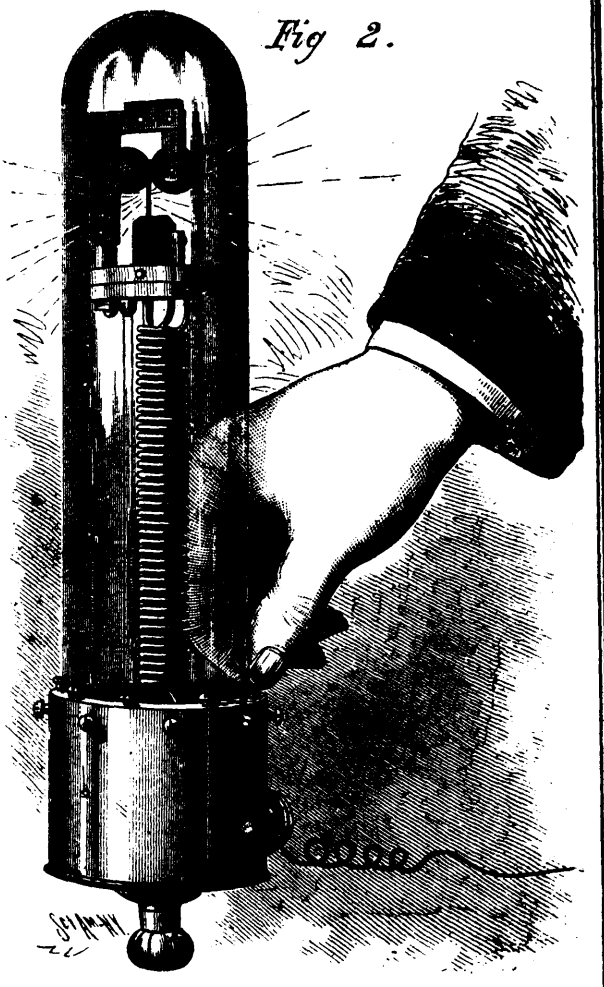
Fig. 3

EXHIBITION OF THE SAWYER ELECTRIC LIGHT.

Fig 2.



THE NEW SAWYER LAMP.

Scientific.

THE SAWYER ELECTRIC LIGHT.

The practical working of the Sawyer system of electric lighting was recently exhibited to a few gentlemen in an ordinary up-town residence on West 54th street, in this city. Seven lamps were distributed at convenient points—one in the rear of the hall, one upon the center-table as a drop light in the front parlor, two upon a double arm gas fixture of the ordinary pattern in the front parlor, and three in the rear. It is stated that the seven lamps are operated upon one electrical circuit, supplied by a single generator transferring four horse power. The current travels about 1,600 feet through conductors having a diameter of a quarter of an inch.

The lamp, based upon the incandescence of a pencil of carbon immersed in nitrogen gas, is in no way different in principle from the Bouliguine or the old Sawyer-Mann lamp exhibited some years ago. The pencil is contained within a globe two inches in diameter and ten inches high, sealed at the bottom by means of a cement, which, while adhering perfectly to the glass and metal, is sufficiently elastic to compensate for the unequal expansion of the two. It softens only at a temperature of 500° Fah. The globes are charged by the process invented some time ago by Thomas B. Stillman, which is so simple in its details and so rapidly operated that a single workman can prepare fifty lamps per hour at a cost of about thirty cents, in such a manner that, according to Stillman's calculation, the amount of atmospheric air remaining is only an infinitely small fraction of the normal quantity.

The large engraving on this page illustrates the manner of filling the lamps with nitrogen gas. Several lamps are placed upon a stand and connected one with the other, so that the gas that fills the last lamp in the series must pass through all of the others. In this manner the gas is made to do double duty. The nitrogen gas is generated by a process which is not made public. It is stored in gas bags, and when required for use it is forced through the purifying and drying tubes, A, sodium, B, and bottle, C, whence it is conducted by a flexible tube to the series of lamps on the table, D. The last lamp in the series is provided with a flexible tube dipping in water in the jar, E, to prevent the re-entrance of air to the lamps when the flow of nitrogen is shut off.

The sodium furnace, B, contains a wrought iron tube partly filled with melted sodium, through which the nitrogen is forced to remove traces of oxygen. The bottle, C, is simply filled with fiber to prevent small particles of sodium oxide from reaching the lamps. The cost of the nitrogen is stated at eight-tenths of one cent, and that of its purification as one and one-fifth cents; the total cost of recharging a lamp, when the nitrogen is exhausted or becomes mixed with air, being, inclusive of the wages of the workman, two and three-fifths cents, against a cost of seventy cents for the process usually employed. The carbon pencil, seven inches in length and about three thirty-seconds of an inch in diameter, is fed upward as fast as disintegration takes place at the point of contact, by means of a regulator, which will be substituted by an automatic feeder as soon as the arrangement can be perfected. Mr. Sawyer says that one of these pencils, used for five hours a day, will last at a minimum calculation from his experiments,