Hand Pump for Dwellings, Manufactories, etc.

The peculiarity of form of this pump is noticeable; its simplicity of construction and directness of action are not less conspicuous. Fig. 1, of the accompanying engravings, shows the outward appearance of the pump as ready for use; and Fig. 2 is a vertical, longitudinal section, exhibiting the working parts. A is a cylinder open at both ends, having on two sides chambers, B and C, also open at both ends, all cast in one piece, and having heavy projecting flanges, as seen plainly in Fig. 1, to which are bolted the heads, D. Between the flanges of the heads and cylinder are introduced glands of thick rubber, which serve as packings. At the openings between the chambers and the heads, this rubber is cut on three sides, leaving the upper side uncut, thus forming flap-valves which are weighted with metal plates attached in the induction set, E, at the bottom, on sides opposite to those of the delivery valves, F, at the upper side of the cylinder. G, Fig. 2, is the inlet pipe; and H, both figures, is the pipe leading to the air chamber, I, from which the delivery pipe, J, is conducted. The upright lever, K, is used to work the piston. The stuffing-box, L, through which the piston rod moves, is provided with a lubricating receptacle to insure ease of working. The arrows, Fig. 2, show the direction of the current, and sufficiently explain the operation of the pump.

Fig. 1

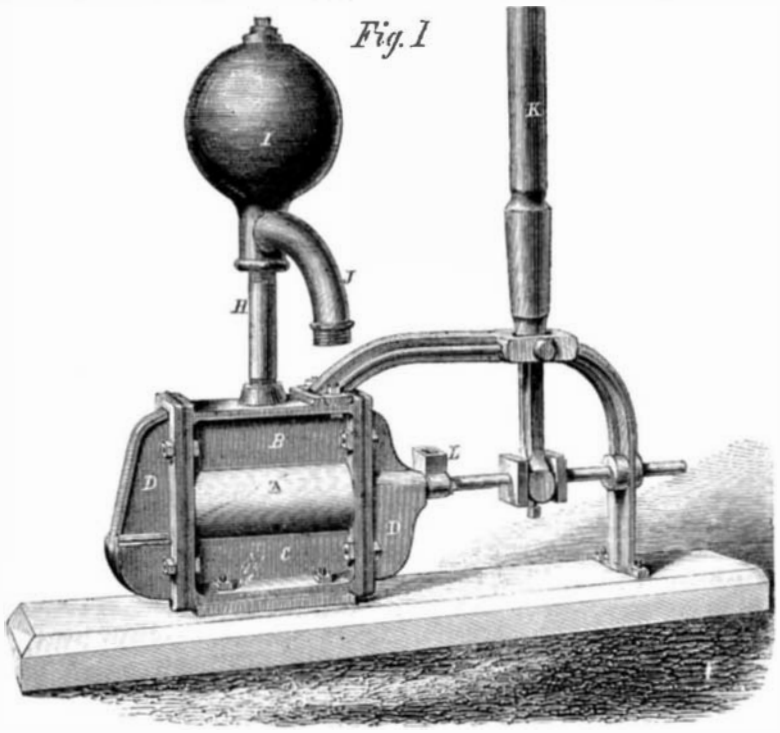
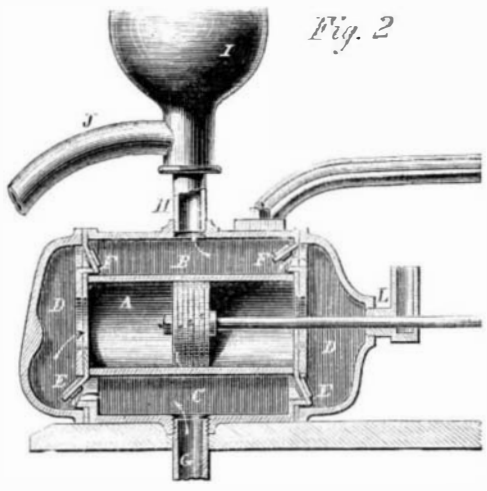


Fig. 2



VERNIAUD & LUCIE'S PUMP.

It is in use in dwellings and manufactories with satisfactory results. The inventor says that a hotel in Quincy, Ill., is using it, and the water is raised from cisterns and forced to the fifth story to be distributed over the house. It throws water seventy-five feet, easily, and is thus valuable as a means of putting out an incipient fire. It is evident, from its plan of construction, that it is easily worked, and is efficient in operation.

