This invention relates to a soil or waste pipe closing and spacing former or mold. The invention is more particularly concerned with improvements in soil pipe end closing and spacing former such as is used in the construction of concrete lavatory floors or the like, to provide an opening therethrough of desired shape and dimensions about the pipe end.

More specifically the present invention is an improvement over my co-pending application Serial No. 205,393, filed January 10, 1951, now Patent No. 2,679,155 issued May 25, 1954.

The said co-pending application discloses a soil pipe end closing and spacing former or mold which generally comprises a cylindrical shell or body member, adapted to encircle the upper end portion of the pipe, with the side wall thereof in concentric spaced relation to the pipe. The member further includes a cover or top closing portion for the shell which extends over the upper end of the pipe.

A wire cage-like member is shown removably supported within and in contact with the shell member and includes horizontally bent arm portions extending between the cover and shell for supporting the former on the pipe end. This cage member also includes other bent portions for centering the shell member about the pipe and which latter portions extend downwardly and then horizontally within the pipe where they are interconnected at the axis of the pipe in intersecting relation.

While the structure disclosed in said application has been found fully satisfactory for the molding of a required opening about the soil pipe, preparatory to the installation of a toilet bowl thereon, it is, however, desirable, if not necessary, at this stage of construction to test the installed soil pipe for possible leaks. Such a test is performed by means of a standard testing plug which is inserted into the waste pipe to a predetermined depth, from the upper free end thereof, and which plug includes a lower supported sealing member and a conical compression collar projecting upwardly from the member so as to extend above the free end of the pipe.

The former structure as disclosed in said application will preclude the use of such a testing plug due to the cover and the diametrical intersecting cage portions.

Accordingly, it is an object of the present invention to provide a soil pipe closing and spacing former of the general character above referred to and having all of the advantages thereof wherein the cage-like supporting and spacing member and the cover are each provided with concentric openings of required sizes for extension of the conical compression collar of a standard testing plug therethrough.

A further object of the invention is to provide a soil pipe former including a cylindrical shell or body member having a removable top cover and with the wall of the shell member adapted to encircle the upper end of a soil pipe in concentric relation thereto with the cover over-lying the upper open end of the pipe and wherein the cover is provided with a central opening of a size to closely receive the upper portion of the frusto-conical collar of a standard testing plug when engaged with the inner wall of the pipe, whereby the shell member may be supported and retained in concentric spaced relation to the pipe by the testing plug.

A still further object of the invention is to provide a soil pipe closing and spacing former for use with a standard testing plug, and wherein the former includes a cylindrical shell member for surrounding the upper open end of the pipe and wherein the plug supports the former and maintains same in spaced concentric relation to the pipe.

Other objects and advantages of the invention will become apparent in the course of the following detailed description, taken in connection with the accompanying drawing, wherein:

Fig. 1 is a vertical sectional view of the former or closet flange spacer as it is referred to in the trade and which permits the use of a standard testing plug within the pipe adjacent its open end;

Fig. 2 is a broken top plan view of the structure shown in Fig. 1 before the cover is applied and secured thereon and showing the interior thereof;

Fig. 3 is a vertical sectional view showing a standard testing plug in operative position within the soil pipe and in operative association with the former or mold mounted on the upper end of the pipe;

Fig. 4 is a top plan view of the cover on a reduced scale and

Fig. 5 is a vertical sectional view on a reduced scale showing a modified embodiment of the invention by which the cage of Figs. 1 and 2 is eliminated and the former is supported and centered by the conical wall of a standard testing plug.

In my co-pending application the former can 10 is fully shown and described in its intended association with the usual wooden sub-floor F, which supports the concrete floor C.

The improved former or mold is adapted for use with or in other words permits the use of a standard testing plug within the upper end of the waste pipe or bend while the former or closet flange spacer is supported in operative position on and about said pipe end. As is shown in Fig. 3, the standard testing plug comprises an elongated tubular member in the form of an expansible rubber packing ring to be inserted within the waste pipe P at a suitable or required distance from its upper free end. This testing plug further includes an externally accessible means for expanding the packing ring r into fluid tight engagement with the inner wall of the pipe as will later be explained.

