May 26, 1970 C. T. FLACHBARTH ET AL 3,513,525

TOOL FOR INSERT CAPS

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Fig. 1.

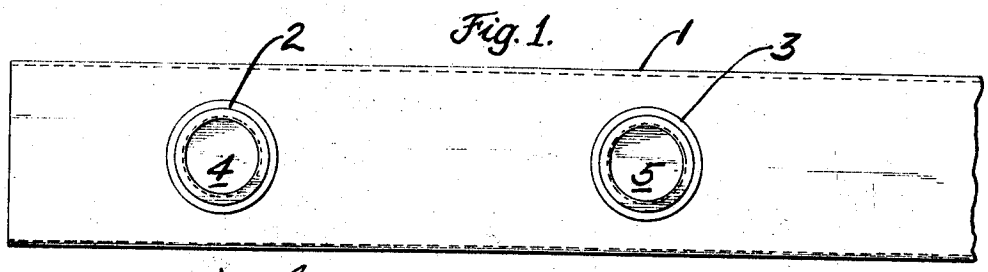


Fig. 2.

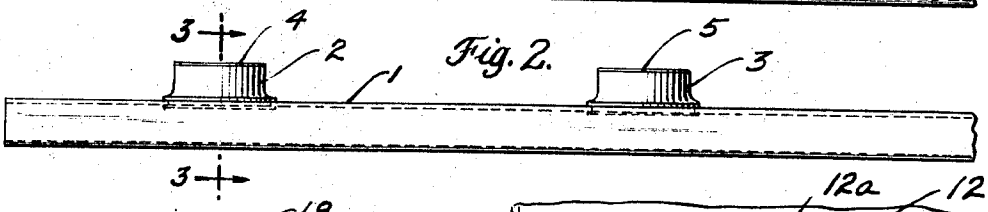


Fig. 3.

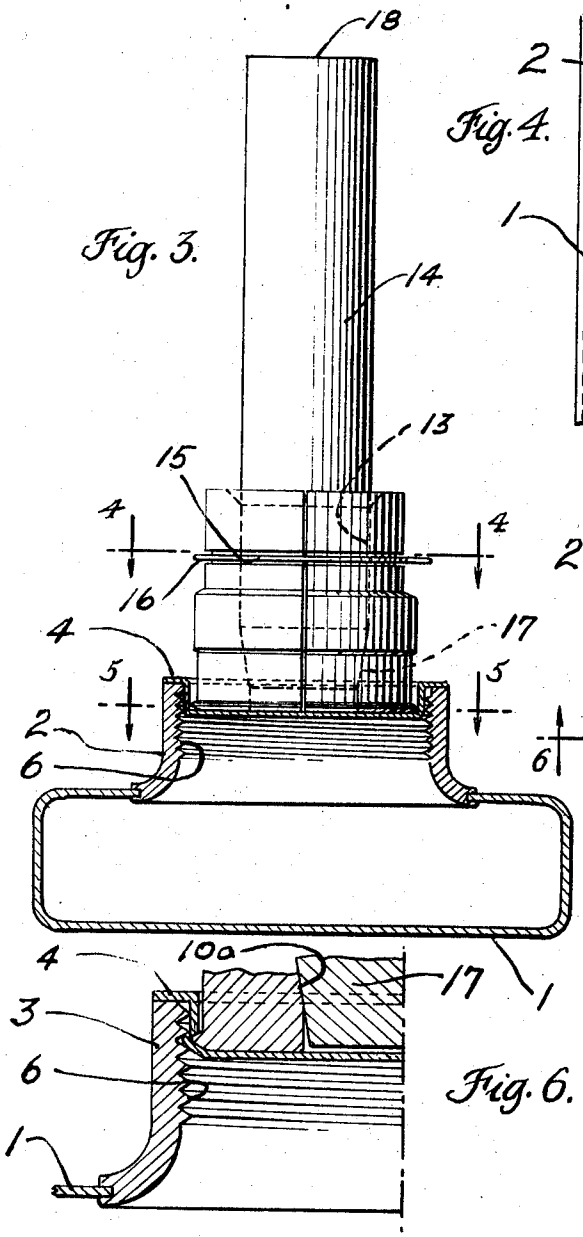


Fig. 4.

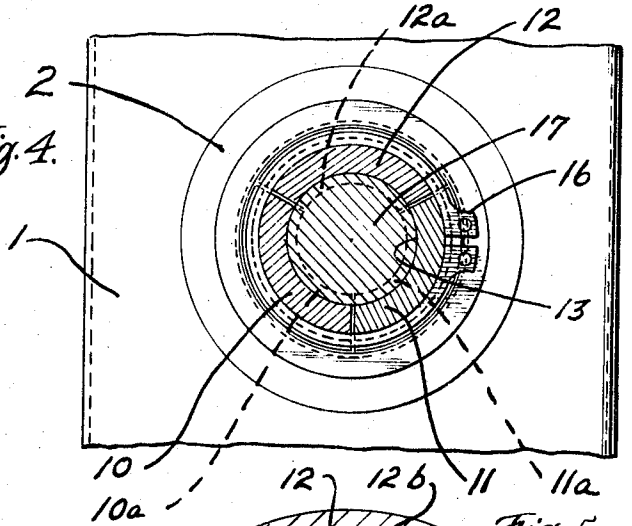


Fig. 5.

