

THE STANLEY AIRSHIP.

One of the competing aerostats for the airship prize offered by the St. Louis Louisiana Purchase Exposition will be the Stanley airship. Although not the largest vessel of its kind ever built, the airship will, nevertheless, be noteworthy for its size.

The contrivance will have a total length of 228 feet and will consist of a cylinder 116 feet long, tapering at either end in a cone 56 feet long. The diameter of cylinder is likewise 56 feet. The entire machine will weigh 13,000 pounds, but the lifting capacity of the hydrogen gas with which it will be filled will be 21,000 pounds. Accommodations for thirty passengers with their baggage have been provided. Besides passengers, allowance has also been made for mail matter weighing 1,000 pounds and 1,000 pounds of ballast. The inventor hopes to attain rather fabulous speeds. His best time he thinks will be 130 miles an hour; his worst he

places at 70 miles an hour. These speeds are to be obtained with propellers 10 feet in diameter moving at the rate of 800 revolutions per minute. Besides rudders, side planes are to be used for the purpose of keeping the ship in proper longitudinal trim.

The novel features of the airship, according to its inventor, are the manner of propulsion, control over elevation, ability to descend at will, and adjustable propeller blades.

The airship is divided longitudinally into two parts by a partition running the full length of the ship, 12 feet above the keel. The lower of the two parts thus formed will contain the motive power, machinery, passengers, and freight. The upper part is to be divided into six compartments to contain the hydrogen gas. Each compartment will be provided with an inner skin of silk to prevent leakage of the gas.

The propellers are placed at the apex of each cone. A rudder beneath each cone will guide the ship horizontally; while a series of side planes or side rudders will control the vertical movement. Top propellers are provided for the purpose of controlling the ship in rising and for the purpose of forcing it down when a landing is to be made.

It is said that a model has been built which works satisfactorily. The information which we are able to give is meager, but it is all that can at present be obtained. It remains to be seen whether the inven-

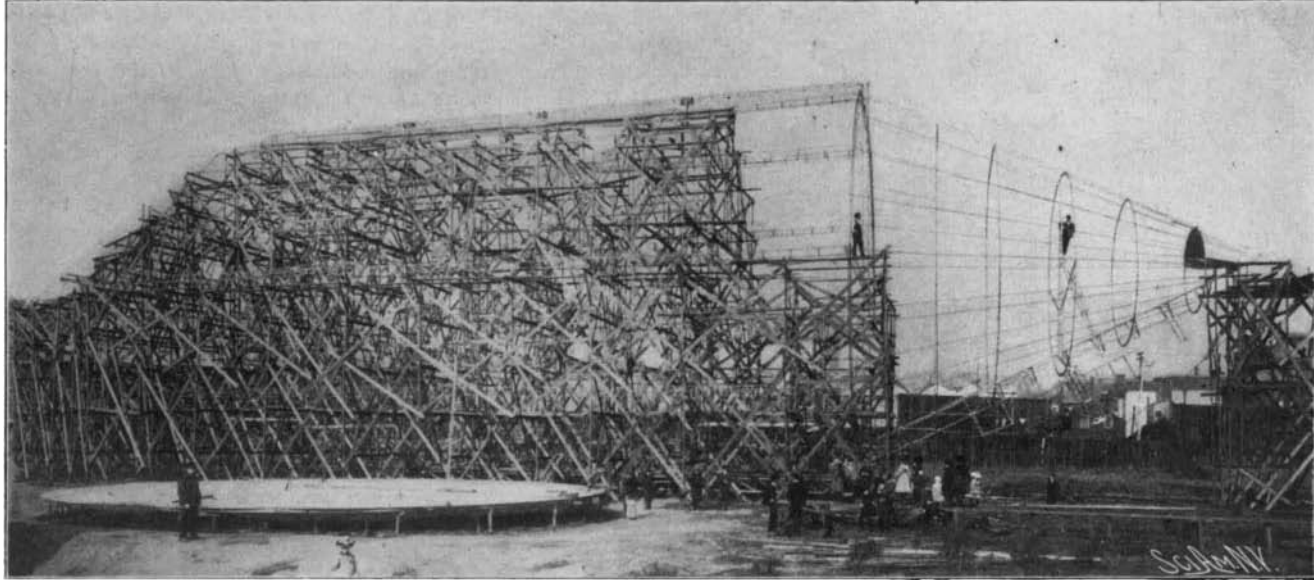
tor's claims will be fulfilled when the airship is completed. J. M. B.

