SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XXXIV.—No. 5. [NEW SERIES.] NEW YORK, JANUARY 29, 1876. [$3.20 per Annum. [POSTAGE PREPAID.]

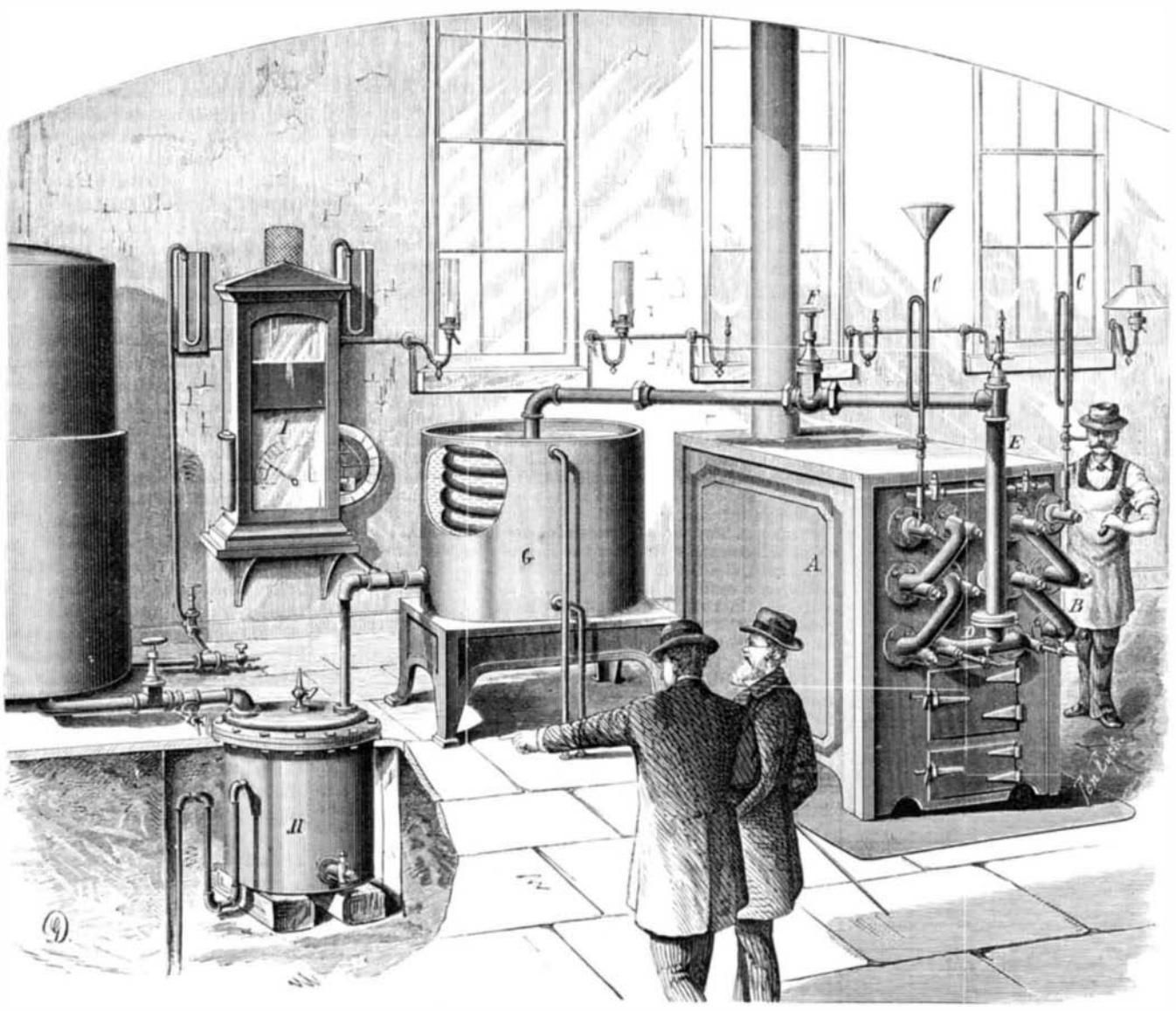
IMPROVED GAS APPARATUS.

The object of the invention herewith illustrated is to furnish private residences, country seats, hotels, railroad depots, and all large buildings with a cheap and efficient portable apparatus for the manufacture of illuminating gas. The engraving shows a front elevation of a complete gas works based on this system. A is the generator, which consists of a furnace and oven, made of a cast iron case and firebrick lining, in which are two series of three retorts each, contrived in a simple way, for graduating the heat to the different substances, according to the progress of the work. The retorts are made of cast iron, and can, it is claimed, be replaced at very little expense or labor. They are free from all danger of obstruction, and they can be used alternately for oil or steam, as desired; so that should the oil retorts, by any chance, become obstructed, the steam can be used to remove the obstacle immediately. At B are shown the outside connections of the retorts, and at C C the inlets for feeding the materials of which the gas is made. The outside connections of the two series of the retorts are at D, and at E is the standpipe, connected with the valve, F, which secures and shuts off the generator from the rest of the works. There is also a connection between the two upper retorts and the valves, between which is another connection leading by a T into the generator, for the purpose of blowing off (after the valve, F, is closed) the gas remaining in the retorts, after shutting down, by means of the superheated steam.

