United States Patent

Hilson

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[54] **INSERT FOR EMBEDDED FITTINGS**

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[52] **U.S. Cl.** **249/94,** 85/1, 238/377, 249/86, 249/97

[51] **Int. Cl.** **B28b 7/16**

[58] **Field of Search** .....238/371, 373, 377; 249/83, 249/96, 97, 86, 205, 41, 94; 18/DIG. 10; 52/585, 704, 699; 25/DIG. 9, DIG. 7, 131 V, 131 RR; 264/35, 271, 275, 278

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[57] **ABSTRACT**

A form in which concrete, or an equivalent moldable material, is poured to provide a finished product. A panel or wall portion of the form or mold is equipped with means for distributively positioning and embedding hollow sleeve-like anchors or fittings. Each means or device embodies a plastic or an equivalent insert or dowel over which the anchor or fitting is sleeved and temporarily held in a manner that it can be embedded at the desired locale in the finished product. After the poured material hardens, adapter means—which constitutes a lower disposable component part of the dowel—is broken off at a frangible or preweakened point. The finished product with the dowel-sealed-anchors is freed for shipment. The adapter stays put in the form until it is subsequently dislodged and discarded.

5 Claims, 5 Drawing Figures

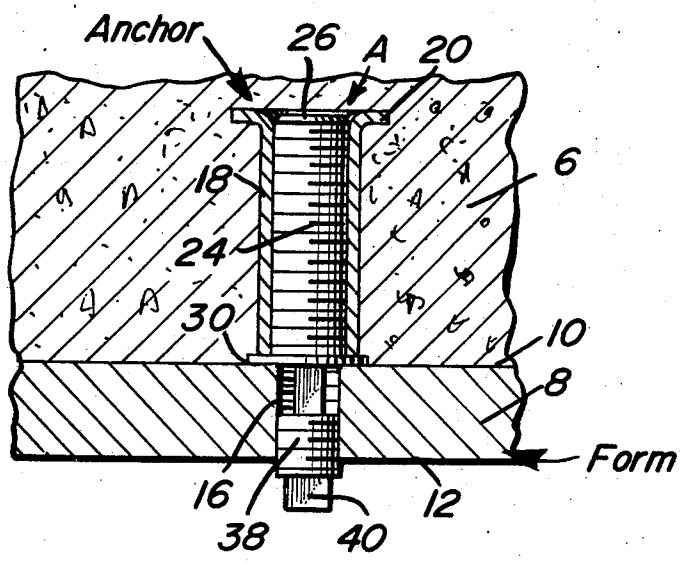


Fig. 1

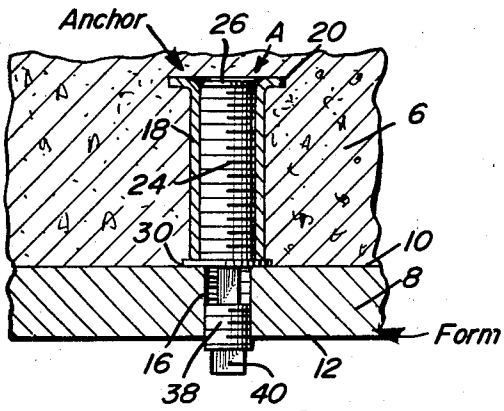


Fig. 2

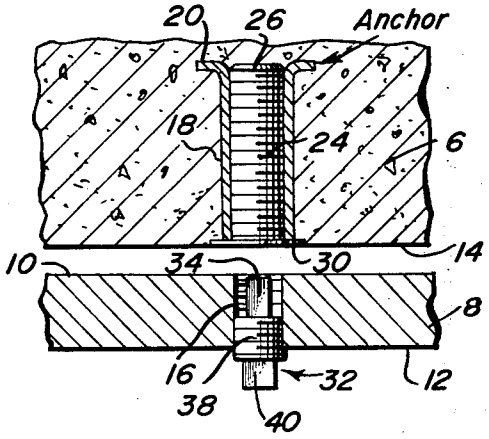
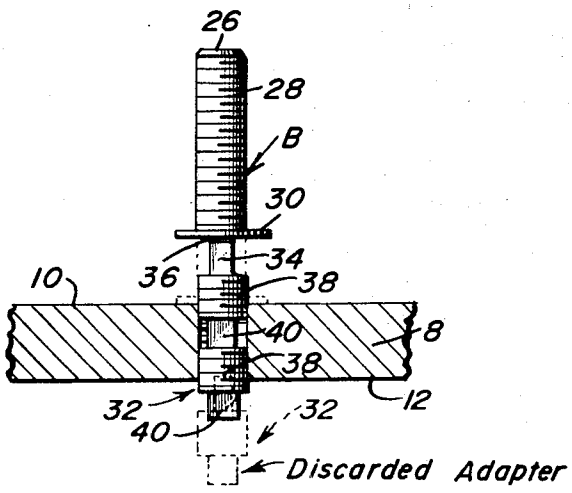


Fig. 4



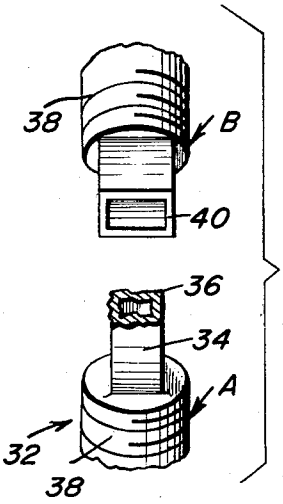
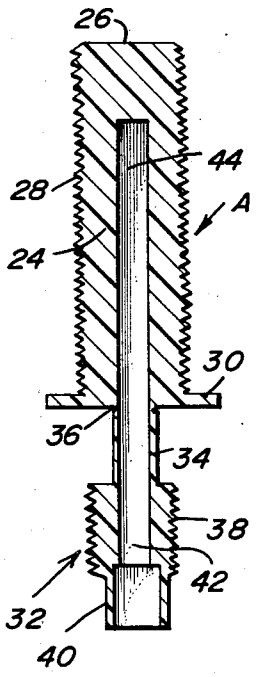


Fig. 5

Fig. 3



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This invention relates to certain new and useful improvements in molds and forms which are designed and adapted to expeditiously manufacture modules such as blocks, slabs, concrete railroad ties and the like and has to do, more particularly, with internally screw-threaded sleeve-type positioning anchors or equivalent fittings and maintaining the same in a predetermined place until the moldable material is poured and hardened to produce the finished anchor-equipped or fitting-equipped end product.

