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Buyken et al.

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[54] **FORM PANEL WITH SNAPABLE FORM-TIE**

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[51] **Int. Cl.**.....**E04g 17/08**

[58] **Field of Search**.....52/98, 100, 713, 52/712, 699, 698, 701; 249/214, 217, 41, 190, 40, 213; 81/53 R

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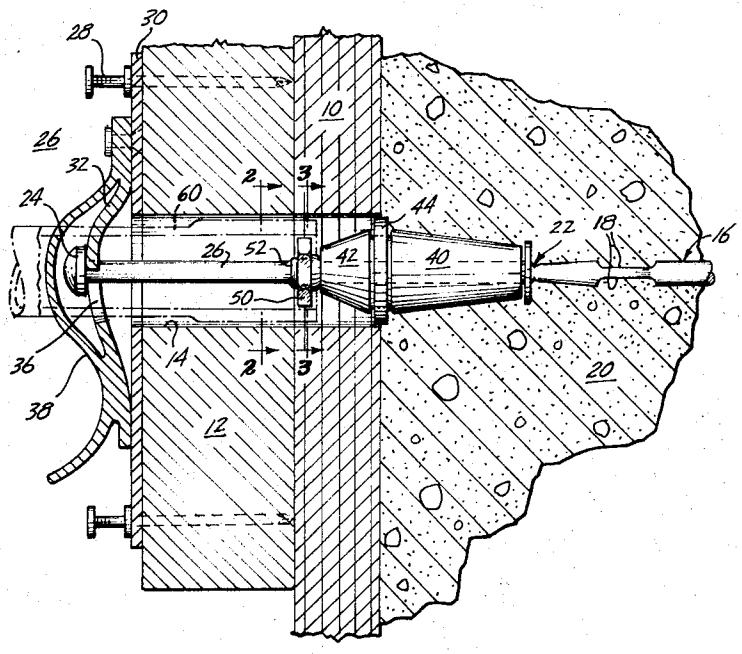
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Attorney—Ford E. Smith

[57] **ABSTRACT**

A concrete-form tie is disclosed to include a flat sided member seized thereto close to the usual breakback and adapted to be engaged by a socket whereby torque is applied to "snap" the breakback in aid of removing the outer end of the rod in place in hardened cast concrete.