This pump was patented through the Scientific American Patent agency, August 20, 1867, by C. Verniaud, & D. J. Lucie, of Quincy, Ill., where they may be addressed for the sale of the right for the United States, excepting Illinois and Missouri, or for rights to manufacture and sell.

Miner's Patent Street Lamp.

It is singular that while so much attention has been given to new designs for chandeliers, pendants, brackets, etc., to be used indoors, but few attempts have been made to improve the appearance or increase the usefulness of our street lamps.

The pattern now used is the same employed ever since the first introduction of gas. The engraving, however, presents a view of an improved lamp for this purpose. Its beauty of form is apparent at a glance, and its superiority in other respects to the old style can be easily demonstrated.

It has a metallic dome of ornamental form, capped by a handsome chimney, the whole supported on four small rods of iron by which it is secured to the lamp post. The glass is made with an outward projecting flange at its top by which it is suspended in the dome. The dome projects beyond the glass to protect it from rain and snow, and the under side of this projection is painted or enameled white to better reflect the rays of light. The gas burner passes slightly through an aperture in the bottom of the glass and the gas is lighted through this hole. The dome is hinged on one side so that it may be turned over, exposing the glass for purposes of cleaning, etc.

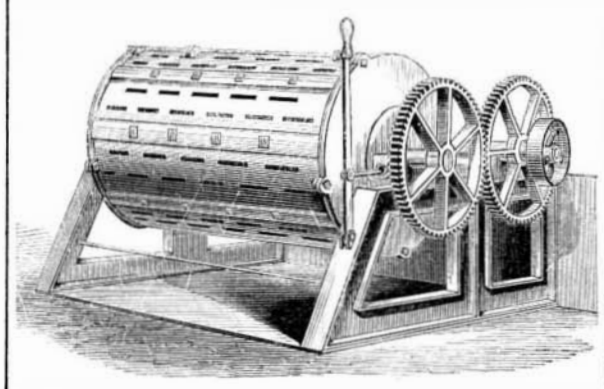
It is evident that this form of glass is stronger and is less liable to be broken by a blow than a flat pane, and it being globular will assist in dispersing the rays of light. No obstruction is offered the light except the slight rods which support the lamp. We should judge it might be furnished considerably cheaper than the lantern-like boxes now in use. Specimens may be seen lighting the entrances to the American Institute Fair, Fourteenth street, every evening, and they are to be on the Prospect Park in Brooklyn.

The lamps and State and County rights may be obtained of the inventor and manufacturer, J. G. Miner, Morrisania, Westchester Co., N. Y.

Horton's Improved Founder's Mill.

Founders, or molders, know what a trouble it is to separate the *debris* of the furnace, or, rather, the cupola; that is to separate the unfused portions of the metal from the fuel. For this purpose tumbling machines, or rotating cylinders, are used. Usually they are made of heads and staves, both of iron, and the apertures for delivering the unconsumed products of combustion are formed by openings made by cutting away in casting, a portion of the stave at what are judged proper distances, allowing these openings, which are made on the edges of the staves, to gradually enlarge. In mills so constructed, after using a short time, the staves become loose, the openings become wider, and, before long, "washing" has to be resorted to.

In the machine shown in the engraving the apertures for the escape of the dust—the *detritus*—are made through the staves themselves, and are contracted from the outside to the



inside of the staves, so that if the outside of the apertures are of sufficient area, the *detritus* may pass through them for a long time before the inside will be worn sufficiently large to necessitate a repair in the mill. This mill is built wholly of iron, and heavily geared, so that but little power is required to drive it. It was patented September 11, 1866, and gives excellent satisfaction wherever used. It is built by the Peekskill Manufacturing Company, who may be addressed at Peekskill, N. Y.

A New and Brilliant Light.

Some months ago Professor Frankland gave a particularly interesting series of lectures "On Coal Gas," at the Royal Institution, in the course of which he made some very important statements which, if corroborated by the results of future experiments, will revolutionize existing ideas as to the source of light in ordinary flames. Some of Dr Frankland's experiments are of the deepest interest, and deserve our attentive consideration as photographers.

