NEW GALVANOMETER.

Homeshoe magnets are stronger and more permanent than bar magnets on account of the proximity of the two poles, and they are more powerfully affected by the current. These considerations led M. Deprez to employ them in a gal-

vanometer, but on account of their form he was obliged to modify the galvanometer bobbin.

The accompanying engraving represents the arrangement adopted.

In the interior of the bobbin, E E, there are two small horse-shoe magnets, A B, B C, exactly alike, and joined together at B, with similar poles opposed to each other. Each magnet may be regarded as an aggregation of an infinite number of very small bar magnets, parallel to the line upon which the horseshoe mag-nets are joined. When the wire of the bobbin is traversed by the current these imaginary bar magnets tend to assume a position perpendicular to the plane of the bobbin. The advantages which result from this mode of construction

are :

1. A more energetic action that than which would be developed by a bar magnet of the same weight and construction as the two horseshoe magnets.

2. The inertia is very much reduced, and consequently the rapidity of the indications is greater.

3. It admits of greater inclination than the bar magnet without removing it from the influence of the bobbin-

This system suspended vertically by a filament or silk con-stitutes an apparatus superior in sensitiveness and rapidity to the ordinary galvanometer. It is easy to render it astatic, and its magnets may be made of sewing needles.

TESTS FOR WATER .- One of the readiest and simplest tests for ascertaining if water is free from organic pollution, is to cork up a small bottle nearly full of it, in which a piece of lump-sugar has been put. If by thus excluding the air, and letting it stand in the light for two or three days, there is not a milky cloud seen, but the water remains clear, it may be considered free from the phosphates with which sewage-water is impregnated. ascertain if water contains iron, take a glass of water and add to it a few drops of the infusion of nutgalls, or suspend a nut-gall in it by means of a thread for twenty-four hours. If the gain it by means of a tinteat for two of a dark brown or black color. Prussiate of potash is a still more delicate test for de-tecting iron. If a crystal, or a drop of it, when dissolved, be added to a glass of water containing iron, it will immediately become of a blue color. To ascertain if water contains magnesia, take a quantity of the water, and boil down to a twentieth part of its bulk, then drop a few grains of carbonate of ammonia into a small glass of water. No magnesia will yet be precipitated; but on adding a small quantity of phosphate of soda, if any magnesia be present, it will then make its appearance and fall to the bottom of the glass. In this experiment it is necessary that the carbonate of ammonia be in a neutral state.



SPEAKING TUBE ANNUNCIATOR.



M. DEPREZ'S NEW GALVANOMETER.

SPRAKING TUBE ANNUNCIATOR.

The engraving shows a novel speaking tube annunciator, in elevation and in section. The tube, A, enters the the box, B, and terminates behind the hinged drop, C. There may be several tubes and as many drops. Below the drop or series of drops there is a rocker, D, whose arms extend into the box, and are connected by a cord, E, with the trigger of the bell at the top of the box.

When a person in a distant portion of the building wishes to communicate with another who is within hearing distance of the bell he blows in the speaking tube, and the air current thus created being directed against the drop, C, at the other end of such tube, causes it to fall upon the outer bar of the rocker, D. The drop being constructed of a thick metal plate, and therefore heavy, tilts the rocker, as shown in dotted lines, so that it pulls on the cord. E, which, in turn, tilts the lever that raises the hammer, which is instantly released and allowed to fall upon the bell, which gives the required notice. The person thus called will, after responding to the message, close or replace the weighted drop in its upright position, and thus relieve the rocker, which, being released, returns automatically to its former position, and is ready for the next alarm.

This invention was recently patented by Mr. W. R. Ostrander. of New York city.

THE BROOKLYN BRIDGE.

The bridge which unites the cities of New York and Brooklyn is the lengest suspension bridge in the world. The length of its arch over the East River is 1,594 feet 6 inches; and its total length from the western extremity of its foundation in Chatham street, New York, to its eastern extremity on Sanda street, Brooklyn, is 5,987 feet. Its width is 85 feet, and the height of its floor above the water is 119 feet, while its height in the centre of the river is 135 feet. The height of each of the granite pillars is 276 feet 6 inches.

Its construction was begun in January, 1870, and the first wire was placed in May, 1877. The length of each wire of the four cables is 3,578 feet 6 inches. Each cable contains 286 wires, nearly 3.16ths of an inch in diameter. The weight of each cable is 42¹/₂ tons, and there are 19 girdles on each of the four cables. The resistance of each cable is 11,200 tons. The bridge will be ready for use in 1882. Its total cost will probably be about ten million dollars.