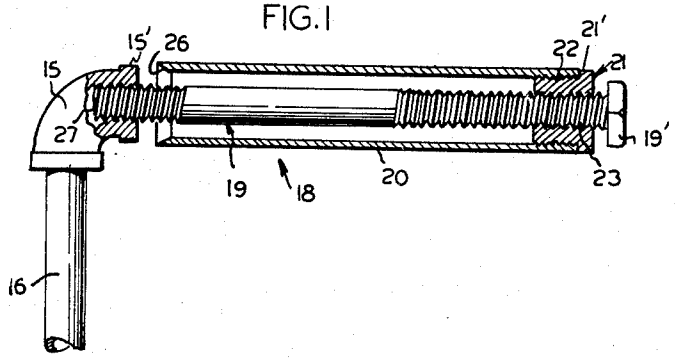
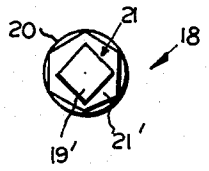


FIG. 2



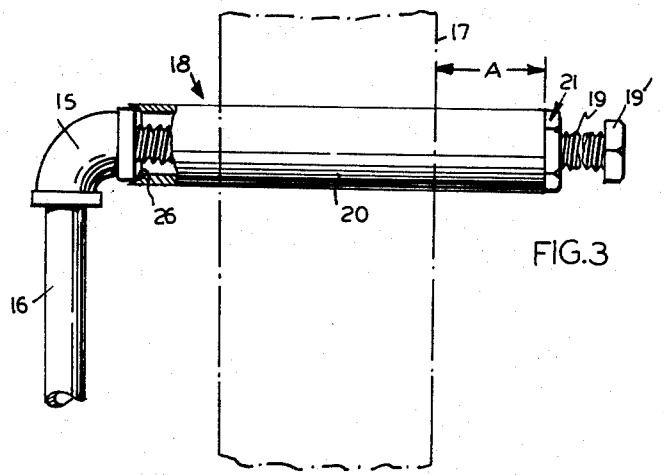


FIG. 3

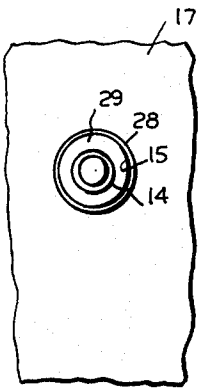


FIG. 4

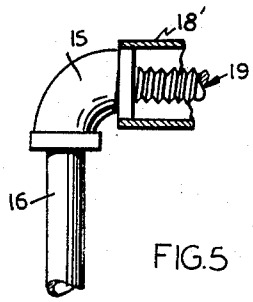


FIG. 5

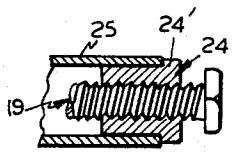


FIG. 6

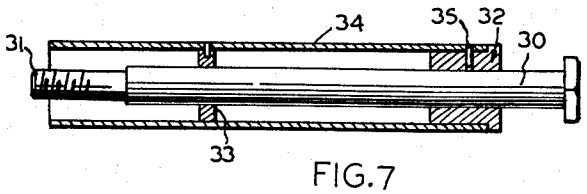


FIG. 7

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PLUMBER'S COMBINATION PLUG AND PENETRATION-FORMING DEVICE

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The present invention relates to a plumber's tool and more particularly to a combination plug and penetration-forming device.

An object of this invention is to provide a novel and improved plumber's tool to plug an open fitting on erected piping in a building under construction and to create a hole through a proposed wall, to enter a nipple therethrough to such fitting and allow play for adjustment of the position of said nipple in all directions, after the nipple is threadedly engaged in said pipe fitting. The use of the plug will of course permit the piping system to be tested and since that the penetration affords the mentioned adjustment of nipple position to align it for fixture installation, there is complete elimination of any necessity to chop into the wall structure.

Another object thereof is to provide a novel and improved plumber's tool of the character set forth, the functional relationship of its various components and the mode of operation, are new.

A further object of this invention is to provide a novel and improved plumber's tool of the kind described, having the stated attributes and which is simple in construction, reasonably cheap to manufacture, easy to use and efficient in carrying out the functions for which it is designed.