Briefly, one aspect of the over-all concept has to do with a uniquely constructed dowel or insert for metal anchors or equivalent fittings and the means which is provided and relied upon to hold the same in place in the mold in which the liquid concrete, or other moldable material, has been poured to form the transportable ready-to-use product. This dowel has a novelly constructed lower end which is herein designated as adapter means. After the moldable material hardens and sets, the adapter means, which has a pressure responsive frangible or pre-weakened neck, is broken off and the finished product with the embedded and dowel-sealed anchors is then readied for handling, shipment and use.

Another aspect of the invention pertains, also briefly stated, to a mold which is characterized by a form embodying a wall which has spaced parallel flat faces and, for purposes of this disclosure, is implemented with at least one screw-threaded hole which opens through the respective flat faces. A precast slab resides and is supported atop one flat face and has an open-ended internally screw-threaded anchor or fitting embedded therein and aligned with the hole. To achieve the improved result desired, the aforementioned positioning insert or dowel comes into play, that is, the dowel proper is telescopingly screwed or threaded into the anchor in such a manner that the bore of the anchor is plugged and thus protectively sealed. The frangible adapter means is broken off after which the finished product is freed and readied for shipment.

In carrying out the principles of the invention, and as will be hereinafter more fully comprehended, it will be understood that a highly significant feature pertains to positioning of metal anchors or equivalent fittings in the mold and the release of the embedded anchor or fitting by forcibly breaking the pre-weakened adapter means. Then, too, novelty is predicted on using a new dowel in a manner to replace the fractured disposable part of the "old dowel" in one operation and also the idea of sealing and protecting the threads in the anchor or other fitting that has already been embedded in the aforementioned finished product.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a fragmentary view with parts in section and elevation showing a part of the mold or form, the finished product with the flanged anchor or fitting embedded therein and the plastic or equivalent insert or dowel threaded into the anchor and also breakably and separably connected with the form.

