March 6, 1951 L. G. JOHNSON 2,543,912

FORMING BOX

Filed Jan. 24, 1947

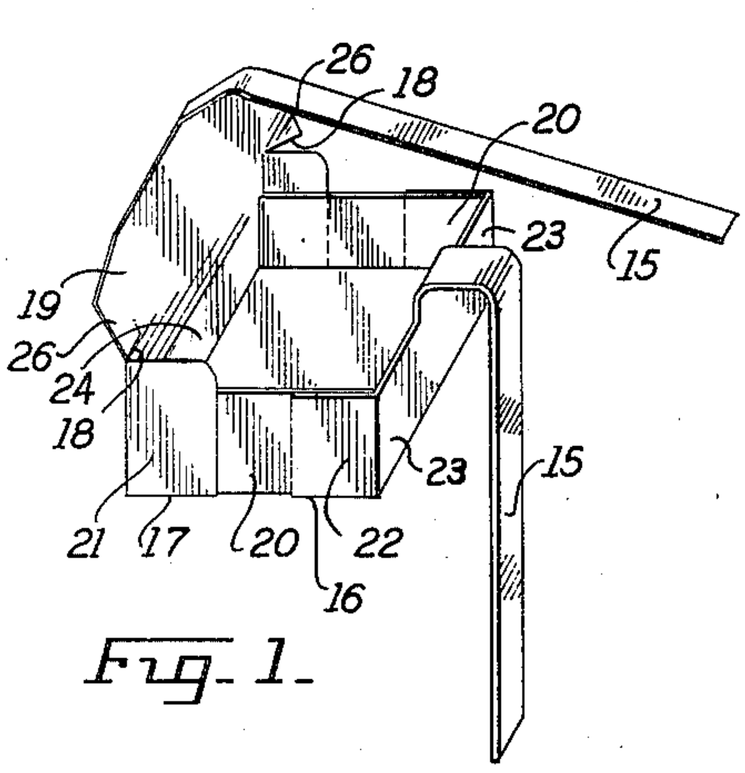

Fig. 1.

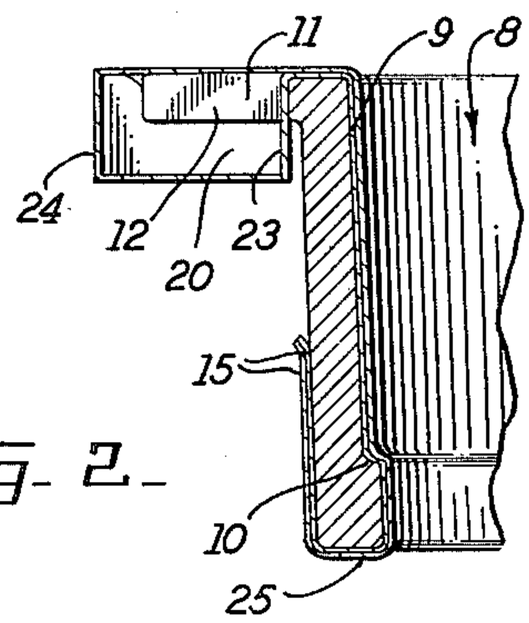

Fig. 2.

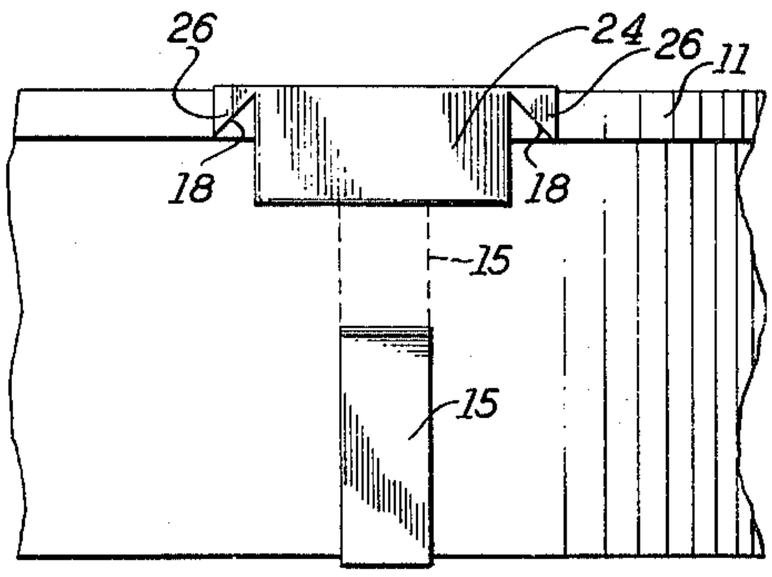

Fig. 4.

