are connected and covered with strips of T-iron 6 in. by 3 in. by $\frac{1}{8}$ in. All these girders are 4 ft. 6 in. in depth, riveted back to back over the bearings, so that the structure is made continuous throughout its whole length.

The central girders of the curved portions of the pier are formed with a radius of 140 ft., the outer and inner ones having longer and shorter radii respectively. Transversely they are braced together, three times in each span, one set being over the pier and two intermediate, as shown upon the detailed drawings. On the outside of each face girder are fastened cast-iron brackets of the design shown in the annexed figure, these being placed 6 ft. 6 in. apart, except over the cylinders cast of $\frac{1}{8}$ in. metal, and secured to the T-iron strips of the girder by twelve $\frac{1}{8}$ in. bolts, and between the brackets are placed cast-iron panels and cornices, Fig. 2, the metal being $\frac{1}{2}$ in. thick, and fastened to the girder by $\frac{1}{2}$ in. tapped bolts, placed 12 in. apart from centre to centre. On the abutment, the ends of the girders rest upon a cast-iron bedplate 2 ft. 4 in. by 2 ft. by 1$\frac{1}{2}$ in. thick, a similar plate being attached to the under side of the girder itself.

Upon the top of the longitudinal main girders and at intervals of 6 ft. 6 in. are placed transverse girders, or rolled joists 12 in. deep in the web, and with flanges top and bottom, 6 in. wide by 1 in. thick. These joists are 25 ft. long, except at the gradual widening of the pier, where their length is increased, or two joists are used to make up the complete width, the joints between the two being always over the central longitudinal girder. Each of the joists is fastened to the main girders by four rivets $\frac{3}{8}$ in. diameter. Upon the transverse girders are placed two lines of rails at the land end of the pier, increasing to three lines, as the width of the platform increases. The rails are carried by longitudinal timbers, 12 in. by 6 in., which are secured to the joists by two bolts $\frac{3}{8}$ in. diameter.

The planking of the platform is 4 in. thick, fastened to the joists by spikes 6 in. long and $\frac{3}{8}$ in. diameter, the ends of which are turned up, and clenched beneath the top flange of the joists. At the ends of the planking, an oak blocking course 12 in. by 6 in. extends along the whole length of the pier, over the outside girders; this is also fastened to the cross joists by two $\frac{3}{8}$ in. bolts, at each occurrence of the joists. Above this is placed a hand-rail of wrought iron, the standards of which are cruciform in section, 2$\frac{3}{8}$ in. by 2$\frac{1}{8}$ in. by $\frac{3}{8}$ in. thick, and 3 ft. high, placed 6 ft. 6 in. apart, so that the positions of the standards correspond with those of the cast-iron brackets before mentioned. The feet of these standards are spread out to 4 in. square, and they are attached in each case to the oak blocking course by four wooden screws $\frac{3}{8}$ in. diameter to each standard. From the shore end to the commencement of the curved portion of the pier, these standards are connected together through eye-holes, at the top of each, by means of a wrought-iron pipe 2 in. diameter, and $\frac{3}{8}$ in thick; the standards on the rest of the pier have, however, a $\frac{3}{4}$ in. chain between them. The rails laid upon the platform, as well as those throughout the viaduct, weigh 56 lb. a yard, in 24 ft. lengths, fastened at the joints by fishplates, and spiked to the longitudinal timbers before mentioned. Points, switches, and crossings are laid down in the position indicated on the plan Fig. 1, and guard-rails are placed round the curves, of which the outer rails are in all cases elevated 4 in.

At the pier head is placed the extensive plant of cranes and lifting apparatus, for unloading the coal from the vessels alongside, into the wagons on the pier, and as the amount of raw material to be thus transferred has amounted to two thousand tons a day, the means for effecting this is necessarily extensive and perfect. This portion of the work was manufactured by Messrs. Easton, Anderson, and Co., of Southwark.