FIG. 2 is a view similar to and based on FIG. 1 and which shows the same combination of parts but with the form and adapter means, the latter being broken off and the finished product readied for shipment.

FIG. 3 is an enlarged sectional view of the novel positioning, setting and retaining insert or dowel in its intact ready-to-function state.

FIG. 4 is a view which shows a fragmentary portion of the form or mold and with a new dowel being screwed into the screw-threaded hole and the "old" adapter means being dislodged for disposition.

And FIG. 5 is an exploded perspective view showing the adapter means forming the lower end of a new dowel with the adapter means of the old dowel broken off but fragmentarily shown.

By way of introduction to the detailed description, it should be pointed out that the disclosure, broadly stated, comprehends molding and manufacturing of a finished or ready-to-use concrete or an equivalent block, slab, concrete railroad tie or an equivalent module. It pertains to, as suggested, the form or mold and wherein the part of the form which is involved is equipped with a plastic or an equivalent insert or dowel over which an anchor or fitting is sleeved and in this manner held for desired anchorage in the finished product. It will perhaps simplify the presentation to designate the finished product as a precast concrete railroad tie. It follows that in FIGS. **1** and **2** the finished product or tie is denoted by the numeral **6**. The mold or form is denoted, that is the essential part, by the numeral **8**. The form has spaced parallel flat surfaces **10** and **12** and is of requisite material and stability. The surface **10** provides a base or support for the coacting surface of the tie **6**, of the finished product **6**. The surface which may be here referred to as the bottom surface in FIG. **2**, is denoted by the numeral **14** and is separable from the mold surface **10** when the product is readied for handling, shipment and subsequent use.

More specifically the part **8** of the form is provided, in actual practice, with a plurality of prescribed screw-threaded holes. For simplicity, a single hole is shown at **16** and opens through the surfaces **10** and **12**. The aforementioned metal anchor or equivalent fitting is of sleeve-like construction and is denoted by the numeral **18**. The upper flanged end **20** is embedded in concrete material in any suitable manner. Also in actual practice this anchor is internally screw-threaded and, assuming that the finished product **6** takes the form of a concrete slab or the like, the anchor serves as hold-down means for a bolt such as is commonly employed to secure a structural member atop the concrete base (not illustrated).

In addition to the concrete member **6**, the form **8**, the flanged anchor or fitting **18** which is embedded in said member **6**, the dowel, that is the plastic dowel, is of the utmost in importance in that it is susceptible of use in holding the anchor or fitting in place in the mold in which the liquid concrete, or other moldable material, is poured to form the transportable ready-to-use product. With reference to FIG. **3**, the intact positioning, setting and retaining dowel is denoted by the reference character A and for disclosure purposes here is differentiated from the correspondingly constructed dowel B. Both dowels A and B are the same in construction and like reference characters are employed to designate like parts. The elongated dowel proper is

denoted by the numeral 24 and has a flat upper end, that is upper in relation to the views of the drawing. This upper end is denoted at 26 and the overall screw-threaded surface of the dowel is denoted at 28. The lower flanged end 30 which provides an abutment and is seated on the surface 10, as brought out in FIGS. 1 and 2, is provided with novel adapter means which is designated, as a unit, by the numeral 32. This adapter means comprises a reduced neck 34 whose upper end is connected to 24 by a frangible or breakable joint 36. The adapter proper comprises a screw-threaded plug 38 of proportional dimension the lower end of which is provided with a socket member 40 which in effect serves as a socket wrench when employed in the manner illustrated in FIG. 4.

