March 21, 1950 W. E. SCHAEFER 2,501,412

METAL CONCRETE FORM TIE WITH BORING BIT

Filed Nov. 4, 1947

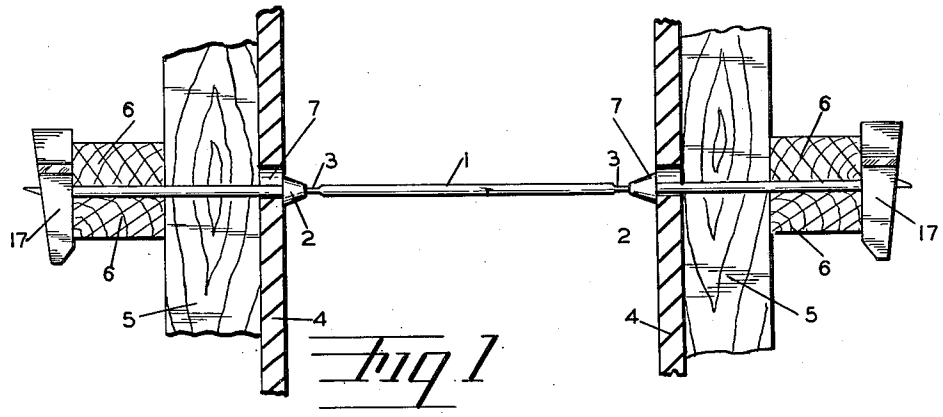


fig 1

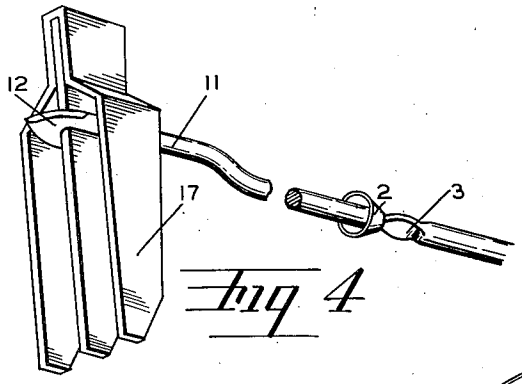


fig 4

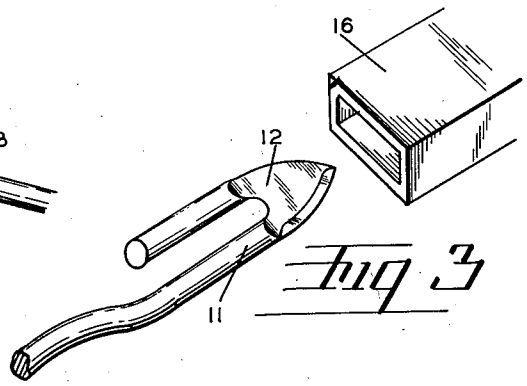


fig 3

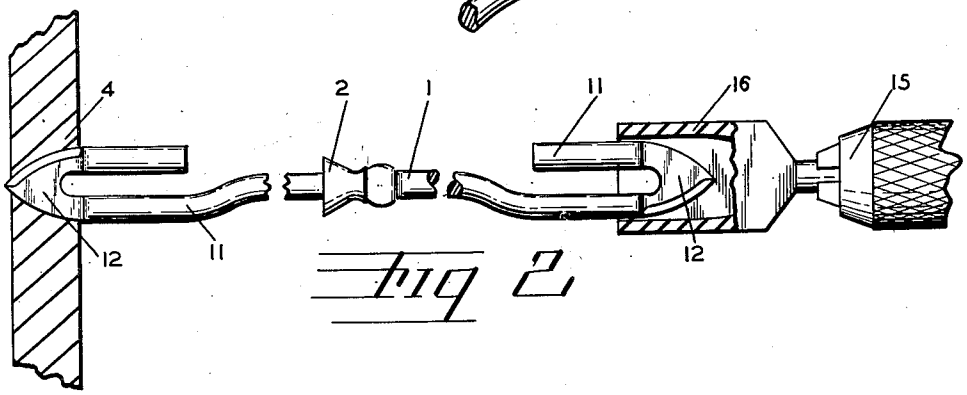


fig 2



fig 5

INVENTOR.
WILLIAM E SCHAEFER
BY
G F McDougall
ATTORNEY

Patented Mar. 21, 1950

2,501,412

UNITED STATES PATENT OFFICE

2,501,412

METAL CONCRETE FORM TIE WITH BORING BIT

William E. Schaefer, Portland, Oreg.