While the details of construction of the testing plug form no part of the instant invention it should be understood that this device may cooperate therewith in certain instances and comprises a length of pipe p whose lower end portion is threaded from the point indicated t to the lower end thereof and which end portion is removably engaged in a threaded socket in the lower packing ring supporting flange or plate f'. A second, upper plate or flange f surrounds the pipe p above the packing ring r so that the compressible packing ring r is disposed between these flanges. A frusto-conical collar c is integral with and projects upwardly from the upper plate or flange f and a thumb nut n is threaded on pipe p above the collar c. Thus upon turning the nut n clockwise the flange members f and f' will be moved relatively toward each other with a resulting compression of ring r into supporting and fluid sealing engagement with the inner wall of the soil or waste pipe P.

After placement of the testing plug in the manner stated, a predetermined fluid pressure is introduced into the bend through the pipe p. Thus the purpose of the
testing plug is to determine the possible presence of leaks in the pipes connecting the bend.

The cover 14 may be normally imperforate whereby same is usable as in the construction of said application, when the use of a testing plug is not required during the use of the former. While this cover member 14 may be formed with the required opening therein as shown in Fig. 3, it is desired to provide same with a relatively deep circular score line 31, whereby the circumscribed portion may be readily pushed out or otherwise removed to provide a central circular aperture 52 for projection of the conical collar c therefrom. The cover 14 is adapted to be secured to the upper edge of the side wall 11, of the shell 10 by means of integral tongues 29, projecting upwardly from such edge, see Figs. 1 and 4, and received in openings 30 in the cover 14 adjacent flanges 15.

After such application of the cover these tongues are bent down into engagement with the upper wall of the cover as is indicated at the left of Fig. 7.

A supporting and spacing cage-like member 16 is provided and which generally corresponds to that disclosed in said co-pending application. As in said application the cage 16 is removably supported in the shell member 10 and includes four wire members 20 which engage the inner cylindrical wall of the shell body. These wire members are each of generally inverted L-form including the lower foot portions 19 which are engageable with the pipe contacting and spacing flange 12, inturnd from the lower ends of each of these second vertical portions 21 extends directly beneath the cover 14 for a substantially greater radial extent than the spacing flange 12 so as to extend entirely across the upper edge of the waste pipe P. At each of these radially spaced points each wire member is bent to provide a second vertical portion 22 engageable within the inner wall of the pipe P (Fig. 3). At the lower ends of each of these second vertical portions the wire is again bent to provide a short radial projection or stub portion 23 on the opposed ends of which a wire ring 23 is supported and suitably secured as by soldering.

Upon reference to Fig. 3 it will be seen that the projections 23 rest on the upper horizontal annular flange 29 of the testing device and the frusto-conical collar c thereon of projects upwardly through the cage ring 28 as well as through the small opening in the cover member 14.

In applying this assembly to a waste pipe end P, the testing device and the former are first disassembled, i.e. the threaded pressure conducting pipe p and wing nut n carried thereon are separated from the rest of the device. The cover 14 of the former 16 is removed from the upper end of the cylindrical body shell 11 and the circular central portion thereof, within the scored lines 31, is pushed out leaving an aperture of slightly less diameter than the ring 28 of the cage member.

The cover 14 is then lowered over the conical wall of the collar c and the threaded pipe p inserted through the collar and again screwed into the base plate f. The cover 14 is then replaced on the shell body with the tongues 29 extending through the slots 30. When these tongues are bent down as shown in Fig. 1 the assembly of Fig. 3 is complete and ready to be placed in and around the waste pipe end and the wing nut screwed down to seal off the waste pipe and provide the required closet bowl receiving space around the waste pipe when the concrete floor is poured.