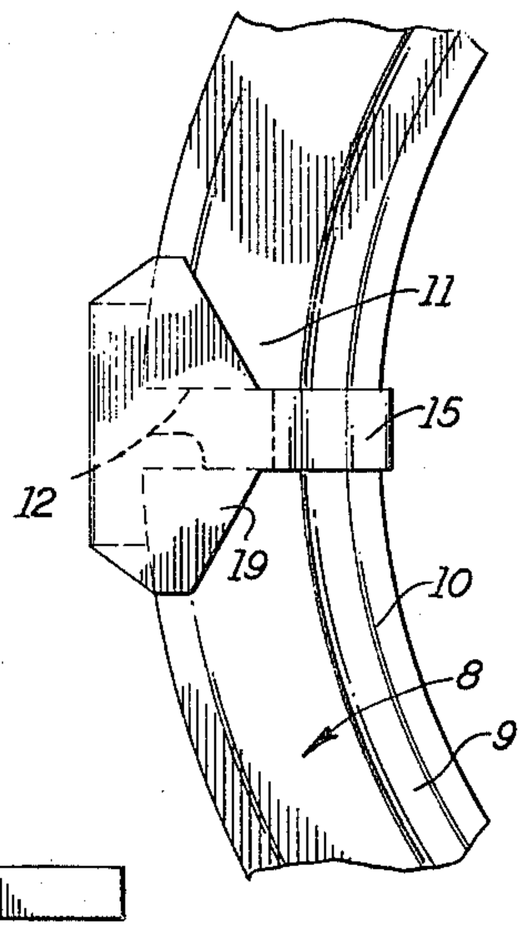

Fig. 3.

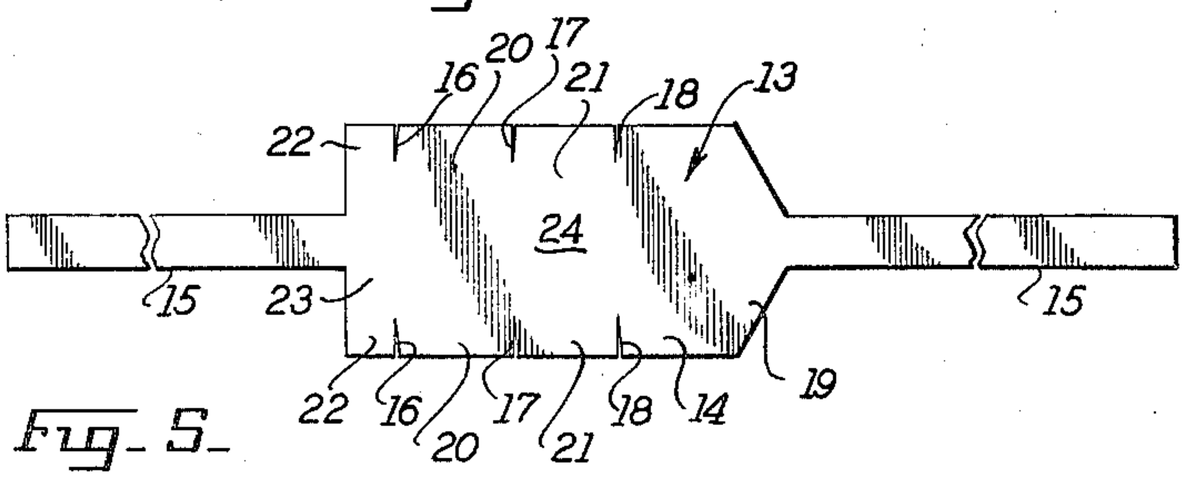

Fig. 5.

