

Volt reducers.

When the city current is at hand in the laboratory, it is very desirable to use it for forks, spark coils, telegraph keys, etc. This cannot be conveniently done on account of the high voltage of the current which arcs across the keys, burns out the platinum contacts, etc. With a battery current HELMHOLTZ¹ used a zigzag of resistance wire connected in parallel with the cup of the tuning fork in which he wished to suppress the spark. This idea has been developed by our laboratory mechanician, J. J. Hogan, into an arrangement by which the dynamo current of high voltage can be manipulated just as a number of galvanic cells. With the cells the current is altered in potential and intensity by the use of more or less of them and by their arrangement in parallel, in series or in combination. With the volt reducer the amount of current drawn from the dynamo is regulated by incandescent lamps. This current passes to a pair of binding-posts by way of the apparatus in which the current is desired, and by way of one or more coils of wire. The particular arrangement of the coils depends on the insertion of various plugs. In this way the current drawn from the binding-posts can be made of any potential from 1 volt to 10 volts and of any intensity within the limits of the particular volt-reducer. The current acts under varying circumstances exactly like that of a battery of the same potential and internal resistance.

¹ HELMHOLTZ, *Die Lehre von d. Tonempfindungen*, 632, 3 ed., Braunschweig, 1877.