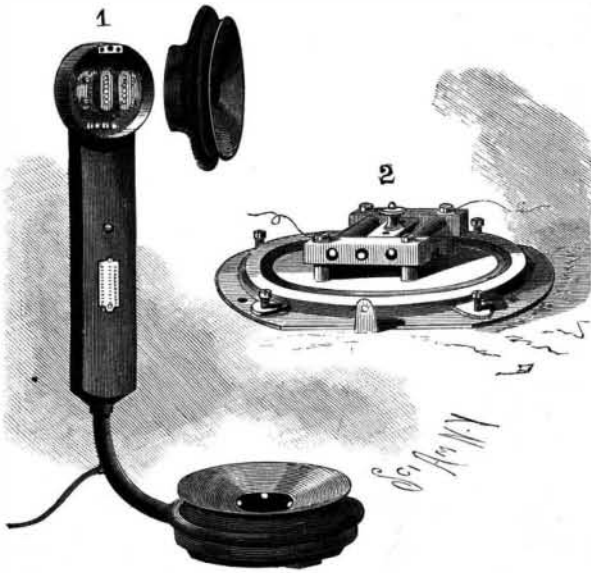


**IMPROVEMENTS IN TELEPHONES.**

Our engravings represent some new forms of telephonic instruments recently brought out by Mr. Eloy Noriega, of the city of Mexico, Mexico. In Fig. 1 is shown a combined telephone transmitter and receiver, in which the instruments are united in such a manner that while the transmitter is held to the mouth in position for receiving speech, the receiver will be pressed against the ear.

The receiver is provided with an iron diaphragm



**NORIEGA'S COMBINED TELEPHONE RECEIVER AND TRANSMITTER.**

which is acted upon by a U magnet concealed in the handle and provided with oblong pole pieces formed of short iron rods and surrounded by oblong bobbins. By means of this construction a powerful magnetic field is formed, which is sensitive to slight impulses, and therefore effective in reproducing sounds uttered in the transmitter.

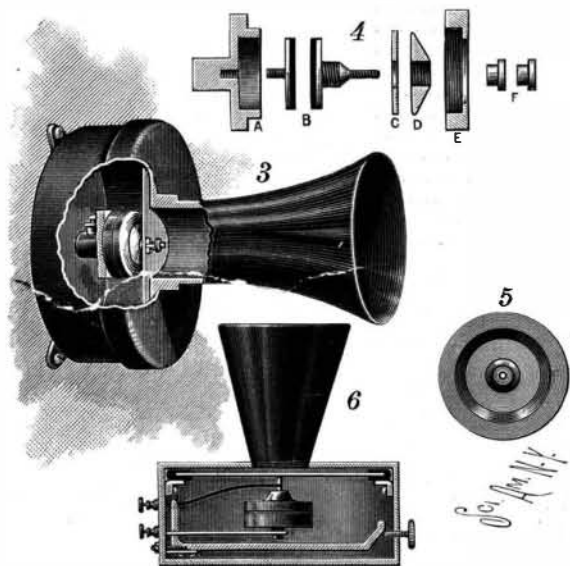
The transmitter used in this instrument is provided with a diaphragm of resonant wood, such as pine or spruce, with a covering of mica on opposite sides, and a binding of elastic rubber around the edge to protect the wood from moisture.

To the diaphragm are attached two perforated carbon bars, in which are loosely inserted the ends of two carbon rods. A cross bar inserted in the carbon bars between the carbon rods carries a brush of horsehairs or analogous material, which presses the carbon rods outward away from the diaphragm and into contact with the outer walls of the holes in the carbon bars, as shown in Fig. 2.

The carbon bars are connected up in the primary circuit of the local battery, and the receiver bobbins are connected with the secondary or line circuit.

The variations of resistance, due to the vibration of the carbon rods in the carbon bars carried by the diaphragm, causes pulsations which are reproduced in the receiver.

