Dec. 3, 1957 B. G. SIMMONS 2,814,943

REINFORCING TRUSSED GIRDER

Filed Oct. 12, 1955

FIG. 1

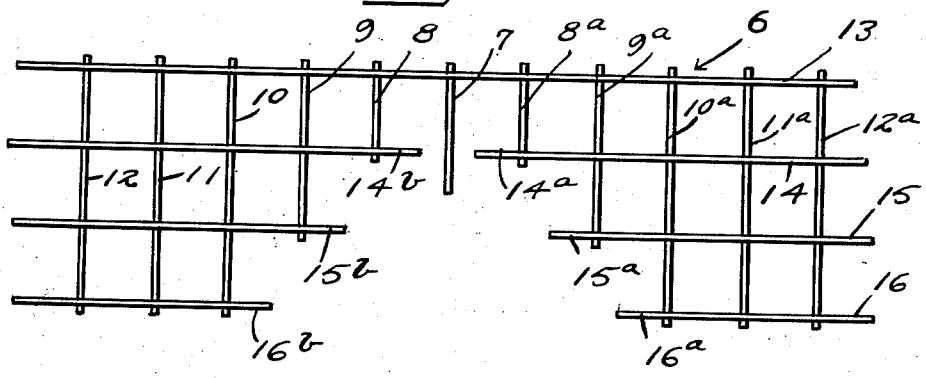


FIG. 2

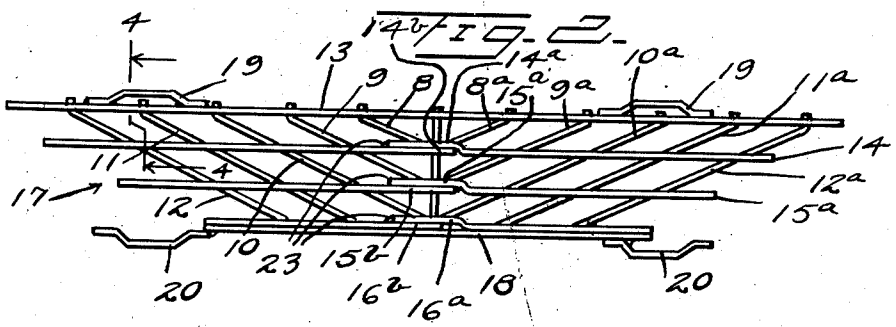


FIG. 3

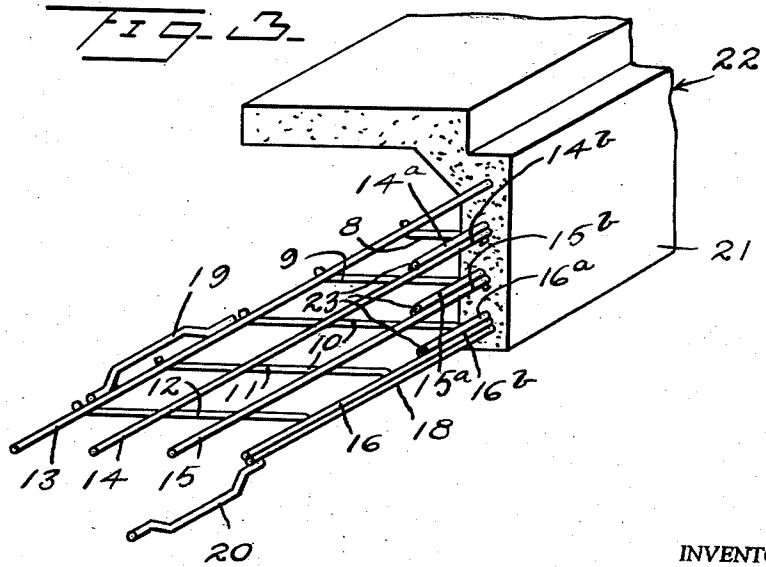
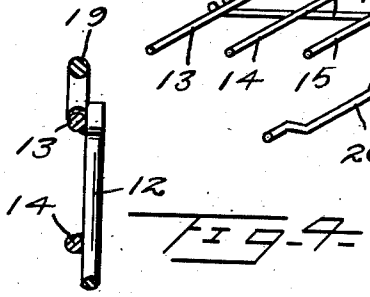


