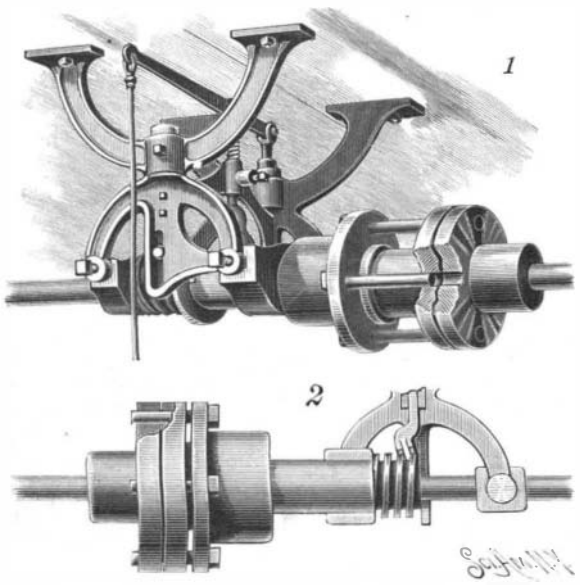
A CLUTCH TO COUPLE SECTIONS OF SHAFTING.

The clutch shown in the illustration is designed to hold the abutting ends of two sections of shafting so firmly together as to afford practically one continuous shaft, but one which may be instantly separated into two parts when necessary. The clutch is designed for most effective use in rolling mills, as the power comes direct from the engine. The improvement has been patented by Messrs. Thomas F. McGee and Eugene J. McCarty, of Clinton, Mass. Fig. 1 represents the application of the improvement, the sections of shafting uncoupled, and Fig. 2 is a partly sectional view, the

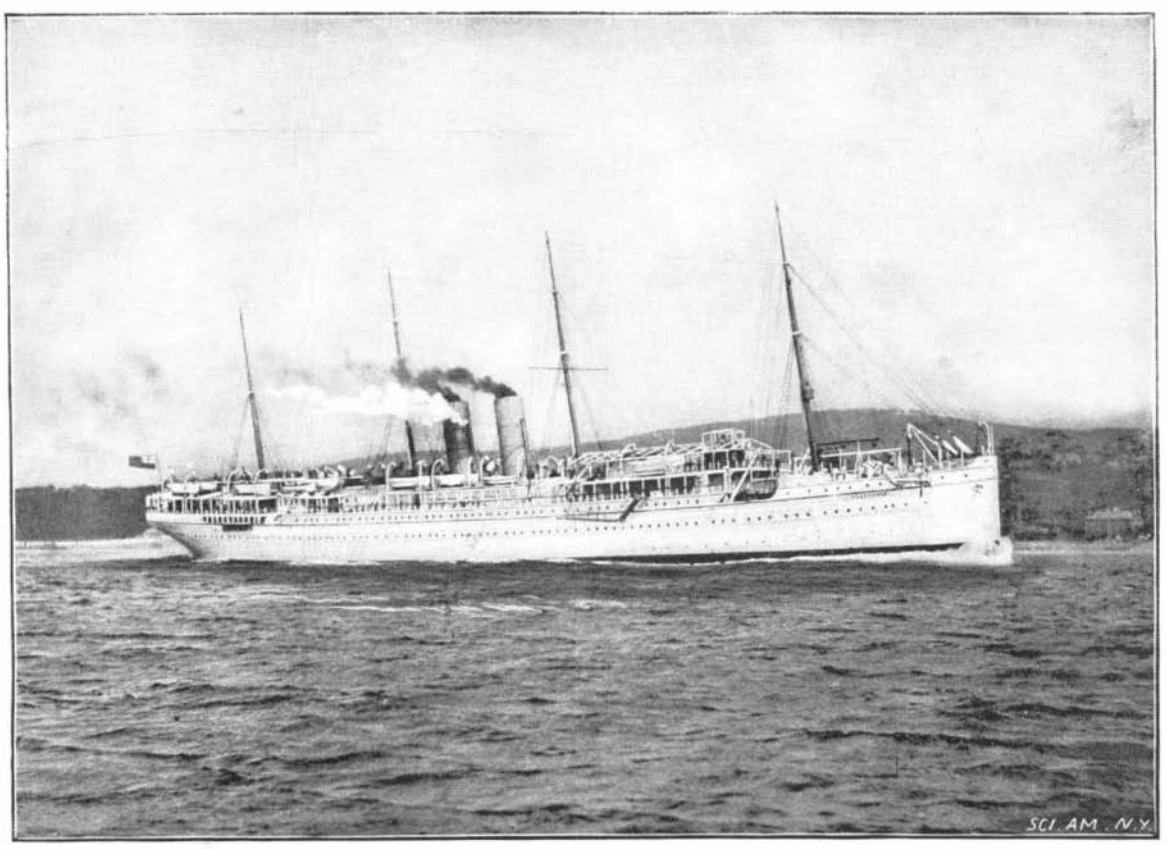


McGEE AND McCARTY'S CLUTCH COUPLING.

