

**THE SAWYER ELECTRIC LIGHT.**

The practical working of the Sawyer system of electric lighting was recently exhibited to a few gentlemen in an ordinary up-town residence on West 54th street, in this city. Seven lamps were distributed at convenient points—one in the rear of the hall, one upon the center-table as a drop light in the front parlor, two upon a double arm gas fixture of the ordinary pattern in the front parlor, and three in the rear. It is stated that the seven lamps are operated upon one elec-

trical circuit, supplied by a single generator transferring four horse power. The current travels about 1,600 feet through conductors having a diameter of a quarter of an inch. The lamp, based upon the incandescence of a pencil of carbon immersed in nitrogen gas, is in no way different in principle from the Bouliguine or the old Sawyer-Mann lamp exhibited some years ago. The pencil is contained within a globe two inches in diameter and ten inches high, sealed at the bottom by means of a cement, which, while adhering perfectly to the glass and metal, is sufficiently elastic to compensate for the unequal expansion of the two. It softens only at a temperature of 500° Fah. The globes are charged by the process invented some time ago by Thomas B. Stillman, which is so simple in its details and so rapidly operated that a single workman can prepare fifty lamps per hour at a cost of about thirty cents, in such a manner that, according to Stillman's calculation, the amount of atmospheric air remaining is only an infinitely small fraction of the normal quantity.

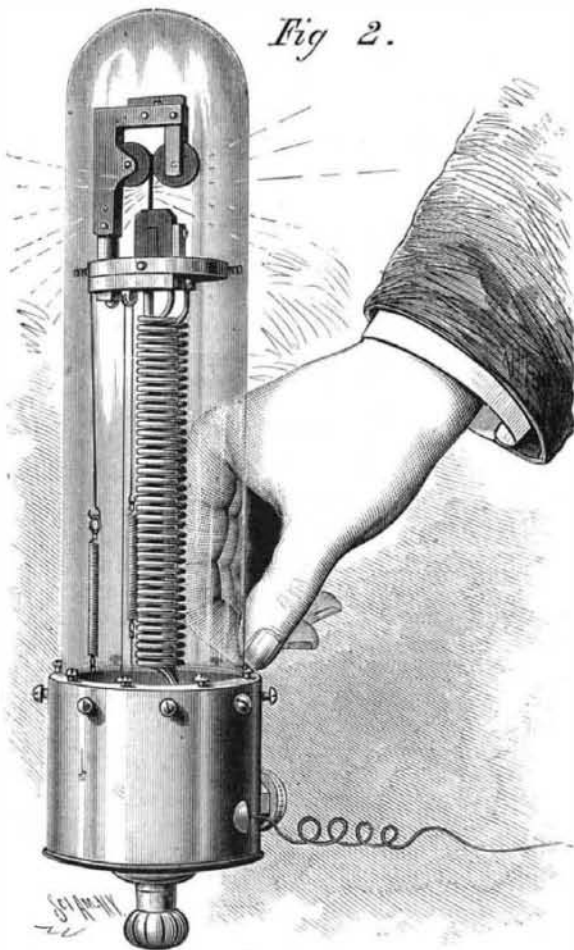
The large engraving on this page illustrates the manner of filling the lamps with nitrogen gas. Several lamps are placed upon a stand and connected, one with the other, so that the gas that fills the last lamp in the series must pass through all of the others. In this manner the gas is made to do double duty. The nitrogen gas is generated by a process which is not made public. It is stored in gas bags, and when required for use it is forced from the bags by heavy weights through the purifying and drying tubes, A, sodium, B, and bottle, C, whence it is conducted by a flexible tube to the series of lamps on the table, D. The last lamp in the series is provided with a flexible tube dipping in water in the jar, E, to prevent the re-entrance of air to the lamps when the flow of nitrogen is shut off.

