

**TEST OF THE NEW FLOATING DRYDOCK AT ALGIERS, LA.**

BY FREDERICK MOORE.

We present an illustration showing the recent test of the new floating dock at Algiers, La., by docking the new battleship "Illinois." This vessel is a sister ship to the "Alabama" and "Wisconsin." She is of 11,565 tons displacement, 17.4 knots speed, and carries four 13-inch, fourteen 6-inch, and twenty-eight smaller guns. She was built at the Newport News shipbuilding yard.

When the late war was imminent, the Spanish government placed an emergency contract with Swann & Hunter, Wallsend on Tyne, for two floating docks of 10,000 tons capacity, and offered premiums to the builders and the towing contractors for the completion and delivery of these docks respectively to Manila and Havana, in the way of several thousand pounds sterling for each month that the contractors clipped from the contract time of delivery. In just eleven months from the date of the contract the now famous Havana dock was delivered at that place. It cost the Spanish government \$595,000, \$150,000 more being paid for towage and premiums. It arrived in Havana about two months before the blowing up of the "Maine," and served the few Spanish cruisers then about Cuba in getting into condition for the war. Unfortunately for Spain, the

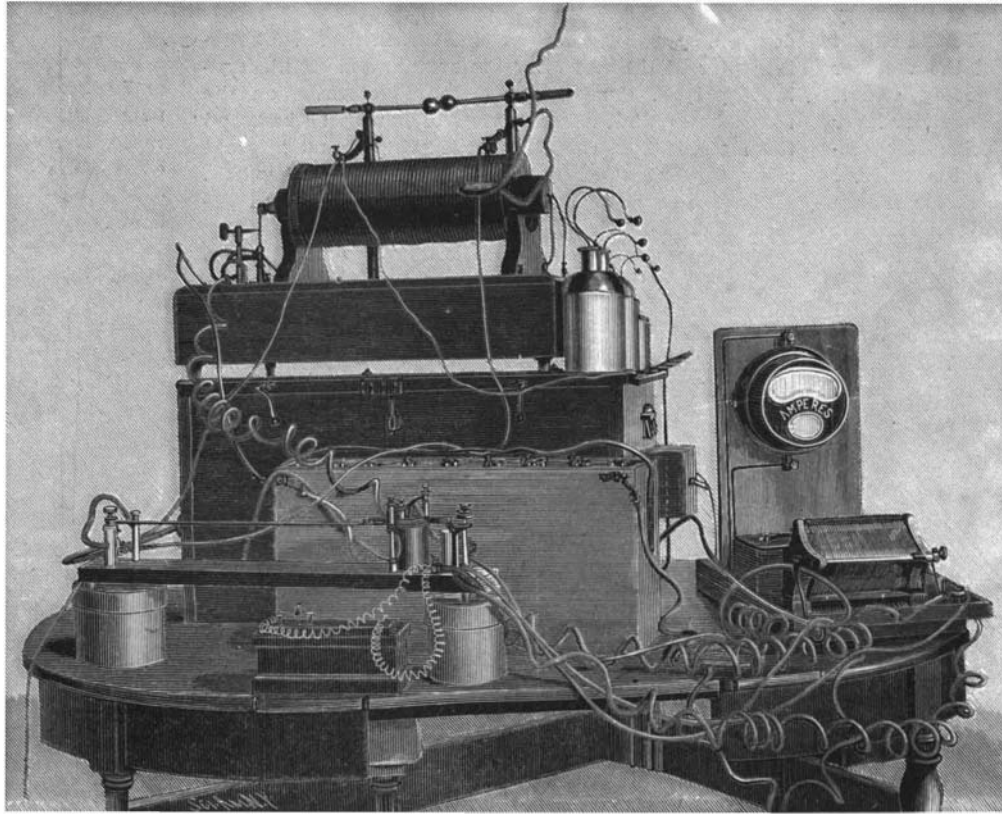


Fig. 2.—THE GUARINI WIRELESS TELEGRAPH REPEATER.

squadron that will represent the navy at King Edward's coronation.

**THE GUARINI REPEATING WIRELESS TELEGRAPH SYSTEM.**

BY A. FREDERICK COLLINS.

Nearly all the work done in wireless telegraphy since its practical introduction in 1896 has been along lines having for their ultimate purpose one of two objects—the first, to cover distance, and the second, to produce a tuned or syntonized system. Occasionally, however, one's attention is drawn to some investigation original to the art, or an invention involving new thought. Among these may be cited the steering of dirigible torpedoes, controlling clocks, block-signal systems and repeaters for wireless telegraphy.

