July 21, 1953 C. B. JONES 2,645,929

TIE BAR FOR INSULATED CONCRETE WALLS

Filed Dec. 9, 1948

Fig. 1.

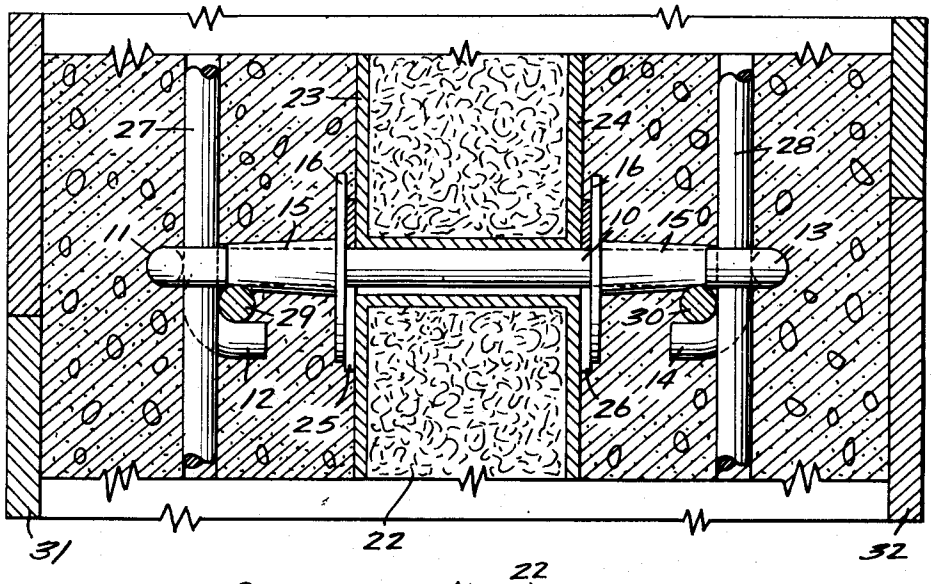


Fig. 2.

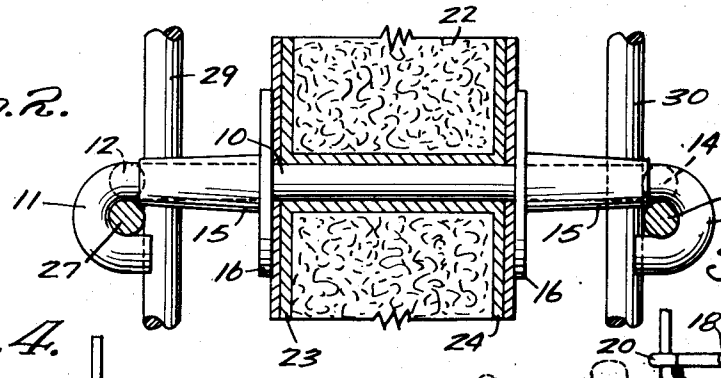


Fig. 5.

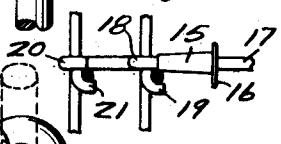


Fig. 4.

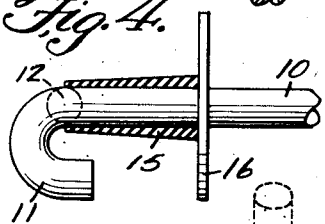
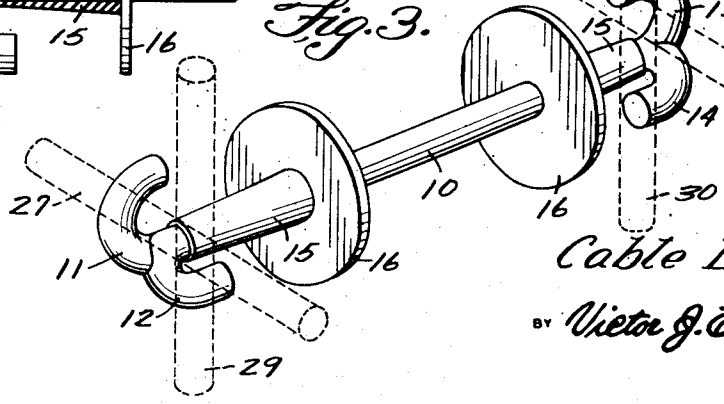


Fig. 3.



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TIE BAR FOR INSULATED CONCRETE WALLS

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Application December 9, 1948, Serial No. 64,396

1 Claim. (Cl. 72—103)

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This invention relates to tie rods for holding reinforcing steel of concrete walls and insulating panels or pads in the walls in spaced relation, and in particular a tie rod having hooks on both ends for tying reinforcing steel of spaced parallel wall sections through an insulating panel positioned between the said wall sections, and also having flanges thereon for maintaining the insulating panel in spaced relation to the forms of the wall.

The purpose of this invention is to provide a positive tie rod for tying spaced wall sections of a concrete wall through reinforcing steel in the sections and for holding a continuous panel of insulating material in position between the wall sections as the wall is poured.

