failures in all the plans of trusses presented, and that the arch, as a last resort, had been added.

It was given as the opinion of the engineer department, that the arch in combination with the truss, should be adopted in some form,—that although this combination had not been successful in all cases, yet its failure resulted either from an imperfect method of adjusting the two systems, or from an improper distribution of the material.

It was therefore determined, after mature deliberation, to adopt the plan shown at Fig. 4.

During the year 1848, the writer was contractor for bridges upon the road referred to, and was subsequently appointed by the company to take charge of the bridges and other structures upon the line. This position was accepted the more readily, because it offered an excellent opportunity for theoretical and practical investigation in the art of bridge construction, for which he felt himself somewhat prepared, by a close application to mechanical pursuits for a number of years previous. There was not at that time before the public, any work upon the theory and practice of bridge construction. Many theories were advocated, which a more thorough investigation has proved fallacious, and generally the self-styled “practical man” adopted certain methods of construction simply because he had done so before, and was as dogmatical in expressing his opinion, as he was ignorant of many of the principles involved.

Upon examining the plan, Fig. 4, it will be seen that the arch rests upon the lower chord of the truss. It is composed of six pieces, each 4×12 inches, making the sectional area 12×24 inches. The lower chord is composed of four pieces, each 6×12 inches; sectional area, 12×24 inches. The upper chord is made up of three pieces, each 6×12