This latter device is the invention of M. Emile Guarini, of Brussels, Belgium, who has directed his energies toward the problem of overland transmission, and to carry his ideas into practice he installed standard equipments at Brussels and Antwerp and his repeating device at Malines.

It is well known that the propagation of long electrical waves over wires may be effected to great distances, but over submerged cables—owing to the excess of capacity and the decrease of inductance—the distance of effective rapid transmission is exceedingly limited. Oppositely disposed to these conditions is the action of electric waves used in wireless telegraphy, for an apparatus capable of sending waves 100 miles by sea, will not propagate waves one-fourth that distance on land.

This was the state of affairs confronting Guarini when he resolved to operate between Brussels and Antwerp—the two cities being, practically, 25 miles apart; and what made the problem still more difficult, was the intervening ground, which attained a considerable elevation. On one of the highest eminences Malines is situated midway between the two cities, and it was here the messages were to be repeated automatically.

With this plan well in mind the inventor constructed a transmitter and a receiver, and by cleverly combining them obtained a repeater capable of retransmitting a message by utilizing fresh electromotive force and sending out re-energized electric waves. In the wire system there is nothing more simple than the repeater, or relay, as the apparatus proper is called, which, by means of a delicately poised armature throws a local battery in or out

of circuit; but current electricity and electric waves must not be confounded one for the other, for current electricity is transmitted by the bound ether or conductors, whereas electric waves are propagated by the polarizations of free ether, i. e., like light waves. Therefore when a repeater is contemplated for wireless telegraphy the apparatus becomes a complicated affair, though to a casual observer it would seem comparatively simple to construct such an apparatus. Therein lies the credit due Guarini. Let us imagine a wireless transmitter, and by this we mean, a Ruhmkorff coil, Morse key and suitable battery; let us also imagine a receiver or combination of coherer, relay, sounder and batteries, and both transmitter and receiver connected to proper antennæ and ground. Now combine the two in-

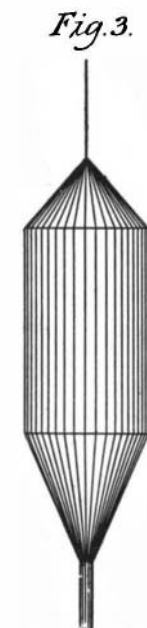
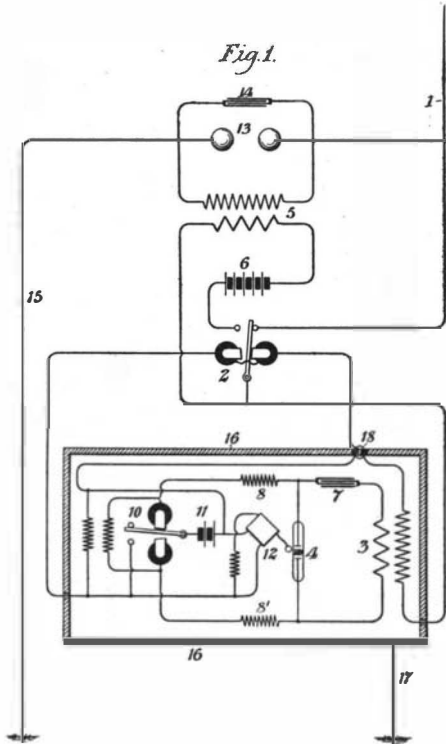


Fig. 3. GUARINI ANTENNA.



DIAGRAMMATIC VIEW OF THE GUARINI WIRELESS TELEGRAPH REPEATER.

dock was misplaced. Had it been sent to Santiago, Cervera's fleet would have been able, at least, to have made a better run, for their bottoms would all have been cleaned and scrapped.

The other dock was not finished until after war had begun, and after the declaration of peace it was taken to Port Mahon, Balearic Islands.

By the treaty of peace it was agreed that all movable property belonging to the Spanish government might be taken away. The board appointed to pass upon movable and immovable property declared the Havana dock movable; but Spain had no use for it, in her comparatively shipless state, and sold it to this

government for the paltry sum of \$185,000. Although we had no occasion to dock our battleships during the campaign, considerable uneasiness was experienced over the fact that in all the southern waters there was no dock large enough to take an American battleship. A small floating dock had been towed to Pensacola; and Key West, Mobile and New Orleans had docks that would lift torpedo boats and small cruisers; but there was no dock south of Newport News able to accommodate one of the government's larger ships.

