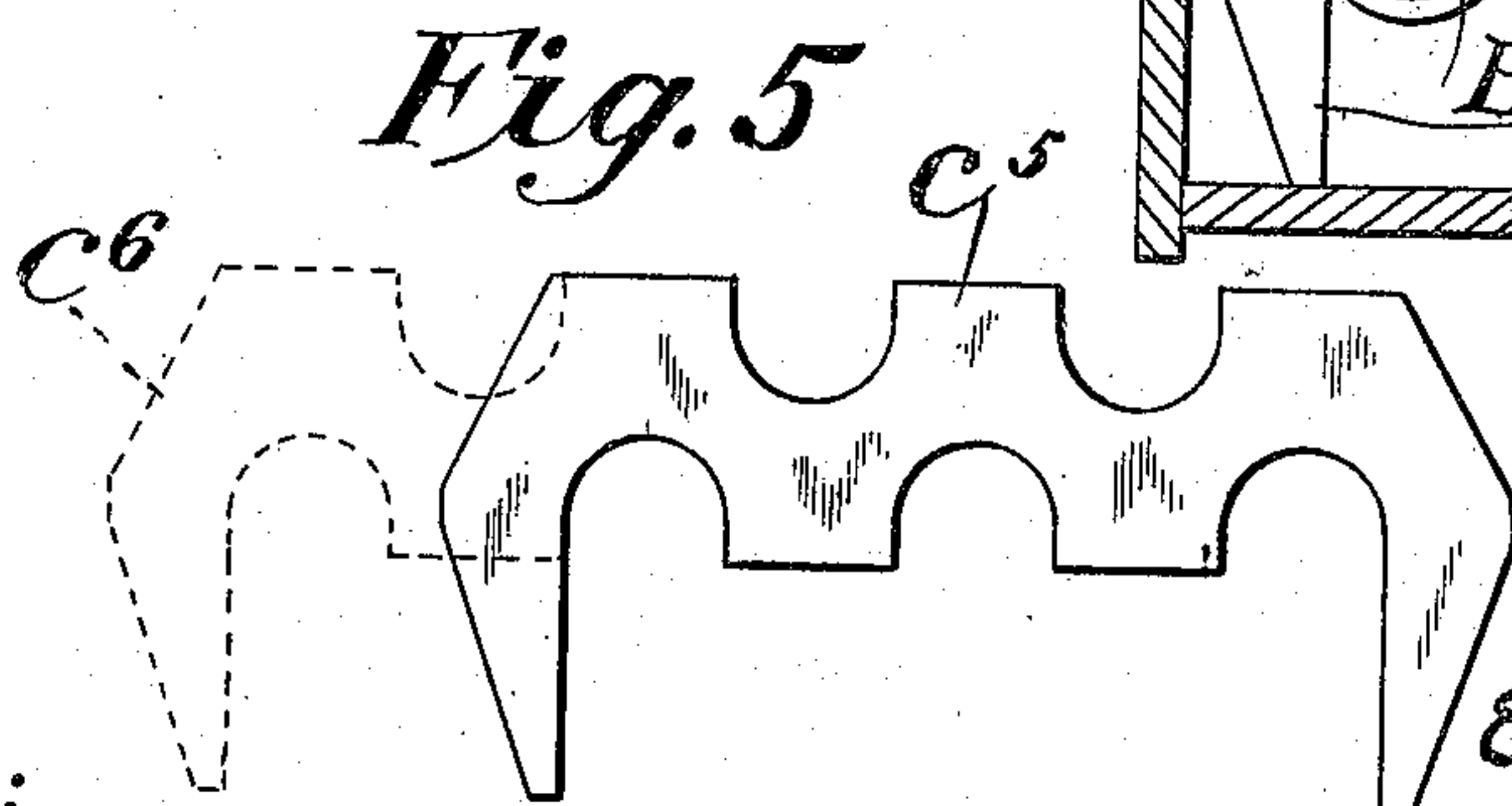
