Feb. 8, 1938. D. C. HUNGERFORD 2,107,415

WEDGE FOR CONCRETE FORM TIES

Filed Nov. 27, 1934

Fig. 1.

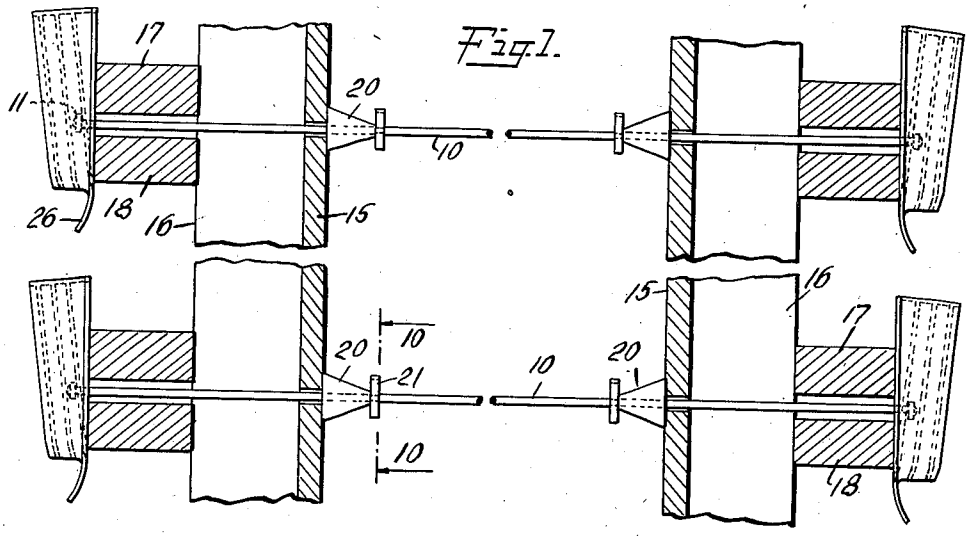


Fig. 3.

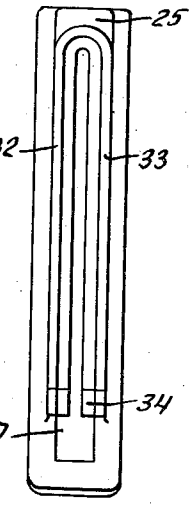


Fig. 2.

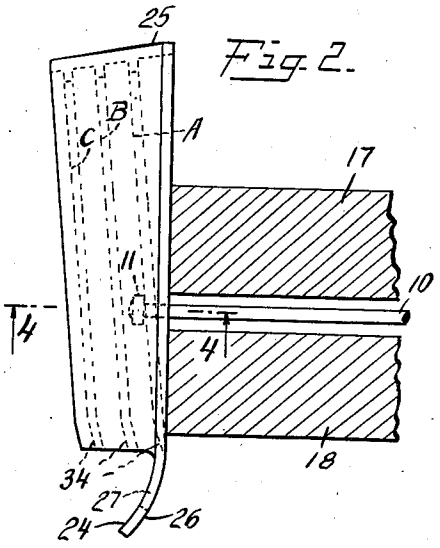


Fig. 4.

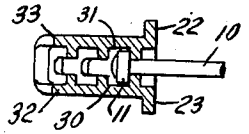


Fig. 5.

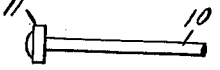


Fig. 6.

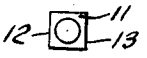


Fig. 10.

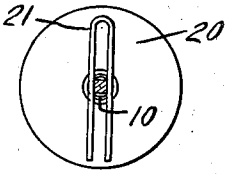


Fig. 7.

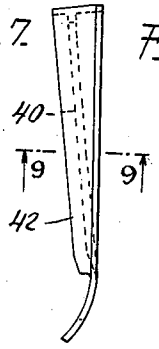


Fig. 8.

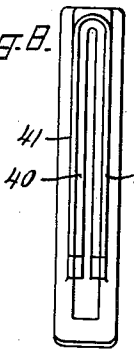


Fig. 9.



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WEDGE FOR CONCRETE FORM TIES

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Application November 27, 1934, Serial No. 754,939

1 Claim. (Cl. 25—131)

This invention relates to ties for concrete forms.

It is common practice to use tie rods and wedges between rod abutments and concrete forms to hold the forms in position. Forms are often built up from lumber at hand and such lumber may vary materially in dimensions.

This invention has for its object to provide a wedge for use with tie rods so constructed as to provide for substantially large variations in the dimensions of the lumber used for the forms.

Another object of the invention is to provide a wedge of the character described having a portion of the wedge surface relatively steep to provide a quick wedge action to take up lost motion.

Another object of the invention is to provide a wedge and tie rod so designed that relative movement of these parts will be prevented when the wedge is rotated around the axis of the tie rod.

