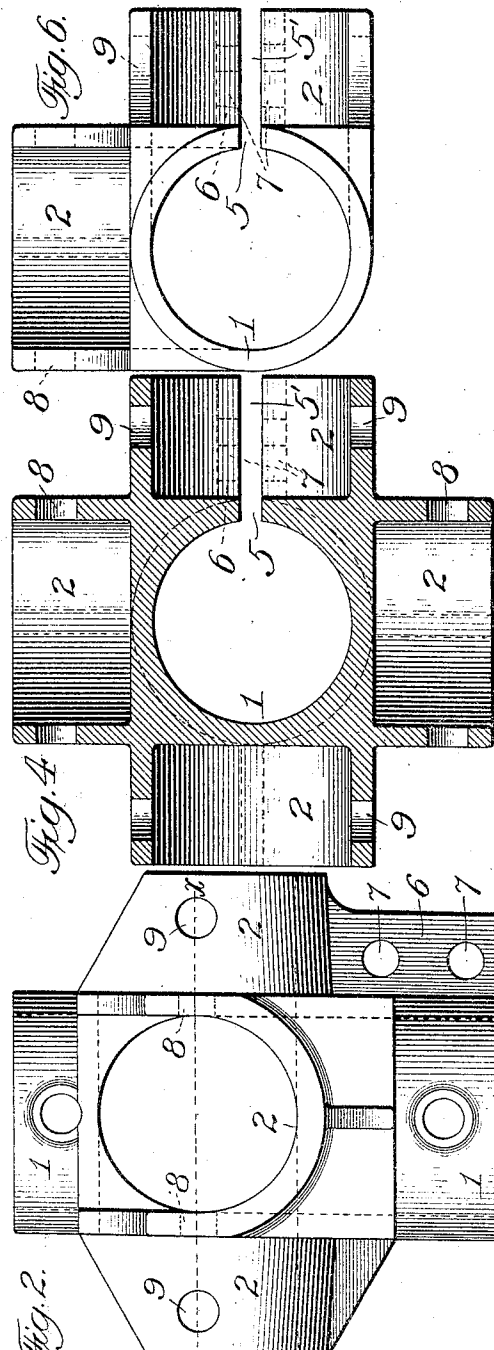
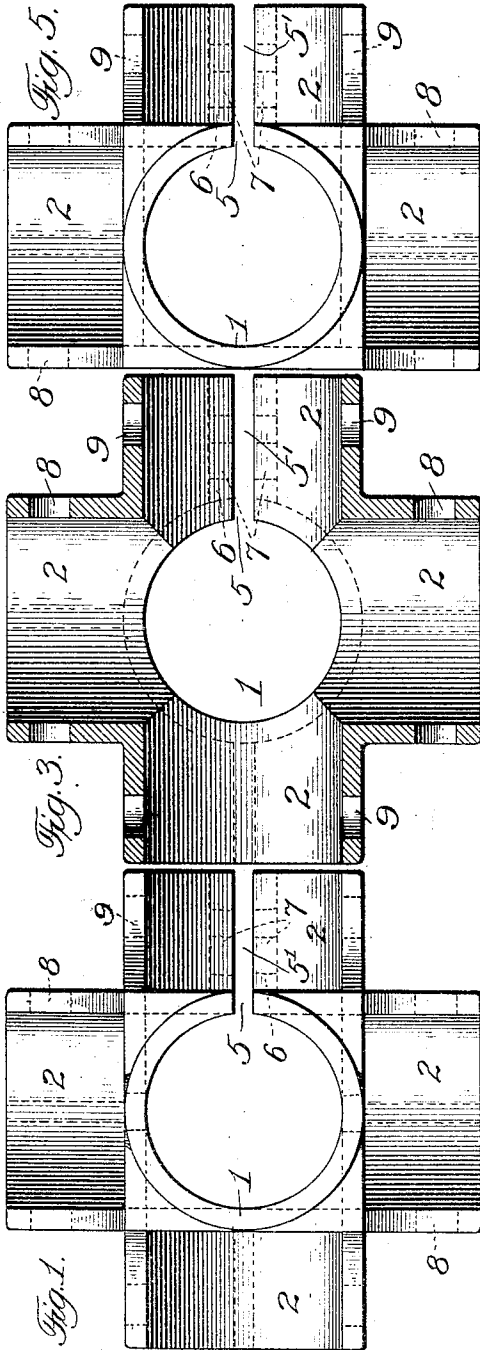


G. M. GRAHAM.

FITTING FOR METAL REINFORCE CONSTRUCTIONS.

