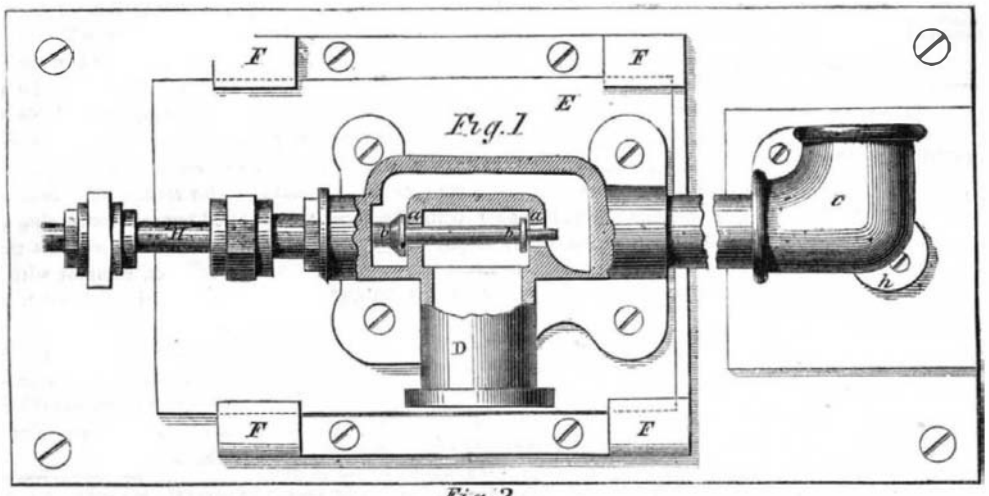
IMPROVED STEAM TRAP.

Since our people are determined to heat their rooms with furnaces, stoves, heaters or hot iron in some form, instead of the good old-fashioned glowing grate or crackling wood fire, with its cheerful blaze and exhilirating warmth, perhaps there is not one of these death-dealing devices less injurious than steam pipes. Indeed, there are many circumstances, such as large shops, counting rooms, &c., in which these pipes are the best of all modes of heating; at all events, from their economy and convenience, they are coming into very extensive use, and the perfection in their arrangements is being seized upon as affording a fine field for profitable invention. The radiation of heat from the surface causes a condensation of water in the portions of the pipes which are at a distance from the boiler, and unless the water resulting from this condensation were removed, it would fill the pipe and stop the circulation of the steam. Several plans have been devised for removing this water automatically, the apparatus being called a steam trap.

The annexed cuts represent a steam trap which is not a modification of any old plan, but an entirely original and novel invention. It consists of a long pipe, with one end fixed, and the other free to move back and forth with the expansions and contractions of the metal resulting from changes of temperature, a stationary valve stem working through the free end of the pipe, so arranged as to close the valve when the pipe is heated by being filled with steam, and to open it when the pipe is sufficiently cool to condense it into water.

The stationary end, C′, Figs. 1 and 2, of the long pipe is rigidly secured to the ceiling or wall of the room, while the board, E, which supports the free end, is suspended by hangers, F F F F, in a horizontal position, so that it may slide back and forth. The valve stem, H, is fastened at its outer end to a hanger depending from the ceiling, while its opposite end passes through a stuffing box into the free end of the pipe and carries the valves, *b b*. The enlargement, C, upon the long pipe serves as a valve chamber, and the water of condensation passes out through the waste pipe, D. It will be seen that, when the pipe is expanded by being filled with steam, the valve seats, *a a*, will be carried forward against the stationary valves, *b b*, and the escape of steam prevented, but when the pipe is sufficiently cooled to condense the steam into water, it will be shortened by this reduction of its temperature, and the valve seats will be drawn away from the valve allowing the water to flow out.

The patent for this novel invention was procured, through the Scientific American Patent Agency, on August 28, 1860, and further information in relation to it may be obtained by addressing the inventor, Nehemiah Upham, at Norwich, Conn.



UPHAM'S IMPROVED STEAM TRAP.

A NEW ELECTRIC LIGHT.

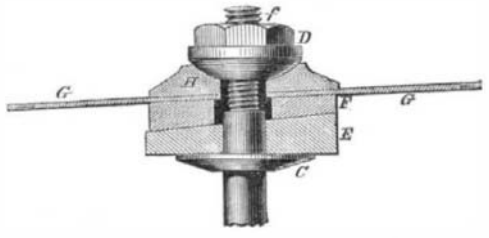
Professor Way, of London, has recently invented an electric light which appears to have more of the elements of practicability than any heretofore proposed. The light is steady, constant, agreeable to the eye, may be exhibited under water as well as in the air, and there is no consumption or derangement of material except of that which is a part of the battery. Moreover, the electricity may be generated by the magneto-electric machine, and possibly by the ordinary friction machine, so that the cost of the light may be determined simply by the cost of mechanical power. In short, it appears as if we may some day employ our steam engines, in the manufacture of light, with as much certainty and profit as in the manufacture of cloth or iron.