The sodium furnace, B, contains a wrought iron tube partly filled with melted sodium, through which the nitrogen is forced to remove traces of oxygen. The bottle, C, is simply filled with fiber to prevent small particles of sodium oxide from reaching the lamps. The cost of the nitrogen is stated at eight tenths of one cent, and that of its purification as one and one fifth cents; the total cost of recharging a lamp, when the nitrogen is exhausted or becomes mixed with air, being, inclusive of the wages of the workman, two and three fifths cents, against a cost of seventy cents for the process usually employed. The carbon pencil, seven inches in length and about three thirty-seconds of an inch in diameter, is fed upward as fast as disintegration takes place at the point of contact, by means of a regulator, which will be substituted by an automatic feeder as soon as the arrangement can be perfected. Mr. Sawyer says that one of these pencils, used for five hours a day, will last at a minimum calculation from his experiments, not less than ninety days, and, at a maximum, for two years. The cost of the pencil is a trifle less than two cents, and the cost of replacing and recharging with nitrogen nine and three fifths cents. The bag of sodium and the large spiral conductors at the base of the carbon, which were distinguishing features of the Sawyer-Mann lamp exhibited about a year ago at No. 94 Walker-street, have been discarded. Two small steel rods take the place of the latter. The globe, which is not unlike the chimney of an ordinary kerosene lamp in general appearance, is embedded in a nickel-plated base, which may be

highly ornamented or not, according to the taste or means of the user.

Photometric tests, it is said, have been made with a Sugg photometer, such as is used by the gas companies for the same purpose, and each light was registered as equal to twenty-seven and five tenths standard candles, or a little more than twice the value of a five-foot gas burner, which usually registers from ten to twelve standard candles.

