A New Regenerative High Power Gas Lamp.

A regenerative gas lamp, which is claimed to be one of the most efficient, as it is certainly about the simplest of its order, has been perfected by Messrs. S. Chandler & Sons, of Kennington Oval. The "Chandler" lamp, as it is called, scarcely differs in general appearance from any of its congeners—the inverted-flame inclosed lamps, with air and, to some extent, gas heated on their downward course to the point of ignition by the ascending products of combustion. It has a similar central gas pipe surrounded by the same kind of chimney, rising out of the familiar enlarged semi-globular lamp body, closed at the bottom by the railway lamp glass. The flame also resembles in shape what has been seen before in more than one kind of recuperative lamp; being like an inverted mushroom. The most striking feature of the "Chandler" lamp is, however, the simplicity of the construction by which this now familiar phenomenon of the silent, steady, brilliant button of shadowless flame is produced. Strange as it may appear, the lamp has positively no burner at all. Other lamps of the genus have some sort of burner, generally of the Argand type, although the holes from which the gas issues may be made horizontally, upright, or reversed, in a steatite or metallic body. Considerable importance has always been attached to the shape and position of these burner holes, or of a slit which has been made to take their place, with reference to the form that has been imparted to the flame by these openings and by the direction and force of the current or currents of air by the aid of which the flame is sustained. All this has been suppressed in this new lamp. There is no burner, and consequently no holes—the gas supply pipe simply coming to an end at its appointed level in the body of the lamp; and the gas burning there without anything that can be called a burner tip to regulate its shape or direction, which depend wholly upon the influences of the gentle gas flow, the current of hot air, and the draught of the chimney upon the products of combustion.

As to the comparative duty of the "Chandler" burnerless lamp, we have no independent information. We can, however, vouch for its burning well with a good shaped flame, and its brilliancy as the result of recuperation is self-evident. It is claimed that the fact of the hottest part of the flame being at some distance from the actual end of the gas pipe is sufficient protection for the latter against undue waste or corrosion. In any case, the advantage of a lamp having no holes for gas smaller than will admit of a substantial rod for clearing out any deposit may be largely appreciated. The heat recuperator portion of the lamp is also of the simplest character and of most substantial construction. Altogether, the apparatus appears to be an addition of practical value to the fast increasing list of recuperative high power gas burners.—*Jour. of Gas Lighting.*

The Slide at Lake Zug.

On July 5, 1887, at the town of Zug, in Switzerland, a portion of the shore gave way and sank into the lake. About three hours later another much larger adjacent area also suddenly subsided, so that in all an area considerably over two acres, with half of one of the principal streets, was submerged to a depth of about 20 feet. It can be seen that the subsoil consists of coarse gravel and sand, followed after a few feet by soft, wet sand and fine mud. According to Professor Heim, this fine mud or sludge reaches to a depth of nearly 200 feet, and the disaster is shown to be due to a flowing out into the lake of this mobile sludge from under the superincumbent weight of buildings and firmer ground. The buildings collapsed as they sank. The catastrophe must have been long impending. The exact cause which precipitated it is undetermined, but a low level of the lake and tremors from pile driving for new quays are suggested as contributories.—*Geol. Mag., October*, 1887.

APPARATUS OF THE PARIS FIRE DEPARTMENT.

The steam fire engine used in Paris is of the Thirion type, and is always accompanied to a fire with a carriage that may be called its tender. This carriage (Fig. 1) carries 2,500 feet of hose, wound round two reels between the two hind wheels, a supply of coal, a number of hose couplings, and all the accessories of the engine.

Besides this, there is another carriage that serves for carrying quickly to a fire the first apparatus necessary and the men for maneuvering it. This carriage consists of a platform in front for an air pump and of a strong box behind for the reels. This box, which is surmounted by a chest and two benches, is supported by a cranked axle and two wheels of wider diameter than the ones in front. The horses are harnessed to whiffletrees, attached to a splinter bar, and the pole, being stationary, does not oscillate and thus fatigue the horses.

The carriage is provided with two hose reels and a pump, two scaling ladders, a life saving sack, a sliding ladder, a hook, and an air pump and fireproof suit, to allow of places being entered where the air is irrespirable. The carriage is provided also with a Trouve electric lamp, a miner's lamp, maps of Paris, and a memorandum book showing the location of the hydrants and the pressure and nature of the water at each. The carriage carries a foreman, three assistant foremen, twelve firemen and corporals, and a driver. Its total weight, when ready to go to a fire, is 7,313 pounds.