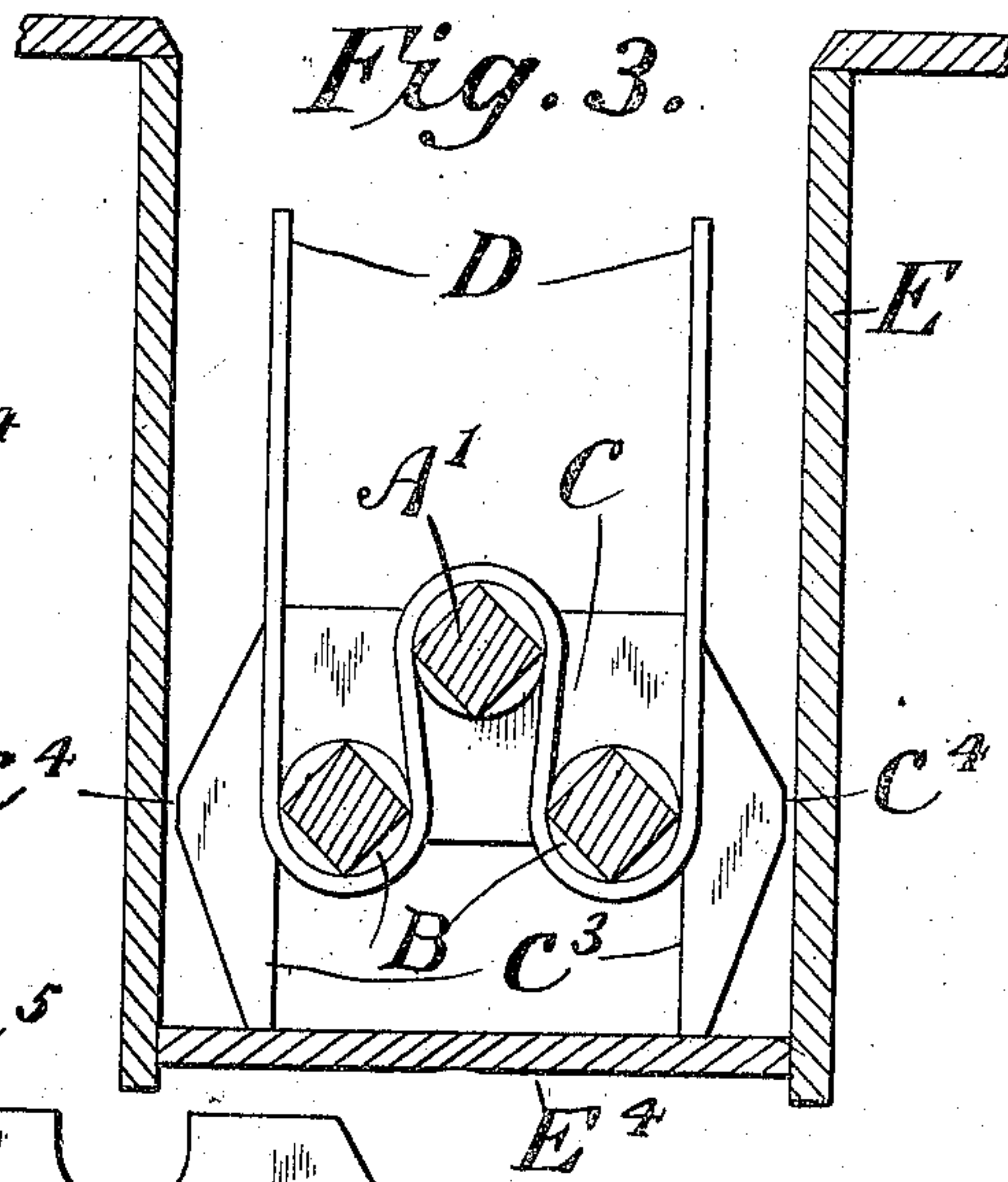
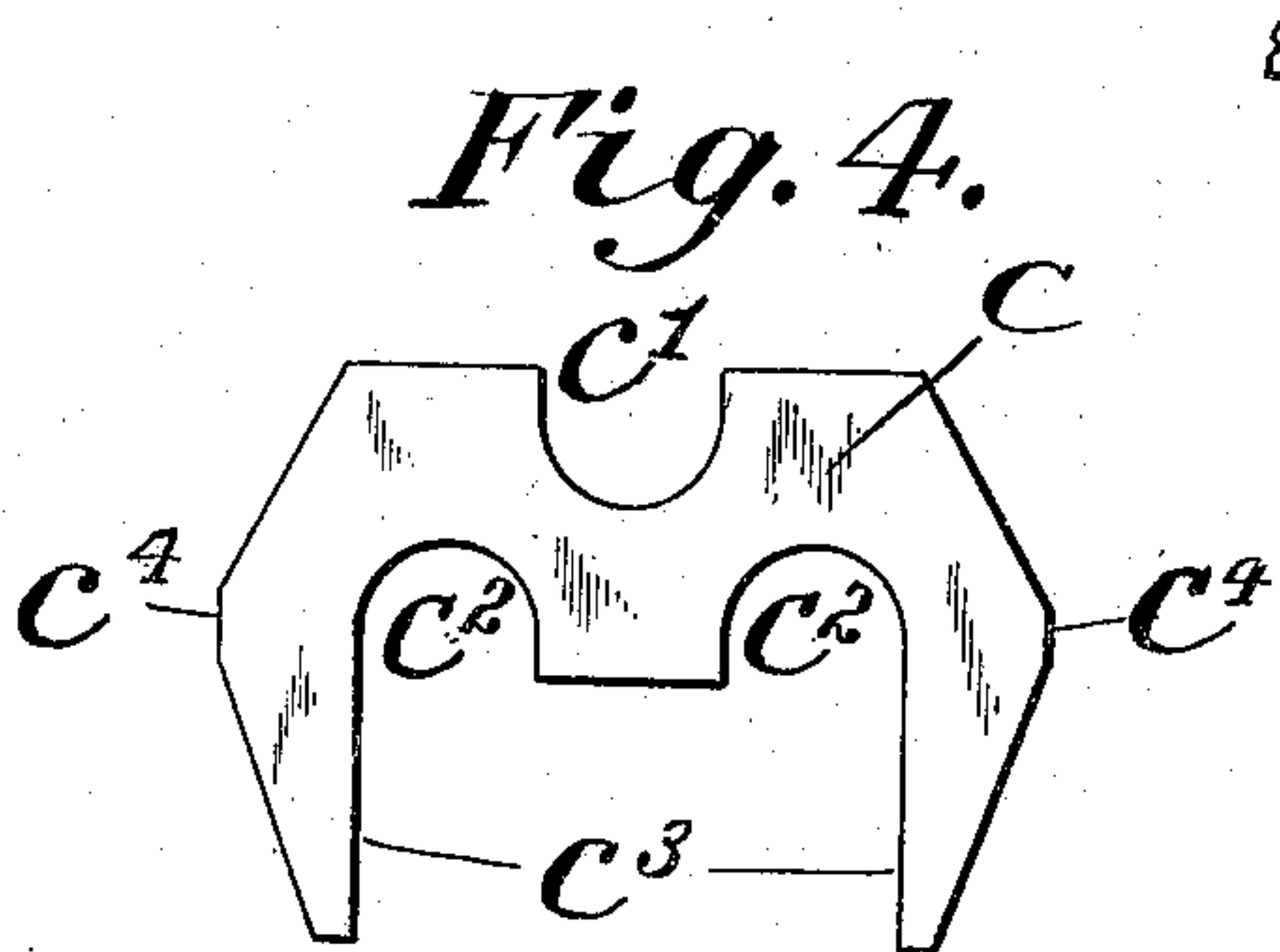
