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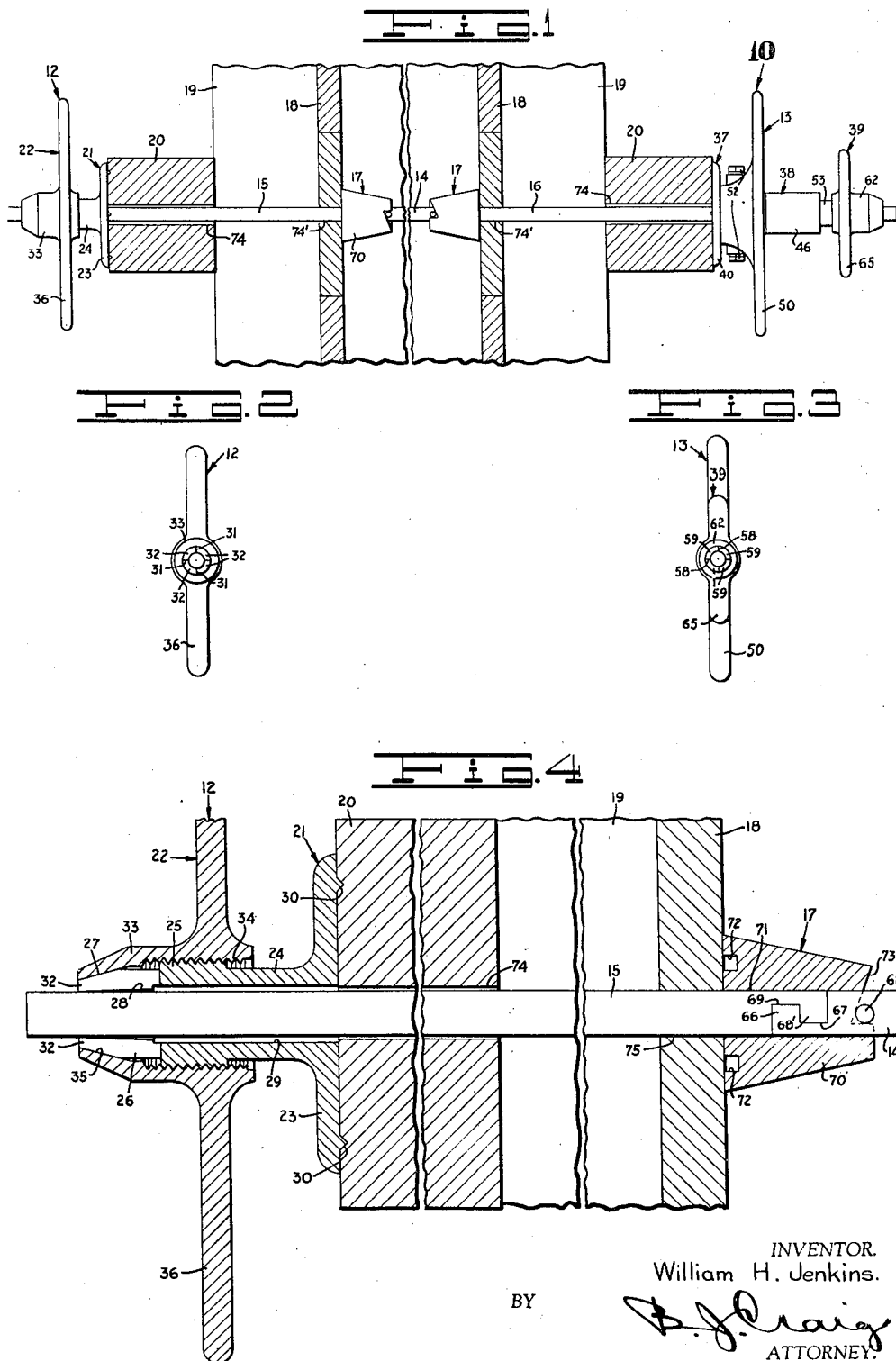
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TIE FOR CONCRETE FORMS

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## TIE FOR CONCRETE FORMS

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1 Claim. (Cl. 254-67)

This invention relates to improvements in ties for concrete forms.