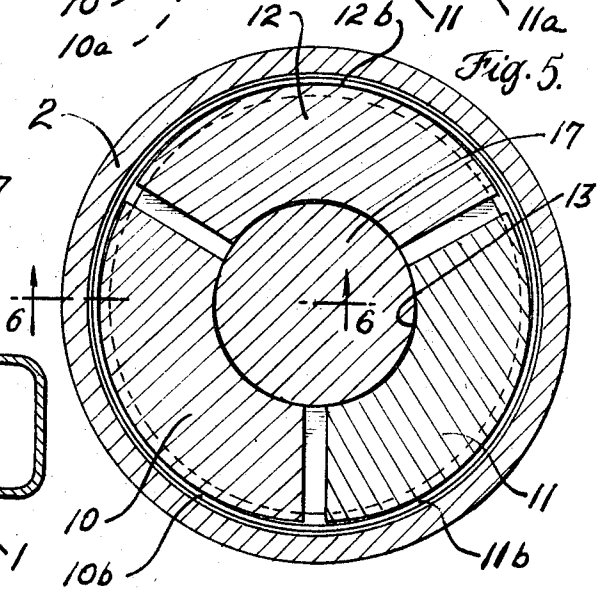


Fig. 6.

INVENTORS
Charles T. Flachbarth
William Walker
BY
Frederick T. Olsson
ATTORNEY

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TOOL FOR INSERT CAPS

Charles T. Flachbarth, Parkersburg, W. Va., and William Walker, Belpre, Ohio, assignors to Textron Inc., Providence, R.I., a corporation of Delaware

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U.S. Cl. 29—203 4 Claims

ABSTRACT OF THE DISCLOSURE

A tool comprising three jaws and a ram mounted as a unit in an insert cap, the jaws being expandable against the wall of the cap to press the same against the side of the insert, expansion of the jaws being effected by striking the ram with a hammer.

This invention relates to tools used in the installation of underfloor duct and in particular relates to tools used on the job for reinstating insert caps.

With underfloor duct of the preset insert type, one of the particularly annoying and serious problems in connection with the installation of such ducts is the matter of loose or missing insert caps. Without a firmly secured cap, the interior of the duct could be partially filled with concrete during pouring. This condition would immobilize the underfloor system unless repairs are made and this necessitates ripping out a portion of the concrete floor to clean out or replace the duct in question.

It is the usual practice to press fit the caps in the insert at the point of manufacture. Because of manufacturing tolerances it sometimes happens that the caps will not be tight enough to withstand the treatment received during shipment and/or on the job. For example the ducts are stacked in bundles, shipped usually hundreds or even thousands of miles, unloaded, put into place on the floor by the electricians and then prior to the pouring of the concrete are subject to contact by persons and equipment of other trades. Therefore, it sometimes occurs that the caps pop out of the insert or become so loose that they are knocked out during the pouring of the concrete. It is the recommended practice that prior to pouring, electricians inspect each of the inserts for loose or missing caps. Loose caps are taped on the insert and missing caps are replaced and taped. The taping is usually done several days and sometimes even weeks before the concrete is poured so that the taped caps are subject to mechanical abuse and weathering. Experience has shown that taping is unsatisfactory because in many instances the taped caps become loose and the duct receives concrete during the pouring.

The present invention provides a tool which can be taken by the electrician as he goes about inspecting caps and then used immediately when he finds a loose or missing cap. The tool is simply inserted in the cap and struck with a hammer. This causes a pair of jaws to expand against the cap wall and force the same tight against the insert wall. This operation locks the insert in place so that the danger of concrete entering the duct is avoided.

A preferred form of the invention will be explained below in connection with the following drawings wherein:

FIG. 1 is a plan view of a portion of an underfloor duct with two preset inserts each having an insert cap.

FIG. 2 is a side elevation of FIG. 1.

FIG. 3 is a vertical section taken through line 3—3 of FIG. 1 with the tool of the invention shown mounted in the insert cap.

FIG. 4 is a plan section taken on the line 4—4 of FIG. 3.

FIG. 5 is an enlarged plan section taken on the line 5—5 of FIG. 3 showing the tool jaws in their expanded position and forcing the cap tight against the insert wall.

FIG. 6 is a fragmentary section taken on the line 6—6 of FIG. 5.

