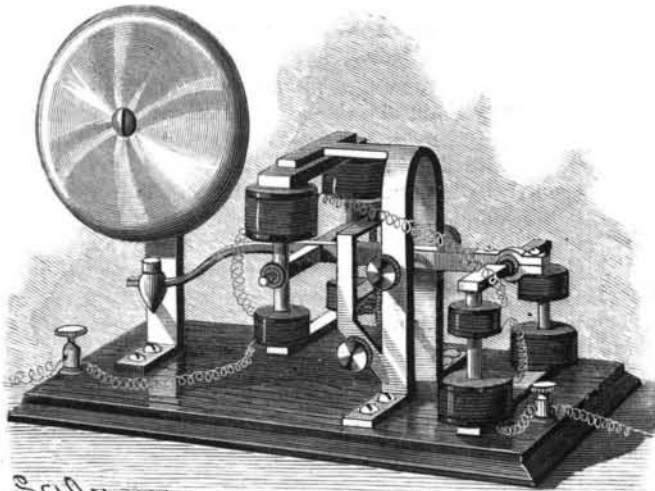


AN IMPROVED ELECTRIC BELL.

An electro-magnetic bell in which a long stroke of the bell hammer may be obtained, to produce an effective alarm without the employment of spring or weight mechanism, has been patented by Mr. William F. Stocker, and is illustrated herewith. Combined with a bell hammer lever, pivoted in a frame of special con-



STOCKER'S ELECTRIC BELL.

struction, are one or more electro-magnetic armatures and one or more helices adapted to receive the armatures within their coils, either the armatures or the helices being carried by the bell hammer lever. By providing a long stroke of the electro-magnet or polarized armature, a powerful blow of the hammer upon the bell is obtained, and as the device is designed for heavy work, it is desirable to place it in a local circuit provided with a strong battery, operating the local circuit by means of a relay.

For further particulars with reference to this invention address Mr. W. O. Van Arsdale, Burrton, Kansas.

ELECTRIC LIGHTING OF THE GREAT EASTERN.

The Great Eastern steamship, which played such an important part in the early days of submarine cable work, and whose career seems now to be at an end, says *Engineering*, recently fitted with a larger number of arc lamps than has hitherto been placed on shipboard. The vessel was chartered by Messrs. Lewis & Co., of Liverpool, for the purpose of exhibition and as a place of popular entertainment during the summer of 1886, and she has since, in other hands, been anchored in Gare Loch, at the mouth of the Clyde, fulfilling a similar purpose. The vessel is fitted with forty-five simple Jablochhoff arc lamps, thirty-nine of which are arranged on deck as shown by the illustrations, the remainder being between decks, lighting the forward tank, the ball room, the grand saloon, and the main deck, which is utilized as a theater.

The engine rooms have recently been lighted by electricity, one arc lamp being suspended in each. The vast improvement effected over the oil lamps originally used is much appreciated, as is the lighting of the ship generally. When lit up, the appearance of the vessel is very effective, and on board, the decks can be viewed as well as by daylight.

Fig. 2 shows the arrangement of the dynamos, of which there are three—Gramme type. They are placed two decks down, over the after end of the screw engine room. Two of the machines are capable of lighting twenty lights each, thirty-five to forty being the number generally in use at one time, while the third, which is in reserve, has capacity for ten lights. The engine used for driving the above is of the

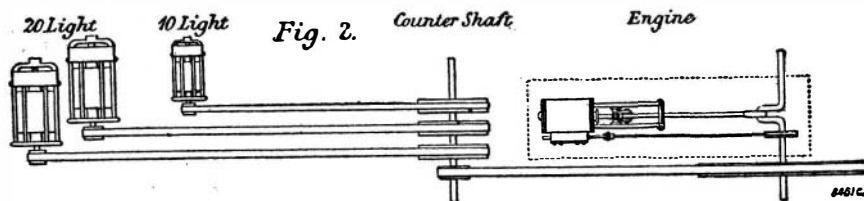
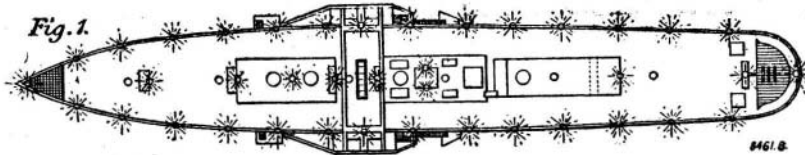
ordinary horizontal single cylinder non condensing type, and is supplied with steam power from a locomotive boiler.