APPLICATION FILED DEC. 27, 1906.

2 SHEETS—SHEET 1.



Attest:  
John Enders.  
Harry Mos.

Inventor  
George M. Graham.  
by Robert Burns  
Attorney

No. 865,489.

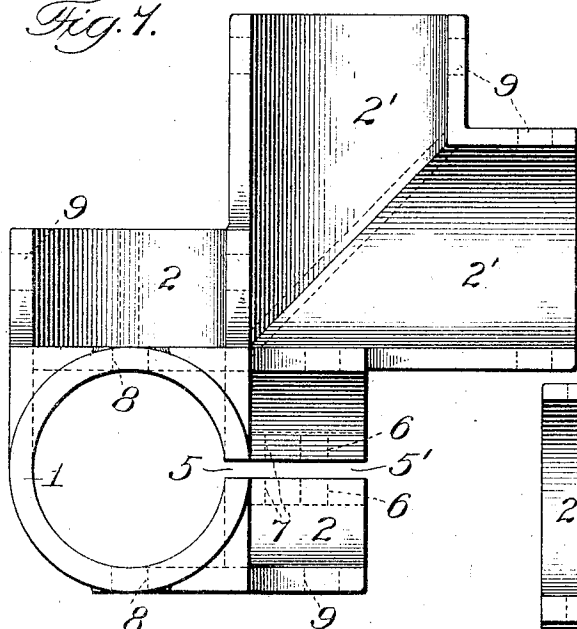
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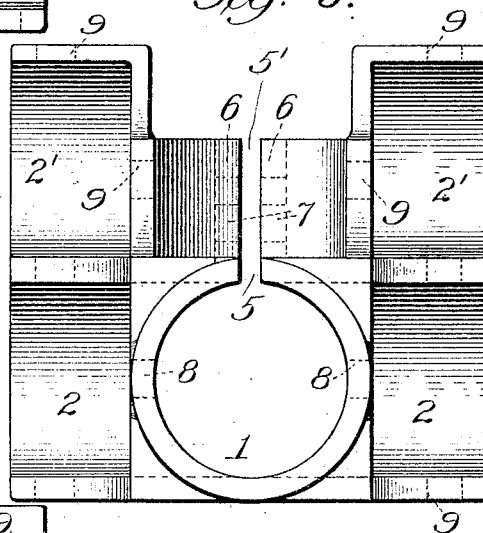
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2 SHEETS—SHEET 2.

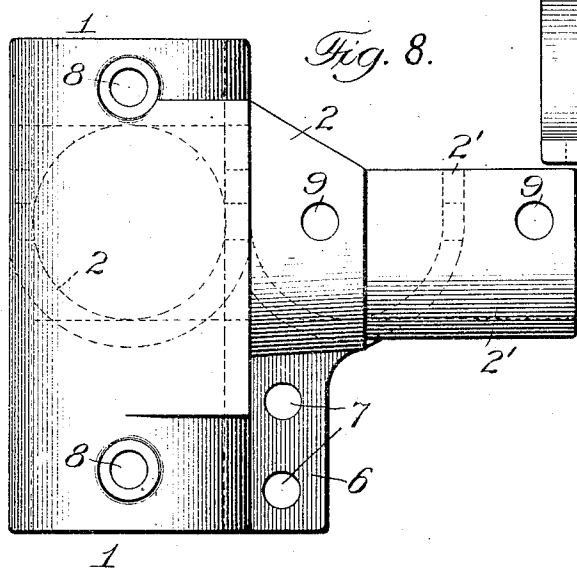
*Fig. 7.*



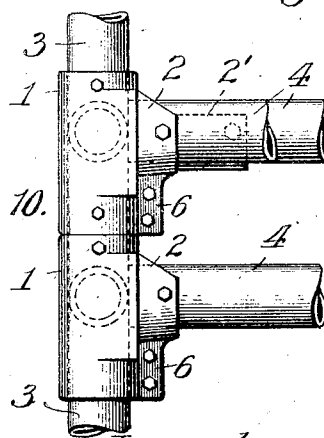
*Fig. 9.*



*Fig. 8.*



*Fig. 10.*



*Attest:*  
*John Enders,*  
*Henry Mos.*

*Inventor:*  
*George M. Graham,*  
*by Robert Burns*  
*Attorney*

# UNITED STATES PATENT OFFICE.

GEORGE M. GRAHAM, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO G. A. EDWARD KOHLER, OF CHICAGO, ILLINOIS.

