

# SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XXX.—No 24.  
[NEW SERIES.]

NEW YORK, JUNE 13, 1874.

[\$3 per Annum.  
IN ADVANCE

## IMPROVED PATENT SECTIONAL BOILER.

The essential features of the boiler represented in our engraving consist in its construction in sectional form, and in the sections being of cast iron, of a shape calculated to economize space, to afford a large proportion of heating surface, to be durable, and to be readily cleaned. The inventor considers that cast iron, owing to its granular formation, allows of the passage of heat through it more readily than does wrought iron, which is fibrous; and, at the same time, it affords a means of building the boiler at a much decreased expense. Two forms of the generator are represented.

Each section in Fig. 1 consists of the curved tube, A, and of one or more smaller tubes, B, which are made on arcs of concentric circles and are cast in one piece with the larger pipe. The lower extremity of the tube, A, in each section, is, by means of a suitable screw connection, attached to a horizontal base pipe, C, two of which pipes extend longitudinally through the lower portion of the generator on each side, and are connected at the back by a transverse pipe, not shown. On the exterior of the main tubes, A, at D, and opposite to the orifices of the smaller tubes, are made apertures, closed by screw plugs, which are accessible through the outer casing, for removal, in order to insert the necessary instruments for cleaning. The upper extremities of tubes, A, are closed, and meet to form the arch, as represented. On the upper side, however, and near these ends are also screw connections, which communicate with the steam drum, E. It is hardly necessary to point out that a large amount of heating surface is secured, while the construction is such that an explosion is confined to the single section, which, through the two screw connections mentioned, is readily taken out and replaced. It is claimed that a perfect circulation is always maintained. The greatest heat is generated in the top of the furnace, through the rising of the light gases, and there is a ready escape of steam into the drum, preventing priming or lifting of the water from the hot surfaces.

In Fig. 2 the boiler is represented somewhat differently constructed. A bridge wall, F, passes longitudinally through the fire box, along which extends the pipe, G, from which rise vertical tubes, H, which connect directly with the steam drum. To flanged projections on tubes, H, are connected the curved tubes, as shown. To the base pipes, I, are fastened large tubes, J, which line the arch of the furnace, having closed upper ends and abutting against the vertical pipes. These tubes have each a screw connection with the drum at K, and, with the various portions, are so joined as to admit of free circulation throughout the generator.

It will be noticed that both forms offer ready means for blowing out the sediment which may accumulate, as the same will sink naturally to the base pipes, where it may be ejected or removed. In Fig. 2 the feed water is admitted to the base pipes.

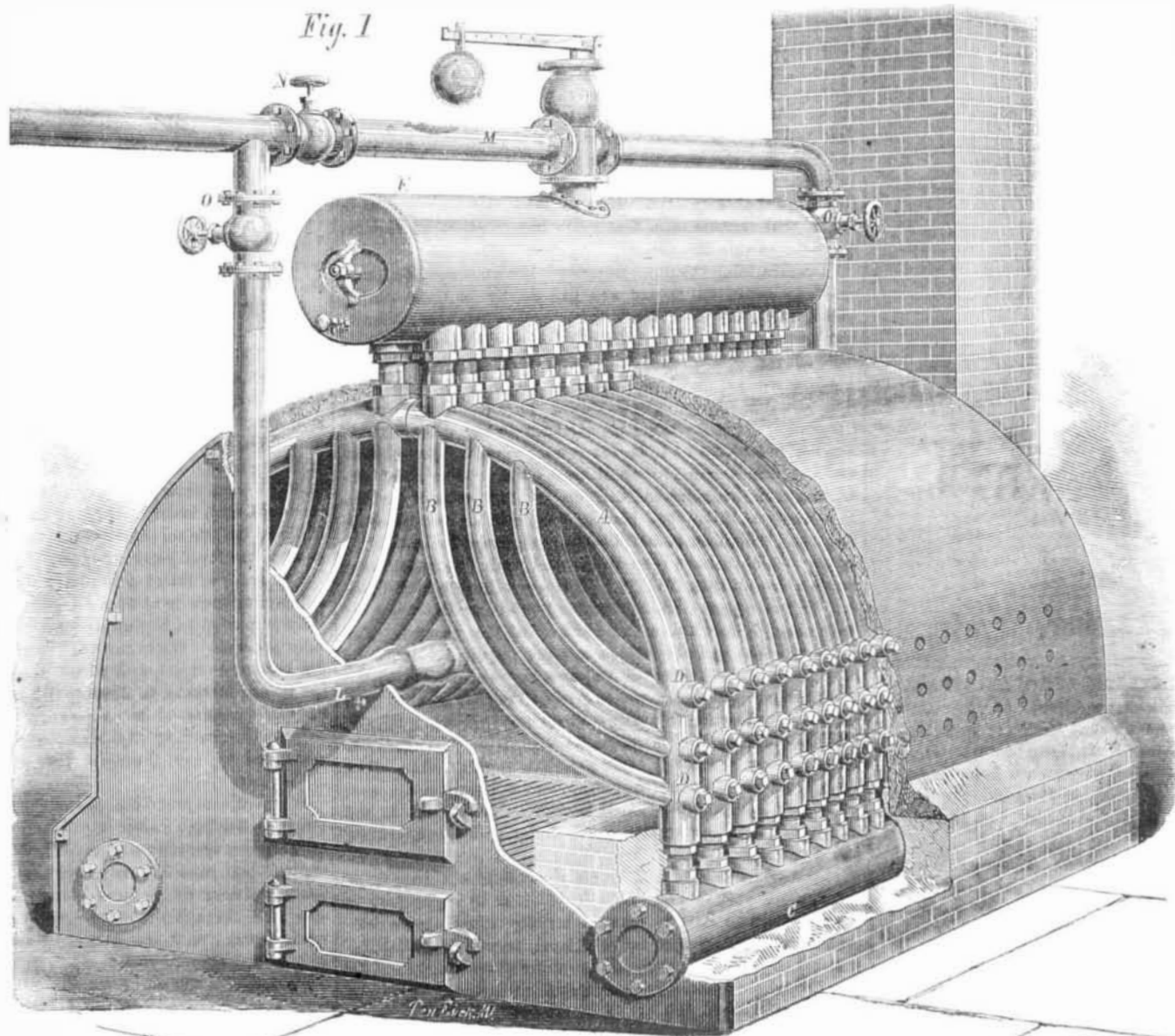
In connection with the boiler, in Fig. 1, a simple superheater is shown, consisting of a pipe, L, which extends down through the fire box, completing a parallelogram, of which the steam pipe, M, forms the upper side. By closing the valve, N, the steam passes down through this pipe, and thus becomes superheated. In case this is not desired, communi-