In use the adapter 38 is screwed and plugged into the screw-threaded hole 16 in the form 8 in the manner illustrated in FIG. 1. The dowel 24 extends at right angles beyond the surface 10. The fitting or sleeve-type anchor 18 is sleeved over the dowel 24 after which the liquid concrete is poured and during which time the plastic dowel is used to position and set the anchor or other fitting and to hold it in place in the mold in which the concrete or other liquid material 6 is poured and placed to ultimately form the finished product. After the material is hardened the lower adapter means 32 on the dowel is intentionally broken off at the pre-weakened or frangible joint or point 36, that is, when the step in FIG. 2 has been satisfactorily accomplished. The manner in which the fracture can take place may vary in actual practice. It should be noted that the adapter means 32 has an axial bore passing therethrough and is accordingly hollow. This bore is conveniently denoted by the numeral 42 and it is in line with a similar socket or bore 44 which is formed in the dowel proper, and which serves in actual practice to accommodate a tool (not shown) when it is desired to unscrew and remove the dowel from the anchor or fitting, that is after the dowel has served its thread-protecting purpose.

It is reiterated that after the concrete or other liquid material has hardened the finished product with the anchor or other fitting and the dowel are removed for shipment. The aforementioned adapter means 32, also designated as the lower portion of the dowel, remains in the form in the screw-threaded hole 16 in the manner illustrated in FIG. 2.

As is believed to be evident now from FIGS. 4 and 5, the so-called new dowel B is brought into play and is screwed into the hole 16 so that the socket member 40 thereof is sleeved or fitted over the neck 34 of the "old" dowel which dislodges and causes the same to be ejected in the manner shown in full and phantom lines in FIG. 4. This is believed to be a novel manner or step of positioning the new plastic dowel B in the mold in a time and labor saving manner.

A significant aspect of the invention is that which will enable one to expedite the manufacture, for example, of a concrete railroad tie and which has to do with positioning, setting and retaining a hollow internally screw-threaded fitting, a screw-threaded metal anchor for example, in its predetermined embedded position in the finished product. With a view toward turning out the finished product achieving the improved end result desired, experience has shown that the unique one piece plastic unit (designated as an insert or dowel in FIG. 3) well serves the purposes for which it has been perfected.

It is to be understood that the length of the anchor is not to be construed as comparably limited to the depth of the poured concrete in which it is embedded. This is to say, an anchor 2 inches in length could, manifestly, be embedded in a concrete slab which is 3 inches, more or less, in depth or thickness.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. For use in conjunction with an open-ended screw-threaded prescribed hole in a predetermined wall of a concrete mold: a positioning, setting and retaining device for a hollow internally screw-threaded fitting of a predetermined type designed and adapted to be embedded in a manner to serve as a bolt-holding anchor, said device comprising, a one piece plastic unit embodying an elongated externally screw-threaded rigid dowel closed at one end and having an outstanding integral wall abutting flange at its other end, said dowel being provided with an elongated axially located non-circular bore closed at said one end and open at said other end and providing a readily accessible hand tool receiving dowel turning socket capable of permitting the dowel to be unscrewed and bodily removed from said fitting when necessary or desired, and complemental adapter means integral with said other end and projecting axially beyond said other end and said flange and embodying a reduced externally screw-threaded plug-like adapter which has an axial bore aligned with said first-named bore and is capable of being aligned with and screwed into the aforementioned screw-threaded hole.

2. The positioning, setting and retaining device defined in and according to claim 1, and wherein said adapter means is provided at said flanged end with a reduced hollow flangible pressure responsive neck, said neck being interposed between said flanged end and plug-like adapter and having a lower end axially aligned with and integrally united with a contiguous upper end of said plug-like adapter and an upper end united with said flanged end.

3. The positioning, setting and retaining device defined in and according to claim 2, and wherein the bore of said plug-like adapter has its bore axially aligned with the hollow portion of said neck.

4. The positioning, setting and retaining device defined in and according to claim 3, and wherein said neck and plug-like adapter are cooperatively unified, said plug-like adapter being cylindrical in cross-section, and said neck being non-circular and of a cross-sectional dimension appreciably smaller than the cross-section of said plug-like adapter.

5. The positioning, setting and retaining device defined in and according to claim 4, and wherein said plug-like adapter has a leading end provided with an integral reduced socket member projecting axially

beyond said leading end and which, when brought into use, constitutes a conveniently usable socket wrench.

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