## FITTING FOR METAL REINFORCE CONSTRUCTIONS.

No. 865,489.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed December 27, 1906. Serial No. 349,683.

To all whom it may concern:

Be it known that I, GEORGE M. GRAHAM, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fittings for Metal Reinforce Constructions, of which the following is a specification.

This invention relates to fittings for connecting together the tubular columns, girders, etc. of metal reinforced frames of concrete buildings etc., and more especially the type of such frames and frame parts, which constitute the subject matter of my companion applications for Letters Patent Serial Numbers 349,682 and 349,684 filed of even date herewith. And the present improvement has for its object to provide a simple and efficient structural formation and combination of parts whereby an easy connection is had, and which at the same time provides a substantial attachment of the parts with ample strength to resist all ordinary strains, all as will hereinafter more fully appear.

In the accompanying drawings:—Figure 1, is a plan view illustrating the present invention applied to a cross fitting. Fig. 2, is a side elevation of the same. Fig. 3, is a horizontal section of the preferred form of the same. Fig. 4, is a similar view of a modified form of the same. Fig. 5, is a plan view illustrating the invention applied to a tee fitting. Fig. 6, is a similar view illustrating the invention applied to an ell fitting. Fig. 7, is a plan view illustrating the invention applied to a duplex or multiple ell fitting. Fig. 8, is a side elevation of the same. Fig. 9, is a plan view illustrating the present invention applied to a duplex or multiple tee fitting, to afford a multiple or twin arrangement of girders in a horizontal plane. Fig. 10, is a detail side elevation illustrating the assemblage of a single and duplex fitting of the ell type upon a column to provide a duplex or multiple arrangement of girders in a vertical plane.

Similar numerals of reference indicate like parts in the several views.

As represented in the various figures of the drawings, the present fittings will have the same general form as the fittings heretofore proposed for connecting together the tubular skeleton frames of concrete and other building structures, and will comprise a body portion or main shell 1, formed with a cylindrical bore of a size corresponding with the external diameter of the cylindrical column or like member upon which the fitting is attached in manner hereinafter described, and with one or more lateral branches 2, in angular relation to said main shell 1, and adapted to afford support and attachment for the adjacent ends of one or more girders or like members having angular relation to the aforesaid column and carried thereby. In Fig. 10, a portion 3 of the supporting column or post is shown pro-

vided with the present fittings for supporting adjacent ends 4, of a series of horizontal girders of a building structure.

In one part of the present invention the circular wall of the body portion or main shell 1, of the fitting is formed with an opening 5 along its length; and in connection therewith opposed marginal ears or flanges 6 are provided on the exterior of said shell adjacent to said opening. Such ears or flanges are formed with aligned bolt holes 7 for the passage of ordinary clamping bolts by means of which said ears or flanges are drawn together to cause a contraction in the diameter of the shell and in consequence effect a very strong and substantial attachment thereof to the post or column, and in a manner which permits of an accurate relation of the parts being readily attained. When desired transverse bolt holes 8 may be formed in the shell and girder etc. for the passage of bolts to fixedly secure the fitting in place on the column, etc. against an endwise movement or slip thereon. The scope of the part of the invention embraces the formation of the shell 1 with more than one opening 5 and accompanying ears or flanges 6; practical experience has however shown that very effective results are attained with a single opening 5 and accompanying ears or flanges 6, as shown in the drawings, and such form of fitting is accordingly preferred for general application. In another part of the present invention the lateral branches 2, of the fitting are made of a U or stirrup shape as shown with a view to admit of the ready introduction of the horizontal tubular girders, etc. into place; and in connection with such construction, the side webs of such branches are provided with aligned bolt holes 9 for the passage of ordinary bolts, which bolts pass through said bolt holes and through corresponding transverse bolt holes in the end of the girder occupying the socket provided by the above described construction, and as fully set forth in my companion applications Serial Numbers 349,682 and 349,684.