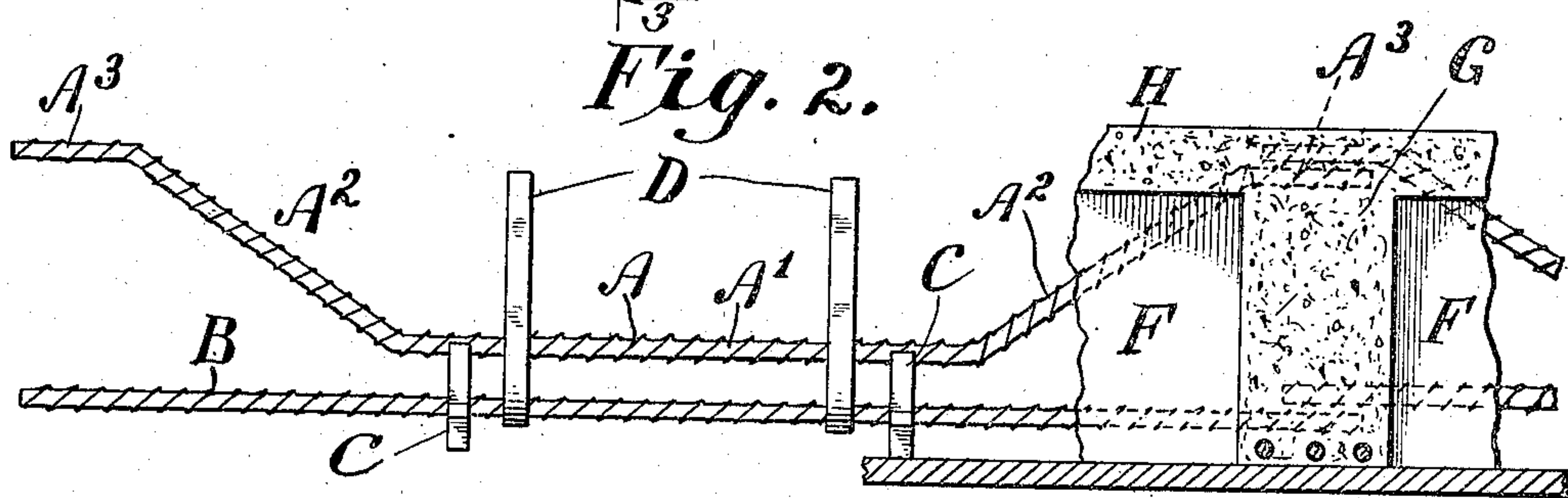
