

A WIRELESSLY-CONTROLLED TORPEDO.

The attempts made by Tesla in this country, by Oring at Stockholm, and by Armstrong at Portsmouth to control torpedoes by the wireless transmission of impulses, have recently been repeated in France by an engineer named Gabet, who seems to have attained more satisfactory results.

In appearance Gabet's torpedo resembles the standard Whitehead. Above it a float or longitudinal buoy is supported, which serves to carry the aerial and to serve as an indicator of the torpedo's direction of travel and its position. The length of the torpedo proper is 29½ feet; its weight is 8,800 pounds; its explosive charge is 1,980 pounds.

The experiments recently conducted at Chalons were limited to tests of buoyancy and stability. More rigorous trials, which will reveal any inherent defect in maneuvering ability, will be conducted at Paris on the Seine.

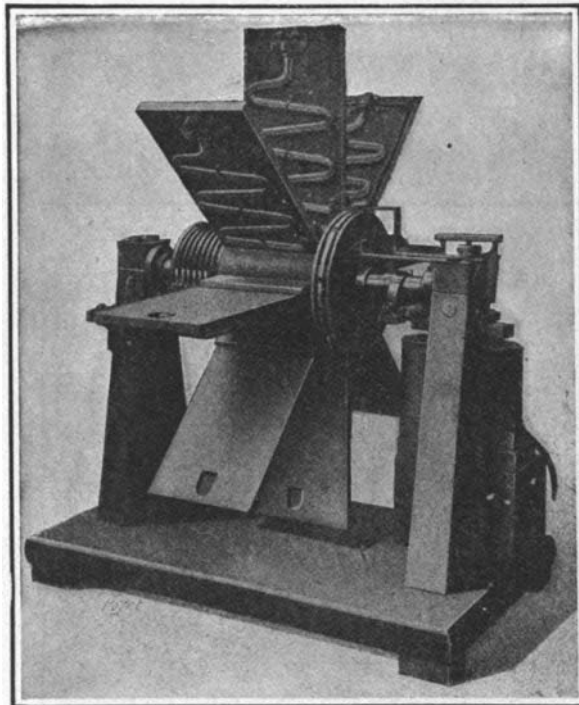
The torpedo necessarily includes in its construction a means for operating propelling and steering apparatus by wireless signals without interference. The main feature of the controlling mechanism is a kind of paddle wheel, which closes the proper electric circuit by bringing the corresponding blade of the wheel into horizontal position. The wheel is driven by a pawl attached to the armature of an electromagnet, each closure of the magnet circuit bringing the blade into the position occupied by the preceding blade. By sending short impulses, the operator can bring the blades successively into horizontal or contact position, and stop the rotation when the desired blade has reached that position. Obviously, several other blades besides the right blade are brought into the contact position during this process. To prevent the closure of the corresponding circuits, and to permit only the right blade to complete a circuit, Gabet delays the electrical action of each blade, so that the unrequired blades may turn without electrically disturbing the mechanism. Only the proper blade is held in place long enough to complete its circuit. To this end, each blade carries a serpentine glass tube containing a little mercury. When the blade is in its uppermost position, the mercury naturally collects at the lower end of the tube. When the rotation of the wheel carries the blade below the axis, the mercury naturally flows down to the outer end of the tube. If a blade is arrested in the contact position, it is slightly inclined downward, so that the mercury winds slowly from one end to the other or contact end of the tube. Five seconds elapse for the transit. Hence if the impulses are made at intervals of less than five seconds, none of the circuits that operate the torpedo is closed until the desired blade has reached the contact position, and has been allowed to remain there longer than five seconds. Each operating circuit terminates in one of the rings shown on the axis of the wheel.

If the wheel has eight blades, two can be used to make and break the circuit of the magnet which drives the wheel and six to accelerate, retard, or stop the torpedo, and to turn its rudder to the right or left, or to hold it straight. As each blade arrives at the contact position, a light flashes up so that the operator on ship or shore can follow the torpedo's behavior. Five seconds are always allowed him to correct mistakes.

Valuable Postage Stamps.

Postage stamp issues of the Canal Zone, Porto Rico, the Philippine Islands, and Cuba have recently had a decided influence on the stamp values, owing to the fact that collectors have found odd issues among these stamps. Many new prices will be placed in the 1909 catalogue for the first time.