We do not present a figure of this carriage, since it looks so much like the tender shown in Fig. 1; but we must call attention to one of the most important apparatus that it carries, and that is the Paulin cellar-fire apparatus. This consists of a suit like that used by divers, which allows a fireman to enter a cellar in which the air has been rendered irrespirable by a conflagration. When it is a question of an ordinary fire, and the air of a room is filled with smoke, the firemen, by taking special precautions, manage to enter,

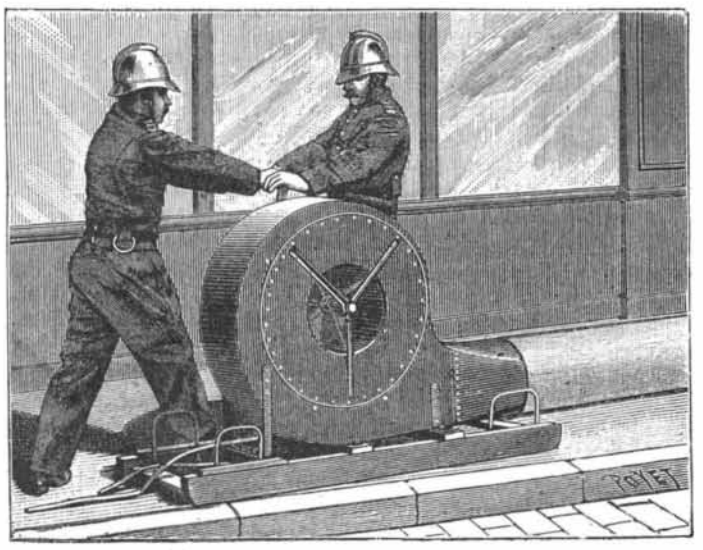

Fig. 3.—VENTILATOR.

but this cannot be done when a cellar is filled with illuminating gas or the products of combustion of sulphur, India rubber, and a number of other substances that furnish asphyxiating gases. In order to locate the fire in such a case, it is necessary to have recourse to the apparatus under consideration. The fireproof suit consists of a leather blouse, fastened at the waist and wrists with ligatures, and provided with a hood and iron mask. The air necessary for respiration is introduced through an aperture in the back of the suit, by means of a rubber tube of great length. The blouse is very roomy, and allows of great liberty of motion. Fig. 2 shows the method of using the apparatus. After the fireman has visited the room filled with deleterious gases, and has made known the seat of the fire, and the men have got the better of the latter, the air remains impregnated with gases that render the room inaccessible, and it becomes necessary to remove such gases, and substitute pure air for them. It is here that intervenes a new apparatus—a centrifugal force ventilator. This apparatus, which is carried on a push cart, consists of curved buckets which when set in motion suck in respirable air, and force it into a pipe of wide diameter that runs into the cellar. This ventilator discharges 14 cubic feet of air per second.

As the gases are generally hot and light, the air thus forced in easily replaces them. Were it a question of very dense gases, heavier than the air (carbonic acid gas for example), a special ventilator would be used, that of Enfer, which forces in air under pressure. As this apparatus is rarely used, we do not think it necessary to describe it.—*La Nature.*

