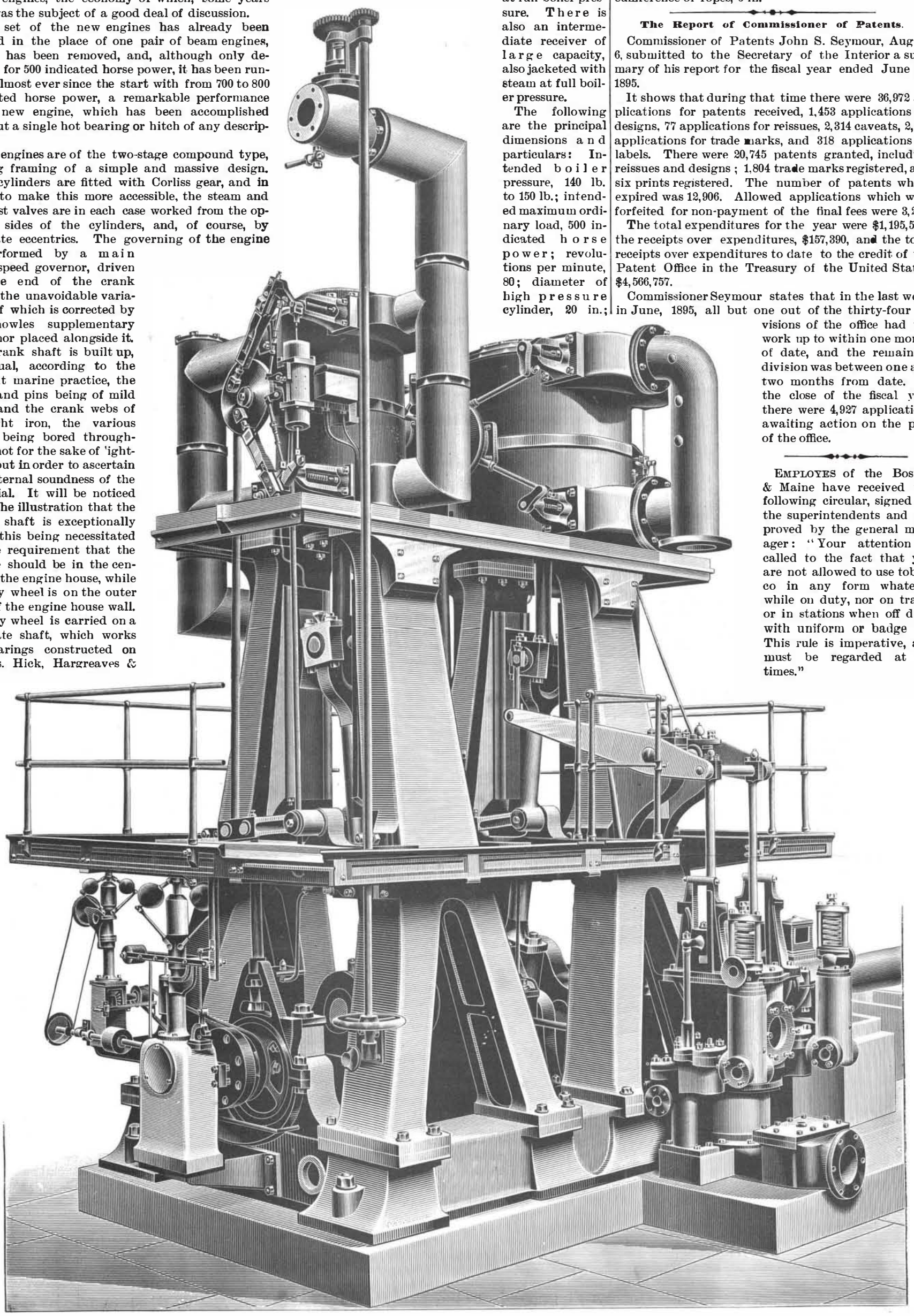
FIVE HUNDRED I. H. P. COMPOUND ENGINE.