This new light is produced by simply sending a current of electricity through a stream of mercury, falling vertically. As the mercury falls, it breaks up into an infinity of small globules, between which bright sparks constantly pass, and these sparks are so small and so close together that the light appears solid and homogeneous. Also, when a battery of quantity is employed, the mercury is greatly heated and vaporized; and it is said that in this way the light is further increased. In the working apparatus there are two reservoirs of mercury, one above the other; and when nearly all the mercury has descended, it is forced up again, or the apparatus is turned over, so that the lower reservoir shall become the upper. These reservoirs with the mercury are hermetically sealed in a glass vase or globe, so that no mercury is lost, and its poisonous fumes cannot get into the air.

We understand that some gentleman in this city are repeating and modifying Professor Way's experiments, and if anything useful should be developed, our readers will be informed at the earliest moment.

IMPROVED GROOVING SAW.

All owners of shops in which circular saws are used will probably find it to their interest to procure the nut and washers here illustrated, for adjusting the saw at any desired angle with the mandrel, for the purpose of cutting grooves in boards or timber of any desired width.



They were invented by Amos D. Hughfield, and have been extensively used in the city of Philadelphia, where they have given universal satisfaction; being recommended in the very highest terms by the leading workers in wood in that city.

Two beveled washers, E and F (Fig. 1), are fitted loosely on the spindle, resting against the collar, C. Upon the opposite side of the saw, G, is the plain washer, H, having a concave recess in its outer side, into which fits the convex surface of the nut, D. The saw is adjusted to the desired angle with the spindle by turning the washer, F, upon the washer, E, and the washer, H, is sufficiently loose upon the spindle to follow the saw, adjusting its inner surface to the outer surface of the saw when the nut, D, is screwed home, securing the several parts in their places. The washer, F, is graduated on its periphery, and the washer, E, has a notch to serve as an index, so that the saw may be accurately adjusted to cut a groove of any desired width.

A striking evidence of the accuracy required in machinery running at high velocity is furnished in the necessity—discovered by experiment—of balancing the weight of the beveled washers upon opposite sides of the axle. This balancing is effected by simply drilling holes through the washers on the thicker side, so as to remove the proper portion of the material.

The patent for this invention is now owned by William H. Harrison, who may be addressed, either for the washers or for any further information in relation to the matter, at No. 705 Jayne-street, Philadelphia.

COLORED LIQUIDS.

The gradual decoloration of colored alcohol in thermometers, by the influence of light and the precipitation consequent on the chemical change produced, is doubtless of importance to the druggist, anxious for the showy appearance of his windows. The following remarks will therefore be read with interest and benefit:—Solutions of various salts or metals in hydrochloric acid are, some of them, of very great intensity and beauty. Thus, a yellow liquid is obtained by dissolving 3 parts of perchloride of iron, or hydrated peroxyd, in 100 of hydrochloric acid: the color may be heightened by adding some some hydrated oxyd. Various colors are produced with the solution of protocarbonate of cobalt in hydrochloric acid. The salt of cobalt used must be chemically pure, especially free from iron or nickel, which would prevent or neutralize the formation of the blue and red shade. The green cobalt color is obtained by dissolving 3 parts of the protocarbonate in 100 parts of the acid, and filtering. By the addition of a few drops of the above yellow liquid the color is deepened, and loses the bluish tinge. A blue color is prepared by dissolving 6 parts of the protocarbonate of cobalt in 100 parts of the acid, and boiling for about two minutes to remove the carbonic acid or chlorine held in solution. Neither of the above two colors should be diluted with water, as this would change them to red. The violet color is obtained by dissolving 34 parts of the protocarbonate of cobalt in 100 parts of the acid, mixed with 5 of water, and boiling up before filtering. A very fine red liquid is obtained by dissolving 45 parts of the protocarbonate of cobalt in 100 parts of acid, diluting with 45 parts of water, and boiling. All the cobalt colors change by heating the solutions, which gives them more or less a blue tinge; but, on cooling, this gives way to the color intended. The solution of carbonate of chromium in hydrochloric acid (chloride of chromium), evaporated until it becomes hard on cooling, and dissolved in alcohol (90 p. c.) in the proportion of 25 parts of the salt and 100 of the spirit (to which are added 5 parts of acid), furnishes a fine deep green. Four parts of crystalised acetate of copper, dissolved in a mixture of 50 parts of aqua ammoniæ and 50 of 90 p. c. alcohol, give a durable blue.

A Belgian named Stipheen, of Ghent, has made a discovery which may be of some utility; it is, that the rusting of nails employed to fasten the branches of fruit trees to walls can be prevented by knocking into the wall at the same time as the nail a small piece of zinc. In giving an account of his discovery to the Agricultural Society, of Ghent, M. Stipheen produced nails which had been eight years in walls in contact with a piece of zinc, and which were not at all rusty.