Among these are the stamps of Puerto Principe, the chief of these rarities being the orange-brown stamp surcharged "3 Cents" on a Cuban stamp of the denomination of 3 milésimas. This stamp has been erroneously quoted by some of the foreign catalogues at \$30, although recently a specimen sold for \$87, and is now catalogued in this country at \$100. The new quotation on the used 3-milésimas orange-brown stamp of the same issue, with the "3 Cents" surcharged, but with the letters on the surcharge upside down, is worth to-day \$75. The 5-cent surcharge on the unused 1-milésima



The paddle-wheel signal distributor.
(Eight blades.)

orange-brown stamp is now catalogued for 1909 at \$75, and the same stamp which has been used for postage holds to the same value as the unused. Of the Puerto

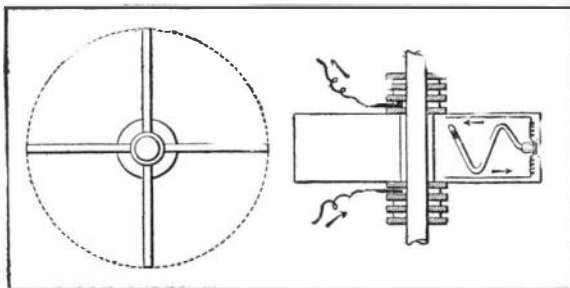
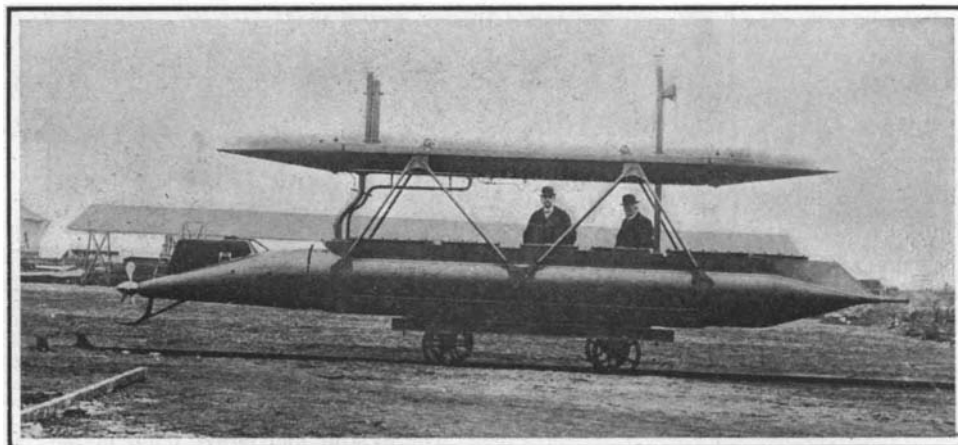
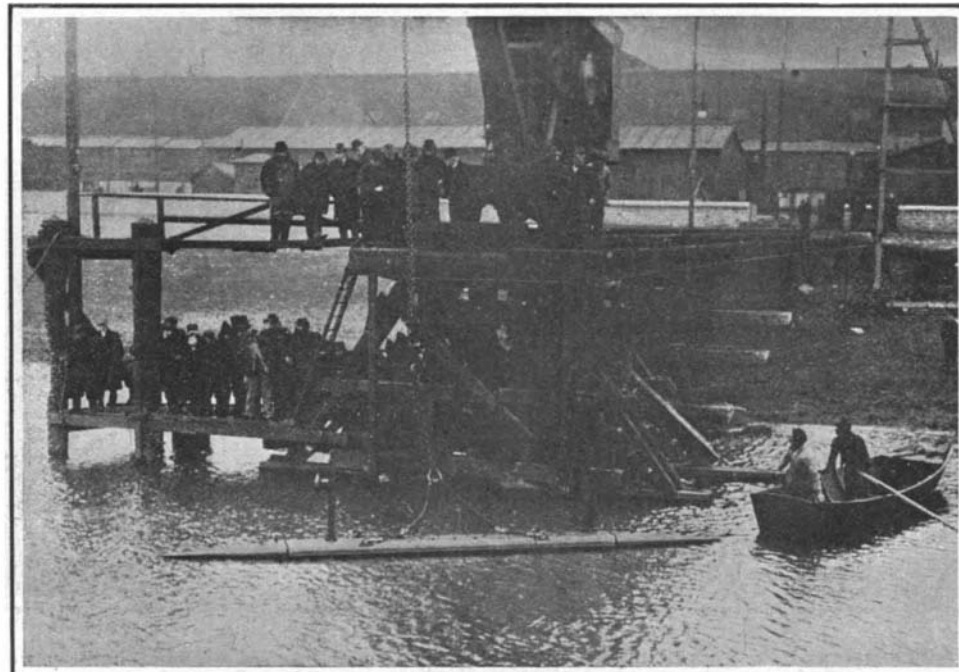


Diagram of a distributor with four blades.