The improved former shown in applied operative position in Fig. 3 will function in the same manner as disclosed in Fig. 4 of said co-pending application but will also provide for the use of the standard testing plug when installed on a waste pipe end. The shell of the space member or mold 10 will be vertically supported by the cage portions 21 and same will be centered by the cage portions 22 and the lower flange 12 of the cylindrical shell member.

In accordance with the modified embodiment of Fig. 5, however, the cage-like member 16 is omitted and the testing plug is endowed with a second function in that it both supports and centers the shell 10 by cooperation of flange 12 thereof.

In this embodiment the opening 22' is of such diameter or so disposed vertically as to engage the frusto-conical wall of collar c in a plane above the upper edge of the side wall 11 of the shell 10 when the plug is in sealing position within the pipe and since the plug is rigid with the pipe when ring r is expanded into tight engagement with the inner wall of the pipe, the shell member will be retained in concentric relation to the pipe with the aid of flange 12 on the lower end of the shell member.

While the former according to Fig. 5 is supported by or suspended from the testing plug collar c with the cover 14 disposed above the free pipe end, it will be understood that the cover may rest on the free end of the pipe and the collar function only to center the former with respect to the pipe.

The former as above described comprises a cylindrical shell or body member whose wall surrounds the wall of the pipe, a cover removably secured to the upper edge of the shell member for extension over the free end of the pipe, and a supporting and centering means for the shell member which embodies a standard testing plug.

After the concrete has been poured and allowed to set, about the former 10 the top or cover 14 is freed by bending the tongues 29 to a vertical position, as to the right in Fig. 1. Thereupon the plug may be contracted and then lifted with the cover 14 upwardly from the pipe P. In the embodiment of Fig. 3 the cage-like member 16 will also be withdrawn with the plug and cover and the shell member 10 will remain in the work and further operations carried out as is set forth in said co-pending application and which are immaterial to the present invention.

While I have disclosed my invention in accordance with certain specific embodiments thereof, such is to be considered as illustrative only, and not restrictive, the scope of the invention being defined in the subjoined claims.

What I claim and desire to secure by U. S. Letters Patent is:

1. A soil pipe end spacing and closing former for operable association with a standard testing plug adapted to be removably supported within a pipe end and including an expandable cylindrical portion for engagement with the inner wall of the pipe, a frusto-conical collar adapted to project upwardly from said cylindrical portion beyond the upper end of the pipe, and the lower end of the collar being of less diameter than said cylindrical portion in the provision of a shoulder, the said former comprising a cylindrical shell for enclosing of the upper free end portion of said pipe, a flange extending inwardly from the lower edge of said shell whose inner edge is adapted to engage the outer surface of said pipe, a cover removably secured to the upper edge of said shell and having a central opening through which said collar extends, and supporting and centering means for said shell including a cage-like member removably supported within the shell and having circumferentially spaced vertically disposed portions adapted to engage the inner wall of the pipe and having projections on the lower ends thereof in seating engagement with said shoulder.

2. The structure according to claim 1 wherein said cage-like member supporting means includes horizontal portions radiating from said vertically disposed portions for engagement with the upper end of said pipe and second vertical portions depending from said horizontal portions in engagement with the inner wall of said shell, and a ring secured to said projections through which said collar extends.

3. A soil pipe end spacing and closing former comprising a cylindrical body member for surrounding a soil pipe end and having an inwardly directed annular flange.
adjacent its lower end whose inner edge is adapted to engage the outer surface of the pipe below its open end, a removable cover on the upper end of the cylindrical body member for extension over the open end of the pipe, said cover being provided with a central circular opening adapted to surround the upper portion of a standard testing plug, a supporting and centering means for the cylindrical member including a wire cage member removably supported within the cylindrical member and having vertically disposed portions for removable engagement with the inner wall of the pipe, projections on the lower ends of said vertically disposed portions, and an annular ring secured to said projections through which said plug extends.

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