cation with the attachment is cut off by means of the valves, O, on the vertical branches.

We are informed that the castings are tested at not less than 250 lbs. to the square inch in hydrostatic pressure, and their peculiar form in curves, concentric as above noted, obviates greatly the dangers due to unequal contraction and

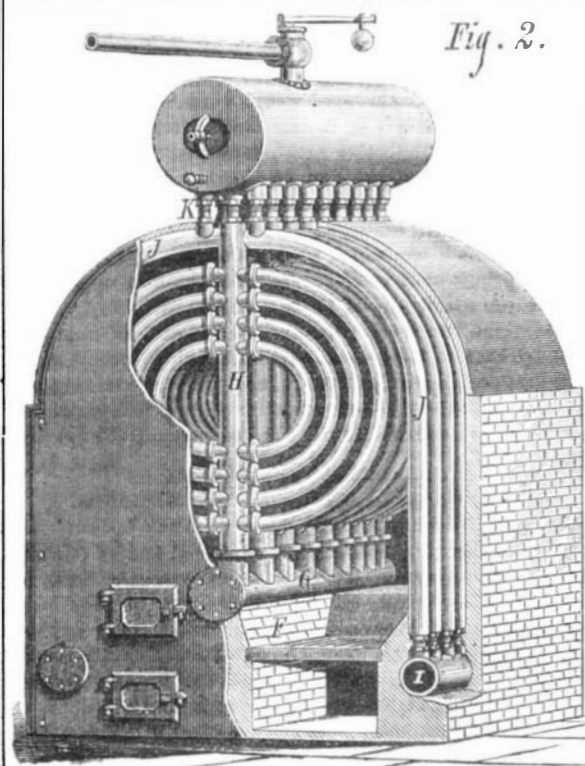
expansion. The manufacturers, Messrs. Dougherty & Broome, of Nos. 143 to 147 Bank street, New York city, state that they use one of these boilers in their foundry, and that, in a small 15 horse generator, an average of one pound of coal

quickly found. The device is covered by ten patents, the most recent of which are dated October 21, 1873. Further information may be obtained by addressing the manufacturers as above.



RENSHAW'S PATENT SECTIONAL BOILER.

expansion. The manufacturers, Messrs. Dougherty & Broome, of Nos. 143 to 147 Bank street, New York city, state that they use one of these boilers in their foundry, and that, in a small 15 horse generator, an average of one pound of coal



## Gas Pressure Alarm.

When two neighboring buildings are illuminated by gas derived from the same source, it frequently happens that the extinction of the lights in one building causes the pressure of gas in the other to become greatly increased, and sometimes to result in accident. M. Launay proposes, as an alarm to give warning of this over pressure, a bisulphate of mercury battery, in which the liquid is in communication with the gas by means of a siphon, so that the pressure of the gas in varying, raises or lowers its level.

If the pressure is above a certain fixed limit, the liquid is raised so as to come in contact with the metallic portion of the battery, establishing a current which sounds an electric alarm. M. Launay also suggests that a simple method of determining leaks in gas pipes throughout a building is to force some strongly odorous smoke into the supply pipe. The fumes of incense, for example, escaping in any room, would be readily distinguished from gas, and the locality of the leak

## Old Hats' Paradise.

The grotesque fancy of savages for the cast-off habiliments of civilized races is a source of amusement to travellers the world over. It is rare, however, that the fancy rises to such a passion for a single article as is exhibited among the Nicobar islanders. Young and old, chiefs and subjects, in these "Summer Isles of Eden," alike endeavor to outvie each other in the accumulation of old hats, priding themselves on the extent and variety of their collections as other people do on their wealth of gold or jewels or works of art. Curiously, second hand hats are most in request, new ones being looked upon with suspicion and disfavor.

The singular passion is taken advantage of by the traders of Calcutta, who make annual excursions to the Nicobars with cargoes of old hats which they barter for coconuts, the principal production of the islands. A good tall white hat with a black band fetches from fifty-five to sixty-five prime coconuts, sometimes more, as, during the intense excitement which pervades the islands while the trade is going on, fancy prices are often asked and obtained. When the market closes, by the exhaustion of the stock of hats for sale or coconuts to buy them with, the traders usually land with a cask or two of rum, and the entire population, clad in their new possessions, with perhaps a rag about the loins in addition, celebrate the occasion by getting thoroughly drunk.

WHAT is believed to be the longest rope in the world has been recently on view at Messrs. Frost's walk, Shadwell, England. It is a grapnel rope, 10,000 fathoms long without a splice, and has been made for the Siemens Telegraph Company. It is made of three strands, the diameter of the completed rope being 2 inches.