We illustrate one of two duplicate sets of 500 indicated horse power engines recently constructed by Messrs. Hick, Hargreaves & Company, Soho Iron Works, Bolton, to the order of Sir Titus Salt, Bart., Sons & Company, for their well-known Saltaire Mills. The Engineer, to which we are indebted for our engraving, says: These engines take the place of the beam engines, the economy of which, some years ago, was the subject of a good deal of discussion.

One set of the new engines has already been erected in the place of one pair of beam engines, which has been removed, and, although only designed for 500 indicated horse power, it has been running almost ever since the start with from 700 to 800 indicated horse power, a remarkable performance for a new engine, which has been accomplished without a single hot bearing or hitch of any description.

The engines are of the two-stage compound type, having framing of a simple and massive design. Both cylinders are fitted with Corliss gear, and in order to make this more accessible, the steam and exhaust valves are in each case worked from the opposite sides of the cylinders, and, of course, by separate eccentrics. The governing of the engine is performed by a main high speed governor, driven off the end of the crank shaft, the unavoidable variation of which is corrected by a Knowles supplementary governor placed alongside it. The crank shaft is built up, as usual, according to the present marine practice, the shaft and pins being of mild steel, and the crank webs of wrought iron, the various parts being bored throughout—not for the sake of 'ightness, but in order to ascertain the internal soundness of the material. It will be noticed from the illustration that the crank shaft is exceptionally long, this being necessitated by the requirement that the engine should be in the center of the engine house, while the fly wheel is on the outer side of the engine house wall. The fly wheel is carried on a separate shaft, which works in bearings constructed on Messrs. Hick, Hargreaves & Co.'s patent swivel pattern. The power is transmitted by ropes to the various line shafts of the mill, giving a much more direct and simple arrangement than had previously been in use with the beam engines. The engines are surface condensing, the condensers formerly used for the beam engines being adapted for the purpose. The cylinders are of the makers' well-known built-up type, and are jacketed with steam at full boiler pressure. There is also an intermediate receiver of large capacity, also jacketed with steam at full boiler pressure.

The following are the principal dimensions and particulars: Intended boiler pressure, 140 lb. to 150 lb.; intended maximum ordinary load, 500 indicated horse power; revolutions per minute, 80; diameter of high pressure cylinder, 20 in.; diameter of low pressure cylinder, 38 in.; stroke of both, 3 ft.; diameter of piston rods, 4½ in.; crank pins, diameter, 9¾ in.; length, 11 in.; crank necks, diameter, 9¾ in.; length, 12 in.; bearings of wheel shaft, diameter, 11 in.; length, 22 in.; connecting rod, length centers, 7 ft. 6 in.; air pump, diameter, 17 in., stroke, 12 in.; feed pumps (two), diameter, 3 in., stroke, 12 in.; rope drum, diameter, 16 ft.; number of ropes, 14; circumference of ropes, 5 in.



FIVE HUNDRED I. H. P. COMPOUND MILL ENGINE AT SALTAIRE.

The Report of Commissioner of Patents.

Commissioner of Patents John S. Seymour, August 6, submitted to the Secretary of the Interior a summary of his report for the fiscal year ended June 30, 1895.

It shows that during that time there were 36,972 applications for patents received, 1,453 applications for designs, 77 applications for reissues, 2,314 caveats, 2,183 applications for trade marks, and 318 applications for labels. There were 20,745 patents granted, including reissues and designs; 1,804 trade marks registered, and six prints registered. The number of patents which expired was 12,906. Allowed applications which were forfeited for non-payment of the final fees were 3,208.

The total expenditures for the year were $1,195,557; the receipts over expenditures, $157,390, and the total receipts over expenditures to date to the credit of the Patent Office in the Treasury of the United States, $4,566,757.

Commissioner Seymour states that in the last week in June, 1895, all but one out of the thirty-four divisions of the office had the work up to within one month of date, and the remaining division was between one and two months from date. At the close of the fiscal year there were 4,927 applications awaiting action on the part of the office.

EMPLOYES of the Boston & Maine have received the following circular, signed by the superintendents and approved by the general manager: "Your attention is called to the fact that you are not allowed to use tobacco in any form whatever while on duty, nor on trains or in stations when off duty with uniform or badge on. This rule is imperative, and must be regarded at all times."