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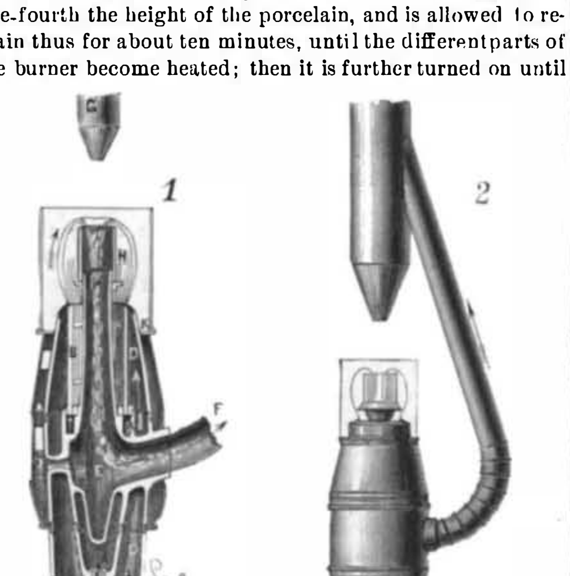
## THE SIEMENS REGENERATIVE GAS LAMP.

In the latter part of 1879, Frederick Siemens made the announcement that he had practically succeeded in greatly increasing the light to be obtained from ordinary coal gas, by what he called the regenerative process, through the superheating of the gas and the air which supported combustion. In a lecture delivered at that time, before the Prussian Society for the Promotion of Industry, he stated that the idea was then twenty years old with him, and was one of the results of experiments relative to heat-regenerative furnaces, which have done so much to change the old order of things in nearly all branches of metallurgical work. He then experimented but little on the gas lamp, as it "seemed impossible to properly supply the gas flame with heated air, owing to the supposition that double glasses or chimneys, one within the other, were necessary to bring the combustion gases and the fresh air together, and the inner glass could not withstand the heat." His later experience in regenerative furnaces taught him to abandon separate combustion chambers, and utilize the natural currents of gas and heated air, in a large oven, and then it naturally followed that the regenerative principle could only be applied to lighting purposes by taking advantage of the automatic motion of air, gas, and the products of combustion at different temperatures. The introduction of the electric light, with the call thereby created for burners of higher lighting power, and the close investigations made as to the relative economy of gas and electricity, led Mr. Siemens to return to the subject of his earlier experiments, and the present Siemens regenerative gas lamp is the result.

This lamp, in its present improved construction, is shown in Figs. 1 and 2, Fig. 1 showing the details of internal arrangement. The gas enters from a pipe at the bottom to the chamber, A, passing up thence through the small gas tubes, B, around the flue, E (through which the products of combustion escape), to a number of small burners, C, arranged around a porcelain chimney, H. Air enters at the bottom to the chamber, D, and is heated with the gas around the central discharge flue, so that the gas and the air to feed the flame meet at a high temperature at the point of ignition. Outside of the burner proper there is a jacket of sheet metal, I, between which and the burner a current of cool air ascends to prevent the overheating of the burner and also add to the supply of air to the flame.

The flue, F, connects the regenerative heating chamber with the chimney, as more fully shown in Fig. 2. The pipe, G, directly over the burner, to which the side arm is attached, is the outlet for vitiated products of combustion, the connection thence to be made to a chimney or flue, which gives this burner great advantages as a ventilator. The glass cylinder, K, around the top of the burner, is simply to protect the flame from the action of the wind. When lighting, the gas is first turned on slowly until the flame reaches about one-fourth the height of the porcelain, and is allowed to remain thus for about ten minutes, until the different parts of the burner become heated; then it is further turned on until

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the flame enters the porcelain cylinder about an inch, the gas and heated air naturally taking the direction indicated, and making the heat in this regenerative heating chamber, or discharge flue, E, as high as about 1,600° F. Any excess of gas beyond the quantity indicated interferes with the perfect combustion and diminishes the light.

The illustrations at the bottom of the page show the testing of the burners as set up at the factory, a burner as adapted for street lighting, and one of the styles suitable for lighting halls or assembly rooms. These lamps are made in sizes which enable them to compete on most favorable terms with some of the best electric lamps, running from 100 candle power to 1,200 candle power, the former burning 14 and the latter 100 cubic feet of gas per hour. Of the comparative economy of burning gas with these burners, the testimonials are very numerous, and from the best of sources, although it is only about four years since they were first put on the market in Europe. The illumination is said to be from two to three times greater, for the same quantity of gas used, than can be obtained by the ordinary burners, while the flame is white and remarkably steady, and the light is admirably diffused. This burner received the Richardson gold medal, as "an exhibit of pre-eminent merit," at the Sanitary Congress Exhibition in England in 1882, the London *Times* describing it as "saving 50 per cent of gas, and greatly lessening the unhealthy condition of the air in which gas is burnt." It has also received the warm indorsement of many leading firms throughout Europe, who have adopted its use in extensive manufactories.