Further objects of the invention will appear from the following specification taken in connection with the drawing which forms a part of this application, and in which

Fig. 1 is a sectional elevation showing a tie rod and wedge constructed in accordance with the invention;

Fig. 2 is a side elevation of one form of wedge embodying the invention;

Fig. 3 is a front elevation of the wedge shown in Fig. 2;

Fig. 4 is a transverse sectional elevation taken substantially on line 4—4 of Fig. 2;

Fig. 5 is an elevational view of one end of the tie rod and the head or abutment thereon;

Fig. 6 is an end elevation of the head shown in Fig. 5;

Fig. 7 is a side elevation of another form of wedge embodying features of the invention;

Fig. 8 is a front elevation of the wedge shown in Fig. 7;

Fig. 9 is a transverse sectional elevation taken substantially on line 9—9 of Fig. 7; and

Fig. 10 is a sectional elevation taken substantially on line 10—10 of Fig. 1.

The invention briefly described consists of a wedge and a tie rod having an abutment, the abutment having two substantially parallel sides and the wedge having substantially parallel walls or edge portions adapted to receive therebetween the parallel sides of the abutment. When the concrete has set and the tie rod is to be broken the wedge is first loosened and then rotated about the axis of the tie rod. The rod will be prevented from rotation relative to the wedge by reason of the coaction between the sides of the abutment and the walls or edge portions of the wedge.

The invention also includes the provision of a plurality of spaced inclined wedge surfaces disposed in different planes, any one of which is adapted to coact with the abutment on the tie rod to increase the tension on the rod and tighten the grip of the wedge on the concrete form. The wedge is preferably provided with a relatively steep incline at the entrance of the wedge surface or surfaces in order to provide a quick wedge action to take up lost motion when the tie rod abutment engages the wedge surface.

Further details of the invention will appear from the following description.

In the embodiment of the invention illustrated in Figs. 1–4 inclusive, there is shown a concrete tie comprising a rod 10 having a head or abutment 11 at one end thereof, the head being shown as rectangular. It should be understood that this particular shape of head is not necessary, but the head should be provided with oppositely disposed substantially parallel sides, such as the sides 12 and 13.

The form may be made up in any desired manner and, as illustrated in Fig. 1, comprises sheathing made up of boards 15 which are engaged by studs 16 and outside of the studs are positioned walers or cross beams 17, 18.

The boards or sheathing are held in position by any suitable abutment, such as the abutment members 20, which in turn are held in position by transverse abutment members or clips 21.

In the form of the invention illustrated in Figs. 1–4 inclusive, the wedge has formed on one face thereof a bearing surface adapted to contact with the cross beams or walers 17, 18. This surface is formed by spaced substantially parallel wedge portions or members 22 and 23. The portions 22 and 23 are connected at the ends, as shown at 24 and 25. The end of the wedge at which the connecting portion 24 is located is curved, as shown at 26, and has an opening 27 therethrough adapted to receive the head or abutment 11 on the tie rod 10.

The wedge shown in Figs. 1–4 has a plurality of spaced inclined wedge surfaces A, B and C which are disposed in different planes, and slotted longitudinally to receive the tie rod. The wedge also has substantialy parallel walls 30 and 31 along the side edges of each wedge surface, the walls being spaced apart a distance substantially equal to the distance between the side

edges 12 and 13 of the abutment or head 11. The walls 30 and 31 are extended above the outer wedge surface C, as shown at 32 and 33.

Each of the wedge surfaces A, B and C has a steeply inclined portion 34 at the entrance thereof to provide for a quick wedge action to take up lost motion when the wedge is first put into use. This slack or lost motion in the tie rod can be easily taken up by the steep portion 34 and the subsequent tightening of the rod is accomplished in easy stages by the gradual incline.

The wedge structure above described, having three separate inclined or wedge surfaces, is adapted for use with various dimensions of lumber used in the concrete forms. When the wedge is used the abutment on the tie rod will be engaged with the particular wedge surface which most nearly approaches the distance of the abutment or head from the outer surface of the walers or cross beams. The wedge will then be pulled downwardly and the steeply inclined entering portion 34 will quickly take up any lost motion and further movement of the wedge relative to the head or abutment on the tie rod will cause the form members to be tightly gripped and held in place. It will be noted that the upper or inner end of each incline or wedge surface is disposed a greater distance from the base of the wedge than the entering end of the next outer surface or incline. Thus, after the head has traveled up one incline or surface to the end and sufficient take-up has not been obtained, the lower end of the next outer surface or incline will receive the head.

When the concrete has set the wedge is first loosened and then rotated about the axis of the tie rod and since the edges of the abutment coact with the side walls 30 and 31 to prevent relative rotational movement between the rod and the wedge, the rod will be twisted and will break at the point engaged by the clip 21.

It will be obvious that the feature last described, namely, the structure whereby relative rotation between the wedge and rod is prevented can be used with a wedge, such as that shown in Figs. 7–9 inclusive, in which a single wedge surface is provided. In Figs. 7–9 the wedge surface 40 is shown as provided at the edges thereof with substantially parallel ridges or webs 41 and 42. The sides 12 and 13 of the rod abutment are adapted to fit between the ribs 41 and 42.

Although certain specific embodiments of the invention have been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claim.

What I claim is:

A wedge having a base and a plurality of inclined surfaces disposed in different planes, spaced from each other and angularly disposed relative to the base, the inclined surfaces being so spaced and so inclined that the distance between the inner end of each surface and the base is greater than the distance between the base and the entering end of the next outer inclined surface.

DANIEL C. HUNGERFORD.