

gineer has met with an initiative, an amount of pluck and mechanical instinct which — as must be universally admitted — do him much individual credit and honours the whole nation. But to return to our subject, viz.: "American locomotives." I have examined them in detail at the manufactory, witnessed their performances on all kind of track, and I am compelled to confess, that what I saw far exceeded my anticipations.

Beginning with the engine and the various mechanical details, as designed and constructed in the manufactory, a very marked difference, as compared with English practice, will be noticed. The boiler is invariably lighter, the maximum thickness of the iron plates composing the barrel and fire-box being $\frac{3}{4}$ in. (with the exception of the tube plates, $\frac{1}{2}$ in. thick), while steel plates from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. are frequently used. The boiler tubes are generally of iron. The longitudinal seams of the boiler and fire-box casing are double rivetted, and they are moreover strengthened, in many cases, by flat bars of iron, placed sometimes across the joint at short intervals, sometimes right along the joint on the inside of the boiler. The fire-box crowns are usually stayed by transverse stays, composed of two plates $\frac{3}{4}$ in. thick, which are welded together at the ends; these stays being connected to the crown of the fire-box casing by sling links. The fire-box casing is generally raised above the boiler barrel, the junction between the two is effected in a simple manner by the "connection sheets," forming a short conic barrel, and dispensing thus with the tedious operation of moulding the front casing plate to any intricate shape. No solid wrought-iron rings are interposed at the fire-door and fire-box bottom, but the plates are flanged so as to meet, when they are rivetted together. The smoke-box is usually cylindrical, forming a continuation of the boiler barrel, and resting on a cast-iron saddle, which carries in its turn the cylinders, and, in some cases, also the bogie pin.

One of the peculiarities in American locomotive construction is the framing, which is made of square bar iron, welded together, slotted, planed all over and entirely finished. The "bar frames," besides being very rigid in every direction, admit of easy access to the link motion; they form at the same time a good base for attaching the various brackets and guide-plates. The cylinders, which are usually outside, are hung from the top bars of the frames, in order to insure