The general object of the invention is to provide a tie for concrete forms wherein the tie rod is unthreaded.

Another object of the invention is to provide a tie for concrete forms including a member having threaded portions which when in position at the time of pouring are not exposed.

A further object of the invention is to provide an improved tie for concrete forms including novel means for applying tension to the tie rods.

A still further object of the invention is to provide an improved tie for concrete forms wherein when the removable portions are removed no metal extends to the face of the concrete.

Other objects and the advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a fragmentary transverse section through a wooden concrete form showing my improved tie operatively mounted thereon;

Fig. 2 is an end view of the head portion of the tie;

Fig. 3 is an end view of the clamp portion of the tie;

Fig. 4 is a fragmentary enlarged longitudinal section through the head portion and adjacent parts;

Fig. 5 is a fragmentary enlarged longitudinal section through the clamp portion of the device;

Fig. 6 is a fragmentary sectional detail of the poured concrete after the forms are removed; and

Fig. 7 is a view similar to Fig. 6 showing the recess in the concrete grouted in.

Referring to the drawings by reference characters I have indicated my improved concrete form tie generally at 10. As shown the device 10 consists of a head portion 12, a clamp portion 13, a tie rod 14, a pair of removable end rods 15 and 16 and a pair of form spacer members 17.

The form shown is of the usual construction comprising side wall sheathing 18 secured to vertical studs 19 which are connected by horizontally extending whaling strips 20.

The head portion 12 includes a pedestal member 21 and a grip member 22. As clearly shown in Fig. 4 the pedestal member 21 includes a base 23 having a reduced elongated boss 24 extending therefrom. The boss 24 has an enlarged externally threaded portion 25 and terminates in a reduced end 26 the outer portion of which is bevelled as at 27. The end portion 26 has an aperture 28 therein which communicates with a

slightly enlarged recess 29 which opens through face of the base 23 opposite the boss 24. This same face of the base 23 has a plurality of integral spur members 30 extending therefrom. The reduced end 26 is slitted as indicated at 31 in Fig. 2 to provide a plurality of semi-resilient jaw members 32.

The grip member 22 includes a body portion 33 having a threaded portion 25 of the pedestal. Opening through the opposite end and communicating with the threaded recess 34 the body has a tapered aperture 35 therein the surface of which is adapted to engage the tapered portion 27 of the pedestal. Intermediate the length thereof the body 33 includes opposed outwardly directed hand grip portions 36.

The clamp portion 13 includes a pedestal member 37, a compression member 38, and a grip member 39. As clearly shown in Fig. 5, the pedestal member 37 includes a circular base 40 having a boss 41 reduced extending therefrom. The base and boss have an aperture 42 there-through and intermediate the length thereof the boss has a peripheral groove 43 therein. Opposite the boss 41 the base 40 has a plurality of integral spur members 44 extending therefrom.

The tension member 38 includes a body portion 45 and a reduced elongated boss portion 46. The body portion 45 has a recess 47 therein to receive the pedestal boss 41 and the boss 46 has a threaded recess 48 therein which communicates with the recess 47 through a reduced aperture 49.

The body 45 adjacent the boss 46 includes opposed, outwardly directed, hand grip portions 50. The body portion 45 has a pair of opposed threaded apertures 51 therein in each of which a set screw 52 is positioned the inner end of which terminates in a reduced cylindrical portion 53 which is positioned in the peripheral groove 43 of the pedestal boss 41. Thus the compression member 38 is rotatably connected to the pedestal.

The grip portion 39 includes a shank member 53 having an enlarged threaded head 54 thereon at one end which is positioned in the threaded recess 48 of the boss 46 of the tension member. Adjacent the opposite end the shank includes an enlarged threaded tail portion 55 and a reduced end portion 56 which is tapered as at 57.

The reduced end 56 is slitted as indicated at 58 in Fig. 3 to provide a plurality of resilient jaw members 59. The end portion 56 has an aperture 60 therein which communicates with a slightly enlarged recess 61 in the shank 53.