In FIG. 1 the underfloor duct **1** carries a pair of preset threaded inserts **2** and **3** which are secured to the duct in the usual manner and have insert caps **4** and **5**.

At the time of the manufacture, the insert caps are press fitted in the insert so that the outside walls bear firm against the insert threads. This is shown in FIG. 3 where cap **4** bears against the threads **6**. Where caps become loose due to conditions in shipping or after being installed on the job, a tool, which will be described below, is utilized to establish a tight contact between the cap and insert so that it will not pop out during the pouring of the concrete.

The tool has a plurality of identical jaws **10**, **11** and **12** which are arcuately shaped and disposed in a circle in side-by-side relationship. Each jaw has interior surfacing arranged to form a central aperture **13** extending axially through the jaws. The aperture **13** receives the ram **14** and provides for the ram to be movable therethrough.

The exterior of each jaw has a groove and the respective grooves are disposed so as to form a continuous peripheral groove **15**. A conventional snap ring **16** is disposed in the groove **15**. The snap ring holds the jaws together for mounting as a unit in the cap of an insert as shown in FIG. 3. The yieldable characteristic of the ring permits the jaws to move toward and away from the insert wall as will be explained below.

The lower part of the interior of each jaw is configured with a gradually tapering cam surface such as the cam surfaces **10***a* and **11***a* on the jaws **10** and **11**. The ram **14** has a tapered head **17** adapted to engage these surfaces.

It will be apparent that if the ram **14** is moved thru the aperture, the engagement of the head **17** with the cam surface **10***a*, **11***a* and **12***a* will cause the jaws to expand or move outwardly against the wall of the insert.

For expanding the jaws, the ram **14** is placed in the position shown in FIG. 3 and then to flat top **18** which is struck with a hammer. This moves the ram down in the aperture and the jaws expand due to the engagement of the tapered surfaces.

Each jaw has a contact face for engaging the wall of the cap and pushing the same against the side of the insert. In the embodiment shown each contact face is in the form of a peening lip such as the lips **10***b*, **11***b* and **12***b*.

When the jaws are moved outwardly against the insert, each peening lip tends to push a portion of the wall of the insert at least partially into a portion of the threads **6** (see FIG. 6). This insures a positive lock while at the same time providing that the cap can be manually removed at some subsequent date when a floor-fitting is to be secured to the insert.

When the ram is pulled out of the aperture, the pressure of the snap ring will cause the jaws to move back to their original positions.

The tool structure described provides for an easy, quick and positive way for the electrician to secure a cap to an insert. The electrician upon replacing a cap or on finding a loose cap simply mounts the unit comprising the three jaws **10**, **11** and **12**, the ring **16** and the ram **14** in the cap and then strikes or taps the ram with a hammer. The electrician then removes the unit and proceeds to the next job assured that the cap is firmly in place.

We claim:

1. A tool for on-the-job securing of the caps of preset inserts of underfloor duct by pressing the wall of the cap against the side of the insert comprising:

a plurality of jaws;

means connecting the jaws together as a unit for mounting in the cap of an insert, said means providing for the jaws to move toward and away from the wall of the cap while so mounted;

means on said jaws respectively forming contact faces operative when the jaws are moved away from each other to engage the wall of the cap and force the same against the side of an insert;

means on each jaw respectively forming a central aperture providing for a ram to be movable therein when the jaws are mounted in the cap of an insert; and

mechanism on the jaws respectively forming cam surfaces to be engaged by a ram moved through the aperture, the engagement of the ram with the cam surfaces moving the jaws away from one another to cause the contact faces of the jaws to press the wall of the cap against the side of the insert.

2. A construction in accordance with claim 1 wherein said contact faces are in the form of peening lips.

3. A construction in accordance with claim 1 further including a ram disposed in said aperture in engagement with said cam surfaces, the ram having means to receive the blow of a hammer for moving the tool through the aperture.

4. A tool for on-the-job securing of the caps of preset inserts of underfloor duct by pressing the wall of the cap against the side of the insert comprising:

three jaws arranged in a circle in side-by-side relationship and having interior surfacing forming a central aperture providing for a ram to be movable therethrough;

means on the exterior of each jaw forming a groove, the grooves being aligned whereby there is formed a continuous peripheral groove;

a yieldable snap ring extending through said peripheral groove and connecting the segments together as a unit for mounting in the cap of an insert and the snap ring providing for the jaws to be movable toward and away from the wall of the cap;

means on said jaws respectively forming contact faces operative when the jaws move away from each other to engage the wall of the cap and force the same against the side of an insert; and

means on the interior of each jaw respectively forming tapering cam surfaces at one end of the said aperture to be engaged by a ram moving through the aperture, the engagement of the ram with the cam surfaces moving the jaws away from one another to cause the contact faces of the jaws to press the wall of the cap against the side of an insert.

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THOMAS H. EAGER, Primary Examiner

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29—200, 243.52, 275