

No. 777,742.

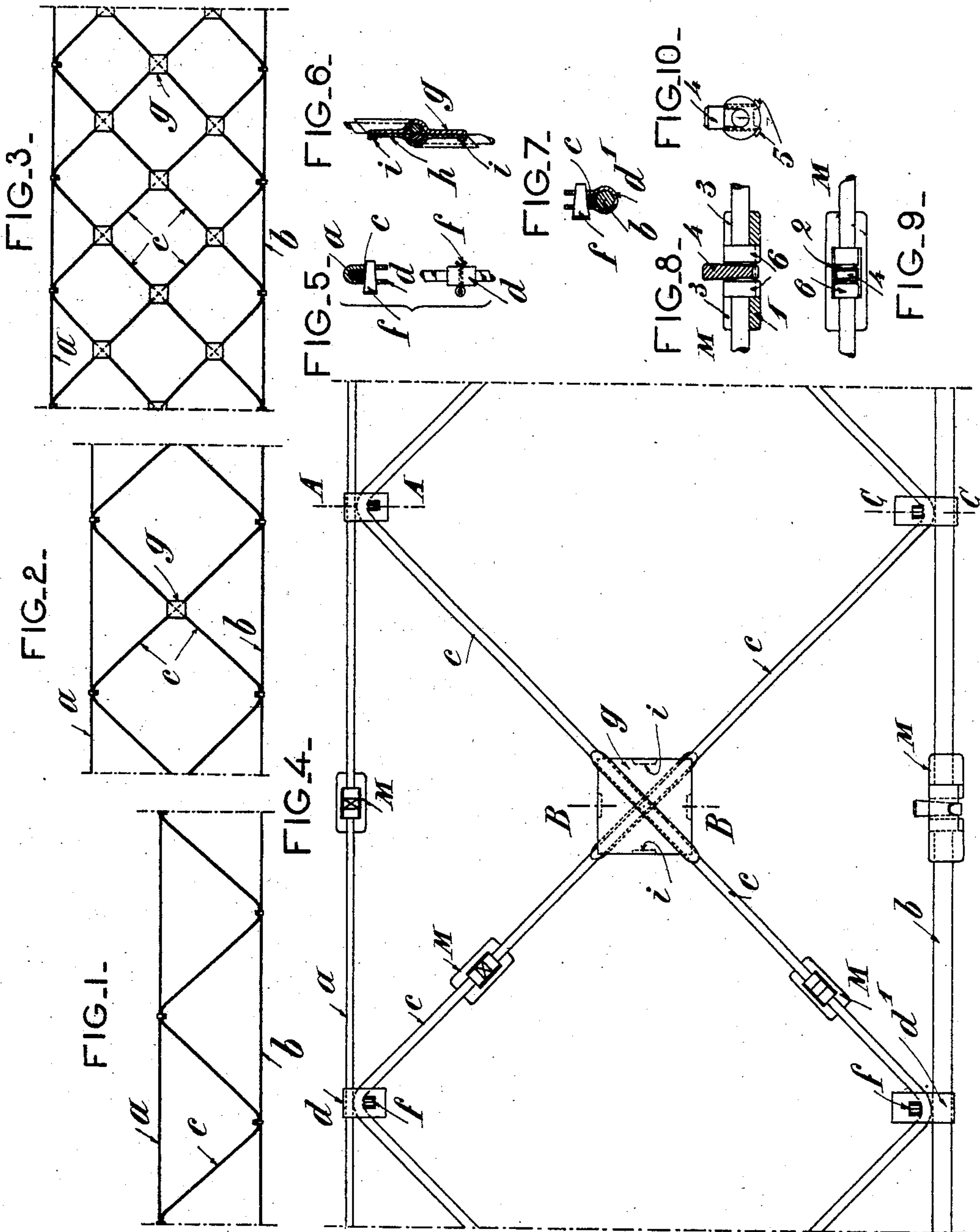
PATENTED DEC. 20, 1904.

G. A. PARENT.

SYSTEM OF METALLIC GIRDERS FOR STRUCTURES OF CEMENT, CONCRETE,
OR THE LIKE.

NO MODEL.

APPLICATION FILED JULY 12, 1904.



WITNESSES

Reynolds White

John A. Percival

INVENTOR

Georges Adolphe Parent

By *Richardson*

ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGES ADOLPHE PARENT, OF PARIS, FRANCE.

SYSTEM OF METALLIC GIRDERS FOR STRUCTURES OF CEMENT, CONCRETE, OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 777,742, dated December 20, 1904.

Application filed July 12, 1904. Serial No. 216,272.

To all whom it may concern:

Be it known that I, GEORGES ADOLPHE PARENT, civil engineer, a citizen of the Republic of France, and a resident of 52 Rue St. Georges, Paris, in the Republic of France, have invented a certain new and useful Improved System of Metallic Girder for Structures of Cement, Concrete, or the Like, of which the following is a specification.