Other objects and advantages will become apparent as this disclosure proceeds.

For one specific practice of this invention, the tool may consist of a bushing having a hexagonal flange at one end and threaded interiorly and exteriorly. This bushing is threadedly engaged in one end of an elongated tubular member and serves as a nut on an elongated screw positioned concentrically through said tubular member and extending outwardly of both its ends. That end of said screw which is nearest the bushing, is headed. The other end of the screw fits the fitting to be plugged. The exterior of the tubular member tapers slightly in the direction away from the bushing, that is, towards the tip end of the screw. The open end of said tubular member is of a size to encompass the open mouth of the fitting, and better yet, to contact its rim, so that no material used to construct the wall, shall enter the tubular member. The length of the tubular member shall be sufficient to extend from the pipe fitting, through the proposed wall and some distance in front of such wall. The screw should be long enough so that its free end can extend sufficiently out of the open end of the tubular member, to permit the plumber to apply wick and compound to the screw end to have a securely sealed joint when the pipe fitting is plugged thereby.

To manipulate this tool and then to install the nipple, all the plumber needs is a wrench. The hole effected through the wall, gives sufficient clearance for the proper alignment of the nipple.

Various embodiments of this invention, their manner of use and operation will now be given in detail, for which I shall refer to the accompanying drawing, in which similar characters of reference indicate corresponding parts in all the views.

FIG. 1 is a central longitudinal section of a tool embodying the teachings of this invention. The screw is shown plugging a pipe fitting of erected piping.

FIG. 2 is an end view of FIG. 1.

FIG. 3 is a longitudinal view of said tool, shown partly in section and in position on said pipe fitting, preparatory to the building of the wall.

FIG. 4 is a front view of the wall after the tool has been removed and the nipple connected to said fitting. This view is fragmentary.

FIG. 5 is a fragmentary sectional view of the open end of the tubular member of slightly modified construction, shown associated with the pipe fitting.

FIG. 6 is a fragmentary sectional view of the bushing end of tool of another modified construction.

FIG. 7 is a central longitudinal section of a tool which is another modified construction.

In the drawing, the numeral 15 designates an open fitting as for instance the elbow at the end of pipe 16 installed in a building under construction. A wall 17 is yet to be erected, through which a nipple 14 need pass for connection to said elbow 15. So I provide a device indicated generally by the numeral 18, which comprises a screw 19 to plug the open mouth of the elbow 15 and have a tubular member 20 concentrically about said screw, but of shorter length so the tip end of the screw is accessible to wind wick and apply sealing compound thereon as is the practice to give a tight joint when said screw is engaged in the elbow to serve as a plug. The wick and compound are not shown in the drawing, as same is well understood by those versed in this art and needs no further illustration. Said tubular member 20 is held in concentric relation with the screw 19, by a bushing 21 fitted into one end of said tubular member. This bushing holds said tube for movement along the screw and of course, said screw can move through the said bushing in which it is fitted. Said bushing 21 may be secured in any suitable manner to be tight in the tubular member, as for instance by being screwed therein as at 221, and the screw may have sliding movement through the bushing by being in threaded engagement therewith as at 23. If desired, the bushing as 24 may be slidably and rotatable fitted in the tubular member 25, as shown in FIG. 6. The screw acts as a track for the tubular member, and the bushing serves to maintain them in concentric relation, in all instances. Also, said screw acts as a plug in the elbow 15.

In installed condition of the device 18 as is shown in FIG. 3, it is advisable that the open end of the tubular member 20 shall be closed by the fitting 15, so no wall material shall enter it and hence the mouth of said fitting will be clear to receive the nipple 14 upon removal of said device after the wall 17 is erected. Hence, I have the forward part of said fitting 15, here, its flange or bead 15', entered into said tubular member, to effect circular line contact with the countersink formation 26 at the free end of said tubular member. Or else, as in FIG. 5, the tubular member 18' fits on said flange, in or at least near contact therewith.

As shown in FIG. 1, the bushing 21 has an outer flange 21' bearing against the end rim of the tubular member 20, while in the arrangement shown in FIG. 6, a similar flange 24' is essential. Said flanges are polygonal to receive a wrench, and the screw 19 at its bushing end, is also provided with a head 19' for like purpose. The thread 27 at tip end of the screw, is to suit a pipe fitting. The tubular member 20 is preferably thin-walled.

