

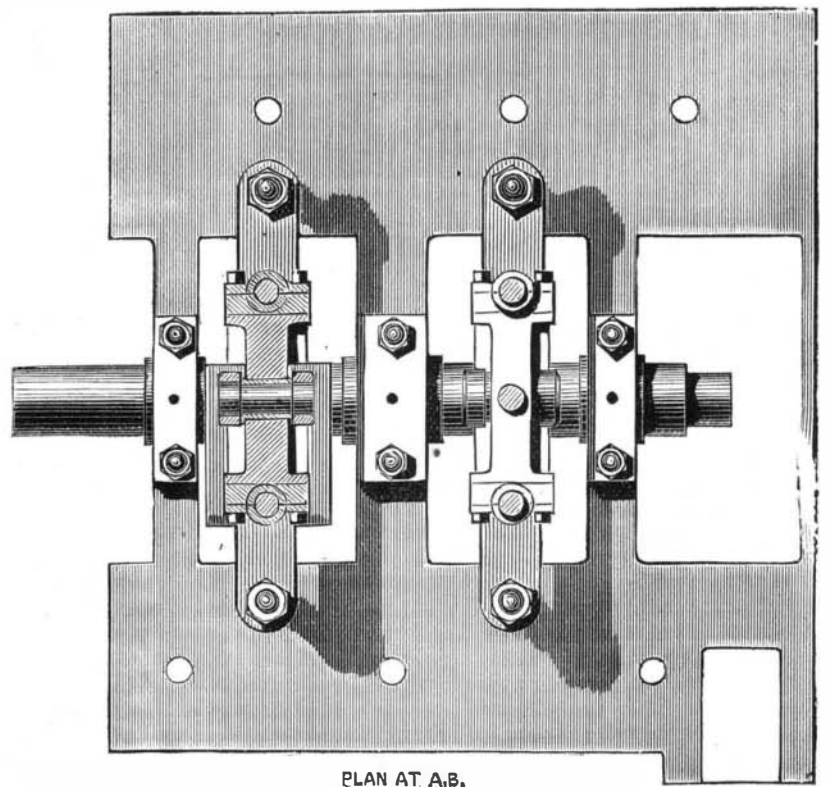
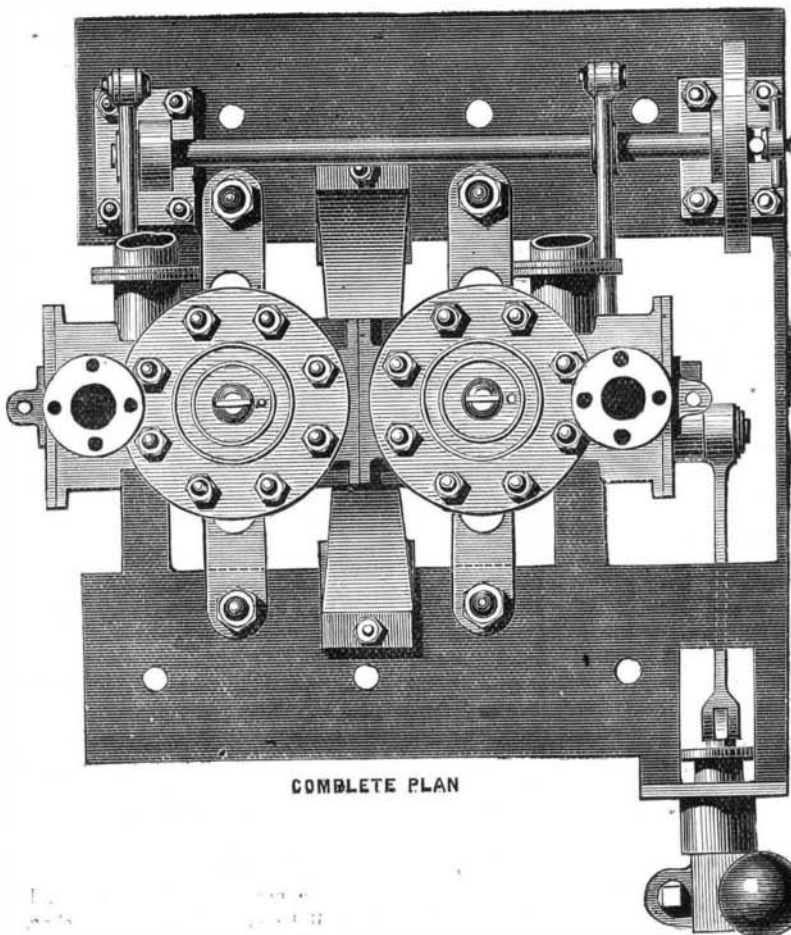
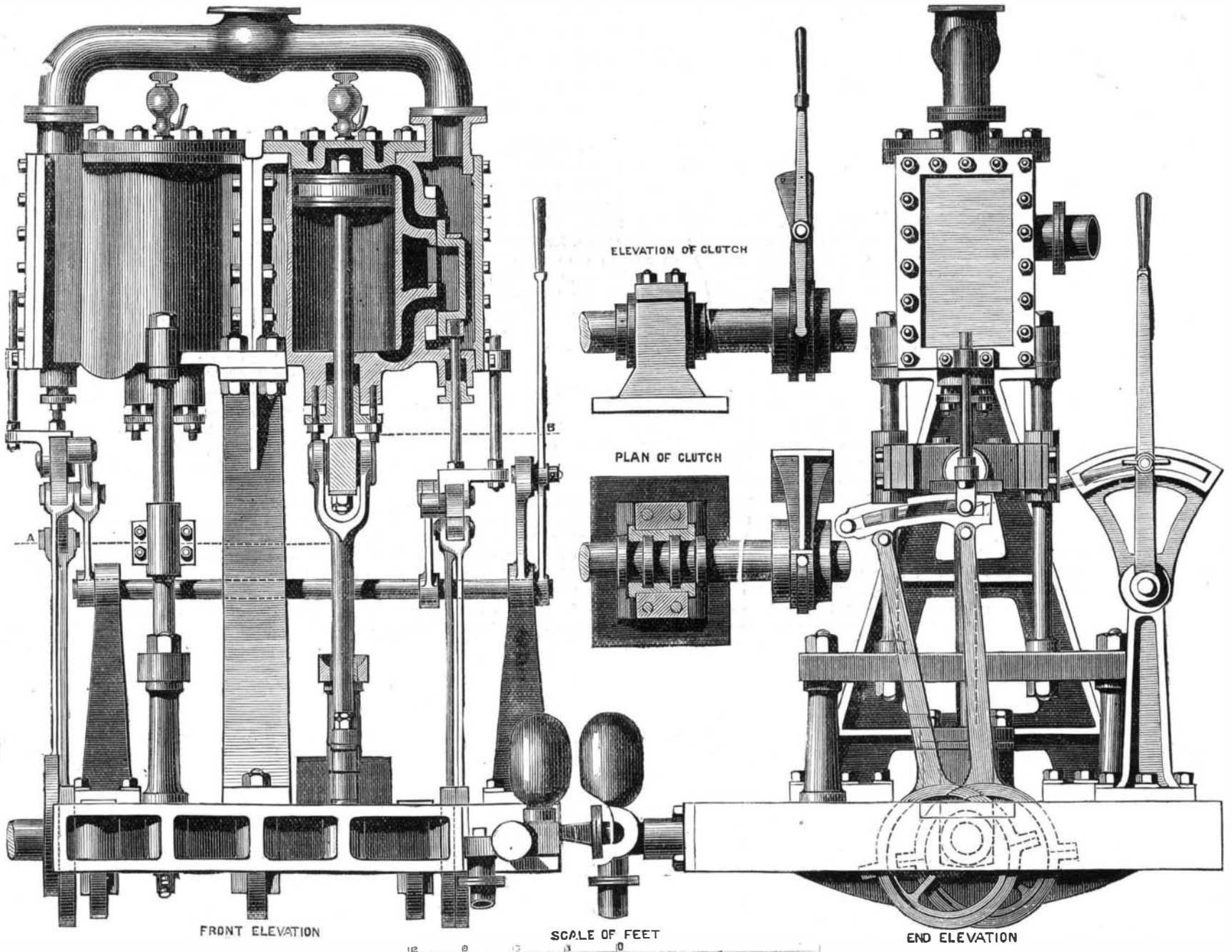
**NINE HORSE POWER COMPOUND BOAT ENGINE.**