This invention relates to an improved system of metallic girder or beam adapted to be embedded in cement, concrete, or the like for the purpose of constructing trussed beams, pillars, or the like of cement or concrete; and the present improvement has for its object to provide such a girder of simple and inexpensive nature and readily and rapidly put together without the use of special tools or machinery.

The invention comprises also an improved system of trussing and coupling instantaneously effected whereby the bars of each beam or girder may be assembled end to end and built-up girders of very considerable length pieced together.

In the accompanying drawings, Figures 1, 2, and 3 represent demonstratively three methods of constructing the improved system of girder. Fig. 4 is an elevation view, at a larger scale, of a girder of this system. Figs. 5, 6, and 7 show the couplings by sections made, respectively, through lines A A, B B, and C C of Fig. 4. Figs. 8, 9, and 10 refer to the sleeve for the coupling end to end of the bars of the girder, Fig. 8 being a longitudinal section, Fig. 9 a plan view, and Fig. 10 an end view.

Under the invention each beam or girder comprises in the first place two longitudinal parallel bars or rods *a* and *b*, preferably of circular section, but which may be of square or any other suitable section, connected by means of braces *c* of round or other section disposed in zigzag manner—that is to say, bent back and forward at the points where they meet said longitudinal bars. The said zigzag braces *c* are secured to the longitudinal bars *a* and *b* by means of bent straps or the like *d* or *d'* lapping over the corresponding bar

and bracing-stay, and split pins or wedges *f*, which are driven into orifices provided for this purpose in the two cheeks or leaves of the said bent strap. In this way absolutely rigid joints are secured which cannot unlock, and the girder forms a completed whole or unit secure against being strained out of shape.

In place of a single zigzag bracing-iron *c*, as shown in Fig. 1, there may be employed two crossing braces, as shown in Fig. 2, or four, as shown in Fig. 3, or any suitable number thereof, the number increasing according to the distance apart of the two longitudinal bars *a* and *b*.

In the case where several braces *c* are employed rigidity at the points of intersection is secured by the provision at each crossing position of two very thin plates of sheet metal *g* and *h*, each shaped to receive one of the diagonal braces, and the said plates are secured together, preferably, by the engagement of projections *i* on one plate bent so as to grip over the edges of the other plate, as shown in Figs. 4 and 6. The said longitudinal bars above referred to may be of the same section or of different sections, according to the use to which the beam is intended to be put. For instance, when a beam for a bridge is desired the lower bar *b* will preferably be thicker than the upper bar *a*, as shown in Fig. 4. On the other hand, if the beam is intended for constructing a pillar or column the two bars, which will be disposed vertically, are of the same section. The braces *c* may be of the same section as the longitudinal bars or of different section.

Beams of very considerable length may be constructed by assembling end to end the bars and braces of the component parts and coupling the same by means of sleeves M, comprising cylindrical blocks 1, each having a central perforation 2 and lateral grooves or channels 3, in which latter are mounted the headed extremities 6 of the bars to be united. A wedge 4 is driven between the heads of said bars and locked in place by the engagement on the lower face of the cylindrical block 1 of projections 5, provided on the thin end of the wedge. The said couplings

are instantaneously set in place, as will be readily understood, and the connection is perfectly rigid.

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

1. A metallic girder or beam for structures of cement, concrete or the like, comprising two longitudinal parallel bars *a* and *b* in combination with braces *c* disposed in zigzag between said bars, straps *d* and *d'* lapping over the corresponding bars and braces, split pins or wedges *f* which engage the orifices of the braces, two very thin plates of sheet metal *g* and *h* each shaped to receive one of the diagonal braces and applied on each side of said braces at the points of intersection, projections *i* made integral with said plates and adapted to grip over the edges of each other, substantially as and for the purpose set forth.

2. A metallic girder or beam for structures of cement, concrete or the like, comprising two longitudinal parallel bars *a* and *b* in combination with braces *c* disposed in zigzag be-

tween said bars, straps *d* and *d'* lapping over the corresponding bars and braces, split pins or wedges *f* which engage the orifices of the straps and assure the fixation of the bars and braces, two very thin plates of sheet metal *g* and *h* each shaped to receive one of the diagonal braces and applied on each side of said braces at the points of intersection, projections *i* made integral with said plates and adapted to grip over the edges of each other, cylindrical blocks 1 having a central perforation 2 and lateral grooves 3 provided for on the joining points of the bars, heads 6 provided for on the adjacent ends of the bars and mounted in the perforations of the block, wedges 4 driven between the heads 6 and projections 5 provided on the thin end of the wedges and adapted to lock same in place, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORGES ADOLPHE PARENT.

Witnesses:

ANTOINE LAVOIX,
HANSON A. COXE.