Mr Sawyer claims that his system of distribution is en-

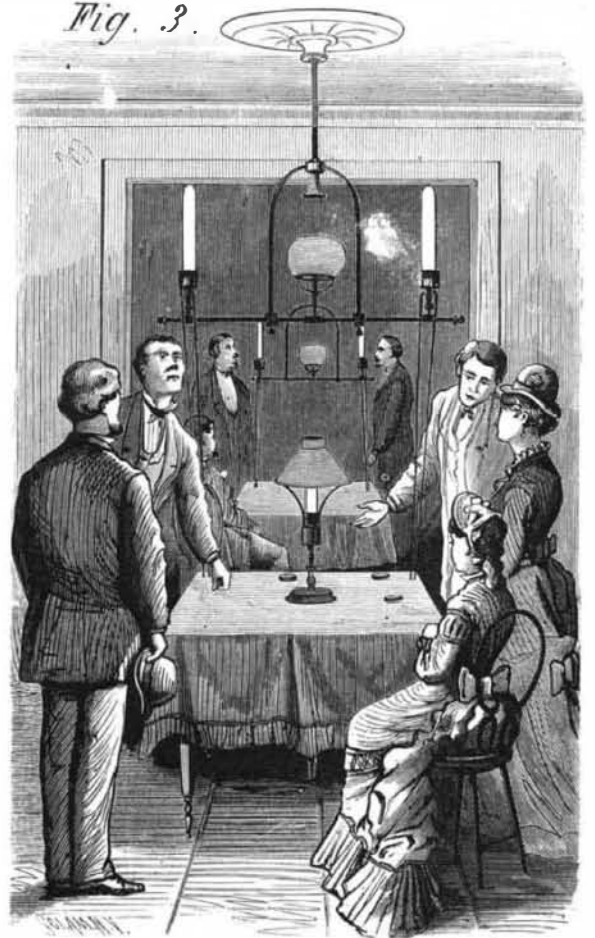


**THE NEW SAWYER LAMP.**

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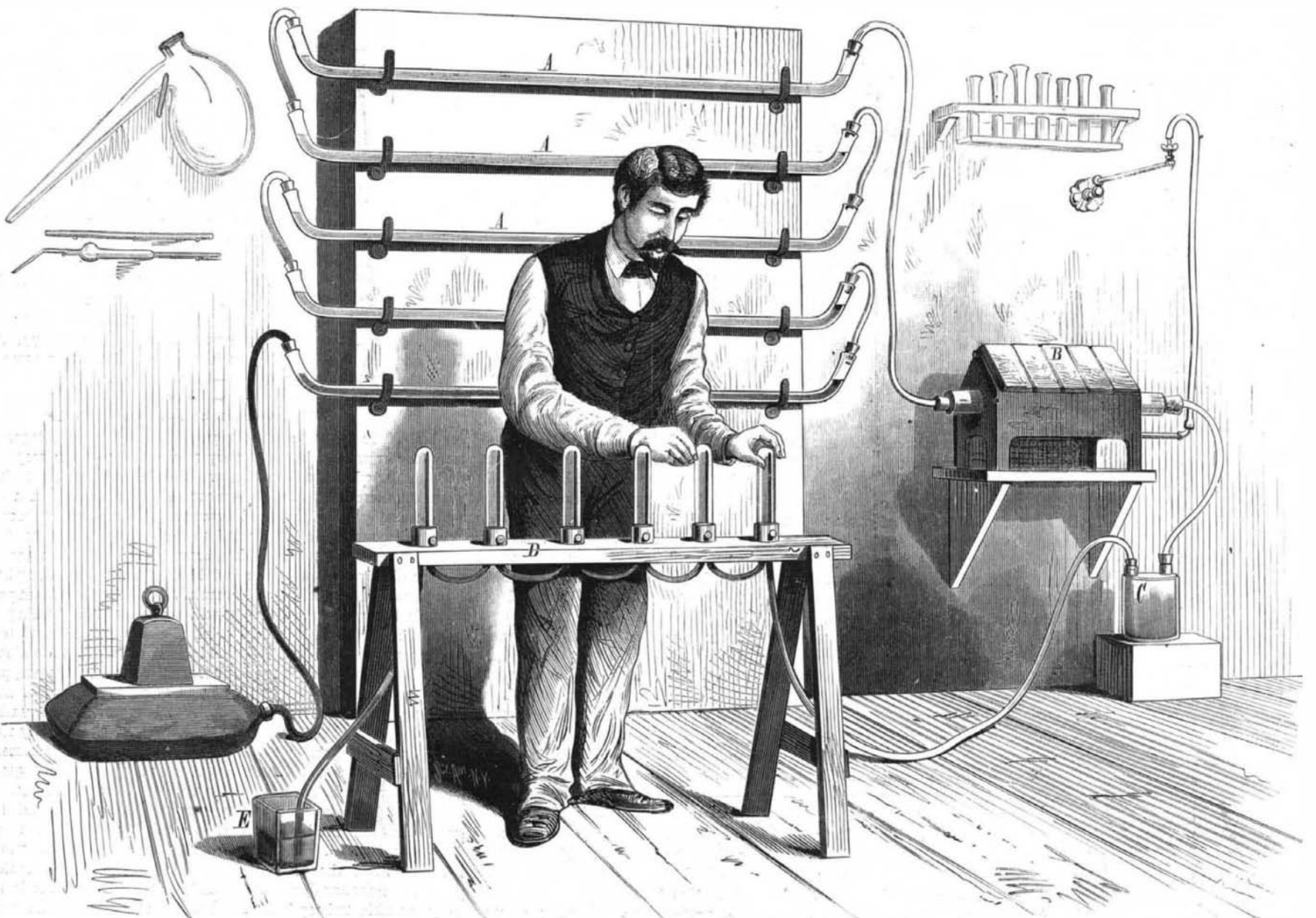
The lamp, based upon the incandescence of a pencil of carbon immersed in nitrogen gas, is in no way different in principle from the Bouliguine or the old Sawyer-Mann lamp exhibited some years ago. The pencil is contained within

*Fig. 3.*



**EXHIBITION OF THE SAWYER ELECTRIC LIGHT.**

tirely novel and original, but declines for the present to give a description of it, his patents not having been as yet secured. The regulator, we are told, is based upon the plan used by the old Berlin house of Siemens Brothers, by which only such a volume of current is supplied as is necessary to overcome the resistance. The light is readily toned down to a glimmer by turning a button in the wall. In its optical pro-



