

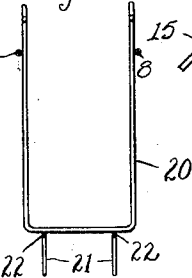
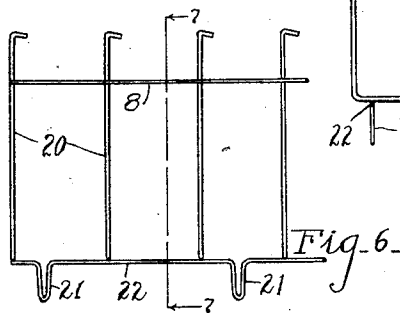
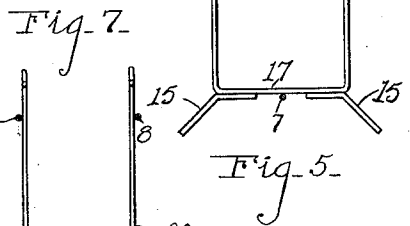
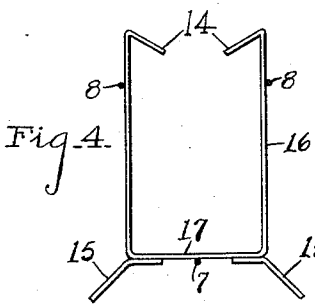
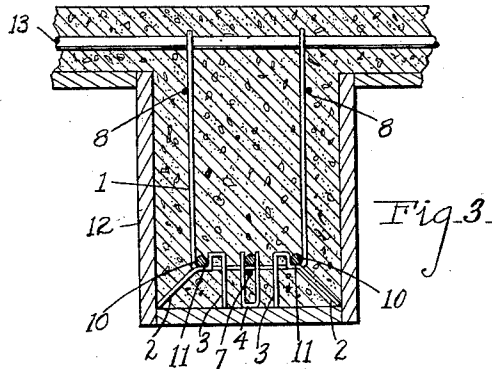
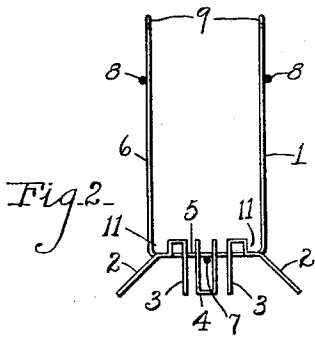
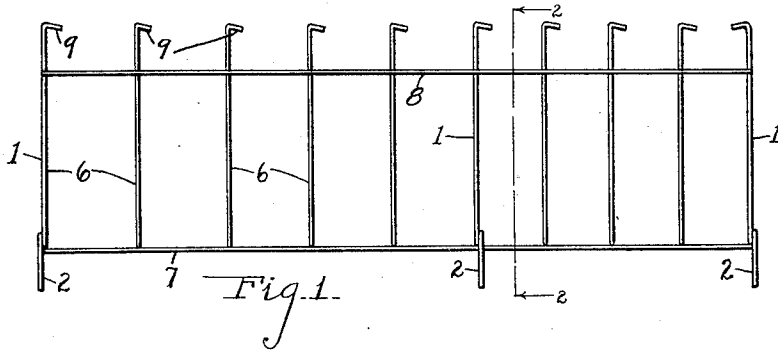
Feb. 7, 1928.

1,658,758

D. H. BITNEY

STRUCTURAL UNIT

Filed Nov. 23, 1925



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# UNITED STATES PATENT OFFICE.

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## STRUCTURAL UNIT.

Application filed November 23, 1925. Serial No. 70,865.

The main objects of this invention are:

First, to provide an improved reinforce structural unit for beams, joist and the like which is well adapted to withstand the diagonal stresses and also constitutes means for supporting and positioning the reinforcing bars and the like.

Second, to provide a reinforcing structural unit which constitutes combined chair, stirrup and spacing means for reinforcing elements.

Objects relating to details and economies of construction and operation of my invention will definitely appear from the detailed description to follow.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, forming a part of this application, in which:

Fig. 1 is a side elevation of a structural unit embodying my improvements.

Fig. 2 is a vertical section on a line corresponding to line 2—2 of Fig. 1.

Fig. 3 is a detail sectional view showing one relation of my improved structural unit in use, the structural unit being sectioned as in Fig. 2.

Fig. 4 is a sectional view corresponding to that of Fig. 2 of a slightly modified form of my improved structural unit.

Fig. 5 is a sectional view corresponding to that of Fig. 2 showing a further modification.

Fig. 6 is a fragmentary side view of a further modification.

Fig. 7 is a vertical section on a line corresponding to line 7—7 of Fig. 6.

In the drawing similar reference characters refer to similar parts throughout the several views.

