

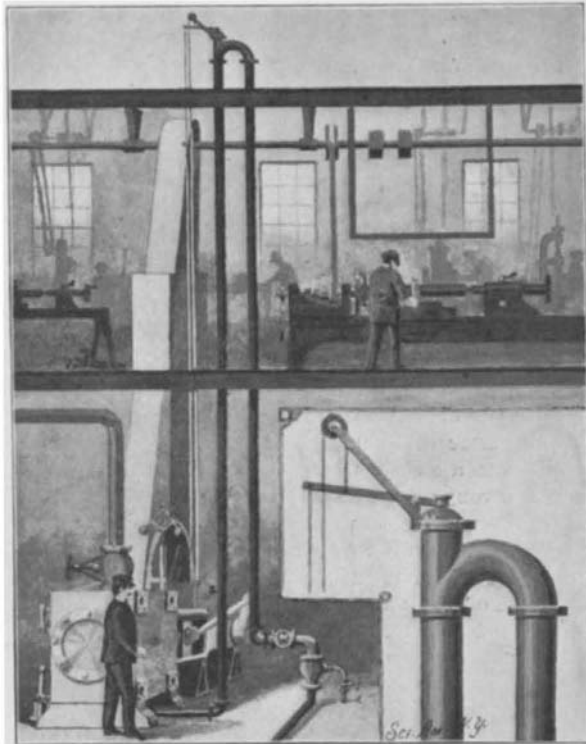
SAFETY DEVICE FOR ENGINES AND CONDENSERS.

A safety device which is arranged to keep the engine cylinder completely free from water in case the engine should act as a pump and the condenser is at a standstill, is an ingenious invention for which Mr. Thomas Grieve, of Perth Amboy, N. J., recently received a patent.

The exhaust of the engine passes to a condenser by means of an inverted U-shaped pipe, the upper portion of which is about 34 feet or more above the level of the water in the condensing chamber, so that when the steam is shut off in the engine, and the piston continues to move by reason of the momentum of the flywheel, causing the engine to act as a pump, the water contained in the condensing-chamber will not be drawn into the engine by way of the U-shaped pipe, since the upper end of the pipe is above the suction height of the pump. The exhaust steam is condensed by a jet of water. The condensing-chamber is connected with the pump to remove the water, the steam being instantly condensed and a vacuum produced in the U-shaped pipe. Should the pumps stop at any time and a vacuum be produced by the engine, the water contained in the condensing-chamber cannot be drawn by way of the U-shaped pipe into the engine for the reasons given.

In the elbow of the pipe an outlet is arranged, which is shown in the detailed view of the accompanying illustrations, and is normally closed by a valve engaged by a lever from the free end of which a rope extends downwardly. When the engineer pulls the rope, the lever will swing the valve off its seat, so that the exhaust steam can freely escape through the upper end of the U-shaped pipe without passing to the condenser. This is done when the steam is not to be condensed, and the valve controlling the passage to the condenser is closed. But when the steam is to be condensed, the valve in the elbow is closed; and in order firmly to hold the valve to its seat until the desired vacuum is established by the action of the circulating pump, a second rope is provided, passing over a pulley held on a bracket, the upper end of the rope being connected with the lever. When the engineer pulls upon this second rope, the lever will be swung upward to press the valve firmly to its seat. The vacuum can be easily broken whenever it may be necessary by means of a valve or plug cock.

The principle underlying this invention can be applied for central condensing purposes, or for one air-pump used in connection with any number of engines, the condensing-chamber suction leading to one main suction and thus to the pump. This centralization of the condensing system by leading the exhaust steam



THE GRIEVE SAFETY-CONDENSER.

from each engine to one large exhaust in turn leading to the condenser, is commonly found in very large plants. The arrangement necessitates the employment of large expensive pipes and valves. With Mr. Grieve's system, the expense of installing this elaborate system of piping would be very materially reduced. Moreover, if the conditions were such that the condensing-chamber could be raised above the pump, the space below the condensing-chamber would be filled with water by gravity; and since every 2.3

feet of water are equal to one pound per square inch, and one pound is equal to 2 inches of vacuum, the pump would be relieved of that much work. Mr. Grieve has subjected his condenser to severe tests, and informs us that it works satisfactorily in every respect.