sections of shafting coupled. On one of the abutting shafts is a rigid flange with holes to receive coupling pins, which slide through holes in a flange on the opposing shaft, the pins being secured to a flange having a hollow hub sliding over the hub of the flange on the second shaft, and the hollow hub having at its outer end a sleeve terminating in a screw. The sleeve and shaft are supported in boxes in the lower end of brackets, at the upper ends of which are slides or shanks moving in boxes of the hangers, the brackets being held at the right height by set screws. The opposite brackets are connected by a cross arm, in which slides vertically the shank of the clutch blade, adapted to engage the screw, there being secured to the blade a curved guide extending beneath the screw, preventing the latter from working when the shaft sections are coupled. The clutch blade is held normally out of contact with the screw by a spring, and the upper end of its shank is pivoted to a transverse lever provided with a pull cord, which may be extended to such point as desired. In the box in which slides the shank of the clutch blade is a spring pin engaging a groove in the shank, whereby the blade is held in engagement with the screw when the pressure on the lever is removed. The clutch separates the two sections of shafting by power, but must be reset by hand. When the clutch is closed to hold the sections together, as shown in Fig. 2, the pulling down of the lever carries the clutch blade into engagement with the screw, thus pulling back the sleeve and movable flange to which the pins are secured, and withdrawing the pins from the flange on the opposing shaft.

THE NEW P. AND O. STEAMER CALEDONIA.

In a recent number of the Steamship we find a collotype engraving of the new steamer Caledonia, built by Messrs. Caird & Co., of Greenock, for the P. and O. Company. The Caledonia, built wholly of mild steel, and in accordance with Lloyd's highest requirements for a spar deck ship, was launched on the 19th May last, her construction having occupied a little under twelve months. The dimensions of the vessel are as follows: Length, 486 feet; breadth, 54 feet; depth, 37 feet 7 inches; displacement at load draught, 11,200 tons; and gross registered tonnage, 7,600 tons. She has been supplied with triple expansion engines of about 12,000 horse power, these having five cylinders—two high pressure, one intermediate, and two low pressure. The boilers are fitted with Howden's patent system of forced draught, the shafting throughout is of Vickers' steel, and the propeller is furnished with large manganese bronze blades. The deck machinery embraces all the latest and most approved appliances, and in this connection it may be stated that the cargo gearing is all hydraulic, practically noiseless in its working. The Caledonia is the largest vessel that has been built at Greenock, and is also the largest and most powerful yet constructed for the P. and O. Company. Not only so, but the rate of speed attained by the Caledonia during her official trials, on August 23, over the measured mile at Skelmorlie, goes to show that she will be one of the swiftest steamers engaged in the Eastern trade. There are five decks, viz., the orlop, lower, main, upper and hurricane, and a great attraction is the magnificent promenade on the upper deck, extending a long distance on both sides, and wide enough for eight or ten persons to walk abreast. She can carry 500 passengers (first and second class), the accommodation for whom is of a very superior kind. The staterooms are roomy, and are arranged in one, two or three berths, so that intending passengers can have ample choice. The ship is lighted throughout by electricity by Messrs. Siemens Brothers, Liverpool, and a large refrigerating chamber is fitted up, the machinery for which has been supplied by Messrs. Haslam, of Derby. Very superior accommodation is provided for the officers and crew, the latter numbering between 200 and 300, and of whom 114 are connected with the engine room staff. The Caledonia is commanded by Captain Andrews, R.N.R., an able and experienced officer.



THE NEW P. AND O. STEAMER CALEDONIA.

