

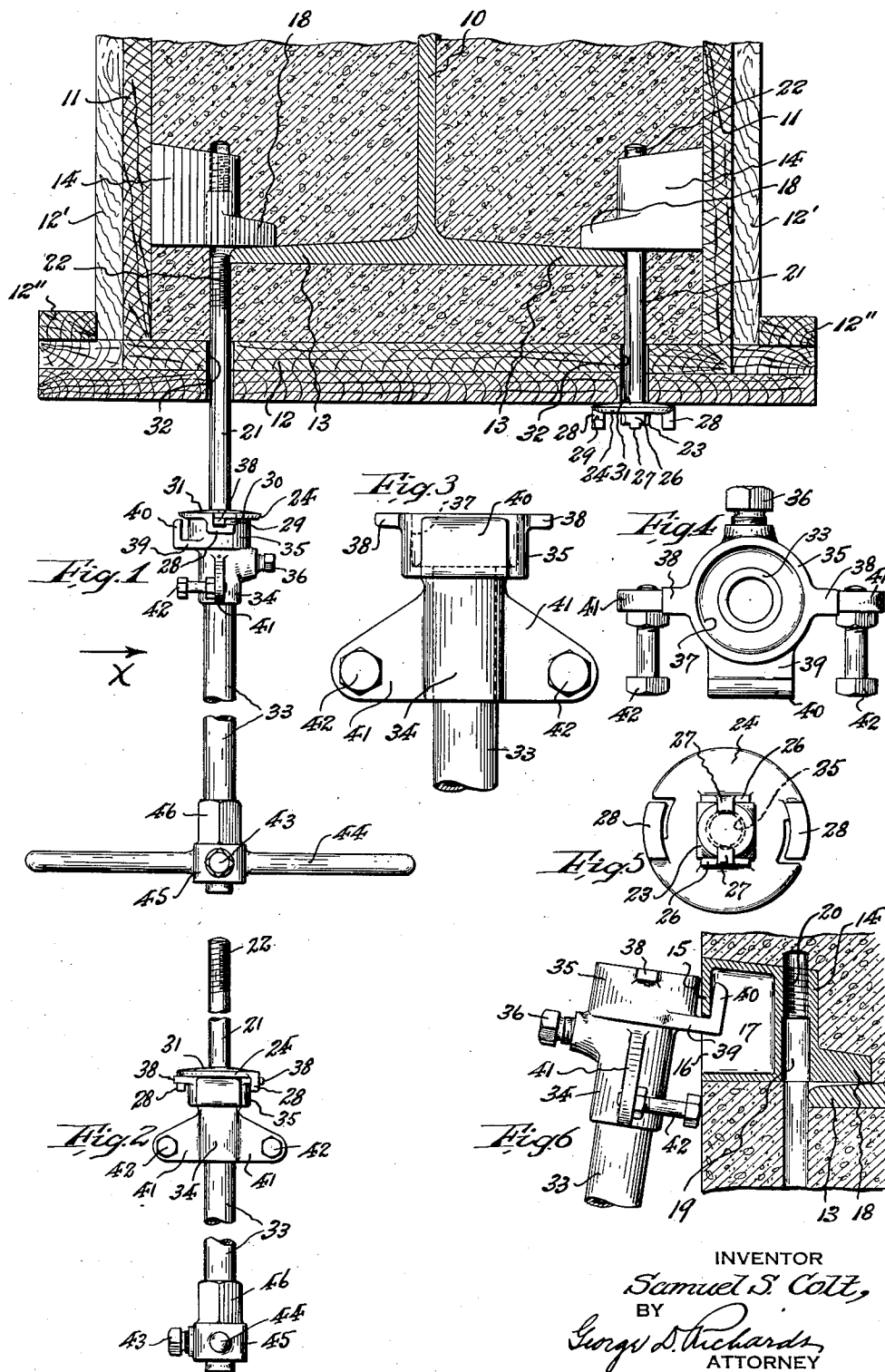
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MANIPULATING MEANS FOR A FORM HANGER

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MANIPULATING MEANS FOR A FORM
HANGER

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1 Claim. (Cl. 81—90)

This invention relates to means for supporting concrete casing forms in enclosing relation to I-beams, girders and similar elements of fabricated steel buildings and other structures; and the invention has reference, more particularly, to a novel form hanger and means for manipulating the same, the latter being especially adapted for use in dismantling the form upon completion of the concrete work.