The use of small boats propelled by steam, upon our many inland lakes and rivers, is now so extensive that any improvements in the economy of working, or in the patterns for producing the machinery of such boats, will be interesting to many of our readers. We have therefore engraved, from *The Engineer*, illustrations of a pair of English engines, designed for the purpose mentioned, which, have been found to operate with much satisfaction. These engines are built on the compound plan, and the launch or boat, at Portsmouth, England, in which they are used, is one of the fastest and most economical little crafts that there is afloat.

The engines are of nine horse power, built by A. Verey. The cylinders are of 6 inches diameter and 8 inches stroke. The stroke of the slide valve is 3 inches; the lead,  $\frac{1}{8}$  inch, and the lap  $\frac{1}{8}$  inch; area of steam ports, 2.65 inches; area of exhaust port, 8.5 inches; diameter of piston rod,  $1\frac{1}{4}$  inches; diameter of valve spindle,  $\frac{1}{2}$  inch; diameter of crank shaft,  $2\frac{1}{2}$  inches; length of connecting rod, 1 foot 6 inches diameter of guide rods,  $1\frac{1}{4}$  inches. The engines indicate 24 horse power when working with 60 lbs. steam cut off at five eighths of the stroke and making 300 revolutions per minute.

It will be seen, on referring to the engraving, that wrought iron has been used to an unusual extent in the construction

of these engines; by this means space is saved and unusual strength imparted. All the working parts are very easy of access, and the guides and general details are very well designed and proportioned. The engines run at a high speed with great steadiness and absence of noise. The screw shaft is fitted with a disconnecting clutch, by which the engines may be run alone to pump the boiler up, a matter of considerable convenience. We look on these engines as very favorable specimens of the miniature marine engine which has of late become so popular. The boilers used by Mr. Verey are either of the Field type or are horizontal boilers with return tubes.



**NINE HORSE POWER COMPOUND STEAM ENGINES.**