POWERFUL ENGLISH ENGINE FOR SUBURBAN TRAFFIC.

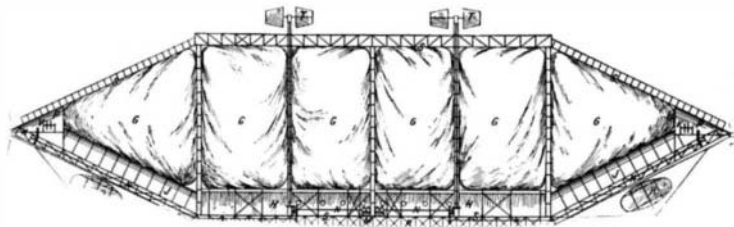
The locomotive that is herewith illustrated is certainly the most striking departure that has been made from standard English locomotive practice for many a decade. It was designed by Mr. James Holden, Chief Mechanical Engineer of the Great Eastern

situation some special type of locomotive was necessary, and Mr. Holden broke away from all precedent by designing and building a locomotive which is not only by far the most powerful in Great Britain, but as a matter of fact, has a greater hauling power than the biggest passenger locomotive built in this country, not even excepting the great engine recently turned out by the Baldwin Company for the Chicago & Alton Railway. A fair test of the power of a locomotive is its tractive effort; this in the case of the Baldwin engines is 31,600 pounds, and for the Great Eastern Railway "Decapod," 36,507 pounds. The best acceleration that has hitherto been possible on this suburban service is the attaining of a speed of 20 miles an hour in 30 seconds from the start with a train of fifteen cars weighing 225 long tons. Some years ago the cars were widened, with the result that each train had an increased carrying capacity of nearly

21 per cent. The new "Decapod" is expected to pull a 50 per cent heavier load and attain a speed of 30 miles an hour in 30 seconds from starting, with a train carrying 1,200 people, making a saving of about 10 minutes on the 10½-mile journey and thereby allowing of a more frequent service of trains. The engine is carried on ten wheels, all of which are coupled, the whole weight therefore being available for adhesion. The practical absence of any smokestack is due to the fact that the loading gage in England is between 1 and 2 feet lower than that in this country, and consequently, as the center of the boiler is lifted, the top of the boiler encroaches on the smokestack until, as in the present case, the latter is entirely sunk within the smokebox. The boiler is 5 feet, 3 inches in internal diameter, and the barrel measures 15 feet, 10⅞ inches in length between the two tube plates. The firebox shell measures 7 feet, 9½ inches in width by 6 feet, 9½ inches in length on the outside. The inside firebox, which is of ⅝-inch copper plate, is 6 feet long by 7 feet wide on the inside. It is stayed by bronze stays 1 inch in diameter. There are 395 steel tubes with a total heating surface of 2,878.3 square feet, and there are 131.7 square feet in the firebox, making a total for the whole boiler of 3,010 square feet, or about double that of the average English locomotive of the present day, and about three times as great as that of the English passenger locomotive of fifteen years ago. The working pressure is 200