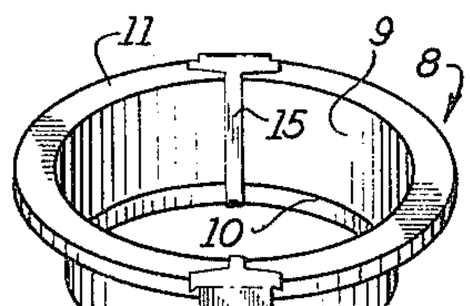

Fig. 6.

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FORMING BOX

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1 Claim. (Cl. 25—128)

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This invention relates to forming boxes, and more specifically contemplates a member from which a box structure may be manually formed, for association with a pipe fitting of the type usually set in concrete floors, to protect and preserve during the laying of the concrete the recesses in the flange of the fitting provided for the accommodation of bolt heads by which a fixture may be mounted rigidly to the fitting and upon the floor.

Closet bowls and other fixtures requiring connection with a sewer line are often set upon concrete floors through which the sewer or drain pipe projects. In accordance with such installations, the soil pipe is assembled before laying the floor, with one end extended upwardly to a point above the level of the proposed floor to prevent the inadvertent flow of fluent cement into the pipe when the floor is laid. Telescoped over the end of the pipe is a flanged fitting adapted for subsequent utility in mounting the fixture in liquid-tight association with the pipe. The fitting is accordingly telescopically positioned upon the pipe with the flange flush with the level of the proposed floor. After calking the bore of the fitting around the pipe, the plumber may safely leave the job while the floor is laid. When the concrete is set, the soil pipe is broken off flush with or within the fitting, and the toilet bowl or other fixture for which the drain is provided is secured by bolts to the flange of the fitting. The bolt heads are inserted under the flange with their shanks projecting upwardly through slots in the flange and into the base of the fixture. As the concrete is laid flush with the upper surface of the flange, it has been inevitable that the slots in the fitting, as well as the area immediately therebelow, are filled with concrete which must be chipped or chiseled out in order to receive the heads.

It is a general object of the present invention to provide a box adapted for assembly with a flanged pipe fitting to substantially enclose the portion of the flange in which a radial bolt recess is located, so as to form a chamber beneath and laterally of the flange when the concrete is laid around the pipe fitting for the accommodation of the head of a bolt by which a fixture is to be subsequently secured to the fitting and floor.

More specifically, an object hereof is the provision of a strip of flexible metal or the like, adapted to be bent around a slotted portion of the flange of a pipe fitting in the form of a box and having integral strips projecting from opposite ends thereof for extension from the top

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and from an inner side of the box through the slot in the flange, respectively, for joint extension over the rim and downwardly into the bore of the fitting so as to positively secure the box in operative position, while the concrete is poured around the fitting.

Another and highly important object hereof is to provide a bolt receptacle of the character above alluded to, operable to snugly engage a pipe fitting, incorporating a top section adapted upon assembly to overlie the slot in the flange of the fitting through which the bolt shank is to be projected, the top section being adapted to be torn, cut, or otherwise removed from the remainder of the box after the latter is cemented with the fitting in the floor so as to expose the slot and to open access through a space laterally in the slot into the box below the flange for the insertion of the bolt head and thereby enable the disposition of the bolt with its shank extending upwardly and axially parallel with the fitting.

Numerous other objects and salient features of my invention, such, for example, as simplicity of construction, economy of manufacture, ease of installation and utility, positive engagement with the flange of the fitting to resist pressure of the fluent cement, and adaptability to pipe fittings of various diameters and wall thicknesses, will be apparent to those of skill in the art upon an examination of the following description, read in the light of the accompanying drawings, in which:

Fig. 1 is a perspective view of a forming box embodying my invention, shown with the elements thereof in partially folded relationship;

Fig. 2 is a fragmentary sectional view through the device as installed upon a flange of a pipe fitting;

Fig. 3 is a fragmentary plan view of a pipe fitting with a forming box installed thereon;

Fig. 4 is a side elevation of the box in position for the laying of the concrete around the fitting;

Fig. 5 is a plan view of the strip from which the box is formed;

Fig. 6 is a perspective view of a flanged pipe fitting, having a pair of diametrically opposed slots in the flange, covered and protected by forming boxes, each incorporating my invention.