These devices 18 are to be made in various lengths and to suit various pipe sizes respectively. They may be of metal, plastic, or other suitable material.

To mount the device 18 chosen to extend a distance in front of the intended wall 17, the screw 19 is shifted through the bushing 21, so the tip end of the screw extends out of the tubular member 20. After applying wick and sealing compound, the screw is fitted to plug the elbow 15. Now, with a wrench applied on the flange 21',

the tube is made to move along the screw until the flange 15' enters the countersunk end 26 of said tube for contact therewith. After the wall 17 is erected, the device 18 is removed by applying a wrench on the tube 20 and then on the screw head 19'. It may be noted, that before such removal, the plumber can ascertain the distance from the front surface of the wall 17 to the fitting 15, by measuring the distance "A" and subtracting it from the known length of the tubular member 20 used.

In mounting the device where the bushing is loose as in FIG. 6, moving the bushing 24 with a wrench so said bushing moves towards the fitting 15, will cause the flange 24' to push the tubular member 25 onto said fitting. To remove the device of FIG. 6, the bushing 24 is turned to be moved towards the head of the screw and then with a wrench applied to the tube 25, work it loose.

It is advisable in all instances to make the tubular member as 20 and 25, slightly tapered towards its open end, to facilitate its removal from the wall structure 17.

It is evident that upon removal of the device 18 after the wall 17 is built, there will be a hole 28 of a diameter equal to the outer diameter of the tubular member 20, through which the nipple 14 extends to the pipe fitting 15 and of course there will be the annular clearance 29 around the nipple, thereby affording adjustment of the position of said nipple to align it as may be necessary, without bending said nipple, for it can be maintained in any position within the confines of the hole in the wall indicated at 28, due to the "give" possible in the erected piping system of which pipe 16 is a part.

In the embodiment shown in FIG. 7, the screw 30 which is threaded only at its tip end 31, is slidably mounted in the bushing 32 and if desired also through a slide bearing 33 secured interior the tubular member 34. Said bushing may be pinned to the tubular member, as shown at 35. The manner of use of this tool is evident from the description heretofore given. The change of the relative positions of the screw and tube is here effected by sliding one on the other.

Whether the bushing is free in the tubular member, screwed therein or pinned thereto, are incidents applicable to all the embodiments shown.

It is to be noted that when 17 is to be very thick wall structure, that the tool may consist of a very long screw, though the tubular member may be in length, but a fraction of the intended thickness of wall. In such instance, the tubular member is first set to encompass the mouth of the fitting 15 as in FIG. 3. A rear portion of the wall is then built of a thickness less than the tubular member used. Upon the setting of such rear portion of the wall, the tube is brought forward on the screw so that the rear end of the tube resides in the hole 28 effected in such

wall portion, and the operation repeated until the wall is completed.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiments shown herein shall be deemed merely illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the specific description herein to indicate the scope of this invention.

I claim:

1. In a tool for plugging a pipe fitting whose open mouth to be plugged faces a proposed wall and for simultaneously providing that such wall when erected will have an opening therethrough to such mouth for the penetration of a nipple for connection to such mouth, an elongated tubular member, the first end of which is adapted to be set to substantially encompass said mouth, an elongated screw member, one end of which is adapted to plug said mouth, positioned within and along said tubular member and an element supporting said members whereby said tool is a unitary structure; said members being relatively movable longitudinally to alter the position of said tubular member in relation to said end of the screw; said tubular member being withdrawable through the wall after the wall is erected about it.

2. A tool as defined in claim 1, wherein said element is an interiorly threaded bushing mounted within the tubular member and in threaded engagement with said screw member.

3. A tool as defined in claim 2, wherein said bushing is threadedly engaged at the other end of the tubular member; said bushing having a laterally extending flange outside said tubular member, in contact with such other end of the tubular member.

4. A tool as defined in claim 2, wherein said bushing is slidably fitted into said tubular member; said bushing having a laterally extending flange outside said tubular member, in contact with the other end of the tubular member.

5. A tool as defined in claim 1, wherein the tubular member tapers towards the first end thereof in at least the exterior thereof.

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