

A. H. TASHJIAN.
 FRAME FOR REINFORCED CONCRETE STRUCTURES.
 APPLICATION FILED MAR. 17, 1911.

1,013,698.

Patented Jan. 2, 1912.

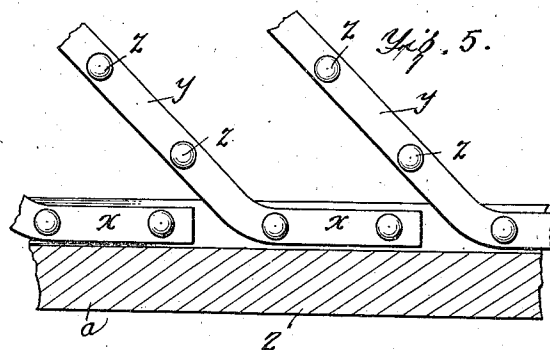
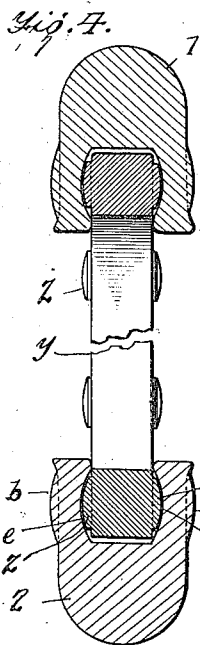
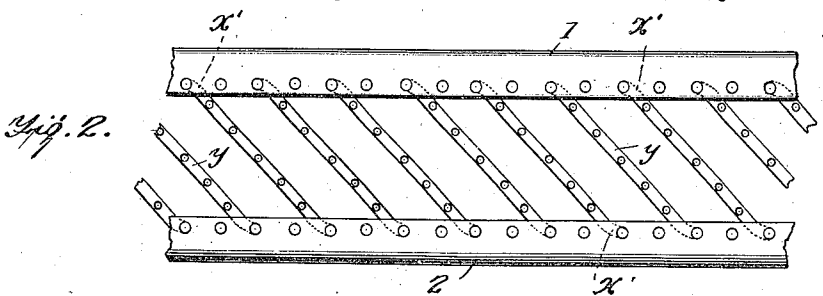
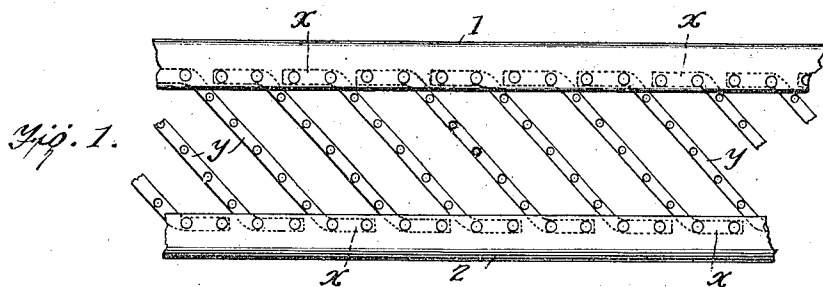
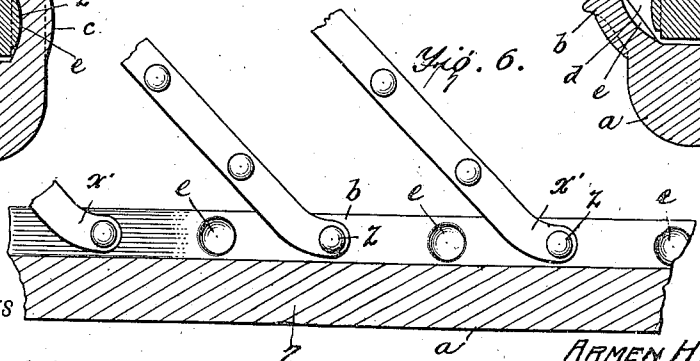
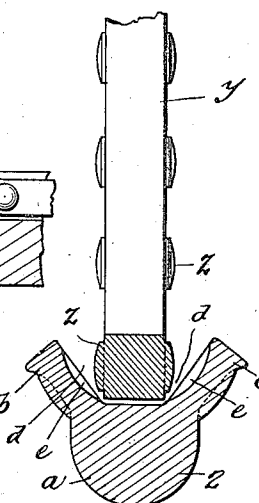


Fig. 3.



WITNESSES

L. H. Schmidt
 L. Stanley

INVENTOR
 ARMEN H. TASHJIAN,
 BY *[Signature]*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

ARMEN H. TASHJIAN, OF PORTLAND, MAINE.

FRAME FOR REINFORCED CONCRETE STRUCTURES.

1,013,698.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed March 17, 1911. Serial No. 615,167.