Principe blue-green stamps with the black surcharge very few were quoted in the catalogue for 1908, but the book for 1909 will show many new prices far above



View showing method of attaching float to torpedo.



WIRELESSLY-CONTROLLED TORPEDO, WITH FLOAT AT THE SURFACE.

the previously quoted ones. Among these the used 5-cent surcharged on the 2-milésimas blue-green stamp is quoted at \$65, and the 5-cent on 4-milésimas blue-green stamp is quoted at \$100; the 3-cent surcharged on the 1-milésima blue-green stamp is listed at \$30; the 3-cent on 2-milésimas blue-green at \$40, and the same stamp showing the misspelled surcharge "cents" for "cents" has by its rarity been boosted to \$60.

Many errors were made in the printing of the Canal Zone stamps, all of which are valued highly. The price of the used 5-cent blue stamp, with the inscription spelled "Panaam," is placed at \$20 in the new catalogue. Another stamp of the same kind, but with a final "A" raised, is to bring \$25, and a third with a bar at the bottom is valued at the same price.

The greatest attraction to the collector of the surcharged Cuban and Canal Zone stamps is their very recent issue, and careful watch of correspondence often enables a collector nowadays to pick up a rare specimen of these makeshift stamps which happens to be floating around.

The recent changes that have been made in the value of the Philippine stamps are marked. The one real slate-blue stamp of 1854, showing the misspelled word "Corros," is now recorded with a value of \$80 unused and \$75 for the used ones. The 5-cent pale vermilion stamp of 1855 is now listed at \$65 unused and \$27 used. Another error stamp is the 8-cent on the 100-milésimas carmine stamp of 1879, with the inscription, "Coreros." This stamp is listed at \$3 used and \$15 unused. The Philippine stamps of 1881-8 issue, with the surcharge inverted, are now quoted at good prices. The 20-cent on 8-cent brown inverted surcharged stamp is listed at \$10, either used or unused, the 2-cent on 24 8-cent ultramarine inverted surcharge stamp at \$20, and the 10-cent on 2-cent carmine inverted at \$12.50, unused.

Quite a number of substantial increases have taken place in the value of certain Chinese stamps. The unused 3-cent red stamp of the 1877 issue, with \$5 surcharged in black, advanced from \$25 to \$40. Of the Chinese 1873-5 issue, the 16-cent green stamp surcharged "3 Cand" (candareens) is now placed in the catalogue at \$75, unused. The 8-cent gray-blue stamp surcharged "1 Cand" is likewise valuable, having recently been catalogued at \$60 in either the used or unused condition. The Chinese 12-cent light brown stamp, with "1 Cand" surcharged of the 1877 issue, is priced at \$75 unused and \$65 used. A variety of the Chinese recent issue of 1893, 5 cents in denomination, blue and black in color, with the black inscription inverted, when unused is valued at \$30.

That man is prone to error is shown by the many mistakes made in the engraving of plates and the printing of stamps. It would seem an utter impossibility for so many slips to happen where a work is checked and proofed by a great number of persons, and it only goes to prove the old saying that the man that never makes a mistake does not exist.

Electrolytic Reduction of Indigo.

An attempt to reduce indigo to indigo white by the electrolysis of a solution of sodium carbonate containing finely divided indigo in suspension having proved unsuccessful, the failure was attributed to the possible recombination of the nascent hydrogen atoms into inert molecules, before coming in contact with the particles of the indigo.

The correctness of this theory was proved by the success of the experiment when a conducting powder, graphite or metal filings, was mixed with the indigo. The caustic soda which is set free by electrolysis aids in effecting the compounds are too coarse or insufficient its practical application. In theory, the process is perfect, complete solution of the indigo-white presents certain difficulties. The mixture by and suspension in the nature of the conducting powder and indigo must not be so intimate or so compact as to prevent its penetration. The electrodes must be of uniform character and must possess a moderate degree of conductivity, as otherwise the reduction takes place only at the edge of the cathode, and the yield is diminished. It is diminished, also, if the mixture is not gently mixed. About 4½ kilowatt hours are required for the reduction of 1 pound of indigo.