

FIG. 1.—SOOT REMOVAL PLANTS

## SOOT REMOVAL PLANT

by

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The requirement of a mechanical vacuum cleaner to assist in external boiler cleaning was first considered in 1934 when the Engineer-in-Chief's Department asked the British Vacuum Co. to investigate the possibility of developing an equipment which would remove the congealed soot that was found at the root of boiler tubes where they enter the water drums.

Experiments were carried out at the Admiralty Fuel Experimental Station at Haslar, and a plant was evolved for this particular purpose, capable of standing up to operation on board ship. The particular tool for the job was a long thin tube having a small inlet area to give a high velocity of air flow. This necessitated a fairly high vacuum pump with consequent small capacity. The E.A.90 positive displacement pump, subsequently employed in the plants for *King George V* Class, *Vanguard* and large aircraft carriers, has a capacity of 90 cfm with a vacuum of 15" Hg.

With the advent of more efficient housemaid in H.M. ships and in order to save man-hours, it was desired to modify the equipment so that it could deal rapidly with soot accumulations on furnace floors, tubes, and uptakes. This has been done for new construction by the addition of a turbo-exhauster pump having a capacity of 350 cfm at 5¼" Hg.

The equipment for the *Ark Royal* Class of aircraft carrier will consist of two complete sets, as shown in Fig. 1, one for the four forward boilers and the other for the four after boilers. Most other large ships will have one equipment to serve all boilers. Connecting points for hoses and tools are provided at the side of each boiler room at floorplate level and also outside the boiler room near the uptake access-doors of each boiler.

A problem in connection with this plant, now undergoing investigation, is the

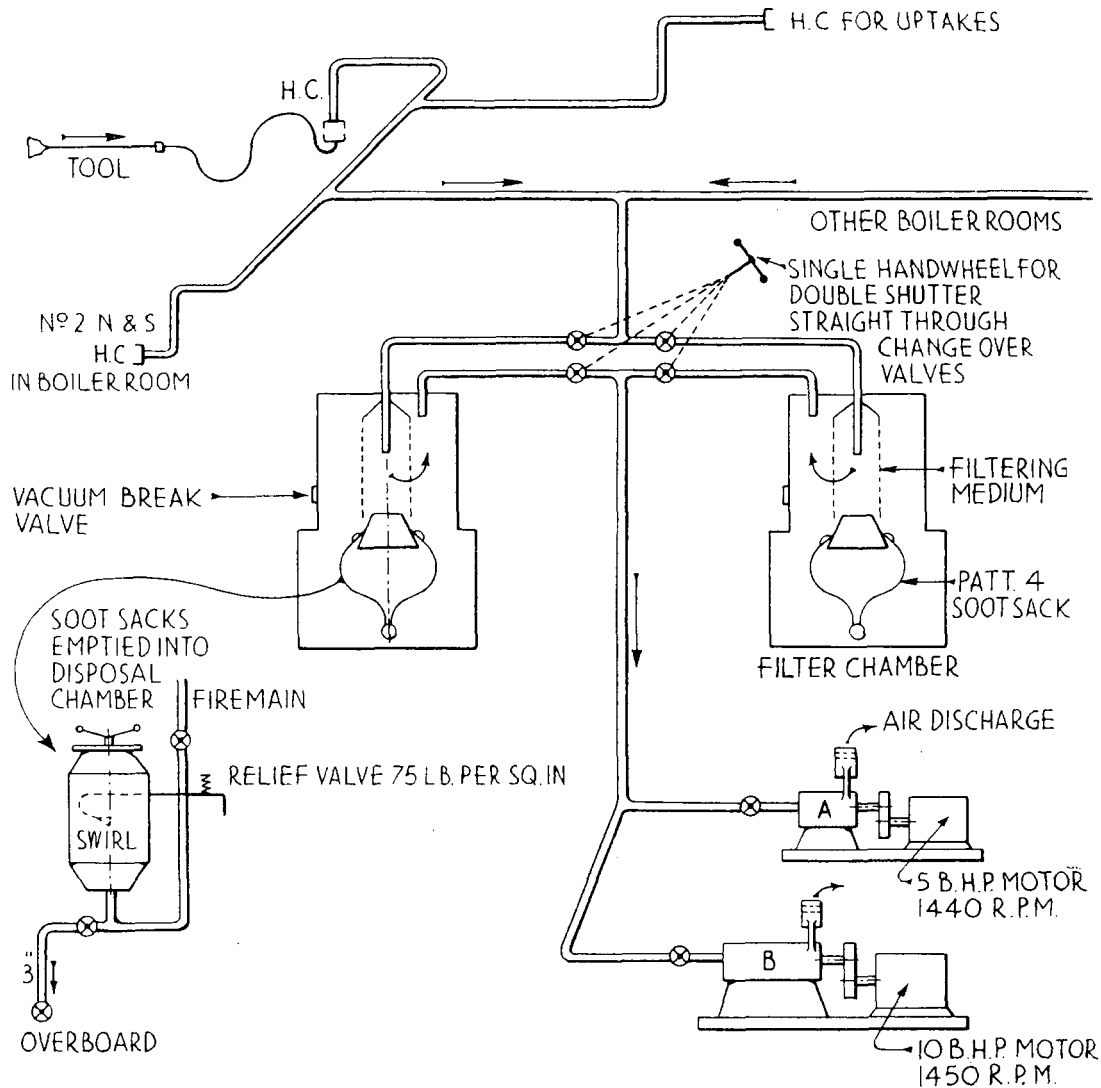


FIG. 2.—GENERAL ARRANGEMENT

difficulty in dealing with lumps of damp soot. It is hoped to develop the plant to the point where external boiler cleaning is a clean, swift and simple operation.