

a magneto call, and for sounding signals at some distant point.

An alarm-bell is connected with the circuit of a local battery by the current generated by the magneto call, and continues sounding after the current of the magneto call has ceased.

*Bell, Magneto Call—Telephone Call*—A call-bell operated by currents generated by the rotation of an armature in a magnetic field.

*Bells, Relay*—Bells used in the early forms of acoustic telegraphs as employed in England with relay sounders.

The dots and dashes of the Morse alphabet were indicated by the sounds of a bell, a tap on one bell indicating a dot, and a tap on the other a dash. This system is now almost abandoned.

*Bias of Relay Tongue*.—A term to signify the adjustment of a polarized relay such that, on the cessation of the working current, the relay tongue shall always rest against the insulated contact and not against the other contact, or vice versa.

Sometimes, as in the split-battery-duplex, the bias is toward the uninsulated contact.

*Bi-Filar Winding of Coils*.—A winding of a coil of wire such that, instead of winding it in one continuous length, the wire is doubled in itself and then wound.

This method is employed in resistance coils, so as to avoid disturbing effects on neighbouring instruments.

*Binding Posts, or Binding Screws*.—Devices for connecting the terminals of an electric source with those of an electro-receptive device, or for connecting different parts of an electric apparatus with one another.

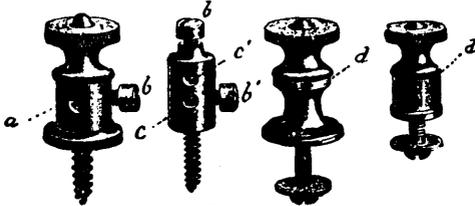


FIG. 52.

The conducting or circuit wire is either introduced in the opening *a*, Fig. 52, and clamped by the screw *b*; or is placed in the space, *d*, and kept in place by means of a thumb-screw. Sometimes two openings are provided at *c* and *c'* for the purpose of connecting two wires together.

*Bleaching, Electric*—Bleaching processes in which the bleaching agents are liberated as required by the agency of electrolytic decomposition.

In the process of Naudin and Bidet, the current from a dynamo-electric machine, is passed through a solution of common salt between two closely approached electrodes. The chlorine and sodium thus liberated react on each other and form sodium hypochloride, which is drawn off by means of a pump and used for bleaching.

*Blow-pipe, Electric*—A blow-pipe in which the air-blast is supplied by the stream of air particles produced at the point of a charged conductor by the convection discharge.

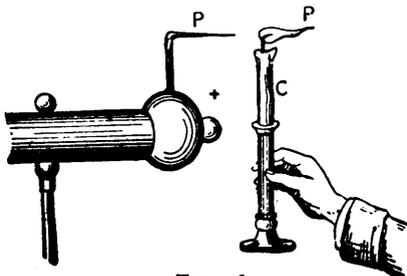


FIG. 56.

The candle flame Fig. 56, is blown in the direction shown by the stream of air particles passing off from the point *P*.

*Blow-Pipe Electric Arc*—A device of Werdermann for cutting rocks, or other refractory substances, in which the heat of the voltaic arc is directed by means of a magnet or blast of air, against the substance to be cut.

The carbons are placed parallel, so as to readily enter the cavity thus cut or fused. This invention has never been introduced into extensive practice.



FIG. 57.

As shown in Fig. 57 the voltaic arc, taken between two vertical carbon electrodes, is deflected into a horizontal position under the influence of the inclined poles of a powerful electro-magnet.

The highly heated carbon vapor that constitutes the voltaic arc is deflected by the magnet in the same direction as would be any other movable circuit or current.

*Board, Multiple Switch*—A board to which the numerous circuits employed in systems of telegraphy, telephony, annunciator, or electric light and power circuits are connected.

Various devices are employed for closing these circuits, or for connecting, or cross-connecting, them with one another, or with neighbouring circuits.

A multiple switch board, for example, for a telephone exchange, will enable the operator to connect any subscriber on the line with any other subscriber on that line, or on another neighbouring line provided with a multiple switch board. To this end the following parts are necessary :

(1) Devices whereby each line entering the exchange can readily have inserted in its circuit a loop connecting it with another line. This is accomplished by placing on the switch-board a separate *spring-jack* connection for each separate line. This connection consists essentially of one or two springs made of any conducting metal, which are kept in metallic contact but which can be separated from one another by the introduction of the *plug-key*, Fig. 58, the terminals, *a* and *b* of which are insulated from each other, and are connected to the ends of a loop coming from another line. As the key is



FIG. 58.

inserted, the metallic spring or springs of the spring-jack are separated, and the metallic pieces, *a* and *b*, brought into good sliding contact therewith, thus introducing the loop into the circuit.

(2) As many separate Annunciator Drops as there are separate subscribers. These are provided so as to notify the Central Office of the particular subscriber who desires a connection. Alarm-bells, to call the operator's attention to the calling subscriber, or to the falling of a drop, are generally added,