Inside the ash pit is a water pan for extinguishing any spark or coals which may fall through the grate bars, as a precaution against danger to the building if the generator is situated in one. By the pipe shown, connection is made with the cooler, G, from which there is a conduit to the drip box, H, in which any condensation is collected, and passed off directly to the sewer or drain pipe, by means of a self-acting seal. The gas from the drip box is led to the gasometer, and in the pipe is a valve to prevent any gas escaping back to the inlet pipe. Should any alteration or repair become necessary, this valve is closed, and the rest of the apparatus is disconnected without danger. The outlet pipe for distributing the gas, to the various pipes leading to rooms or streets, is also secured by a valve. Connected with the outlet is a branch pipe under seal, leading from the outlet to the drip box, to collect all condensation which has not before been gathered. Connected with the drip box pipe is a pressure gage which shows the pressure of the generator on the gasometer when manufacturing gas. There is also a pressure gage connected with the outlet, which shows the pressure carried by the gasometer. I is an improved jet photometer, by which the candle power of the gas is correctly shown at once. Test cocks are provided to test the hydrogen and carbon separately, and also to test them when mixed, as a fixed gas before cooling. This process, the inventor considers, may be adopted by large or small gas works throughout the country, with the result of producing better gas at less expense and with less labor. It requires but one man where ten are needed in the coal gas process. The inventor also claims the process to be absolutely and perfectly safe. There is no distillation or purification necessary; and during the coldest weather of 1875, the candle power was not in the least affected, and no condensation whatever found.

The apparatus needs no especial skill for its management, any ordinary laboring man being able to run it with perfect safety, after three days' experience. It can quickly be taken apart and put together, and it also occupies but small space, averaging about one fourth that required by a coal gas works of the same capacity.

Patented through the Scientific American Patent Agency, November 16, 1875, by Mr. John H. Eichholz For further particulars apply to Messrs. Eichholz & Green, 115 Freeman street, Brooklyn (E. D.), N. Y.



EICHHOLZ'S GAS APPARATUS.

Platinum and Iridium.

MM. Saint-Claire Déville and Debray have succeeded in preparing platinum and iridium in a state of purity hitherto unattained. They prepare platinum of a density of 21·5, and iridium of the still more considerable density of 22·4. Alloys of these metals have a greater density in proportion to the amount of iridium present. With 90 per cent of platinum and 10 of iridium, the density is 21·6; it reaches 22·38 if the iridium form 95 per cent of the whole.

Canal Steaming.

The use of steam on the Chesapeake and Ohio Canal is destined to increase the transportation facilities of that enterprise, and eventually make a larger quantity of Cumberland coal available. The Ludlow Patton recently made a round trip between Cumberland and Georgetown, including lockage, in four days and nineteen hours, said to have been the fastest time ever made on the canal. The owner of the Ludlow Patton claims that the simple and ingenious arrangement for submerging her propeller has conducted largely to her success. She has been running the entire season just closing, has consumed for fuel 4½ tuns of coal per trip, and the repairs to her motive power have thus far cost but 90 cents.

Mysterious Fires.

We are now arrived at a season of the year when fires are abundant, and mysterious fires especially so. The mystery of a fire is one of three kinds—the mystery of fraud, the mystery of carelessness, and the mystery of ignorance. The latter characterizes people of all ranks in life, and is, seemingly, as persistent as carelessness, and sometimes as culpable as fraud. For instance, how many people know precisely what a defective flue is? How many know anything about spontaneous combustion? How many know that hollow walls are actual flues, which have the power of carrying flames from the bottom of a house to the top, almost instantly? How many know that the heat of a stove, even when separated by some little distance from wood, will, in the course of time, so char it that a spark will fire it? How many know that, under favorable circumstances, fires will smolder for hours, ready to flash into actual flame when fanned by the opening of a door, or the slightest current of air caused in any manner whatever? In brief, how many know anything of a hundred and one circumstances that will cause mysterious fires, which a slight degree of practical knowledge might easily prevent?—*The Index.*

Working Men's Reading Rooms—One Result of Our Suggestion.

A few weeks ago we published a brief editorial about working men's reading rooms, suggesting that it would be an excellent idea to establish resorts of this kind in every village and town, and to furnish them with newspapers and other cheap reading and interest the men, while, at the same time, educating them and preventing their wasting their evenings in taverns and bar rooms. The seed we thus threw broadcast fell, in one instance at least, on fertile soil. At a recent meeting of a Good Templar's Lodge, in Plattsburgh, N. Y., a lady read our article, "little expecting," says the local journal, the *Plattsburgh Sentinel*, "that it would lead to any immediate practical result." The members, however, at once seized upon the idea; one, Mr. Thomas Armstrong, offered a room free of charge, and a committee was then and there appointed to carry out the project. The *Sentinel* says that a cheerful, well lighted, and well warmed room, well supplied with newspapers and other attractive literature, will be provided, and in every respect rendered a congenial and pleasant resort. We are very much gratified to learn of this result of our efforts, and congratulate the worthy Good Templars on their generosity and public spirit.

Sixty-Foot Rails.

The Edgar Thompson Steel Works have filled an order for 60 foot rails. Several advantages are claimed for rails of this length. They cost no more per pound than 30 foot rails; and as two crop ends are saved, the cost of production is considerably lessened—no way of using crop ends economically having yet been devised. The cost of laying is lessened; fewer fish plates, etc., are required; and as the hammering caused by the rolling stock in passing from rail to rail is lessened by one half, the wear and tear of rails and rolling stock must be greatly diminished. On bridges, also, the strain will be greatly reduced. The practical results of the use of these rails will be awaited with considerable interest. —*Chicago Railroad Review.*

HOW TO GROW FAT.—It is said that a pint of milk, taken every night just before retiring to rest will soon make the thinnest figure plump. Here is a simple and pleasant means by which thin, scraggy women may acquire plump, rounded figures.

A GOOD alloy for making working models is 4 parts copper, 1 part tin, and ¼ part zinc. This is easily wrought. Doubling the proportion of zinc increases the hardness.