The Atlanta.

The Philadelphia *Inquirer* says: "Those friends of the late John Roach, and their name is legion, who remained steadfast in their belief in his skill as a shipbuilder in spite of the persistent attacks made upon him in connection with the four vessels built for the government, have at last practical proof that their confidence was not misplaced. The Atlanta, the best abused ship of the quartet, has been put to a test which few vessels belonging to the navies of Europe would have come through so triumphantly. The Atlanta has been bumped ashore with more than ordinary violence. The fact of her having come off without cracking her plates or starting a rivet is a practical proof that John Roach put good material into his ships. The naval advisory board, which superintended the construction of the four Roach ships, has now orders to close up all work on those vessels, which shows that the government is satisfied that they meet the requirements of the service. One of the prognostications regarding the Atlanta was that 'if she touched the ground and the water only left her six inches, something would be sure to break, either a frame or a bracket plate, from the inherent weakness of her construction.' A great deal was made about the report of Captain Bunce regarding the inability of the vessel to stand the repeated shocks of the explosion of her heavy guns, but it was afterward proved that the slight derangement of some of the interior fittings after the firing was quite local and had nothing whatever to do with the strength of the exterior hull."

The Nearest Star.

The distances of the stars are ascertained in the same manner as those of the sun and planets; that is, by parallax. Instead, however, of taking two stations at different parts of the earth's surface, and laying down a base line between them, we take the diameter of the earth's orbit, or 183,000,000 miles, as the base; the observations being taken at intervals of six months. Even with this immense line, however, the parallax is

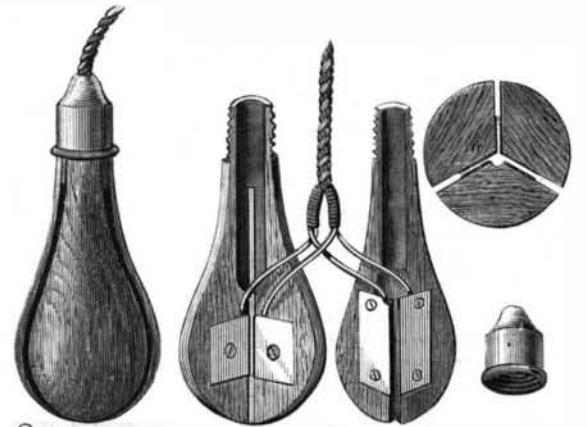


so small that it can only be detected by the most careful observations and accurate instruments. The parallax of about a dozen stars has now been ascertained, and is found to vary between 0.919 second and 0.046 second. The star α Centauri is the nearest to the earth, and its distance is estimated at 20,496,000,000

miles; while the average distance of stars of the first magnitude is probably three or four times as great as this.

AN IMPROVED ELECTRIC CIRCUIT CLOSER.

A pendent circuit closer, designed to close the circuit with certainty whenever it is grasped by the hand, has been patented by Mr. William F. Stocker, and is illustrated herewith. It consists of a handle of non-



STOCKER'S ELECTRIC CIRCUIT CLOSER.

conducting material divided longitudinally into three equal parts, each part carrying a plate connected with one of the electrical conductors, the smaller ends of the three sections being confined by a ferrule, so as to allow the free ends of the sections to spring when pressed by the hand. The central figure is a side elevation of the sections of the handle separated from each other to show their electrical connections, the small figure illustrating the ferrule, and another sectional view showing how angled metallic plates are fitted in the main part of the handle section, from which the conductors lead. The arrangement is such that when any two of the sections of the handle are brought together, the electric circuit will be closed between two of the angle plates, thus permitting of using this circuit closer without giving any attention as to how it is grasped in the hand.