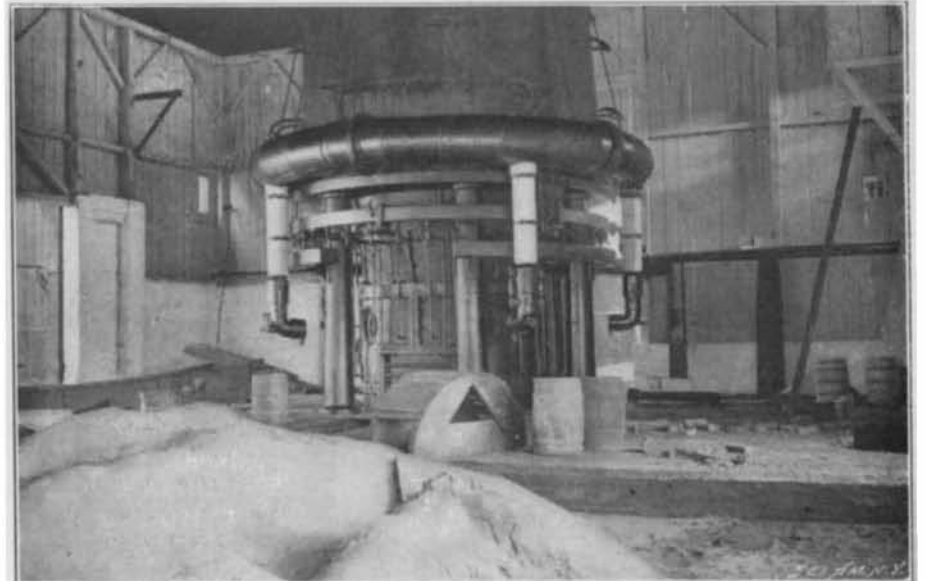
IRON MAKING ON THE PACIFIC COAST.

An event of no small importance is the recommencement of iron making on the Pacific Coast, which will take place shortly at Irondale, some five miles south of Port Townsend, Washington. Here, nearly one-quarter of a century ago, was erected the first blast furnace on the Pacific Coast. The venture, after being in operation for a matter of twelve years, proved a failure, and the plant was shut down. After the expenditure of a quarter of a million of dollars in prospecting and developing iron mines, experimental work with fuels, the installation of new machinery and the repair of the old plant, the Pacific Steel Company, a corporation in which practical iron-makers of Pennsylvania are the principal owners, is now in condition to commence work where the defunct Puget Sound Iron Company abandoned it twelve years ago.