The tie bar of this invention is particularly adapted for retaining the insulating pad or intermediate section of my co-pending application filed December 9, 1948, with the Serial Number 64,395, in position in a concrete wall.

The usual tie rods of concrete wall forms extend continuously through the forms and the rods are removed or the ends thereof cut away after the concrete formed by the forms has set and the forms are removed. In the usual concrete wall a continuous slab or panel is provided so that permanent tie rods therein are not required; however, where a concrete wall is divided by a continuous intermediate insulating panel two spaced wall sections are provided and it is necessary to permanently tie these sections together through the insulating panels. With this though in mind, this invention contemplates a tie rod having hooks on the ends that may be positioned through the insulating panel with the ends extended into the intermediate part of the spaced wall sections wherein the hooks at the ends are hooked over reinforcing elements in the said spaced wall sections.

The object of this invention is, therefore, to provide positive tying elements for securing spaced wall sections together through reinforcing elements in the sections and with the rods extended through and holding insulating units between the sections in spaced relation to the wall sections.

Another object of the invention is to provide means on permanently positioned tie rods for spaced concrete wall sections in which freedom of movement of the rods in relation to the sections is provided to prevent shearing the rods by uneven contraction or settling of the concrete.

Another object of the invention is to provide a tie rod for securing spaced wall sections together through reinforcing steel therein wherein the tying elements are installed without bolts or nuts.

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A further object of the invention is to provide self-contained tie rods for securing spaced concrete wall sections in spaced relation with an insulating panel between the sections which are comparatively simple and inexpensive to manufacture.

With these and other objects and advantages in view, the invention consists of the new and useful combination, construction and arrangement of parts, as hereinafter more fully described, set forth in the claim appended hereto, and disclosed in the accompanying drawing forming part hereof, wherein:

Figure 1 is a view showing a vertical cross-section through a wall illustrating the improved tie rod in use with the tie rod extended through an intermediate insulating panel and with the end hooked over reinforcing steel elements of spaced concrete wall sections;

Figure 2 is a plan view of the tie rod shown in Figure 1 with the form omitted;

Figure 3 is a perspective view showing one of the tie rods with flanged resilient sleeves thereon and with parts of reinforcing steel shown in dotted lines;

Figure 4 is a detail showing one end of one of the tie rods with a tapered resilient sleeve shown thereon in section;

Figure 5 is a detail illustrating a modification wherein the ends of the tie rods are provided with a plurality of hook-like elements.

Referring now to the drawings wherein like reference characters denote corresponding parts, the reinforcing steel tie rod of this invention includes a rod 10 having hooks 11 and 12 at one end and 13 and 14 at the other.

The rods are illustrated as being round, however, it will be understood that steel of any other shape in cross-section may be used.

Each end of the tie rod is provided with a sleeve 15 that may be formed of rubber or other material for forming a yielding area in the concrete around the ends of the rod and the outer surface of the sleeve may be tapered, as shown. The rods are provided with spaced flanges 16 which are integral with the rods and these are positioned against the sides of the intermediate insulating panel of the wall to position the insulation between the forms and hold the insulation in spaced relation to the forms as the concrete is poured.

In the design shown in Figure 5, tie rods 17

are provided with hook-like elements 18 and 19 and also similarly shaped elements 20 and 21 which are spaced from the hook-like elements 18 and 19, and this rod is also provided with resilient sleeves 15 and flanges 16. The opposite end of the rod 17 may also be provided with similar elements. The sleeves serve to allow freedom of motion of the tie bar.

In use, the tie rods 10 are extended through an intermediate insulating panel 22, which is formed with sides 23 and 24 and provided with overhanging flanges 25 and 26 that extend over a similar section of the panel, as shown in Figure 1, and with the tie rods positioned in the insulating panel in this manner, with the circular flanges 16 against the sides of the insulating material the panel is held in position. The hooks 11 and 13 at the ends of the tie rods extend around vertical reinforcing rods 27 and 28 and the hooks 12 and 14 extend over horizontally disposed reinforcing rods 29 and 30. In the design shown, the reinforcing rods are positioned substantially midway between the outer surfaces of the insulating panel and the sides 31 and 32 of the forms of the wall. With the parts positioned in this manner, the form is ready for the concrete and as the concrete is poured, the hook-like end of the rods with the resilient sleeves 15 thereon are embedded in the concrete and should the concrete of one side wall set or contract more than the other, the resilient sleeves permit the ends of the tie rods to move upwardly or downwardly or laterally to compensate for strains and stresses resulting from uneven expansion and contraction of the outer and inner wall sections that may

cause the tie rods to break or the concrete to be crushed or broken.

It will be understood that modifications may be made in the design and arrangement of the elements without departing from the spirit of the invention.

What is claimed is:

A tying device for reinforced concrete construction comprising a rod having a pair of hooks on each end thereof, and spaced annular spacing flanges intermediate of and spaced from the ends, said flanges being integral with said rod, the hooks of each pair being positioned in substantially perpendicular relationship to each other, and tapering yieldable sleeves positioned on the ends of the rod between the flanges and hooks, the thin edges of said sleeves being positioned adjacent the hooks and the thick edges positioned against the flanges.

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