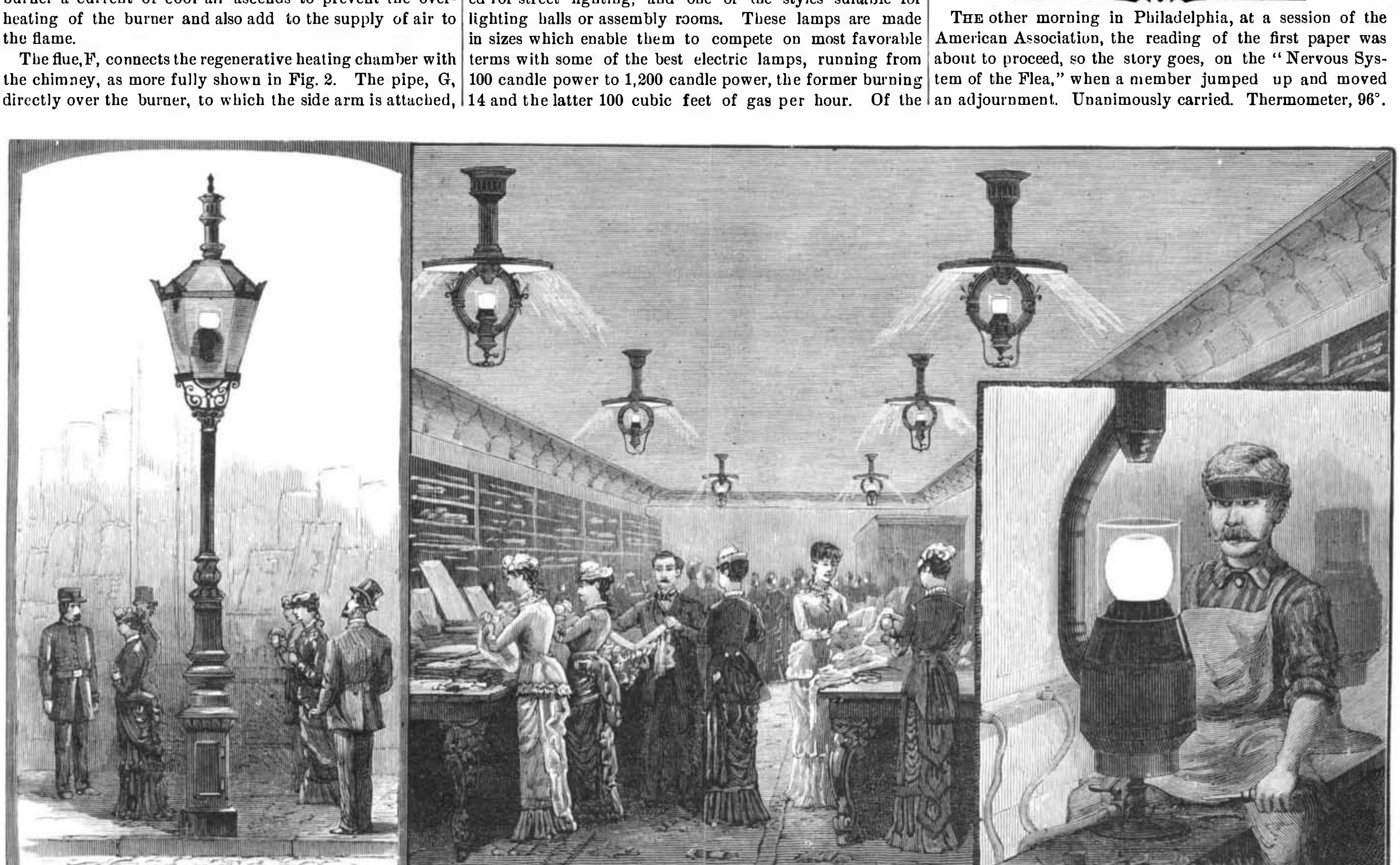
The Siemens Co. light the restaurant of the Electrical Exhibition, a room 40 × 96 feet, ceiling 19½ feet high, with six lamps 500 candle power each, at a cost of about 9 cents per hour. The light is soft and pleasant to the sight, and casts no shadows.

The sole right to manufacture and sell this burner in the United States has been acquired by the Siemens Regenerative Gas Lamp Co., of Philadelphia, who have recently fitted up an extensive factory for the manufacture at the northeast corner of Twenty-first Street and Washington Avenue, in that city.

### Soldering Aluminum.

M. Bourbourze (*Comptes Rendus*, xcviii., 1490) has found a means of soldering aluminum successfully. Hitherto the great drawback to the extended use of this metal in the arts and in scientific instruments, for many of which it is peculiarly fitted by its great lightness and resonance, has been the difficulty of making good joints. M. Bourbourze uses alloys of tin and zinc, or of tin, bismuth, and aluminum; but one of tin and aluminum yields the best results. The proportions of alloy vary with the kind of work it is intended for. For instruments which have to be turned or shaped after soldering, an alloy composed of 45 parts of tin and 10 of aluminum is most suitable. This will resist even hammering. Metal which it is desired to solder to aluminum should be first tinned with pure tin.

THE other morning in Philadelphia, at a session of the American Association, the reading of the first paper was about to proceed, so the story goes, on the "Nervous System of the Flea," when a member jumped up and moved an adjournment. Unanimously carried. Thermometer, 96°.



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