

TELEGRAPHING WITHOUT WIRES.

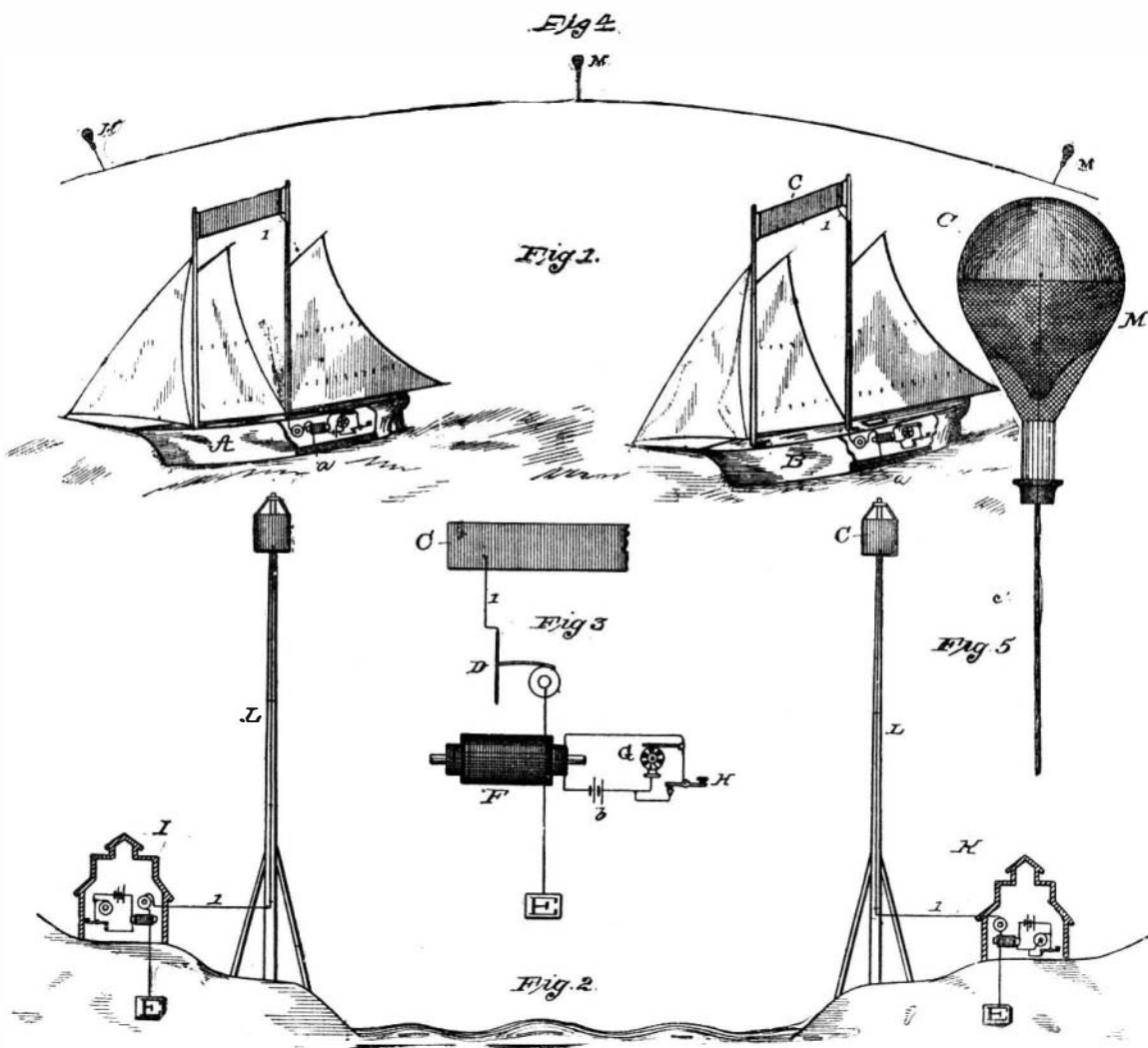
Among the recent patents is one by Thomas A. Edison, of Menlo Park, N. J.—means for transmitting signals electrically, without the interposition of connecting wires. In his specification he says:

"I have discovered that if sufficient elevation be obtained to overcome the curvature of the earth's surface and to reduce to the minimum the earth's absorption, electric telegraphing or signaling between distant points can be carried on by induction without the use of wires connecting such distant points. This discovery is especially applicable to telegraphing across bodies of water, thus avoiding the use of submarine cables, or for communicating between vessels at sea or between vessels at sea and points on land; but it is also applicable to electric communication between distant points on land, it being necessary, however, on land (with the exception of communication over open prairie) to increase the elevation in order to reduce to the minimum the induction-absorbing effect of houses, trees, and elevations in the land itself. At sea, from an elevation of 100 feet, I can communicate electrically a great distance, and since this elevation, or one sufficiently high, can be had by utilizing the masts of ships, signals can be sent and received between ships separated a considerable distance, and by repeating the signals from ship to ship communication can be established between points any distance apart or across the largest seas, and even oceans. The collision of ships in fogs can be prevented

in tension are produced at the elevated condensing surface, producing thereat electrostatic impulses. These electrostatic impulses are transmitted inductively to the elevated condensing surface at the distant point and are made audible by the electromotograph connected in the ground circuit with such distant condensing surface. The intervening body of air forms the dielectric of the condenser, the condensing surfaces of which are connected by the earth. The effect is a circuit in which is interposed a condenser formed of distantly separated and elevated condensing surfaces with the intervening air as a dielectric.

In the accompanying drawings, forming a part hereof, Fig. 1 is a view showing two vessels placed in communication by my discovery; Fig. 2, a view showing signaling stations on opposite banks of a river; Fig. 3, a separate view, principally in diagram, of the apparatus; Fig. 4, a diagram of a portion of the earth's surface, showing communication by captive balloons; Fig. 5, a view of a single captive balloon constructed for use in signaling.

A and B are two vessels, each having a metallic condensing surface, C, supported at the heads of the masts. This condensing surface may be of canvas covered with flexible sheet metal or metallic foil secured thereto in any suitable way. From the condensing surface C a wire 1 extends to the hull of each vessel and through the signal receiving and transmitting apparatus to a metallic plate *a* on the vessel's bottom.



EDISON'S NEW METHOD OF TELEGRAPHING WITHOUT WIRES.

by this character of signaling, by the use of which, also, the safety of a ship in approaching a dangerous coast in foggy weather can be assured. In communicating between points on land, poles of great height can be used, or captive balloons. At these elevated points, whether upon the masts of ships, upon poles or balloons, condensing surfaces of metal or other conductor of electricity are located. Each condensing surface is connected with earth by an electrical conducting wire.

On land this earth connection would be one of usual character in telegraphy. At sea the wire would run to one or more metal plates on the bottom of the vessel, where the earth connection would be made with the water. The high resistance secondary circuit of an induction coil is located in circuit between the condensing surface and the ground. The primary circuit of the induction coil includes a battery and a device for transmitting signals, which may be a revolving circuit breaker operated continually by a motor of any suitable kind, either electrical or mechanical, and a key normally short-circuiting the circuit breaker or secondary coil. For receiving signals I locate in said circuit between the condensing surface and the ground a diaphragm sounder, which is preferably one of my electromotograph telephone receivers.

The key normally short-circuiting the revolving circuit breaker, no impulses are produced in the induction coil until the key is depressed, when a large number of impulses are produced in primary, and by means of the secondary corresponding impulses or variations

This wire extends through an electromotograph telephone receiver, D, or other suitable receiver, and also includes the secondary circuit of an induction coil, F. In the primary of this induction coil is a battery, *b*, and a revolving circuit breaker, G. This circuit breaker is revolved rapidly by a motor (not shown), electrical or mechanical. It is short-circuited normally by a back point key, H, by depressing which the short circuit is broken and the circuit breaker breaks and makes the primary circuit of the induction coil with great rapidity. This apparatus is more particularly shown in Fig. 3.