Referring to the drawings in detail, the numerals of which indicate similar parts throughout the several views, 8 designates generally a circular pipe fitting having a bore 9 diametrically reduced at its lower end to form

an upwardly-directed internal shoulder 10 for a purpose hereinafter described.

An integral annular flange 11 encircles the upper end of the fitting, and in diametrically opposite sides of the flange radial slots 12 are formed. Each slot 12 is of a width only slightly greater than the diameter of the shank of a bolt (not shown) adapted to project upwardly through it for attachment of one side of the base of a closet bowl or other fixture to flange 11.

The forming box depicted in Figs. 1–4 and 6, is illustrative of each of a pair thereof adapted to be assembled and shaped upon opposite sides of the fitting, and comprises a flat, generally rectangular strip 13 (Fig. 5) composed preferably of flexible metal. The body 14 of strip is of a width substantially greater than that of the slot 12 in flange 11 of the pipe fitting 8 with which the box is to be associated. From each end of the rectangular body 14, a narrow retaining strap 15, integral with the body, extends for a purpose later referred to.

Adjacent one end of body 14 of the strip 13, the sides of the latter are cut inwardly as at 16 on a line forming a right angle with the longitudinal axis of the strip and to a depth equal to the proposed depth of the inner side of the box to be formed, as will appear. The distance between the cuts 16 and the adjacent end of body 14 of the strip is preferably substantially equal to the depth of the cuts, respectively. A second pair of aligned cuts 17, parallel to the first, are made in the side edges of body 14 to a depth equal to that established by the cuts 16. The distance between the cuts 16 and 17 at respective sides of the strip determine the width of the bottom of the box, and accordingly varies with the width of flange 11 and the diameter of the bolt head to be accommodated. A third pair of transverse, aligned cuts 18 extend into the sides of the body a distance corresponding to the depth of the first cuts 16 and are spaced from the line of the cuts 17 a distance equal to the depth of the proposed box laterally of the flange 11 to which it is to be attached.

From the aligned cuts 18 the remainder of the body of the strip, identified by numeral 19, is of a length sufficient to substantially cover the entire box proper to be constructed by the user from the part of body 14 between the opposite end of the latter and the cuts 18. The width of the strip 15 attached to the adjacent end of the body is preferably slightly greater than that of slots 12 in flange 11 of the fitting 8 over which it is to be placed, as will appear, so as to supplement the function of the top section 19 of the box when formed, of obviating any tendency of the liquid cement to enter the box through the slot in the flange.

The utility of the flat strip 13 and the construction of the box produced by bending the component parts of the body thereof is as follows: Prior to the assembly of fitting 8, and with the soil pipe mounted so as to project vertically above the level of the proposed floor, the fitting is equipped with a pair of boxes embodying my invention for the protection of the slots 12 as above generally described. To this end, the sections 20 and 21 of each strip between the cuts 16, 17 and 18 at each side and the sections 22 of the strips between the cuts 16 and the adjacent end of the body are bent at right angles to the plane of the body and in the same direction. The strip 13 is then bent to form a right angle on a transverse line extending between each of the oppo-

sitely disposed cuts 16, 17 and 18, respectively, each bend of the strip being in the same direction. It will thus be seen that this latter step of folding the body of the strip brings the rectangular transverse portions 23 and 24 of the body into parallel oppositely disposed relationship to one another to form oppsite sides of the box. Coincidentally, the marginal sections 22 of the body between the cuts 16 and the adjacent end of the body and the sections 21 between the cuts 17 and 18, respectively, are folded inwardly to overlie and flank the marginal sections 20 between the cuts 16 and 17 at each side of the body to form composite ends of the box as illustrated particularly in Fig. 1.