FIG. 4



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REINFORCING TRUSSED GIRDER

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1 Claim. (Cl. 72—110)

This invention relates to a novel reinforcing unit for precast concrete members forming structural units which are disposed with their axes substantially horizontal and in a vertical plane, for increasing the load bearing capacity of such members.

More particularly, it is an aim of the present invention to provide a reinforcing trussed girder for concrete members which may be readily formed from a section of concrete slab reinforcing mesh.

A further object of the invention is to provide a novel method of forming a reinforcing trussed girder from conventional reinforcing mesh and which will provide a substantially greater resistance to stresses and compressive forces than the conventional reinforcing mesh.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

Figure 1 is a section or piece of conventional concrete slab reinforcing mesh cut preparatory to its conversion into a reinforcing trussed girder, shown in plan or elevation;

Figure 2 is a plan or elevational view showing the reinforcing mesh after being drawn and welded to form a reinforcing trussed girder;

Figure 3 is a perspective view showing a cutoff end of a precast concrete structural member and in which one end of the trussed girder is embedded, the other end thereof being shown exposed, and

Figure 4 is an enlarged fragmentary cross sectional view, taken substantially along a plane as indicated by the line 4—4 of Figure 2.

Referring more specifically to the drawing, a section or piece of conventional reinforcing mesh, such as is used for reinforcing precast concrete members, is illustrated in Figure 1 and is designated generally **6**. However, the section or piece **6** is modified in that portions of the rods forming the mesh are cutaway adjacent the center thereof. The mesh piece **6** includes an intermediate vertical or cross rod **7** interposed between vertical or cross rods **8** and **8***a* which are in turn disposed between vertical or cross rods **9** and **9***a*. The piece **6** also includes additional vertical rods **10**, **11** and **12** disposed beyond the vertical or cross rod **9**, and **10***a*, **11***a* and **12***a*, disposed beyond the vertical or cross rod **9***a*. The piece **6** also includes longitudinal or horizontal rods **13**, **14**, **15** and **16**. The longitudinal or horizontal rods are secured to the vertical or cross rods at the junctions thereof.

A short piece is cut out of the longitudinal rod **14**, intermediate of its ends, so that adjacent end portions **14***a* and **14***b* thereof terminate between the cross rod **7** and the adjacent cross rods **8***a* and **8**, respectively. A longer piece is cut out of the intermediate portion of the longitudinal rod **15** so that the adjacent cutoff ends **15***a* and **15***b* thereof terminate inwardly with respect to and adjacent the cross rods **9***a* and **9**, respectively. A still longer section is cut out of the intermediate portion of

the rod **16** so that the adjacent end portions **16***a* and **16***b* thereof are spaced apart a distance greater than the spacing between the cross rods **9** and **9***a* and less than the spacing between the cross rods **10** and **10***a*.

The intermediate cross rod **7** is cut off substantially midway between the rods **14** and **15** so that it is supported by and connected only to the uncut upper longitudinal rod **13**. The rods **8** and **8***a* are cut off between the rods **14** and **15** and adjacent said rod **14**; and the rods **9** and **9***a* are cut off between the rods **15** and **16** and adjacent said rod **15**, all as clearly illustrated in Figure 1.