In Fig. 2, I K are stations on land, having poles, L, supporting condensing surfaces, C, which may be light cylinders or frames of wood covered with sheet metal. These drums are adapted to be raised and lowered by block and tackle, and are connected by wires with earth plates through signal receiving and transmitting apparatus, such as has already been described.

In Fig. 5, M is a captive balloon having condensing surfaces C of metallic foil. The ground wire 1 is carried down the rope *c*, by which the balloon is held captive. In Fig. 4 three of these captive balloons are represented in position to communicate from one to the other and to repeat to the third, the curvature of the earth's surface being represented."

Several claims are made, but the principal one is the following:

"I claim as my discovery means for signaling between stations separated from each other, consisting of

an elevated condensing surface or body at each station, a transmitter operatively connected to one of said condensing surfaces for varying its electrical tension in conformity to the signal to be transmitted, and thereby correspondingly varying the tension of the other condensing surface, and a signal receiver operatively connected to said other condensing surface, substantially as described."

New Discovery of Clymenia.

John M. Clarke describes in the *American Journal* for January the fossil *Clymenia* discovered in the fauna of the intumescens zone (Naples beds) of Western New York. The ammonoid genus *Clymenia* Munster has not heretofore been found in North America. As early, however, as 1843, Professor Hall doubtfully referred to this genus, a fossil from the Portage shales, the *Clymenia* (?) *complanata*, and in 1862 redescribed the species without the mark of doubt, at the same time adding a new specific name, *C. Erato*, for a fossil from the same fauna. Subsequently these fossils were proved to be of the same species, and though the name *Clymenia* was still retained as late as 1876, it was finally and quite properly abandoned in 1879.

The present discovery of a true *Clymenia* in a lower Upper Devonian fauna containing *Goniatites intumescens* and various other primordial goniatites was unexpected and is of considerable geological importance.

AN OVERSHOE ATTACHING DEVICE.

An improvement designed to facilitate the securing of rubber or other overshoes in a rapid, convenient, and firm manner on the boots or shoes of men, women or children is represented in the accompanying illustration, and forms the subject of a patent issued to Mr. Joseph H. Morison, of Centralia, Kan. It is an attachment consisting of a pair of pivoted opposite lateral clamps, adapted to hug the upper heel-end portion of the overshoe, and jointed together at their inner ends by a vertical hinge pin passing through an intermediate or center plate firmly secured to the overshoe. The center plate has a backwardly protruding



MORISON'S OVERSHOE ATTACHMENT.

lug, through which and two side arms of a clamping lever passes a fulcrum pin. The side arms of this lever are practically cams, and as the lever is pressed downward against the heel of the shoe the arms press the clamping wings inward, making the heel-end portion of the overshoe bind on or grip the under boot or shoe, to prevent the accidental withdrawal of the overshoe or its slipping off in muddy or sticky roads. To put on or take off the overshoe the central member of the lever is turned up, releasing the pressure upon the clamping wings, but, in putting on the overshoe, a single motion of the clamping lever, made by either the hand or foot, locks the overshoe on the under boot or shoe.

A Proposed Ship Canal around the Falls of Niagara.

A bill has been introduced in Congress by Senator Davis, of Minnesota, for the construction of a ship canal around Niagara Falls which provides that the canal shall be built "along and upon one of the routes for a ship canal heretofore surveyed by the United States, if either of such routes shall be deemed feasible."

The report says: "Were this route open into Lake Ontario, vast numbers of lake steamers could and would descend to the Atlantic Ocean and there engage in the carrying trade in the winter months. That experiment has been repeatedly demonstrated beyond all doubt, and that, too, by vessels of less than six hundred tons burden. Ocean steamers as well as sail vessels could be constructed on the lakes cheaper than elsewhere, because all materials for construction as well as provisions are cheaper there than on the seaboard. This would at once solve the problem so long and anxiously sought after by statesmen as well as commercial men, to wit, revive commerce and cheapen transportation from the interior, so that our agricultural products could be carried to Europe at a profit, and there would no longer be a complaint of a languishing commerce."

THE "Physicians' Visiting List" for 1892, published by P. Blakiston, Son & Co., Philadelphia, besides the daily memorandum pages, contains much information useful to medical people.