Application November 4, 1947, Serial No. 783,905

4 Claims. (Cl. 25—131)

1

This invention relates to an improvement in ties for wood concrete forms where they are set up for Portland cement concrete to be moulded therebetween. The conditions to be met are rigid since both sides of the wall must be of the intended configuration when the wood forms are removed. A critical dimension is wall thickness, which, if it lacks uniformity, will also mean distortion of the wall surfaces. This is accomplished by tying the outside and inside wall form sheathings together by metal tension rods, each of which carries two separators, spaced when the tie is made, for a given wall thickness. The form will, for each side include a sheathing of horizontal wood board, usually planed on the concrete abutting surface, vertical studding on the outside of each sheathing and what the art calls "wales" outside of the studding, shown in the drawing and hereinafter explained.

The ties are made of a special, hard rather brittle steel though not an expensive one; there are two weakened spots that will be just inside of the wall line when it is hard, the separators and both ends of the tie being broken off without first removing the forms, after the concrete is ready.

The object of the present invention is to so form the tie that it can be chucked in a boring machine, such as an air or electric drill, whereupon it can bore its way through the two sheathing layers resting in place, saving about the time of one workman and resulting in a more uniform job, over the current way of boring the holes with a power auger, laying that down and fishing in the tie. Once in place the procedure will be the same with old and new.

A drawing accompanies and forms a part of this disclosure, in which: Fig. 1 is a vertical section of a concrete form tied with my new tie; Fig. 2 is an enlarged view of a foreshortened tie, illustrating the manner of its application; Fig. 3 illustrates the instantaneous manner of holding the hook of one of my ties to bore its way into position by the opposite end; Fig. 4 is a perspective illustrating the hook used as a tension applying means, in cooperation with a wedge to cause the tie to perform its function; Fig. 5 is an end view of the boring bit portion of the tie, hereinafter explained.

A detailed explanation of the structures of the drawing will now be given; numeral 1 (see Fig. 1), shows the tie from end to end, holding the sheathings 4, the studding 5, the wales 6 on one end and duplicated on the other end against spreading, by the tensile strength of the tie 1 when tension is applied by wedges 17.

2

Numeral 2 represents a stop, in this case a cone shaped member loosely mounted on the tie 1 outside of the weakened parts of the tie indicated by the flattened parts 3 and serving to keep the sheathing 4 properly spread, until the wet concrete is placed therein. As in the current art, the center part of the tie 1 will remain in the wall, permanently.

On each side are first a sheathing 4, vertical studding 5 and horizontal wales 6, which in machine-shop practice would be called strongbacks.

All of the foregoing is current art and has been practiced for a long time. My improvement resides in forming and sharpening the end of the tie into a boring tool, here illustrated as flattening the hook 11, pointing its rebent portion that constitutes the hook and grinding cutting edges such as with an emery wheel so that it is capable of boring its way though the forms without in any way impairing its tying function.

Referring to the drawing, the boring bit portion 12 is illustrated as being on each end of the tie 1, though ordinarily only one is required. The workman will be provided with the usual power drill 15 with an adapter 16, picks up a tie, places one end in the adapter, bores the tie into place, drops it and repeats indefinitely, while following workmen will place the ends of the tie between wales and drive a wedge such as 17 into each end, check wall thickness and move to next position. This not only saves a lot of time, but if by miscalculation or rapid pouring the forms show signs of bulging, my new form tie can be inserted through wet concrete with a facility almost equal to its normal placement which is wholly impracticable with the ordinary tie and tools for placing it.

Having fully disclosed my invention so that the art can make and use it, what I claim as new and desire to secure by Letters Patent is:

1. A metal form tie for concrete wall forms defined as a double end tie, fashioned with a wedge receiving means on both ends, at least one of said ends being fashioned and sharpened into a boring bit portion of said tie capable of boringly penetrating the material of the forms when turned by a boring machine and to be then left in place.

2. A metal form tie for wooden concrete wall forms, comprising a body portion for permanent moulding into a concrete wall, integral wedge engaging openings at opposite ends of said tie, said ends formed into a sharpened boring bit

capable of penetrating the wood of the forms, resting therein and having tension applied by the wedge openings to sustain the wood forms.

3. A metal tie for wooden concrete forms comprising a preformed tie portion to remain in the wall, weakened portions near the wall boundaries that fall inside of the wall surface, distance pieces mounted on the tie to bear against the weakened portions, wedge engaging portions at each end of the tie, characterized by at least one end of said metal tie being fashioned and shaped into an integral wood boring tool capable when driven, of boring the tie into its place through the form, to rest there and support the form by wedges engaged with both ends.

4. A metal tie for concrete walls to hold the forms rigid embodying a median portion for leaving in the completed wall, weakened notches or the like separating said median portion from two

equal integral end portions, said end portions fashioned to include wedge engaging portions and a sharpened boring tool with cutting edges at the extreme of at least one wedge engaging portion, said boring tool capable of boring the tie into place through the material of the form when turned by a power tool.

WILLIAM E. SCHAEFER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,108,888	Cousins	Sept. 1, 1914
2,095,714	Pinaud et al.	Oct. 12, 1937
2,370,174	Kinninger	Feb. 27, 1945