4 Claims, 4 Drawing Figures



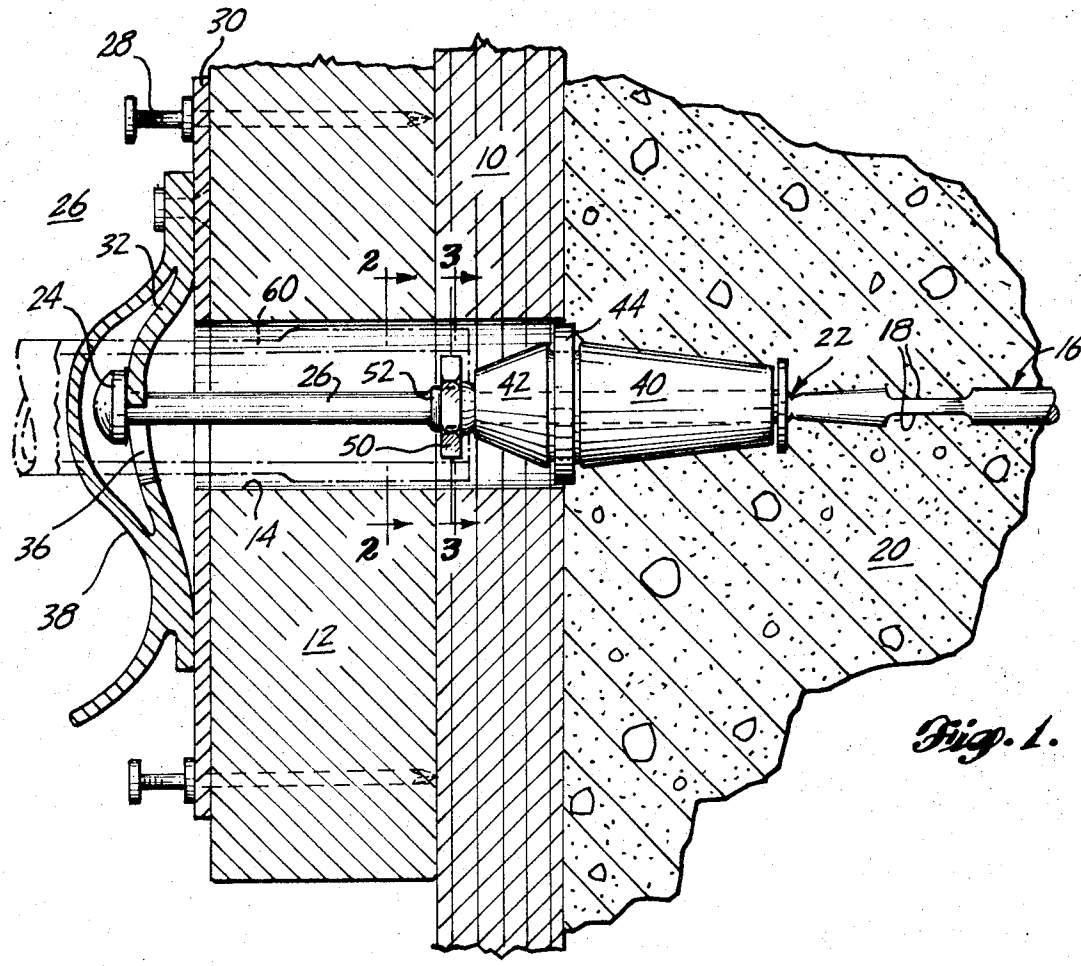


Fig. 1.

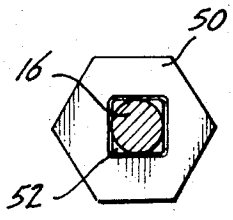


Fig. 2.

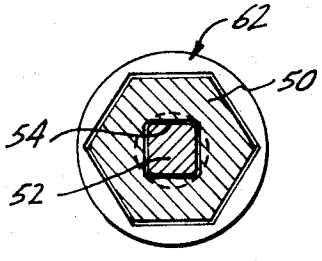


Fig. 3.

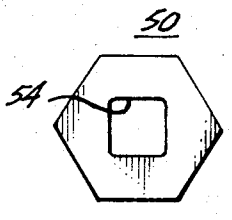


Fig. 4.

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FORM PANEL WITH SNAPABLE FORM-TIE

SUMMARY OF THE INVENTION

Considerable difficulty has been encountered in the construction industry in snapping or severing the outer ends of form ties. Most such ties have a breakback located to be embedded in hardened cast concrete a substantial distance inward of the concrete-form interface. Recent construction techniques involving the use of large and rugged "gang forms" aggravates the problem of snapping the ties. It is usual to locate the ties in the reinforcing walers of such gang forms. Where the walers are thick it is required that the tie rod ends extend great distances outward of the concrete-form interface in order to be gripped and secured by the form locks or other wedge elements used in the assembling and tightening of the forms. Thus, when the ties are to be snapped at the breakbacks, the operator or workman must perform the snapping operation at a substantial mechanical disadvantage working as he must remote from the breakbacks. In some instances according to current practices he must apply torque to the rod end at a point which may be 6, 8 or even 12 inches from the breakback. The torque force is thus distributed throughout a great rod length and is not appropriately applied in a concentrated manner to the breakback. It is the primary object of this invention to provide a tie rod with means for applying torque thereto that is closely associated with the breakback; that, when operated, facilitates the snapping of the tie rod; and which is simple and easy to construct and to use manually and rapidly. A preferred form of the invention is shown in the drawings an described hereafter.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a substantially full sized view of a tie rod according to this invention as in use in a concrete casting operation;

FIG. 2 is a sectional view on line 2—2 of FIG. 1;

FIG. 3 is a sectional view on line 3—3 of FIG. 1; and

FIG. 4 is a face view of flat sided member to be seized to a tie rod.

DESCRIPTION OF THE INVENTION

In FIG. 1 is shown a form panel **10** having a waler **12** on its outer face to stiffen and reinforce the panel. It is to be borne in mind that gang form panel according to current construction practices may be very large, i.e. 10 × 20 feet, 15 × 30 feet and other appropriate sizes as permitted by the structural design being produced. As a result, while panels **10** will usually be three-fourths inch thick, the walers **12** may be 2 inches, 3 inches, 4 inches, or even 8 or 10 inches thick and from about 4 inches to as much as 10 or 12 inches wide. The form ties will be produced accordingly in dimensions that coordinate with such form elements.