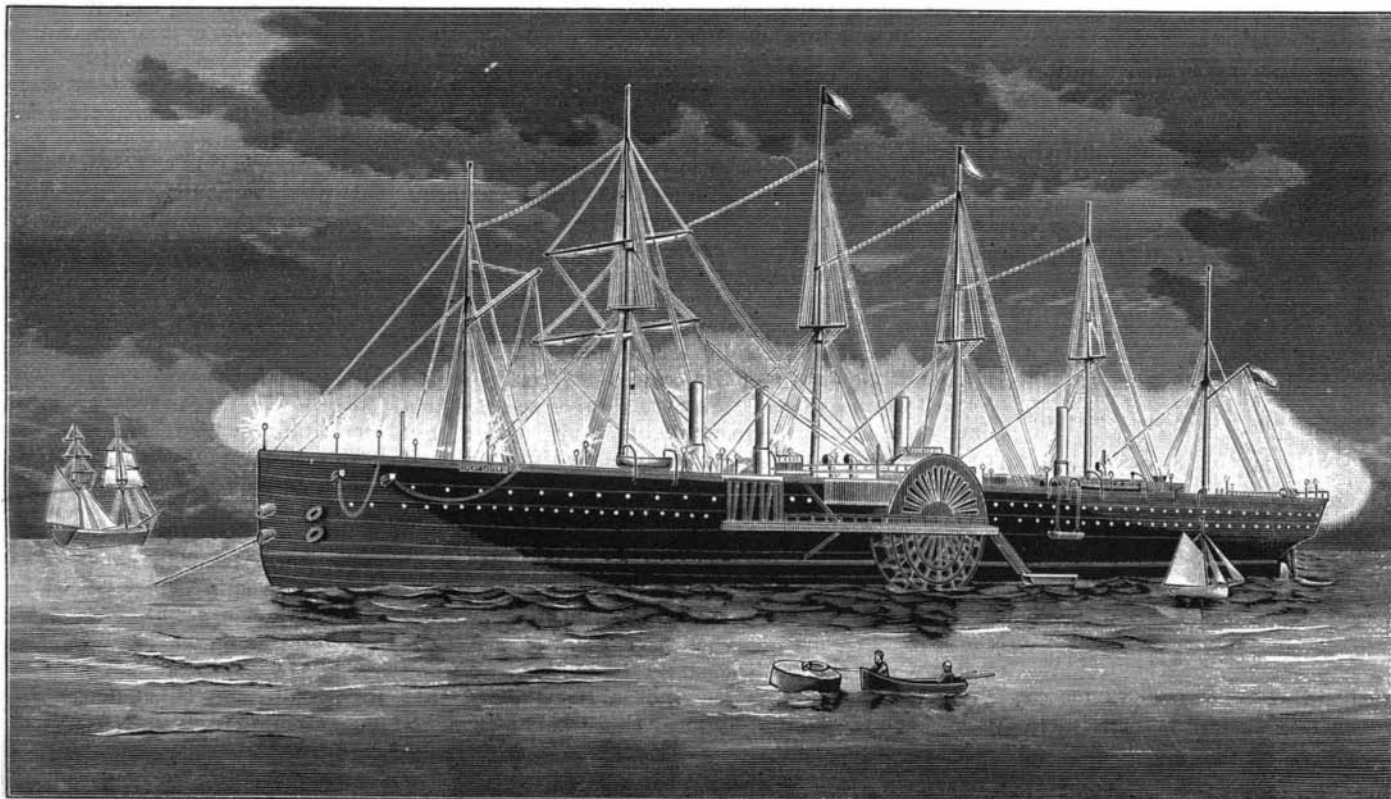
For further information relative to this invention, address Mr. W. O. Van Arsdale, Burrton, Kansas.

Heavy Guns Abroad.

In Europe all the very large cannon are wrought or built up, but we are trying the experiment of casting the steel gun whole, a very much cheaper and more expeditious process. One such gun has been cast in Pittsburg, and to all appearance it is a success, but it has not yet been tested. Should it stand the test of the trials, says the *Real Estate Record and Guide*, of this city, it will mark a great advance over Europe in the making of great guns. Our ordnance officers think that

the gun of the future will be made of aluminum bronze. It will be very much lighter, stronger, and cheaper than the steel gun. And then the bronze itself will have a far higher value than old steel. Aluminum, it must be remembered, is the metallic basis of all clay soils. This metal has some very remarkable properties. It is almost as light as glass, it does not rust, it is stronger than steel, and with alloy can be made to replace any of the other metals. It is not in universal use because of its great cost, but science is at work solving that problem. Its use for guns and firearms would revolutionize modern warfare.

MUCILAGE of acacia, made with acetic acid in place of water, makes a good liquid cement. It cannot be used for marble.



THE ELECTRIC LIGHTING OF THE GREAT EASTERN.