DESIGNS FOR STEAM BOILER.

Among the more recent inventions covering improvements on steam boilers for heating and power purposes the following design presents several features of interest. One of the claims for this design is that of the large amount of heating surface in actual contact with the fire. This the manufacturers claim is at least 100 per cent. more than is

obtained in the ordinary cast-iron sectional boiler. It is also claimed that this design removes all danger from rust between sections, and that no rubber packings are required.

Another feature of interest is the large chamber over the fire for the combustion of gases. As may be seen from the accompanying section, the hot gases pass through the secondary heater after leaving the firepot. The smoke pipe, which constitutes the lower portion of the secondary combustion chamber, takes off the cooled gases. In the steam dome an outer chamber receives the water forced over in the case of a heavy fire and conveys it back to the firepot. The same principle used in this heating boiler is now being applied by the manufacturers to power purposes, in which a system of free circulation with short passages is being employed. Provision is made for taking the mud and impurities that collect from the water by keeping the water practically still in the boiler, which contains the bulk of the water, and which is furthest removed from the fire, where it will settle and can be drawn off. In the firepot section the quick circulation provided keeps impurities from collecting. These designs are made to occupy about the same space as the average boiler; they are made in small sections, and are easily shipped and handled. This design of boiler can be set in brickwork or an outer casing lined with a nonconducting material.

The cost is said to be about equal to that of the ordinary boilers now in use. Tests have been made on a small scale, and have proven entirely satisfactory, verifying the advantages claimed for this type of boiler. The principle is also being applied to hot water heating, in which case the steam dome is removed and a larger surface exposed in the secondary heater. The hot water from the firepot passes direct into the radiators without mixing with the rest of the water in the boiler. The return pipes from the radiators enter the outer

ring of the secondary chamber, through which the gases pass before they enter the chimney. The design employed here does away entirely with flat sections and the associated injuries from rust.

Messrs. Norris and Williams, 507 Clinton Street, Toronto, the manufacturers, are now engaged in putting these designs through a thorough test, and hope shortly to place them all upon the market. Patents covering Canada, England, Germany and France have been granted, with other patents pending. Messrs. Reid & Brown, Esplanade, Toronto, have charge of the construction work.

The returns of the Suez Canal traffic for 1907 show the number of ships belonging to the United Kingdom and foreign countries, respectively, which passed through the canal in the last three years were as follows:

United	Other
Kingdom.	Countrie

Total.

-6

1905	2,484	1,632	4,110
1906	2,333	1,642	3,975
1907	2.651	1,616	4,207
The total net tonnage	for the past	year shows	s an increas
1,282.030 as compared	with that of	1006, and	of 1,594,32

or 1,282,930, as compared with that of 1906, and of 1,594,329 over that of 1905. British tonnage increased by 1,195,937 from 8,299,931 to 9,495,868. German tonnage, which is next in importance, rose from a total of 2,113,484 in 1905 to 2,155,-552 in 1906, and to 2,253,651 in 1907.

PROCRESS ON THE PANAMA CANAL.

The grand total of excavation on the Panama Canal during the month of August was 3,252,506 cubic yards, all of which, except 100,035 cubic yards, was taken from the canal prism. This is 83,666 cubic yards more than the highest previous record for excavation in the rainy season, that of July,



Section of Steam Boiler.

1908, and 227,764 cubic yards short of the highest record, that of March, 1908. Of the grand total of August excavation 1,876,515 cubic yards were dry excavation and 1,375,991 by dredges. The average rainfall in August for the territory in which excavation is in progress was 11.91 inches, as compared with 11.14 inches in previous month and with 12.27 inches in August, 1907.