In FIG. 1 for illustrative purposes consider panel **10** as being three-fourths inch thick and waler **12** as being a 2 × 6 inch timber. When the panels and walers are assembled, they are drilled, usually with holes **14** slightly less than 1 inch in diameter, with spacings normally about **24** inches center-to-center along the walers and spaced 16 inches center-to-center in the like-spaced walers.

Tie rod **16** is pre-formed to have flats **18** by which the rod is locked into the hardened concrete **20**. A breakback **22** is located inward of the end of the rod. Usually the breakback is buried about 1 to 2 inches in the cast concrete. Head **24** on the outer extremity of rod **16** and shank **26** pass through hole **14** in waler **12** and in this example is located about 6 inch from breakback **22**.

A form lock **26** is normally secured by nails **28** or screws or bolts passing rhough plate **30** into waler **12** at the outer end of hole **14**. A slotted eccentric cam member **32** is pivoted to plate **30**. Tie rod head **24** is engaged by cam slot **36** and, when cam **32** is swung about its pivot, draft is placed lengthwise on rod **16**. Shield **38** carried with cam **32** caps the rod end and assists during form assembly. The form lock shown and described forms no part of this invention and is presented merely for illustrative purposes. It will be understood that the opposite end of rod **16** is similarly engaged when a pair of form panels is being erected and assembled.

As shown in FIG. 1 rod **16** is equipped with oppositely tapered cones **40** and **42** extending outward from close to breakback **22** to the interior of hole **14** where it passes through panel **10**. Other forms of cones are contemplated.

A resilient washer **44** may be placed between the cones. Washer **44** substantially fills hole **14** and serves to prevent or reduce leakage of the concrete from within the form. The inner cone during pouring functions to mold a cavity in the concrete around rod **16** where it emerges from the concrete.

A flat sided flange-like member **50** is seized to rod **16**. Desirably seizing is produced by rod **16** being swelled within and at the sides of member **50** as shown in FIG. 1 at **52**. Member **50** is most desirably hexagonal shaped as shown in FIG. 4 providing wrench-flats. It has a central hole **54** preferably multisided and here shown as practically square. Seizing of member **50** to rod **16** is accomplished by firmly gripping rod **16** in spaced-apart areas at each side of the desired location of member **50** and forceably moving the rod together thereby causing a swelling of the intervening portion of the rod within the hole **54**. The swelled or expanded rod metal then conforms to the multisided shape of hole **54** and the member **50** is thus seized or secured non-rotably to rod **16**. Alternatively rod **16** may be first expanded to form a collar at **52** and then member **50** pressed or forced thereon causing the expanded collar **52** to conform in cross section to the shape of hole **54**.

When it is desired to "snap" a form tie, i.e. to apply torque to the breakback **22** and to fracture or snap the tie rod at that point, a tubular wrench **60** having a socket **62** to fit the wrench-flats or flat sides of member **50** is used. First cam **32** and its shield **38** are swung to disengage from the head **24** and outer shank end **26** of rod **16**. Wrench **60** is inserted into hole **14** and over member **50** and then twisted to sever the breakback. The wrench and the severed outer end of the form tie are removed and at that point, at least the form panel is free of the concrete.

In the foregoing is described a preferred form of the invention. It will be apparent to others skilled in the art that alternative forms of member **50** may likewise be employed. All such as by a reasonable and appropriate application of the doctrine of equivalents are intended to be covered by this patent.

What is claimed is:

1. In combination a snapable form-tie with an end passed outward through a hole in a form panel, and which has a mid-portion provided with a breakback located adjacently inward of such form panel hole, the improvement comprising:

an integral, annually swelled portion on said end located to be disposed within such a hole in said form panel;

said swelled portion having a flat-sided flange thereabout providing wrench-flats on its periphery coaxial of said form-tie; and

said flat-sided flange being of a size relative said hole

diameter to be engaged for rotation by a socket-type wrenching tool inserted into the form panel hole from its outer end.

2. The combination according to claim 1 in which the flat-sided flange is a separate member non-rotatably secured about said swelled portion.

3. The combination according to claim 2 in which the flat-sided flange has a square central hole and the swelled portion therein is shaped accordingly and fits tightly therein.

4. The combination according to claim 1 in which the flat-sided flange is in the form of a multi-sided nut.

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