As hereinabove indicated, the width of the transverse portions 24 as determined by the spacing of cuts 17 and 18 is greater than the width of the marginal portion 23 by an amount equal to the thickness of the flange 11 with the result that when the strip is folded as above described, the outer side wall 24 of the box projects above the upper edges of the remainder of the box and to a corresponding extent. The box is then assembled with the fitting by initially placing the same below flange 11 with the strap 15, which extends from the end of the body opposite to the top section 19, projecting upwardly through and in contiguous relation with the bottom of slot 12. The depth to which the cuts 18 penetrate the body is proportioned to the distance between the line of cuts 16 and 17 so as to assure the formation of end walls of a length from the inner edge of the box to the nearest adjacent edge of the outer transverse portion 24, substantially equal to the width of flange 11 of the fitting, whereby the outer edge of the flange will normally abut against the edge of the transverse portion 24 of body 14 when the box is assembled therewith, as described.

The top section 19 of the body of strip 13 is then bent down upon the upper surface of flange 11 and over the slot 12 in the latter so as to complete the enclosure of that portion of the flange.

In order to secure the box in the described position, the straps 15 are jointly extended over the upper rim of fitting 8 and downwardly into and contiguous with the bore 9. It is desirable that straps 15 be of sufficient length to project from the lower end of the fitting in order that they may be bent around the lower rim, as indicated in Fig. 2 at 25, and thereby positively clamp the box in preadjusted position.

The fitting 8 with the boxes installed is then telescoped over the pipe and positioned with the flange at the level of the proposed floor. The fitting 8 and pipe are rigidly connected by calking the bore of the fitting around the pipe to the depth of the annular shoulder 10. Straps 15 and the boxes are thus preliminarily secured in their adjusted positions on flange 11. The outer corners 26 of top section 19 may then be bent downwardly to obviate the projection from the finished floor of sharp edges.

The floor of concrete may then be laid around the fitting and boxes, the latter being firmly cemented in place. After the concrete is set, the plumber severs the portion of the pipe projecting above the floor and theeafter cuts the top section 19 from the boxes, exposing the slots 12 in the flange 11 and the receptacles in the concrete below and extending laterally of the flange provided by the forming boxes. The heads of the bolts by which the fixture is to be attached are slipped beneath flange 11 adjacent the outer walls 24 of the respective boxes and the shanks

of the bolts are drawn into their normal operative position in the slots 12 of flange 11 for alignment with the holes in the base of the fixture (not shown) to be attached to the soil pipe, in a conventional manner.

It will be appreciated that the admission of small amounts of fluent cement into the box between the component elements thereof will not impair the practical efficiency resulting from its utility. However, before securing the straps 15, the plumber may fill the box with paper, oakum or other material which may be removed with facility after the floor is laid.

While I have shown and described but a single embodiment of my invention, it will be appreciated that numerous changes in size, design, shape and number of the various elements hereof may be made in accordance with specific requirements, that the box need not be formed by the plumber on the job, but may consist of a molded, cast, or a pre-formed suitably sealed sheet metal receptacle adapted for association with the flange of a pipe fitting, that the contour of the finished box may be varied, depending upon the shape of the flange and of body of the fitting so as to assure the provision of a tight enclosure, and that any conventional expedients may be substituted for the integral straps 15 by which the boxes are secured in place—all without departing from the spirit of my invention as defined in the appended claim.

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

In a device of the character described for enclosing a slotted portion of the flange of an annular pipe fitting, a box structure comprising a bottom and a side wall, a strap to support the upper edge of a reach of said side wall against

the underside of the flange at the bottom and at each side of said slot another reach of said side walls extending to the level of the upper surface of the flange laterally of the latter and a top section connected to the last-named reach of said side walls to overlie the slotted portion of said flange, said strap being connected to the side wall of said box structure adjacent the bottom of the slot in the flange and extending over the rim of the fitting into the bore thereof, a top section for said box structure connected to said last-named upper edge to overlie the portion of said flange in which the slot is located, and a strap connected to the edge of said top section extending over the rim of said fitting and into the bore thereof to secure said top section in position.

LOREN G. JOHNSON.

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