**THE FRAME OF THE STANLEY AIRSHIP**

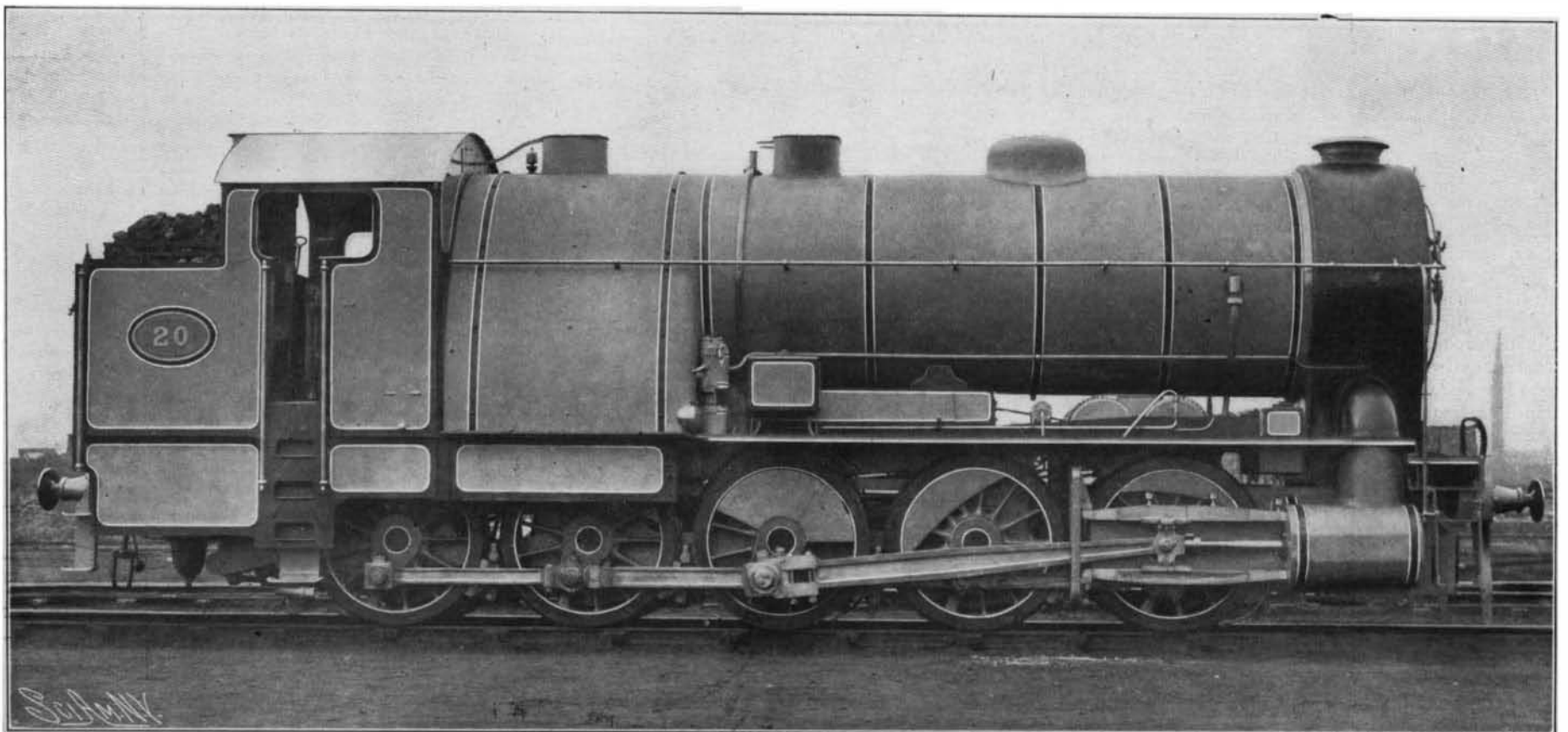
Railway, to handle the extremely heavy travel on the suburban lines of the Great Eastern Railway, England. This traffic centers at Liverpool Street and Fenchurch Street stations, London, and the annual travel over the suburban lines served from these stations amounts to 111,000,000 people. Although the Great Eastern Railway has a good record for the number and punctuality of its trains, it has been endeavoring for some time past to accelerate its local service: but on account

**SECTIONAL VIEW OF STANLEY AIRSHIP.**

S, shell; G, gas bags; E, end propellers; T, top propellers; M, engines; N, shafting from engines to propellers; H, main hull; J, inclined passages to pilot houses; P, pilot houses; R, rudders; B, lower bridge; V, steering gear.

of the great number of stations on each of the suburban lines, this has been a matter of much difficulty. Thus, on the line running to Enfield there are sixteen stations in a distance of 10 miles, and the inability to make rapid starts with the long and heavy suburban trains has prevented the trains from maintaining a high average speed. The steady increase of the past few years in the number of passengers and in the weight of the trains showed that to cope with the

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Three cylinders 18¾ by 24 inches; heating surface, 3,010 square feet; steam pressure, 200 pounds; weight, 87¼ tons; tractive effort, 36,507 pounds.

POWERFUL ENGLISH LOCOMOTIVE FOR SUBURBAN TRAFFIC.