10 This invention has for an object to provide a novel construction of form hanger means for the purposes described, together with a novel manipulating tool cooperative therewith and especially adapted to facilitate the removal of the hanger means from the finished concrete upon dismantling of the form, all whereby the devices comprising the hanger means are salvaged subject to repeated use.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

Illustrative embodiments of this invention are shown in the accompanying drawing, in which:—

25 Fig. 1 is a transverse vertical section of a concrete form supported about a girder by the novel hanger means of this invention, and into which concrete has been poured to unite said girder; the novel manipulating tool being shown as applied to one of the hanger bolts for withdrawing the same preparatory to dismantling the form; Fig. 2 is a side elevation of the manipulating tool as operatively to a hanger bolt, and as viewed in the direction of the arrow x in Fig. 1; Fig. 3 is a front face elevation of the operative end of the manipulating tool; drawn on an enlarged scale; Fig. 4 is a top end view of said tool; Fig. 5 is a bottom end view of the hanger bolt and associated parts; and Fig. 6 is a sectional view of the hanger body, showing the application of the manipulating tool thereto for the purpose of withdrawing said hanger body from the finished concrete.

Similar characters of reference are employed in the above-described views, to indicate corresponding parts.

Referring to the drawing, the reference character 10 indicates an I-beam or girder about which it is desired to apply a form for casting concrete in enveloping relation to the same. The form comprises side walls 11 and a bottom or transverse wall 12, these walls being respectively outwardly spaced from the beam or girder for distances corresponding to the dimensions of the concrete casting desired to imbed the beam or girder. The hanger means according to this

invention is adapted to suspend the form structure directly from the beam or girder; and said hanger means are arranged in sets of opposed members at opposite sides and along the length of said beam or girder, being respectively engaged with oppositely extending portions 13 of a given flange of said beam or girder.

Each hanger means comprises a combined hanger and spaced block comprising a laterally exteriorly tapered hollow block body 14 having an outer face wall 15 cutaway at its lower portion to provide an opening 16 communicating with its hollow interior 17. Integrally formed at its lower inner end, preferably flush with the bottom end plane thereof, to project inwardly and horizontally therefrom, is a suspension ear or lug 18. Extending vertically upward through the block body 14 adjacent to its inner end is an opening or bore 19, at least a portion, as 20, of which is internally screw-threaded.

The reference character 21 indicates a hanger bolt having a threaded end portion 22 and a head 23 of polygonal form at its opposite end. Connected with the headed end of said hanger bolt is a washer-like supporting member 24 which is centrally perforated as at 25, to permit the shank of said hanger bolt to extend upwardly therethrough. The bolt head 23 is stopped against the underside of said supporting member 24, and integrally formed with the latter to project from the outer or underside thereof are laterally spaced holding flanges 26, between which the bolt head is lodged, and by which the same is engaged to retain the bolt against rotation relative to said supporting member. Connected integrally with the outer end portions of said holding flanges 26 are bendable retention ears 27 which, after the bolt is assembled in connection with the supporting member, are intumed or clenched over the bolt head 23, to thereby retain the bolt against displacement from operative assembled relation to said supporting member. Projecting from the outer or underside of said supporting member, at diametrically opposite points bordering the outer marginal portions thereof, and preferably forming integral parts thereof, are downwardly off-set hoop-like coupler members 28, preferably provided with inwardly and laterally projected nosing portions 29 at their free ends bordering the entrances 30 leading into the bights thereof. The inner or upper face of said supporting member 24 is preferably of convex contour, as shown at 31.

To apply the novel hanger means to the I-beam or girder 10 in operative relation thereto for

the support and spacing of the form walls, the hanger bolts 21 are thrust upwardly through openings 32 provided in the bottom form wall 12, and the threaded ends thereof are thereupon respectively passed upwardly through the bores 19 of the hanger block bodies 14 and then screwed into the threaded sections 20 of said bores. The hanger block bodies are respectively disposed so that their suspension ears or lugs 18 rest upon the upper surfaces of the marginal portions of the oppositely extending beam or girder flanges 13, with the assembled bolt shanks abutting the flange edges. The screwing home of the bolts 21 carries the supporting members 24 into abutment against the underside of the bottom form wall 12, thereby supporting the latter in desired spaced relation to the underside of the beam or girder. After the hanger bolts and supporting members are thus arranged to support the bottom form wall 12, the form side walls 11 are applied in abutting relation to the outer faces of the hanger block bodies 14, which thus serve to space said side walls relative to the sides of the beam or girder; batten strips 12' and keeper strips 12'' may be employed to retain the side walls against outward displacement. Any suitable tie means (not shown) may be engaged between the form side walls 11 above the beam or girder to prevent spreading or like displacement of said walls. From the above it will be obvious that the form, as assembled, encloses the beam or girder so that concrete may be cast into the form interior in enveloping relation to said beam or girder.

After the cast concrete has set sufficiently to admit of dismantling the form, the hanger means may be released and withdrawn from the concrete mass subject to use again in form construction, and consequently no loss or waste is involved.