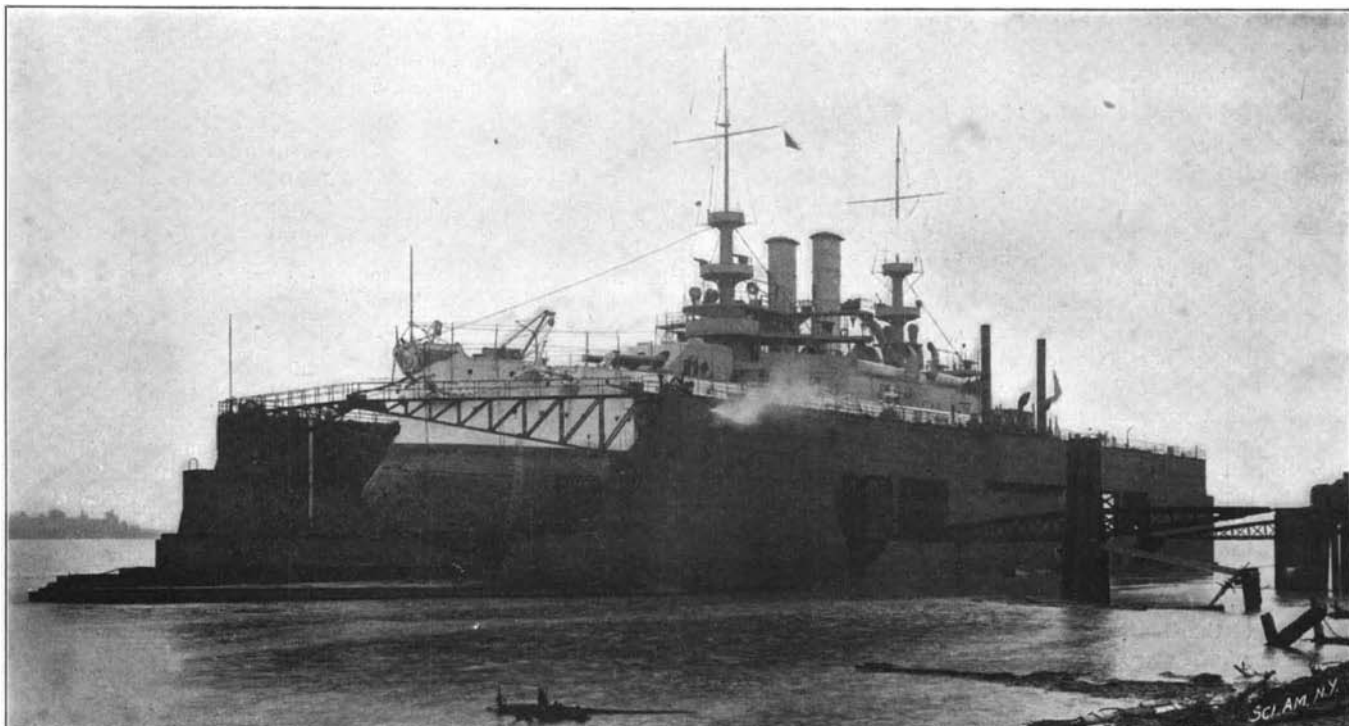
Immediately after the war, a contract was awarded for the building of a floating dock for Algiers (just opposite New Orleans) that would lift any vessel in the navy. This was to be the largest dock of its kind afloat, 15,000 tons capacity with decks two feet above water, 18,000 tons awash. In October the dock was successfully towed from Sparrow's Point, Maryland, its place of construction, to New Orleans. This style of dock was decided upon for three reasons: First, because a graving dock could not be built in a stable way in the alluvial soil of the Mississippi's banks; secondly, because of the variation of 18 feet in the river levels at high and low water; and thirdly, because of the cheapness of first cost (one-third less) and of maintenance, as compared with stone docks.

The test of the full capacity of the dock could not be made, for the reason that the "Illinois" displaces only 11,565 tons; but the test of that lift was entirely successful and satisfactory.

The Havana dock is being put in thorough repair, and will very likely be towed to Manila to augment the naval station there.

Under the terms of the contract a two days' sea trial was lately made by the "Illinois," when the ship was thoroughly inspected by the naval board and was found to be in every respect satisfactory.

The "Illinois" will be the flagship of the European



BATTLESHIP "ILLINOIS," TESTING THE NEW FLOATING DOCK AT ALGIERS, LA.

flagship of the European