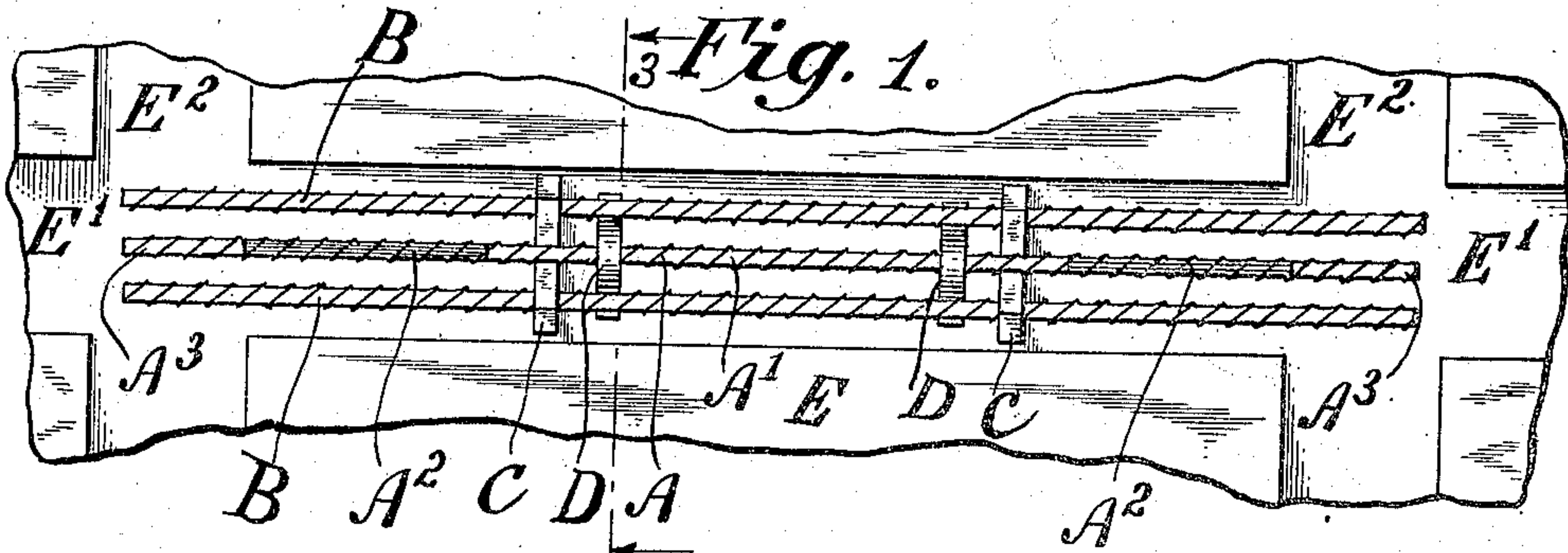