In the preferred construction of the fittings shown in Figs. 1, 3, 4, 5, 6, 7, and 8, a branch 5' of the heretofore described opening 5, in the shell 1, will be formed centrally in the semi-circular wall of the branch 2 to afford additional means for clamping and holding the end of the girder in place, and in such construction the opposed ears or flanges 6 with their clamping bolt as heretofore described, will act to contract the parts of said branch or stirrup upon the girder. It is however within the province of this part of the invention to arrange the opening 5 with its before described accessories at a point removed from said branches or stirrups, as illustrated in Fig. 9, when circumstances or the judgment of the constructor may so direct.

In another part of the present invention the fitting is provided with duplicate or twin lateral branches 2

and 2' of counterpart construction to that already described, and as illustrated in Figs. 7, 8 and 9 with a view to receive pairs of girders in parallel and horizontal relation, for the class of framing constructions requiring extra lateral strength in the girders, as more particularly set forth in my companion application Serial No. 349,684 before referred to. And with such construction still greater lateral strength can be readily attained by placing one of the first described fittings immediately above or below the duplex fitting last described, and attaching thereto a single girder as illustrated in Fig. 16.

In the preferred construction of the various fittings shown and described, the circular bores of the shell 1 and lateral branches 2, open one into the other so as to permit the fitting to be placed along the length of a column, girder or other framing member, as circumstances or the judgment of the constructor may direct.

Minor modifications of the fittings may be made from that shown in the drawings, so as to adapt the same to different positions in the building frame, and can be left to the judgment of the constructor in applying the present fitting to the particular use which requires such modification.

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

1. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches, of a U shape the side walls of which extend above a transverse plane intersecting the longitudinal axis of said branches the said shell having an opening along its length and provided with lugs or ears on its exterior for the passage of a clamping bolt, substantially as set forth.

2. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches of a U shape, the side walls of which extend above a transverse plane intersecting the longitudinal axis of said branches and formed with bolt holes on said transverse plane the said shell having an opening along its length and provided with lugs or ears on its exterior for the passage of a clamping bolt, substantially as set forth.

3. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches of a U shape, the side walls of which extend above a transverse plane intersecting the longitudinal axis of said branches and formed with bolt holes on said transverse plane the shell having an

opening along its length and provided with lugs or ears on its exterior for the passage of a clamping bolt, said opening extending through the wall of a lateral branch aforesaid, substantially as set forth.

4. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches, of a U shape the side walls of which extend above a transverse plane intersecting the longitudinal axis of said branches the bores thereof opening into each other, the said shell having an opening along its length and provided with ears or lugs on its exterior for the passage of a clamping bolt, substantially as set forth.

5. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches of a U shape, the side walls of which extend above a transverse plane intersecting the longitudinal axis of said branches and formed with bolt holes on said transverse plane the bores thereof opening into each other, the said shell having an opening along its length and provided with ears or lugs on its exterior for the passage of a clamping bolt, substantially as set forth.

6. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches arranged in pairs in a horizontal plane, said branches having a U shape with the side walls extending above a transverse plane intersecting the longitudinal axis of said branches the said shell having an opening along its length and provided with lugs or ears on its exterior for the passage of a clamping bolt, substantially as set forth.

7. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches of a U shape arranged in pairs in a horizontal plane, said branches having a U shape with the side walls extending above a transverse plane intersecting the longitudinal axis of said branches the said shell having an opening along its length and provided with lugs or ears on its exterior for the passage of a clamping bolt, substantially as set forth.

8. A fitting for connecting tubular building frames together, the same comprising a main shell, and one or more integrally formed lateral branches of a U shape arranged in pairs in a horizontal plane, said branches having a U shape with the side walls extending above a transverse plane intersecting the longitudinal axis of said branches the shell having an opening along its length and provided with lugs or ears on its exterior for the passage of a clamping bolt, said opening extending through the wall of a lateral branch aforesaid, substantially as set forth.

Signed at Chicago, Illinois, this 19th day of December, 1906.

GEORGE M. GRATTAM.

Witnesses:

ROBERT BURNS,  
HENRY MOE.