This truss otherwise differs little from the preceding, except that the chain pins are shorter, as the arch pieces are not expanded towards the ends, or points of connection with the chains, and the end-most links of the chains do not require the twisting to form said connection.

For estimating the strain upon the different parts of the arched truss, and proportioning them accordingly, reference may be had to Articles 13, 14 and 15, and to the tables and remarks upon the strength of iron.

LVI. It will be seen that these trusses, having but small width of base, will require lateral support to preserve them in a vertical position, which may be afforded by braces running up from the cross bearers, and by tying across the top when sufficiently high. In this case, since the trusses depend for support upon the cross bearers, in some measure, and since it is desirable that the iron work form an independent system, capable of sustaining itself without the aid of any less durable material, I consider it advisable (although not absolutely necessary) to use iron cross bearers, in connection with cylindrical arched trusses.

Iron cross bearers may be formed on the same principles as the longitudinal trusses, by combining wrought and cast iron where each is respectively best suited to sustain the force it will be subject to.

Fig. 18, Pl. 3, shews an iron cross bearer, and the manner of its connections with the verticals and chain pins; which latter form a sort of nucleus for the connection of other parts.

The cross bearer has a cast iron arch-like piece standing with two feet upon two chain pins of the main bearing trusses. The verticals passing down through said feet, are screwed into the chain pins. The thrust of the arch piece is counteracted by a chord chain embracing its feet. This chain is composed of three links, a little twisted so as to lie nearly flat wise, when linked together, and long enough for each of the two connected ends to embrace