The grip member 39 further includes a body portion 62 having a threaded recess 63 therein

which receives the threaded portion 55 of the shank 53. Opening through the opposite end and communicating with the threaded recess 63 the body has a tapered aperture 64 therein the surface of which is adapted to engage the tapered portion 57 of the shank 53. Intermediate the length thereof the body 62 includes opposed, outwardly directed, hand grip portions 65.

The tie rod 14 adjacent each end includes a cut off reduced finger portion 66 and has a transverse notch 67 therein and inwardly from the notch a transverse pin 68 which projects beyond the sides of the rod a predetermined distance.

One end of each of the end rods 15 and 16 includes a cut off reduced finger portion 68' and has a transverse notch 69 therein.

Each of the spacer members 17 includes a frusto-conical body portion 70 having an aperture 71 therein. The large end of the body 70 has a plurality of wrench receiving recesses 72 therein and the small end has a pair of opposed inclined cam surfaces 73 thereon.

When the device 10 is installed to tie a concrete form together the end rods 15 and 16 are positioned in apertures 74 in the whalings 20 and extend through apertures 74' in the sheathing 18 to within the form where, as shown in Fig. 4, the finger portion 68' of the end rods is positioned in the groove 67 of the tie rod 14 and the finger portions 66 of the tie rod are positioned in the grooves 69 of the end rods. After the end rods and the tie rod are thus connected the spacer members 17 are slid over the connections until they engage the tie rod pins 68 and are rotated until the pins 68 engage the lower portion of the cam surfaces 73.

The head member 12 is then put on the end rod 15. The end rod 15 is positioned in the recess 29 and aperture 28 of the pedestal member 21 and then the grip member 22 is rotated to cause it to travel towards the pedestal base. As it thus moves the tapered surface of the aperture 35 engages the jaws 32 and forces them into tight engagement with the rod 15.

The clamp member 13 is then put on the end rod 16. The end rod 16 is positioned in the pedestal aperture 42 in the tension member aperture 49 and in the recess 61 and aperture 60 of the shank member 53. The grip member 39 is then rotated to cause it to move towards the tension member whereupon the tapered surface of the aperture 57 engages the jaws 59 and forces them into tight engagement with the rod 16.

To force the forms to their correct position and apply tension to the tie rod and the end rods the shank member 53 is held stationary and the tension member 38 is rotated to cause it to force the shank member outwardly therefrom thus forcing the forms inwardly.

After the concrete is poured and has set the grip portions 22 and 39 are released from their respective end rods and the head 12 and the clamp portion 13 are removed from the end rods.

Thereafter the forms are removed and after which a suitable wrench (not shown) is applied to rotate the spacer members 17 which when rotated, due to the surfaces 73 engaging the pins 68, force themselves out of the concrete leaving a recess 75 in the concrete (see Fig. 6). The spacer members 17 are then moved outward and the end rods are disconnected from the tie rod 14 leaving a portion of the tie rod projecting into the recess 75. Thereafter the recess 75 is grouted in with concrete 76 as shown in Fig. 7 thereby completely covering the ends of the tie rod.

From the foregoing description it will be apparent that I have provided a novel form tie device which is simple in construction and highly efficient in use.

Having thus described my invention, I claim:

In a tie device for a concrete form, a rod, a tension device on said rod, said tension device including a base portion having an aperture therein, said rod being positioned in said aperture, said base including a hub portion coaxial with said aperture, said tension device further including a compression member, said compression member including a body portion having a recess therein at one end and a reduced threaded recess at the other end and a reduced aperture opening into said recess and said threaded recess, said hub portion of said base being positioned in said recess and said rod being positioned in said aperture and said threaded recess, a shank member, said shank member having an aperture there-through in which said rod is positioned, said shank including an integral externally threaded head portion and an integral externally threaded tail portion, said head portion being positioned in said threaded recess of said compression member, said shank head including a plurality of integral semi-resilient jaws extending beyond said externally threaded tail portion and surrounding said rod, each of said jaws including an outwardly tapered surface, and a grip member on said shank, said grip member having a threaded aperture therein to receive said threaded tail portion of said shank, said grip member including a projecting end tapered to engage said tapered surfaces of said jaw members, said grip member when rotated in one direction being adapted to force said jaw members into engagement with said rod and when rotated in the opposite direction to allow said jaws to release from said rod.

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