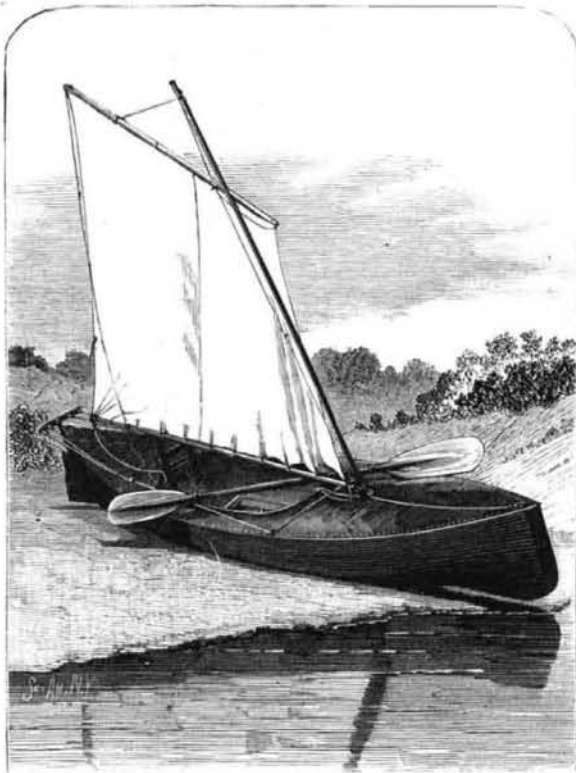
**FILLING THE SAWYER LAMPS WITH NITROGEN.**

erties this light is much like gas. It is yellow, steady, and soft, and consequently not irritating to the eye. It has none of the blue rays incident to the voltaic arc arrangement, and the shadow cast by intervening objects is softened and mellowed at the margin. For practical purposes it is intended that the power of each lamp shall not exceed that of two ordinary gas jets.

The relative economy of this system of lighting we are unable to learn. "Approximate estimates" of cost make it much cheaper than gas; but in the absence of specific data for exact calculation, such estimates do not go far to satisfy the popular mind.

**THE RACINE CANOE.**

The pretty little canoe shown in the annexed engraving is the outgrowth of the experience of the Racine Boat Com-



**THE RACINE CANOE.**

pany during the year 1879. It is made of birch, cherry, or cedar, according to the taste of the purchaser. Three sheets of the wood are cemented together with the grain of the inner sheet crossing the grain of the outer sheets, and the whole, while green, is pressed into the desired form under heavy pressure, making a body with but a single seam under the keel. The decks are made in the same way. The ends are nicely sheathed with brass, and the boat is finished with coach varnish, bringing out the beauty of the wood.

The boat thus made is very strong and not liable to injury with ordinary usage. It never leaks, and it is in every respect complete and well finished, and is of the most approved model.

The dimensions of the boat are as follows: Length, 13½ feet; beam 28 inches.

The boat shown in the engraving, when full rigged, weighs but 80 lb.

The parties building this, make open canoes, row boats, and shell boats on the same plan. They are finished with water-proof fillings and varnishes, and are very handsome and desirable. In a canoe similar to the one shown in the engraving, a trip was made late last season from Racine, Wis., to New Orleans, La., a distance of about twelve hundred miles, via lake, canal, and river.

Further information may be obtained by addressing the Racine Boat Company, Racine, Wis.

**THE FRANKLIN DRAUGHT REGULATOR.**

The accompanying engraving represents the well known device in common use for operating a damper in the flue of a steam boiler by steam pressure. This device is substantially the same as that patented by Patrick Clark, in 1854, but it is combined with a recently patented improvement known as the Franklin regulator.

The improvement consists in erecting above the weighted lever, A, a plate, B, from which is suspended any desired number of weights (a, a', a'') by rods which are furnished above the plates with thumbscrews, and are forked below so as to straddle the lever, A. The suspension rods and their weights may be so adjusted by the thumbscrews that the

lever, when it rises under the pressure of steam, will, after reaching a given height, be loaded by one weight, and after overcoming this load and rising further, will receive another load, a third load being added by another weight after the lever reaches a still greater height.

When there is a slight excess of pressure of steam in the boiler, the lever, instead of being raised far enough to entirely close the damper, as in previous devices of this class, will be arrested in its upward movement by one of the weights, which gives the lever an additional load to carry, and to oppose the excess of pressure, the damper being closed to the limited extent determined by this additional load.

Should the pressure of steam in the boiler be reduced and resume its normal condition, the lever will fall to its original position, the weight will remain suspended clear of the lever, and the damper will be entirely open. If, on the other hand, there should be such an excess of pressure of steam as to raise the lever loaded by the first weight, it will, after rising a short distance, be further loaded with a second weight, and there will be a further contraction of the flue by the damper, a still further rise of the lever, resulting in the arresting of the latter by a third load and a further contraction of the flue.