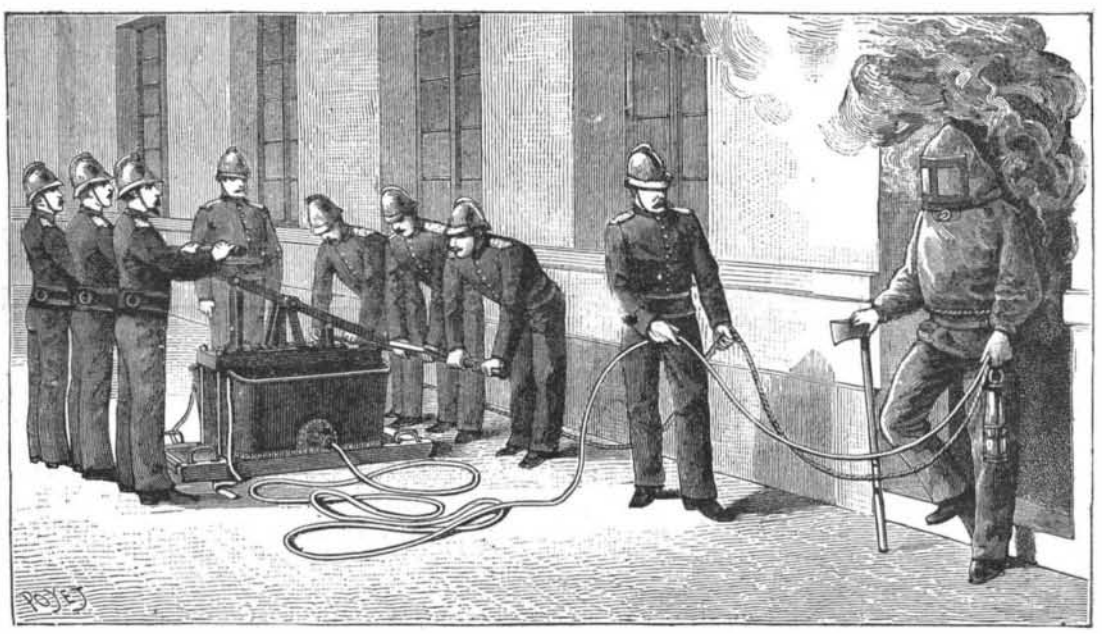

Fig. 2.—AIR PUMP AND FIREPROOF SUIT.

A CORRESPONDENT of the *Electrical Review* (London) furnishes the following table of the number of amperes required to fuse copper wires of various sizes:

B. W. G.	Amps.	B. W. G.	Amps.
30	21·84	36	7·72
32	19·25	40	4·58
34	15·44		

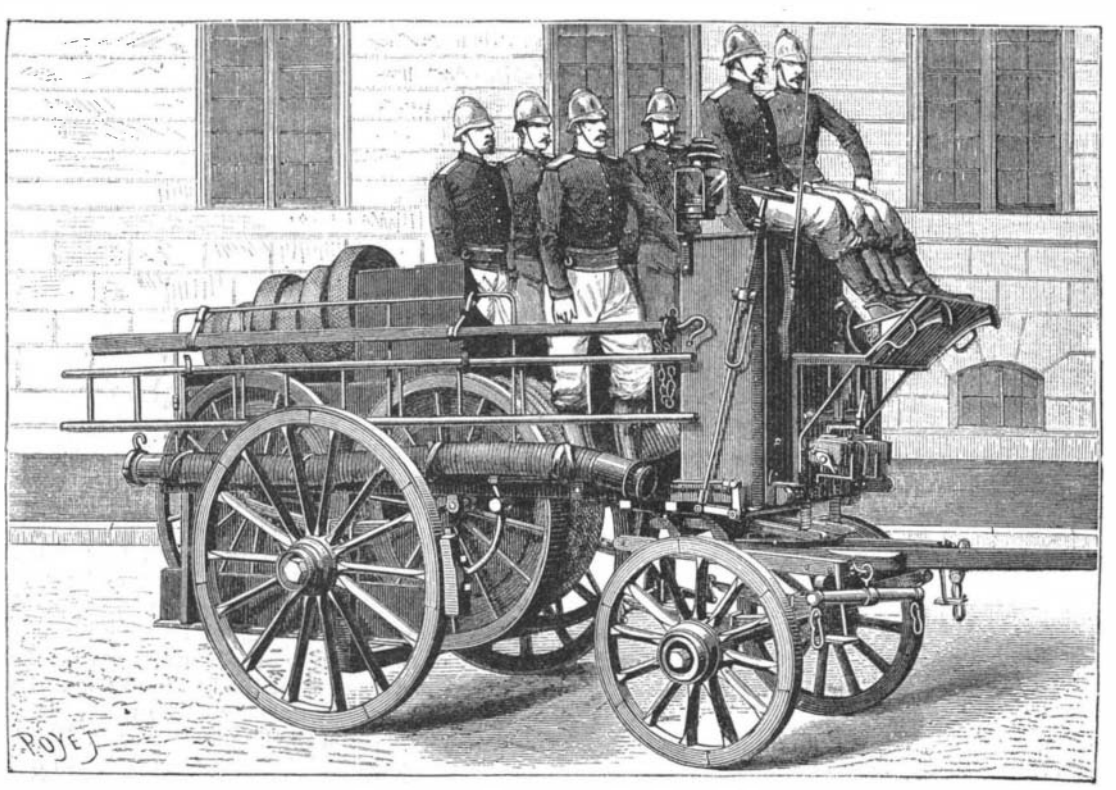

Fig. 1.—FIRE ENGINE TENDER.