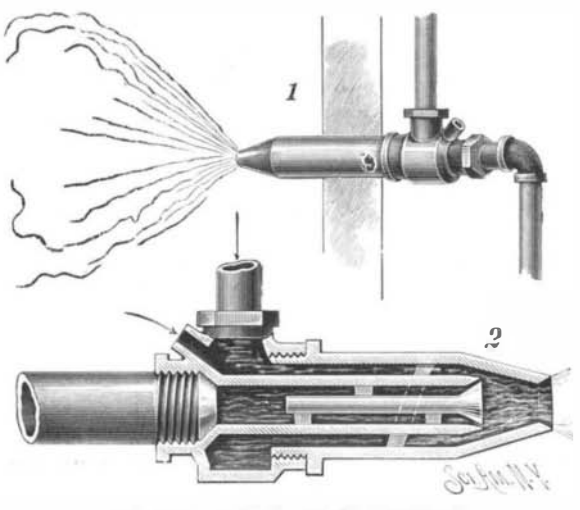
The Submarine Detector.

It is now a little over a year since the Russian monitor Rusalka foundered with all hands in a storm in the Gulf of Finland. To discover the precise locality of the vessel, with the view of raising her, an expedition set out with divers and all necessary apparatus, including one of Captain McEvoy's submarine detectors, which was made in London for the expedition. It has recently been ascertained that the spot where the Rusalka went down is a reef near the Waster Tokan, a rocky islet southwest of Mjolo, and one of the outermost rocks off the Finland coast. The reef is submerged, and it is supposed that the Rusalka grounded there and subsequently slipped off into the surrounding deep water. Her precise position has been localized in 30 fathoms of water by means of the detector. This apparatus consists simply of an electrical arrangement contained in a small mahogany box, which is carried on board the searching vessel, and a sinker, which is trailed along the bottom. The sinker also contains an electrical arrangement, and is connected with that in the box by a light electrical cable of any required length. When the sinker approaches a mass of steel, iron, or other metal, sounds become audible in a telephone on board, while they are reduced in intensity as the sinker recedes from the metallic object. Three hundred feet of electrical cable were employed in this search, which was continued for several weeks. The exact position of the foundered vessel was at length placed beyond all question, as every time the searching steamer passed over a given spot the electric indicator of the detector sounded loudly, thus affording evidence that a large mass of metal was submerged below. The divers then descended and examined the ship. She had foundered through serious damage to her stern. The examination was only external, the hatches being so firmly fixed that they could not be opened.

Although most appropriate for the purpose of searching for wrecks of iron ships, the submarine detector was primarily designed by Captain McEvoy to indicate the approach of iron ships to anchored torpedoes, as well as to search for stray torpedoes, lost anchors and chains, telegraph cables, and the like. The approach of a mass of metal, such as an enemy's ironclad, to a torpedo disturbs the balance and causes the sounds to become audible in the telephone. The torpedo may then be fired electrically by means of the cable connection, the invention thus presenting itself as an important adjunct of coast defense.

A BURNER TO FACILITATE THE BURNING OF CRUDE PETROLEUM.

In this burner, which has been patented by Mr. Berend Kamps, the oil inlet is at the top of the casing, there being an adjacent obliquely inclined air inlet, and below this a steam inlet, the nozzle having a contracted end extending into the furnace. The inner end of the steam inlet terminates in a pipe extending into the nozzle, as shown in Fig. 2, and near the front end of the pipe is a collar forming an annular space for oil within the casing around the pipe. The collar has a longitudinal slot or recess to permit the passage of the oil upon the front end of the steam pipe. In the forward end of the steam pipe is a cone-shaped plug, causing the steam to pass out at a high velocity



KAMPS' HYDROCARBON BURNER.

in a very fine annular spray, the plug having a rearwardly extending stem on which are lugs fitted in the steam pipe to hold the plug in proper position. Further information relative to the improvement may be obtained of the Zeeland Brick Company, Zeeland, Mich.

Improvements on the Danube.

A recently issued report by Mr. Percy Sanderson, British consul-general for Roumania, gives an interesting account of the improvements made in the navigation of the Lower Danube during the years 1878 to 1893 inclusive. The engineering works, which have been carried out under the able superintendence of Sir Charles Hartley, K.C.M.G., chief engineer to the Danube Commission, may be classed under three heads, viz., those on the Black Sea coast line, those in the port of Sulina, and those in the river. The approaches to the port have been made safe by beacons, as well as by fog signals and a "whistling" buoy, and the south pier at Sulina has been prolonged considerably. An even depth of 20½ feet has been maintained at the mouth of the river, and will be increased to 23½ feet by the completion next year of parallel dams. In the river numerous cuttings have been made, with the result that a minimum depth of 15 feet has been obtained on the whole of the Sulina branch of the river, while the course of the river has been shortened by six nautical miles.