E. J. MOORE.
 REINFORCED CONCRETE CONSTRUCTION.
 APPLICATION FILED AUG. 29, 1908.

924,090.

Patented June 8, 1909.



Attest:

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 his Atty

UNITED STATES PATENT OFFICE.

EGBERT J. MOORE, OF YONKERS, NEW YORK.

REINFORCED CONCRETE CONSTRUCTION.

No. 924,090.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed August 29, 1908. Serial No. 450,878.

To all whom it may concern:

Be it known that I, EGBERT J. MOORE, a citizen of the United States, and resident of Yonkers, county of Westchester, and State of New York, have invented certain new and useful Improvements in Reinforced Concrete Construction, of which the following is a specification.

In reinforced concrete construction, especially in the construction of floors, the mold is constructed of proper form to pour in the concrete to form in one solid mass the floor, girders and beams, the reinforcing metal bars having been first placed in position in the mold so that they will be enveloped or buried in the mass of concrete when it hardens. The concrete is tamped in the mold and owing to this operation, it is very uncertain whether the reinforcing bars are displaced from their proper positions and the whole construction thus rendered defective and weak. Means for preventing the displacement of the bars are, therefore, very important and to provide such means, as well as to provide means for properly positioning the reinforcing bars in the mold so that they will be enveloped in the concrete with a sufficient covering of concrete on all sides to obviate all danger of damage by fire, such positioning being required by fire-laws in nearly all cities.

With these objects in view, my invention consists broadly in a frame work of metal reinforcing bars for such construction which will be always held or maintained in proper position during the filling and tamping of the mold and consequently properly positioned in the finished concrete beams.

My invention further consists in the improved construction, arrangement and combination of parts hereinafter fully described and afterward specifically claimed.

I have illustrated an embodiment of my invention in the accompanying drawing in which—

Figure 1 is a diagrammatic plan view of part of the mold for a floor, beams and girders, with a frame work of reinforcing bars in place therein, ready for pouring the concrete. Fig. 2 is a view partly in elevation and partly in section, showing the beam, girder and framework. Fig. 3 is a sectional

view on a plane cutting transversely through the mold and framework on the line 3—3 of Fig. 1. Fig. 4 is a view in elevation of one of my improved bridge-pieces used in assembling the parts of the framework. Fig. 5 is a similar view showing in full and dotted lines, modified forms of bridge pieces.

Referring specifically to the drawing, A indicates a metal bar roughened in any approved manner to prevent it slipping in the concrete, in this instance being angular in cross section and twisted to form spiral ridges throughout its length although this specific form, while perhaps preferable, is not necessary to the proper operation of the invention. This bar A is straight at its center as at A', inclined outward and upward at A², A², and again straight at each end, as at A³, A³, the parts A' and A³, A³ being parallel and horizontal.

B, B indicate straight metal bars shown as of a form in cross section corresponding with that of the bar A.

C, C indicate bridge pieces substantially of inverted U shape and preferably made of cast metal although other materials might be used if desired. The shape of these pieces is shown in Fig. 4, there being formed in the upper edge of each a substantially semi-circular recess, seat or notch C', and two similarly shaped recesses, seats or notches C² in the under surface, the legs C³ being shown as tapering toward the bottom from the points C⁴ to the bottom. The recesses C', and C², C², alternate with each other, the former being intermediate of the latter.

D, D indicate metal stirrups formed of strap or band iron of a suitable weight to permit of bending readily but at the same time to retain their bent position, a suitable thickness for general purposes being about 1½ by ½ inches.

To secure the three bars A, B, B together in position for use, the upper bar A may be placed with the part A' on the floor with the parts A², A³, in a vertical plane and the two stirrups D, D, placed astride of this bar so that the middle loops thereof embrace or set over the part A'. The two bars B, B are now placed, one on each side of bar A and parallel with the part A' and in the two side loops of each of the stirrups. A workman

at each end holds down the bars B, B by placing his foot thereon, or otherwise, and raises the center bar A to the upper end of the middle loops of the stirrups. The bridge pieces C, C, are then inserted in the positions shown whereupon the bar A may be released, resting in the upper recesses C' of the bridge pieces and held therein by the middle loops of the stirrups, with the bars B, B resting in the side loops of the stirrups and held therein and in the recesses C² C² of the bridge pieces as shown clearly in Fig. 2, the whole frame being held in position by virtue of the stiffness of the bars A and B, B.

