

## IMPROVEMENTS IN THE CONSTRUCTION OF MARINE STEAM ENGINES.

(With an Engraving, Plate VIII.)

Abstract of Specification of a Patent granted 16th March, 1841, to Joseph Maudslay, of the firm of Maudslay, Sons, and Field, Engineers, Lambeth.

These improvements relate to the arrangement of certain parts of steam engines of that kind, (usually termed direct action engines), whereof the centre of the cylinder is situated immediately beneath the axis of the cranks, and are assigned for the purpose of producing and applying a greater amount of steam power than has heretofore been available within a given space or area on ship board, and for the purpose of applying a greater length of stroke and connecting rod in a given height, than can be obtained (in a direct action engine) by any other means, and the lower end of the connecting rod guided without any lateral pressure on the piston or piston rods.

They consist in disposing the connecting rod in a space which is left vacant for its reception, (together with the requisite appurtenances of that rod) within the central part of the steam cylinder, and within the central part of the piston which works up and down in the said cylinder, the steam cylinder having for that purpose a small cylinder fixed concentrically within it, and the piston being a broad ring or annulus, which encompasses the said small cylinder, and fits into the annular cylindrical space which is left between the interior of the steam cylinder, and the exterior of the said small cylinder. The annular piston is moved alternately up and down in the said annular cylindrical space, by the force of steam acting therein, but which steam does not enter into the interior of the small cylinder, neither is any piston or part of the piston fitted therein, but the interior of the small cylinder is left open at top and vacant within, for the connecting rod and its requisite appurtenances to work in, with liberty for that rod to move up and down therein, and likewise with liberty when so moving, to incline as much as it requires to do, from a vertical position alternately on one side of the vertical and then on the contrary side thereof, in consequence of the upper end of the connecting rod accompanying the motion of the crank pin in its circular orbit (in the usual manner of connecting rods), whilst the lower end of the said rod moves alternately up and down in a vertical line, that line being at the central line or imaginary axis of the steam cylinder, and which axis would in ordinary steam engines be situated in the centre of the solid metal of the ordinary piston and piston rod, but according to my improvements in the arrangement and combination of the various parts, the said vertical line or imaginary axis of the steam cylinder, is situated in an open space which, as already stated, is left vacant for the purpose of receiving the connecting rod, together with its appurtenances within the central part of the steam cylinder, and within the central part of the annular piston, in consequence of the small cylinder being fixed concentrically within the interior of the steam cylinder, and in consequence of the cylinder cover, as well as the piston being each a broad ring or annulus, and each being suitably fitted to the annular cylindrical space between the two cylinders, but without covering or occupying the interior of the small cylinder.

These improvements will be more fully understood by a reference to the accompanying engraving, and the following description thereof, in which fig. 1 is an elevation of the said engine taken longitudinally, fig. 2 is a longitudinal vertical section corresponding to the side elevation fig. 1, fig. 3 is a horizontal plan of the upper part of the engine, and fig. 4 is a horizontal section of the cylinder thereof; fig. 5 is a transverse vertical elevation and section representing two such engines disposed side by side for combined action; one of the two engines in fig. 5 being represented in elevation, the other in section. The same letters of reference denote the same parts in all the figures.

The exterior or large cylinder is shown at *a a*, the interior and smaller cylinder concentric to it at *b b*, and an annular piston at *c c*, having two piston rods *d d*, working through stuffing boxes in the annular cover of the cylinders, the upper ends of which rods are affixed by keys to the T shaped cross head *e e e e*, at the lower ends of which cross head there is a slider *f*, working within the inner cylinder, to this slider *f* one end of a connecting rod *g* is attached, the other end of the rod being attached to the crank pin of the crank *h*, on the propelling shaft.