The rod ends **14***a* and **14***b*, **15***a* and **15***b* and **16***a* and **16***b* are then drawn inwardly toward one another and into overlapping relation relative to one another, as illustrated in Figure 2. This drawing inwardly of the inner ends of the rods **14**, **15** and **16** also causes an inward bending of all of the cross rods except the center cross rod **7** so that the cross rods **8** and **8***a*, **9** and **9***a*, **10** and **10***a*, **11** and **11***a* and **12** and **12***a* are then disposed in downwardly and inwardly converging relation to one another, as seen in Figure 2. As a result of this, the rods **14**, **15** and **16** are displaced toward one another and toward the unmodified upper longitudinal rod **13** while retaining their substantially parallel relation. Accordingly, by this displacement of the longitudinal rods toward one another, the cut off intermediate cross rod **7** intersects and forms junctions with the overlapping portions of the rods **14**, **15** and **16**. The overlapping rod portions **14** and **14***a* are then welded to one another and to the rod **7** and the rod portions **15***a* and **15***b* and **16***a* and **16***b* are likewise welded to one another and to the intermediate cross rod **7** as seen at **23** to thus complete the reinforcing trussed girder, as seen in Figure 2 and designated generally **17**. Where additional reinforcing is desired, a rod **18** may be welded to the rod **16**, as seen in Figures 2 and 3.

If desired, short anchoring rods **19** of anchoring units as disclosed in my co-pending application entitled Precast Concrete Structural Unity, Serial No. 536,659, filed September 26, 1955, may be secured to the rod **13**, as illustrated in Figures 2, 3 and 4, and similar short anchoring rods **20** may be secured to the lower rod **16** or the reinforcing rod **18**, said anchoring rods **19** and **20** having outwardly offset intermediate portions which can assume exposed positions relative to top and bottom edges of a precast concrete member in which the trussed girder **17** is molded.

One end of the trussed girder **17** is shown molded in a wall or side **21** from which the adjacent end portion has been cut off, and which wall or side **21** forms a part of an angular structural unit as fully disclosed in my aforementioned co-pending application. It will be understood that the entire trussed girder **17** will be molded into the wall or side **21** so as to be completely embedded therein with the exception of the offset intermediate portions of the anchor rods **19** and **20**. It will also be understood that the length and width of the girder **17** may be varied by utilizing pieces of mesh **6** of different sizes. Thus, the girder **17** may include a greater number of longitudinal and cross rods than as illustrated in Figures 1 to 3.

The trussed girder **17** is adapted to be utilized in any precast structural member intended to be disposed with its axis substantially horizontal and in a vertical plane, as illustrated by the wall or side **21** in Figure 3, so that said reinforcing girder **17** is disposed with the plane thereof substantially vertical. The girder **17** will thus effectively function to materially increase the load bearing capacity of a precast member in which it is embedded. The girder **17** may be disposed, as illustrated in Figure 3, with the longitudinal rod **13** constituting the upper edge

thereof, or may be disposed in an inverted position with the rod **13** constituting the bottom portion thereof.

From the foregoing it will be apparent that a novel reinforcing girder for precast concrete members has been provided, as well as a novel method of producing such a reinforcing girder from a piece of conventional rod mesh of the type normally employed for reinforcing concrete slabs.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit or scope of the invention as hereinafter defined by the appended claim.

I claim as my invention:

A reinforcing trussed girder adapted to be embedded in a precast structural member, said girder being formed of rod mesh and consisting of a plurality of substantially parallel longitudinal rods including an outermost longitudinal rod, an intermediate cross rod secured to and extending continuously across intermediate portions of all of said longitudinal rods, and a plurality of diagonal rods disposed on each side of said intermediate cross rod, said diagonal rods being disposed in downwardly and inwardly converging relation to the intermediate cross

rod and each extending continuously across and being secured to the outermost longitudinal rod and to one or more of the other longitudinal rods, the diagonal rods which are disposed remote from the intermediate cross rod being secured to all of the longitudinal rods, all of said longitudinal rods, except said outermost longitudinal rod, being formed of end sections having adjacent end portions secured to said intermediate cross rod and secured to one another in overlapping relation.

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