In the course of his lectures Dr. Frankland soon falls foul of the generally received explanation of the source of light in the combustion of an ordinary gas flame. We all know that the prevailing idea is that the luminosity of the flame of common coal gas is altogether due to the liberation of solid particles of carbon in the flame and their subsequent ignition. The light, then, is the result of the incandescence of *solid* matter, and not of a gas. On the contrary, Dr. Frankland asserts that the luminosity of these flames is due to the ignition of *gaseous* and not solid matter. This novel view is supported by a number of very striking and important experiments, into the details of which we shall not now enter; suffice it to say that the learned Professor's object was in every case to obtain a highly luminous flame, which could not, by any possibility contain solid matter in a state of intense ignition. In pursuing this search he has been most successful, and found not only what he wanted, but has drawn attention to a method of producing a flame of high photographic power. This we have experimented with, and will now describe the method which we have found most suitable and convenient for its production.

When bisulphide of carbon is warmed so that it freely gives off vapor, and then is ignited, it burns with a pale blue flame, giving but very little light. If now a jet of the gas, which we obtain by the action of nitric acid on copper filings, be allowed to play through the burning vapor, a brilliant and intense bluish light is obtained, almost rivaling the magnesium light in power, but much more bearable by the eyes than the latter. We need scarcely remind our readers that the gas above alluded to is the peroxide of nitrogen, which is very easily made and preserved. We may now mention a method which we have found very useful for the production of the light on a very small scale.

A light bottle is taken, of about a pint capacity; it is fitted with a cork through which passes a glass tube. The latter is bent to a right angle a little above the cork, the free end is drawn out so as to form a tolerably fine jet, and this extremity of the tube for about four or five inches from the end is bent like the letter U, the jet looking directly upwards. The only other essential vessel is a test-tube or narrow beaker, into which the U-tube can easily dip. When we wish to procure the light, fragments of copper—either plate or wire—are placed in the bottle, and a mixture of one part strong nitric acid and two of water, poured in; the cork carrying the glass tube is then replaced, and the bent portion of the latter is allowed to dip into the little beaker, which has previously been placed in a vessel of warm water. As soon as gas comes off freely through the jet, some bisulphide of carbon is poured into the beaker. The hot water with which the latter is surrounded quickly vaporizes the bisulphide; when set fire to, this burns at the mouth of the beaker with its usual blue lambent flame, but from the gas jet, upwards, for an inch or more, according to the pressure, a brilliant cone of light arises, which is possessed not only of great illuminating power, but also of very considerable chemical energy. Of course this flame can be kept up until the gas ceases to be evolved from the copper and nitric acid, or until the bisulphide of carbon has been used up. It is necessary to observe that the current of gas should always be tolerably rapid, and the bisulphide well heated in order that the best effects may be obtained.

Bisulphide of carbon, when burning, gives off abundance of fumes of sulphurous acid, and it is advisable to have the vapors from the jet carried away by a little extemporized chimney. With this precaution there need be no trouble experienced.—*British Journal of Photography.*

Intensifying Negatives by Chloride of Gold.

Use a collodion with a good body; let the bath be perfectly free from organic matter, and make the iron developer with—

Sulphate of iron	20 grains.
Malt vinegar	60 minims.
Distilled water	1 ounce.
Alchohol	*quant. suf.*

I prefer malt vinegar to acetic acid, as by its use in the developer the latent image is brought out gradually, and with much greater intensity than with the usual formula.

If the above conditions be complied with, and the proper exposure given, a vigorous negative will in most cases be the result, requiring only a little intensification to fit it for the production of prints.

To make the gold solution, dissolve one grain of chloride of gold in a pint of distilled water, and keep this as a stock solution, from which pour a small portion into a small wide-mouthed bottle for use. After fixing and thoroughly washing the negative, allow it to drain for a few seconds; then, with a steady sweep, pour on sufficient of the gold solution to cover the plate. The color of the deposit will be observed to change from the grayish white of the iron-reduced silver to a slate color, increasing in intensity as the operation is prolonged. If great density be required, as in copying prints, etc., the solution may be used stronger. The same quantity may be used again and again, till its strength is exhausted.

If photographers will give this method a fair trial, pyro. and silver, bichloride of mercury, and the troublesome ferro-gelatine will soon be looked upon with but little favor, and the two former be reserved for extreme cases only. Among