From this arrangement it will be perceived that by the ascent and descent of the piston *c c*, the rods *d d*, will cause the cross head *e e*, to move perpendicularly up and down, and in so doing to raise and depress the slider *f*, with the connecting rod *g*, which rod will by that means be made to give rotary motion to the crank *h*, and thereby cause the paddle-wheel shaft *i* to revolve. The rods *j j*, connected to

the slider *f*, will at the same time work the levers or beams *k k*, to which the rods of the air pump *l*, are attached.

Having fully described the invention, the patentee desires it to be understood that he does not claim the use of two concentric cylinders and an annular piston, but he claims as his invention the use of the space within the interior cylinder for the lower end of the connecting rod to work in, whereby the ultimate length of stroke and connecting rod within a given height is obtained, and the lower end of the connecting rod guided without any lateral pressure on the piston or piston rods.

## CANDIDUS'S NOTE-BOOK.

## FASCICULUS XXXII.

"I must have liberty  
Withal, as large a charter as the winds,  
To blow on whom I please."

I. ONE of the prettiest little bits of street architecture about town that I know of is the front of a small house adjoining the Polytechnic Institute, in the upper part of Regent Street;—a very clever and artist like specimen of Italian, in which rustication of a more than usually finished and picturesque character has been very happily applied—of that kind which may be termed *mixed* rustication, both vermiculated rustics and moulded ones with plain faces being employed,—as has likewise been done in the new houses on the south side of Lowndes Square. The character thus produced is at once rich and sober. The archway forming the entrance to some livery stables, on one side, is not the least agreeable feature in the design, nor is it any compliment to it to say, that it is in infinitely better taste than the huge slice of architectural gingerbread which Nash clapped by way of frontispiece, against that mass of ugliness the Royal Mews at Piccadilly. How that Nash did palm his Brummagem stuff upon old George the Fourth!—and took pretty good care to be paid for it in sterling cash—good and lawful money of the realm!

II. Because it does not happen to be as big, as tawdry, and as ugly as one of the Regent's Park Barracks—those genteel Union Workhouse affairs—no one has been able to discern any merit at all in the specimen above referred to. The Paddington or Paddy style—the horrible mushroom monstrosities which are now springing up in that district, and which are apparently directed by some Nash the second—some genius well qualified to be the successor of that mighty master,—are far more to John Bull's taste, and according to his notion of "genteel houses."

III. "Can you give me any sure general rule for my guidance by adhering to which I shall always be certain of attaining superior beauty in composition and design?"—Such was the question once put by an architect to a connoisseur of acknowledged taste, who thereupon replied: "My advice was asked the other day by a writer who wished me to inform him what rule he should attend to in order to raise himself in the literary world. My counsel to him was: be original if you can, be interesting if you are able. As I answered him, so now I answer you: display both invention and taste, and into whatever you do take care to put character and effect. I know of no other general rule; but if you can act up to that, I believe you will find it a sufficiently efficacious one." A plain answer to a very simple question!

IV. It is a wonder that Pugin has not shown up the range of Brummagem Gothic buildings in the Temple,—most trumpery and tasteless as to character, though, no doubt, not very trumpery—perhaps of most sterling merit, as to cost. Not a little strange, too, is it that he did not have a fling at that notable example of Civic Gothic the façade of Guildhall, which is such a perfect monstrosity that it deserves to be pulled down.

V. Besides giving Turner a tremendously heavy blow—one almost sufficient to demolish him, and put him quite *hors de combat*, the reviewer of the "Exhibitions," in Blackwood, deals a few home strokes at Stanfield, and also at our present English view-mania. "What," he asks, "must the inhabitants of all the tumbledown places on the Rhine and the Rhone think of us, our scenery, our buildings, and our taste, when they learn that representations of their beggarly edifices and their abominable outskirts form the chief ornaments of our Royal Exhibition?"—"Nor in respect to architecture," he afterwards observes, "are our views always in good taste. The low and the mean, the decayed and the poverty-stricken, are often thought to be the only picturesque, as if picture must indulge in vile associations. Let not art take *habitat* in "rotten rows," nor vainly imagine that the eye should