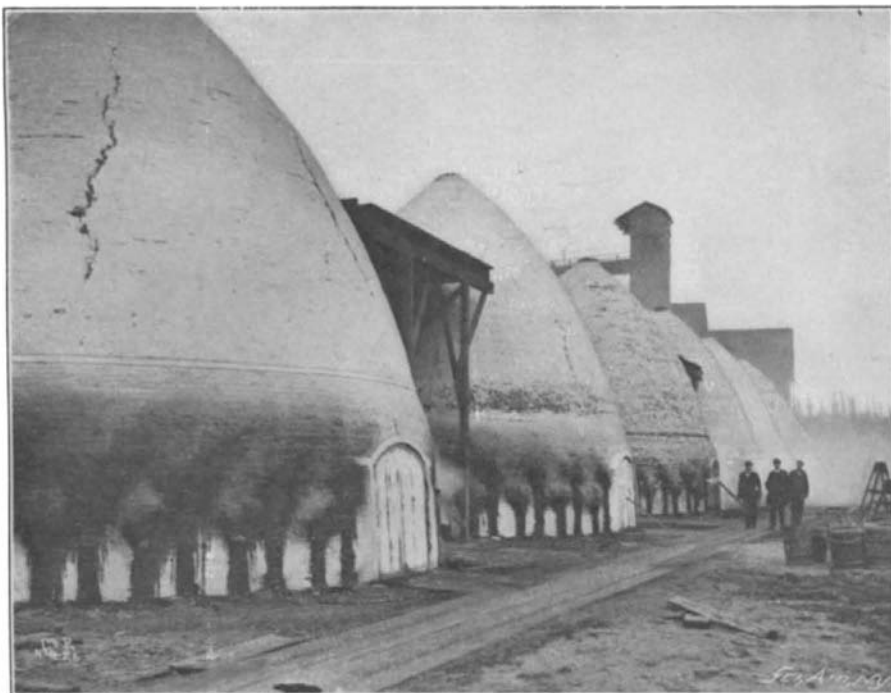
It is a fact that practically every pound of iron and steel which the Pacific Coast consumes or sends over sea to foreign markets is brought from points east of the Mississippi River; and it is claimed that at the present time competition with the iron works of the East is all but impossible, on account of the necessarily prohibitive freight rates on the raw materials. Some three years ago the present vice-president of the Pacific Coast Steel Company commenced an investigation of the iron mines on Texada Island, B. C., from which the ore used in the abandoned plant had been brought, and also thoroughly examined the coke and charcoal made on Puget Sound. Many tons of various Pacific Coast coals were sent to McKeesport, Pa., and there coked side by side with Pennsylvania coals, and the results compared. As a result of these investigations, the vice-president, Mr. Swaney, purchased the abandoned plant of the Puget Sound Iron Company, and work was opened up once more at Irondale. The furnace was relined, the machinery for crushing and hoisting ore was overhauled, and the steam plant improved with a view to securing more economical power production, this refitting being car-



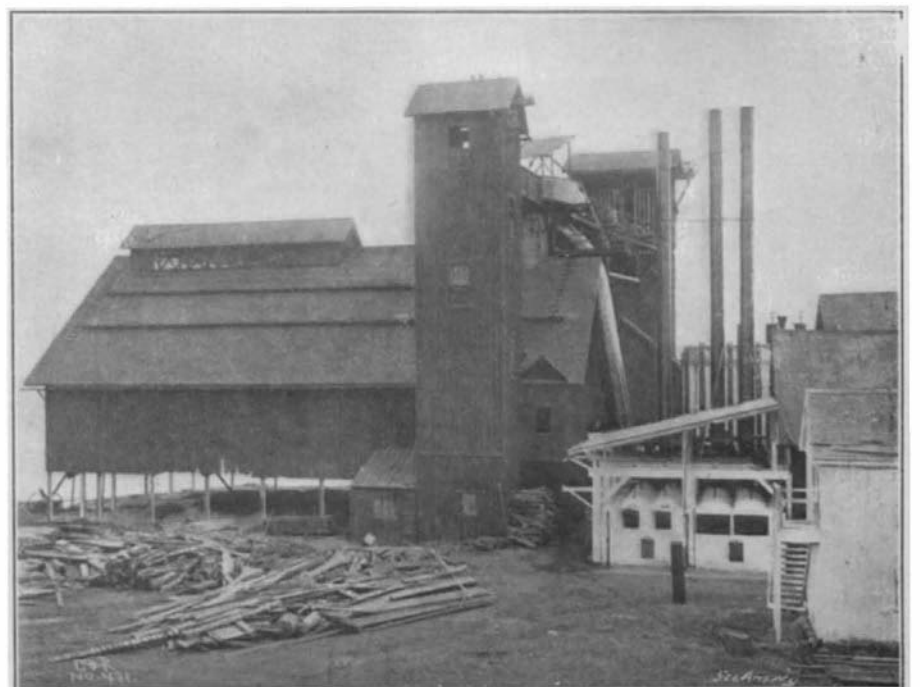
Ore-Bunkers on the Wharf.



The Blast Furnace, Showing the Hot-Blast Tuyeres.



Row of Charcoal Burners.



Rear View of Plant, showing Charging Platform of Furnace and the Boiler Plant.