It used to be customary, and the practice is still followed to some extent, to make the top plate of varying thickness, or to vary the number of plates, increasing from the ends of the truss to the centre, making the channels of the same dimensions throughout. But this method is not advisable; for the proper place for the larger part of the material in a chord like the one under discussion is in the channels, and not in the plate. Similarly, in any channel, the proper place for the larger part of the material is in the flanges, and not in the web; the reason being, in both cases, that the moments of inertia of the section in respect to vertical and horizontal neutral axes are increased by removing a portion of the area away from these axes, and the strength of a strut increases with the moments of inertia of its section.

Steel iron should never be employed in an iron bridge, and there is never any necessity for using tee-iron. Two of the latter sections, latticed by a triple or quadruple intersection of thin, narrow bars, are sometimes adopted for a portal brace; but it is evident how weak such a strut must be, and it is in the very place where a strong one is most needed.

Four angles with the legs turned in, and set at the corners of a square, laced on the four faces thus formed, make an economical strut, as far as the section is concerned; but it is probable that the extra weight of detail and the increased cost of shopwork will make it more expensive than another strut of larger section. Two channels latticed or laced are the best form of portal strut. Large, heavy cast-iron portals made in one or two pieces look very well, and might be made strong enough, but are not so neat and graceful as some other kinds of bracing, besides adding unnecessary dead load to the structure. Cast-iron is not to be depended upon, and should not be used in any part of an iron bridge to resist stress.

Channels in posts usually have their webs parallel to the direction of the plane of the truss, with their flanges turned outward: sometimes they are turned inward; and, where the floor beams are riveted to the posts, the webs are, or should be, placed at right angles to the plane of the truss, the flanges turning outward.