To all whom it may concern:

Be it known that I, ARMEN H. TASHJIAN, a citizen of the United States, and a resident of Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Frames for Reinforced Concrete Structures, of which the following is a specification.

My invention relates to improvements in frames for use in making concrete structures, and it consists in the combinations, constructions and arrangements herein described and claimed.

In most frames which are used as a reinforcement upon which the concrete is laid for structures of the reinforced concrete type, there are two sets of members, first, the main bars which take the direct tensile or compressive stresses, and second, the secondary bars which take the shearing or diagonal stresses. In making an ideal reinforcing frame there are certain points that should be kept well in mind. The main bars must be of such a shape as to present a maximum contact area to the concrete. These main bars should also be of such form as to allow a rigid and easy attachment of the secondary bars, so that the whole frame may act as a rigid unit with no possibility of displacement during the pouring of the concrete. Besides this the members of the frame should be so constructed as to allow the fabrication of the units in the shop or field with the least amount of labor.

An object of my invention is to provide a frame which is composed of parts so constructed as to present a maximum contact area to the concrete.

A further object of my invention is to provide frame members which can be readily fabricated into a rigid frame.

A further object of my invention is to provide frame members which, by slight alteration, *i. e.*, in the form of secondary bars, may be fabricated into frames of variable depth.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of a portion of a frame constructed according to my invention, Fig. 2 is a view of a modified form

of the device, Fig. 3 is a section through one of the main bars showing the manner in which the frame is formed, Fig. 4 is a section similar to that shown in Fig. 3 showing the main bars clamped to the secondary bars, Fig. 5 is a detailed section showing the manner of joining the main to the secondary bars, and Fig. 6 is a view similar to Fig. 5 showing a modified construction.

Referring now to the drawings, I have shown therein the main bars 1 and 2 of which the frame is composed. The shape of these bars is best shown in Fig. 3. It will be seen that they consist of a body portion *a*, of a substantially circular cross section having a pair of outwardly extending flanges *b* and *c* between which is a trough or groove *d*. I prefer to make this groove of one standard size in all sizes of main bars. The flanges *b* and *c* have pressed in them a series of cupped like recesses *e*, at regular intervals as shown in Fig. 1. The bars may be rolled and the recesses may be pressed in during the rolling process, or they may be formed after the formation of the bar itself.

The secondary bars are cut from a standard size metal bar—of the same size as the standard groove in my main bars—on the two opposite faces of which are rolled a series of lugs *Z* whose surfaces are curved so as to conform with the cup-shaped recesses *e* in the main bar. The lugs however are smaller than these recesses *e*, as clearly shown in Fig. 6.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

In forming the frame the secondary bars are cut in the necessary lengths according to the depth and shape of the frame, the ends *X* bent so as to allow two or more lugs on each bent end. These bent portions are placed in the grooves *d* of the main bars. The position of the secondary bars at this stage of fabrication is shown in Fig. 3. The flanges *b* and *c* are now forced together so as to clamp the secondary bars in the manner shown in Fig. 4. The structure thus formed is absolutely rigid because the ends of the bars are held in two places.

In some instances it is desirable to have a frame which may be made of a variable depth, and in this case I prefer to cut away my secondary bars, so that one lug at each end comes close to the end, as shown in Figs.

2 and 6, so that only one lug at each end registers with the recesses *e* in the lips of the flanges *b* and *c*. The ends of the secondary bars are bent to a slight curve, so that when the frame is collapsed in the direction of the arrows shown in Fig. 2, the lugs of the secondary bars will not be in the way. The lugs *Z* of the secondary bars between the main bars and outer bulged surfaces of the main bar cups serve as surfaces of attachment for the concrete thus having the effect of a corrugated surface.

I claim:—

1. In a reinforcing frame for concrete structures, a pair of main bars each being provided with a pair of outwardly extending flanges, each of said flanges having a series of recesses at equal distances apart, a series of transverse or secondary bars each of lugs spaced apart at equal distances, the end lugs of said transverse bars being adapted to enter the recesses in said flanges, the

said transverse bars being arranged to be clamped between said flanges.

2. In a reinforcing frame for concrete structures, a pair of main bars, each of said main bars being provided with a pair of outwardly extending flanges on one side thereof, each of said flanges having a series of recesses stamped therein at equal distances apart, a series of transverse or secondary bars, each transverse bar being provided with a series of lugs spaced apart at equal distances, the end lugs of said transverse bars being adapted to enter the recesses in said flanges, and the intervening lugs serving as surfaces of attachment for the concrete, said transverse bars being arranged to be clamped between the flanges of said main bars.

ARMEN H. TASHJIAN.

Witnesses:

HENRY WINGATE STEVENS,
CHAS. E. B. KING.