The hanger means is designed for cooperation with a novel tool which is especially adapted to facilitate the release and withdrawal of the elements of the hanger means from the cast concrete. This tool comprises an elongated shank or bar 33, upon the upper end portion of which is mounted the tubular neck 34 of a wrench head 35; said neck 34 being suitably affixed to the shank or bar 33, as e. g. by a set screw 36 or any other suitable fastening means. Said wrench head 35 is preferably of circular form in horizontal cross section, and is provided with an upwardly open central chamber or socket 37. Integral with and extending diametrically in opposite directions from the sides of said wrench head 35 are exteriorly and laterally projecting wrench tongues 38. Also integrally formed with and exteriorly related to one side of said wrench head is the off-setting base 39 of an upstanding extractor lug 40, the latter being spaced outwardly from the adjacent side of said wrench head. Integral with and extending diametrically in opposite directions from the sides of the neck 34 below said wrench head, and disposed in a plane parallel to the plane of said extractor plug 40, are wings 41. Secured to said respective wings 41, to project laterally therefrom in the same direction as the offset extractor lug 40, are fulcrum studs 42. Affixed to the lower end portion of said shank or bar 33, as e. g. by a set-screw 43 or other suitable fastening means, is a T-handle 44, the hub 45 of which is preferably provided with squared portion 46 to which a wrench may be applied for turning said shank or

bar and the tool elements carried thereby should occasion require.

In the use of the tool, especially to remove the elements of the hanger means from the cast concrete, upon dismantling the form, the following operations are carried out. First the hanger bolts and associated supporting members are removed. This can be done from floor beneath the beam or girder 10, since the long shank or bar 33 enables the operator to manipulate the tool from levels beneath said beam or girder. The wrench head 35 is pressed upwardly against the underside of a supporting member 24 so as to enclose the bolt head 23 and the adjacent holding flanges 26 and retention ears 27 within its chamber or socket 37, thereby permitting the wrench tongues 38 to align themselves for movement into engagement with the hook-like coupler members 28 of the engaged supporting member. By means of the T-handle 44, or by application of a wrench to the squared portion 46, the shank or bar 33 is turned in a clockwise direction, thereby moving the wrench tongues 38 through the entrances 30 into engagement with the hook-like coupler members 28 of the supporting member 24, whereupon by continued clockwise turning of the shank or bar 33 and wrench head 35 of the tool unscrewing rotation is imparted to the hanger bolt 21, thereby disengaging the same from the hanger block body 14, so that the bolt may be thereupon withdrawn from the concrete and away from the bottom form wall 12. If the bolts tends to stick in the concrete reciprocal rotative movement may be applied thereto, by seating the wrench tongues 38 behind the nosing portions 29 of the hook-like coupler members 28 so that alternate movements in clockwise and anti-clockwise directions may be transmitted by the tool to the supporting member and associated hanger bolt.

After the hanger bolts have been removed, the form walls may be stripped away from the bottom and sides of the concrete, thereupon exposing the outer faces of the hanger block bodies 14. Upon removal of the form walls, the tool may be used to withdraw or extract the hanger block bodies 14 from the concrete. This is accomplished by inserting the extractor lug 40 of the tool through opening 16 and behind outer face wall 15 of the block body 14, and thereupon bringing the fulcrum studs 42 to bear against the concrete mass below the block body 14, all as shown in Fig. 6 of the drawing. With the tool thus applied to the block body 14, by using the shank or bar 33 as a lever fulcrumed by said studs 42, the block body 14 may be quickly and easily loosened, pried away and thus withdrawn from the concrete. The tapered form of the block body 14 facilitates such operation.

By reason of the fact that the block bodies are of substantial height and when operatively positioned in form supporting relation to the beam or girder flanges extend above the latter, the same provide a comparatively long bearing for the hanger bolts applied thereto, and consequently tendency of the bolts to become bent or displaced is efficiently avoided.

The block body 14 and the hanger bolt 21 may be galvanized to advantage, if desired, since galvanized surfaces have less tendency to adhere to the finished concrete, and consequently removal of these parts from the latter is thereby facilitated.

Having now described the invention, I claim:
Means for manipulating a hanger bolt for

form hanger means wherein a flanged washer element is interlocked to the bolt head and is provided adjacent to its periphery with dependent hook-like coupler members, comprising a hollow upwardly open wrench head to receive said bolt head, said wrench head having diametrically aligned opposite and exteriorly extending wrench tongues lying flush with the plane of the open

end of said wrench head, said wrench head having an axial neck portion at its lower end, and a handle shank bar of substantial length affixed to said neck portion, the lower end of said shank bar being provided with a cross-bar for turning the same and the wrench head affixed thereto.

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