In Figs. 4 and 5 are shown two forms of transmitter employing a carbon button or granulated carbon placed between carbon or metallic disks, one of which is stationary, while the other is vibrated by the diaphragm when the instrument is in use. In Fig. 4 the



**NORIEGA'S MICROPHONIC TRANSMITTER.**

several parts of the button are shown in the order in which they are assembled, the carbon button or granulated carbon being placed between the disks, B. A side elevation of the complete button is shown in Fig. 5. In Fig. 6 the cell just described is supported by a spring attached to an adjustable lever secured to one side of the diaphragm cell and adjustable by a screw passing through the opposite wall of the cell.

The same lever carries a flexible spring, having at its free end a stud which rests upon the diaphragm and presses upon the center of the button. In each case

the disk adjoining the diaphragm is slightly movable, like a piston, in the cell in which it is placed.

The kind of carbon preferred by the inventor is that prepared by a peculiar coking process from anthracite coal. This instrument is designed for long distance work, and is constructed with a view to using heavy currents.

**Removal of Shops.**

General Manager Broughton, of the Chicago and Eastern Illinois Railway Company, has ordered the company's divisional shops at Brazil, Ind., torn down, preparatory to moving them to Momence, Ill. A committee of thirty business men called upon Mr. Broughton and requested that the shops be allowed to remain. He answered that he was simply carrying out the instructions of the company, the city and county authorities having refused the company protection. He bitterly censured the sheriff for appearing on the company's property when appealed to for protection wearing the strikers' white ribbon, and when deputies were asked for, swearing in strikers, who put oil cans filled with emery on the locomotives. He said that when non-union men appeared on the streets, they were assaulted and driven out of the city. He censured the mayor for fining a non-union man for carrying a revolver, when the man's life was threatened, and said the boarding houses and eating houses had refused to feed the men, and the company thought it best to remove the shops.

**AN ADJUSTABLE ELECTRIC LAMP HOLDER.**

The illustration shows a simple and inexpensive bracket device by means of which an electric lamp may be conveniently placed where desired, by simply being moved into position by the hand. It is made by the Faries Manufacturing Co., of Decatur, Ill. The smaller figure shows the simplest form of the device, another style having two arms and a bracket with eyes



**AN ADJUSTABLE ELECTRIC LAMP HOLDER.**

to slip over a three-quarter inch iron pipe, the curved section working in the outer end of a horizontally swinging arm. The combined length of all these sections is five feet, so that the lamp can be placed in any part of the space within a circle of ten feet. There are no screws to be manipulated in making any of the adjustments, except when moving the bracket up or down the post.

**Corea's Ancient Ironclad.**

Ensign George C. Foulke, U. S. N., who spent several years in Corea in charge of the American Legation at Seoul, in a report to the Navy Department in 1883, wrote regarding Corean strength at sea:

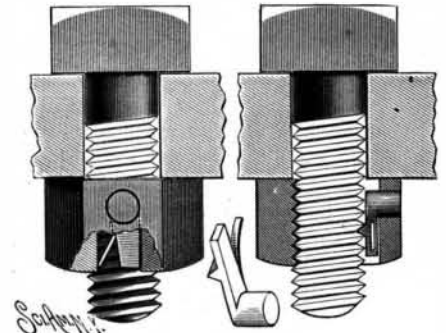
"The old navy consisted of junks, which were armed with grapnels, punching pikes, and small firearms. At present there are no vessels kept for war purposes at all. During the last war with the Japanese in 1619 an iron turtle-backed vessel was built by the Coreans and very successfully used against the Japanese wooden junks. From ports under the turtle-back grapnels were thrown on the Japanese junks, which were then capsized or sunk by having holes punched in them. This ironclad is still in existence at Yong Yong; it is one of the oldest, if not the oldest, ironclad in the world."

**Army Bicycles.**

The sum of 100,000 marks is included in the German army estimates for the present year for the supply of bicycles to the infantry. Two bicycles are assigned to each battalion. An instruction has been issued dealing with the bicycle service. Bicycles are to be used for communications between columns on the march and for communications between advanced guards. When troops are in quarters, bicyclists are to fulfill the functions of orderlies, especially where mounted orderlies are wanting. They will also relieve the cavalry from relay and intelligence duties. In great fortresses the whole of the duties now devolving upon cavalry as message bearers will be transferred to bicyclists.