Another method of assembling the parts into form is to place the bars A, B, B, in approximately the relation they are finally to hold with each other, and separating the bar A from the bars B, B, by small rods or blocks (not shown). A blank for a stirrup may now be bent at its center and placed over bar A with its ends between the bars B, B, thus forming the middle loop of the stirrup. These ends may now be bent around the bars B, B, forming the side loops of the stirrups, and the bridge pieces inserted as before described.

It will be observed that in the completed framework, the bars A, B, B, are arranged so that they lie substantially at the angles of a triangle, as clearly shown in Fig. 3, the upper bar A being intermediate of and in a different vertical plane from those of the lower bars B, B. The elasticity of the bars will serve to hold them in position against displacement.

E indicates a floor mold of which E' is the trough in which a beam is molded and E² that in which a girder is molded.

A frame-work constructed as hereinbefore described is placed in each of the sections E' of troughs E between the sections E², the ends of the bars extending into and nearly crossing the sections E² as shown in Figs. 1 and 2, and when a sufficient number of such frameworks are in position, the concrete is poured in and tamped, in the usual manner, enveloping the framework in beams F, Fig. 2, the ends of the bars projecting into the girders G and floor H, overlapping the ends of the next framework.

The legs C³ rest upon the floor E⁴ of the mold and thus support the bars A, B, B, in proper vertical positions, and the points C⁴ are of a proper size to position the bars away from the sides of the concrete of the beam, so that when the beam is finished, the reinforcing bars will not be exposed to the action of fire or any other outside influence.

I desire it to be understood, however, that I do not limit myself to the arrangement described, of three bars, as I may use any desired number by modifying the construc-

tion of the bridge-pieces and correspondingly modifying the stirrups, and I have shown a modified form of stirrup at C⁵ in Fig. 5. In this figure, the structure is shown in full lines as suited for groups of five bars and by the addition as shown in dotted lines at C⁶, for groups of seven bars. Further extension may be made in the same manner.

What I claim as new is:—

1. A framework of reinforcing bars adapted to be embedded in concrete in a mold, comprising a group of substantially parallel bars, bridge pieces having notches to receive said bars, and stirrups passing alternately over and under adjacent bars to confine them in the notches of the bridge pieces.

2. A framework of reinforcing bars adapted to be embedded in concrete in a mold comprising a group of substantially parallel bars, bridge pieces having notches in their upper and lower edges to receive the bars, and stirrups passing under the bars in the notches in the lower edge and over the bars in the notches in the upper edge of the bridge pieces for maintaining the bars in the notches.

3. A framework of reinforcing bars adapted to be embedded in concrete in a mold comprising a group of substantially parallel bars, bridge pieces having notches in their lower edges, and notches in their upper edges alternating with those in their lower edges, to receive the bars, and stirrups bent over the bars in the notches in the upper edges of the stirrups and bent outwardly and upwardly under the bars in the notches of the lower edges of the stirrups, to maintain the bars in position in the notches.

4. A framework of reinforcing bars adapted to be embedded in concrete in a mold comprising three bars substantially parallel with each other, two being below and one above and intermediate of them, means for fixing the bars with relation to each other substantially at the three angles of a triangle and stirrups bent over the upper bar and downward and then outwardly and upwardly under the two lower bars, for retaining the bars in their relative positions.

5. A framework of reinforcing bars adapted to be embedded in concrete in a mold comprising transverse bridges of substantially inverted U-shape having notches in their upper and lower edges and having their legs extended laterally, bars located in the notches, and stirrups entwined about the bars to hold them in the notches.

6. A framework of reinforcing bars for concrete construction comprising three bars substantially parallel with each other, bridge pieces of substantially inverted U-shape having triangularly located recesses in which said bars rest, one of said recesses being in the

upper edge and the other two in the lower
edge of the bend of each of the bridge
pieces, and stirrups, each provided with a
central loop passed over the upper bar for
5 holding it down in the upper recess and side
loops passed under the lower bars for hold-
ing them up into the under recesses.

Witness my hand this 17th day of August
1908, at New York, N. Y.

EGBERT J. MOORE.

Witnesses:

S. BRASHEARS,
S. S. NEWTON.