Referring to the drawing, my improved structural unit comprises a plurality of chair elements 1 disposed in spaced relation, there being a chair element at each end of the unit illustrated and one intermediate chair element. These chair elements are formed of rods bent to U-shape and are provided with legs, the preferred form of legs, shown in Figs. 2 and 3, comprising the outwardly projecting diagonally disposed legs 2 and the vertical legs 3 and 4, the legs 2 and 3 being formed integrally, the legs being se-

cured to the horizontal or bottom portions 5 of the U-shaped members to project above the same providing spacing means for the reinforcing elements, as will be hereafter described.

I also provide a plurality of U-shaped stirrups 6, these stirrups being disposed in spaced relation relative to the chair members and to each other and secured in such position by means of the longitudinal bottom bar 7 secured on the under sides of the bottom pieces of the elements 1 and 6 and the longitudinal side bars or rods 8 secured to the uprights thereof. The upper ends of the elements 1 and 6 have laterally turned ends 9, the ends being disposed in Figs. 1, 2 and 3 in the longitudinal plane of the uprights. By securing the longitudinal rods on the outside and by disposing these laterally turned rods in the longitudinal planes of the uprights, a plurality of the units may be nested together into a compact form for shipment or storage.

The longitudinal reinforcing rods 10 are properly positioned in the recesses 11 provided therefor or formed by the leg members projecting above the bottom pieces 5 of the chair members.

The diagonally disposed legs 2 form means for positioning the unit in the form, as 12.

The transversely disposed reinforcing bars 13 are engaged under the laterally turned ends 9 of the elements.

In the modification shown in Fig. 4, the laterally turned ends 14 are disposed inwardly. The legs 15 of the chair units are secured on the under side of the bottom cross piece 17.

In the embodiment shown in Fig. 5, the ends 18 are turned in the same transverse direction. Longitudinally disposed reinforcing elements 19 are engaged under these ends 18.

In the modifications shown in Figs. 6 and 7, the U-shaped members 20 are substantially the same as shown in Fig. 1, the legs however being formed on the longitudinal bottom spacing rods 22, the rods having downwardly offset loops therein forming the legs.

My improved structural unit is capable of wide use, is quickly placed in the forms and is effective in preventing errors or carelessness on the part of the workmen. It is

not only effective as a reinforcing element in itself but it effectively positions and supports the reinforcing bars.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A structural unit comprising a plurality of U-shaped chair elements having outwardly projecting inclined legs and vertical legs secured to the bottom cross pieces thereof to project above the same providing reinforce spacing means, said outwardly inclined legs constituting positioning members, a plurality of U-shaped stirrup elements disposed in spaced relation between said chair elements, and longitudinal supporting and spacing rods rigidly secured to said chair and stirrup elements whereby they are supported in relatively fixed spaced relation.

2. A structural unit comprising a plurality of U-shaped chair elements having legs secured to the bottom cross pieces thereof to project above the same providing reinforce spacing means, a plurality of U-shaped stirrup elements disposed in spaced relation between said chair elements, and longitudinal supporting and spacing rods rigidly secured to said chair and stirrup elements whereby they are supported in relatively fixed spaced relation.

3. A structural unit comprising a plurality of U-shaped chair elements provided with outwardly projecting inclined legs constituting supporting and lateral positioning members, a plurality of U-shaped stirrup elements disposed in spaced relation between said chair elements, and longitudinal supporting rods rigidly secured to said chair and stirrup elements whereby they are supported in relatively fixed spaced relation.

4. A structural unit comprising a plu-

rality of U-shaped chair elements provided with legs and reinforce spacing means, a plurality of U-shaped stirrup elements, said chair and stirrup elements being disposed in spaced relation, and longitudinal spacing and supporting rods fixed to said chair and stirrup elements whereby they are supported in relatively fixed spaced relation as an integral unit.

5. A structural unit comprising a plurality of U-shaped elements disposed in spaced relation, and longitudinal spacing and supporting rods rigidly secured to the bottom cross pieces of said elements and to the outer sides of their uprights whereby said elements are secured in relatively fixed spaced upright relation as an integral unit, one of said elements being provided with legs secured to the bottom cross pieces thereof to project above the same providing reinforce spacing elements.

6. A structural unit comprising a plurality of U-shaped elements disposed in spaced relation, and supporting and spacing rods fixed to the outer sides thereof whereby said elements are supported in relatively fixed upright relation as an integral unit, at least one of said elements being provided with downwardly diverging supporting and positioning legs and with reinforce positioning members.

7. A structural unit comprising a plurality of U-shaped elements disposed in spaced relation, and longitudinal rods fixed thereto for supporting them in upright relatively fixed spaced relation as an integral unit, one of said elements being provided with reinforce spacing means.

In witness whereof I have hereunto set my hand.

DEWEY H. BITNEY.