**AN IMPROVED NUT LOCK.**

According to this improvement the nut may be turned freely to screw it up, but is prevented from unscrewing without stripping the threads from the screw bolt, making as strong a lock as the bolt will stand. It is a recently patented invention of Mr. Henry J. Van Nest, of Florence, Col. Two of the figures show different sectional views, while the small figure shows the key, which fits in a recess provided therefor within the nut. The key has a tongue-like piece running in the direction of the length of the bolt and having on one side a sectional portion of a screw thread fitting the screw thread on the bolt. The key is preferably made of steel, and is held in position, but so as to have a lateral swinging motion, by a lug entering a hole at right angles in the nut. Attached to and forming a

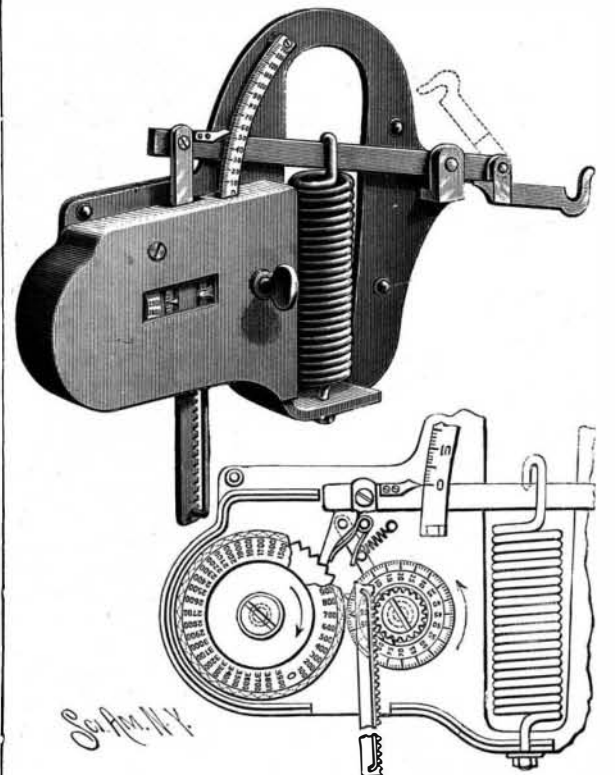


**VAN NEST'S NUT LOCK.**

side branch of the key is a spring, which causes the key to begin to act or start the friction of the key with the bolt.

**RANEY'S SELF-REGISTER FOR WEIGHING SCALES.**

The illustration represents an improved self-register, of simple and durable construction, which automatically registers the amounts weighed. It is shown as applied to a spring scale of any approved construction, although it may be readily adapted to lever and other scales, and one of the views represents an enlarged face view of the improvement with the casing cover removed. A patent for this invention has been granted to Mr. Oscar Raney, No. 101 Tyler Street, Topeka, Kansas. It is especially adapted for ice weighing and recording and all general weighing, at the same time not interfering with an account that is being kept, being readily attachable to one end of a refrigerator, or in some other convenient place about the premises. The end of the scale beam may be turned up out of the way, as indicated in dotted lines, and the beam is pressed on by a spring and has a pointer indicating on a scale the amount weighed. On the rear end of the beam is a downwardly extending rack, which engages a pinion turning loosely on the hub of an indicating wheel within the casing, the front face of this wheel being marked to indicate amounts weighed up to one hundred pounds, in such way that it may be seen through an opening in the casing. When it is desired not to register the loads weighed, the rack is thrown



**RANEY'S SELF-REGISTER FOR WEIGHING SCALES.**

out of mesh with the pinion by means of a key extending through the casing cover, whereby the registering mechanism may be at any time made inoperative, or again caused to register. In order to register more than one hundred pounds, the first registering wheel is connected with a second wheel, on which is a dial indicating hundreds and thousands, the pointer on the rack bar indicating on this dial as well as on the other, and so that the operator can at any time read the total amount registered from both dials through the opening in the cover casing.