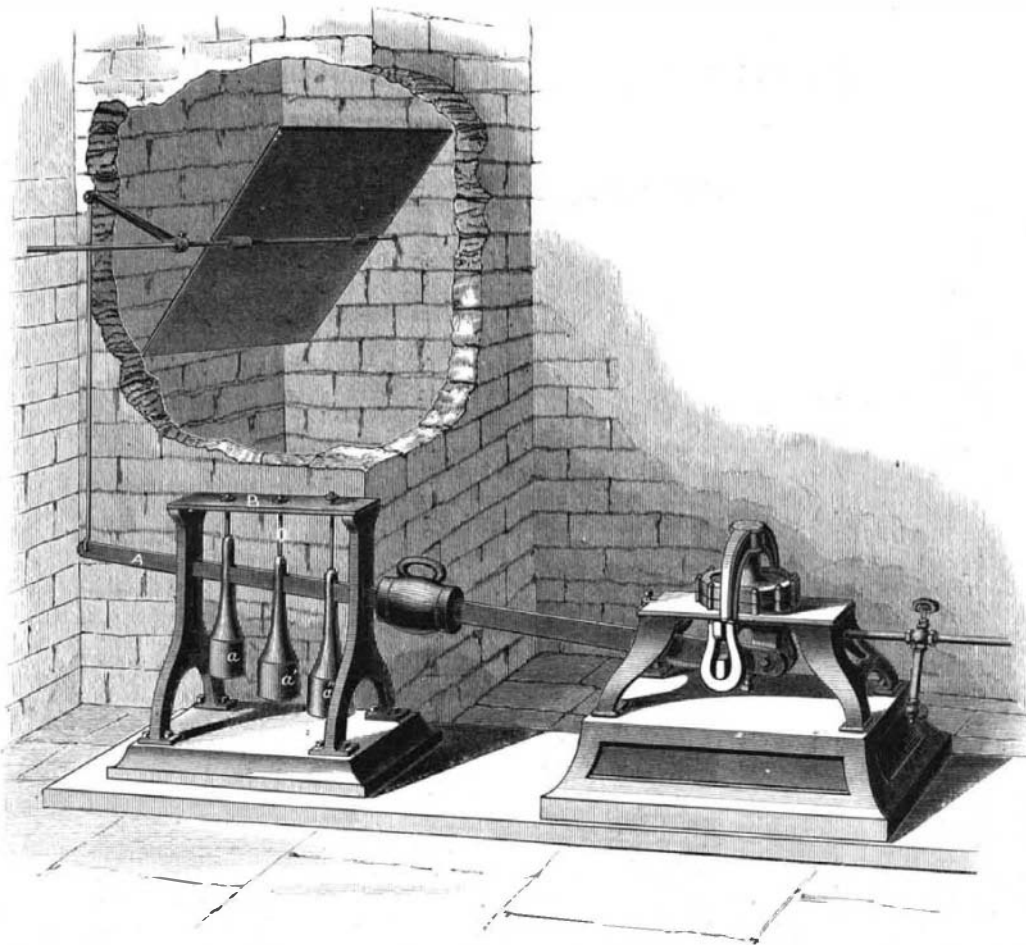
The manufacturers claim every advantage that is gained by the use of other damper regulators without their disadvantages. In all other machines that have been applied to operate the damper by the action of the steam there are but two possible positions of the damper—it is either wide open or entirely closed; there must be no draught at all, or the full force. This has been the one defect that has prevented them from being thoroughly successful.

By this machine we are now able to absolutely control the working of boilers by keeping the damper always in that position which produces the normal pressure of steam, and by compensating for any rise or fall of pressure due to an irregularity in the use of steam by closing or opening the damper only as may be necessary.

Except in extreme cases, the damper is neither entirely open nor closed, but is maintained accurately in the position necessary to produce a draught corresponding to the normal working pressure.

This regulator is applicable to cases where an artificial draught is used by arranging it to regulate the motor. It must be admitted that economy of fuel is effected by having a constant uniform of draught proportioned nicely by the amount of steam it is desired to carry, which reduces the consumption of fuel to a minimum.

It is impossible for the pressure to run up rapidly, as the increasing pressures are met by a corresponding closing of the damper. In addition to these advantages a great saving of labor is effected, especially where the fireman's duty is not confined to the care of his boilers alone—the steam pressure remains practically always at a constant point, and



**THE FRANKLIN DRAUGHT REGULATOR.**

his time, except when coaling or feeding water, can be utilized in other work.

For further information apply to Turl's Iron Works, agents, foot of West 28th street, New York city.

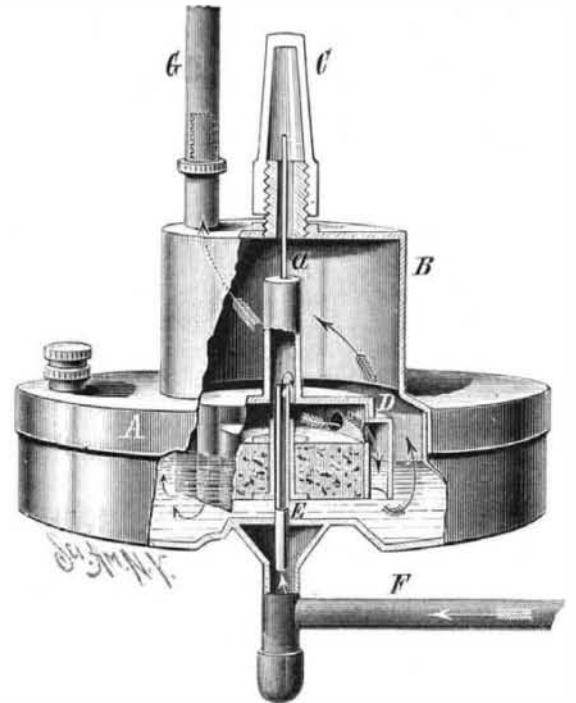
**The Alaska Fisheries.**

The United States coast-survey schooner Tukan sails from San Francisco, in May, for Alaska, in charge of Mr. Tarle-

ton H. Bean, who has been directed by the Commissioner of Fisheries to make a thorough examination of the character and resources of the Alaska sea and river fisheries.

**A NEW GAS ECONOMIZER.**

The annexed engraving represents a novel device for enriching and economizing coal gas. It is simple and easily applied, and is said to be very efficient. On the top of the liquid-tight vessel, A, there is a dome, B, from the center of which a glass tube, C, projects. This tube is closed at the top, and at the bottom opens into the vessel, A. A float, D, having a cork bottom, slides upon a tube, E, which enters the vessel, A, at the bottom, and communicates with a pipe, F, leading from the gas meter. In the upper portion of the float there is a shallow chamber which communicates by small perforations with small vertical tubes arranged around



**STRONG'S GAS ECONOMIZER.**

the float. From the top of the float a needle, a, extends upward into the glass tube, C, and serves as an index of the movements of the float. The vessel, A, is provided with a filling tube, through which some of the lighter hydrocarbons are introduced into the vessel. The float rises and falls freely as the depth of the liquid varies in the vessel, but the weight of the float remaining the same its displacement is not affected by the quantity of liquid in the vessel, and the gas ejected into it from the float will always have the same quantity of liquid to rise through, thereby insuring uniformity in both the pressure and the quantity of gas supplied. Gas conveyed to the float through the tube, E, passes into the vertical tubes and rises up through the liquid as indicated by the arrows, and finally passes out through the tube, G, for distribution to the burners.

The gas is enriched by its passage through the hydrocarbon, and the light given by it is correspondingly increased. This useful invention was recently patented by Mr. George T. Strong, of Port Hope, Ontario, Canada, from whom further information may be obtained.

**London Fogs.**

The Londoners are, as usual at this season of the year, in great tribulation over their fog. On the theory that the steam from a kettle will disperse fog in a room, a writer in the *Lancet* believes that by sending out an army of steam engines on foggy mornings about the London streets, they might produce a cloudless sky. A most telling prospectus could be made out of the advantages of blue sky over yellow fog. The name of the company, *Capital and Labor* suggests, should be the "Fog Dispersing and Blue Sky Assurance Company," and a

copy of the prospectus should be particularly sent to ladies and gentlemen known to suffer from bronchial affections. An army of puffing engines would, of course, be somewhat expensive, and it may be rather irritating to be awakened, say at the hour of 4 A. M., by a chorus of steam engines, but considerations of this kind ought not to be allowed to stand in the way of the realization of an idea which is at least unique.