

Sheet 1-2 Sheets.

J. Tiffany.
Carbureting Air.

N^o 96,364.

Patented Nov 2, 1869.

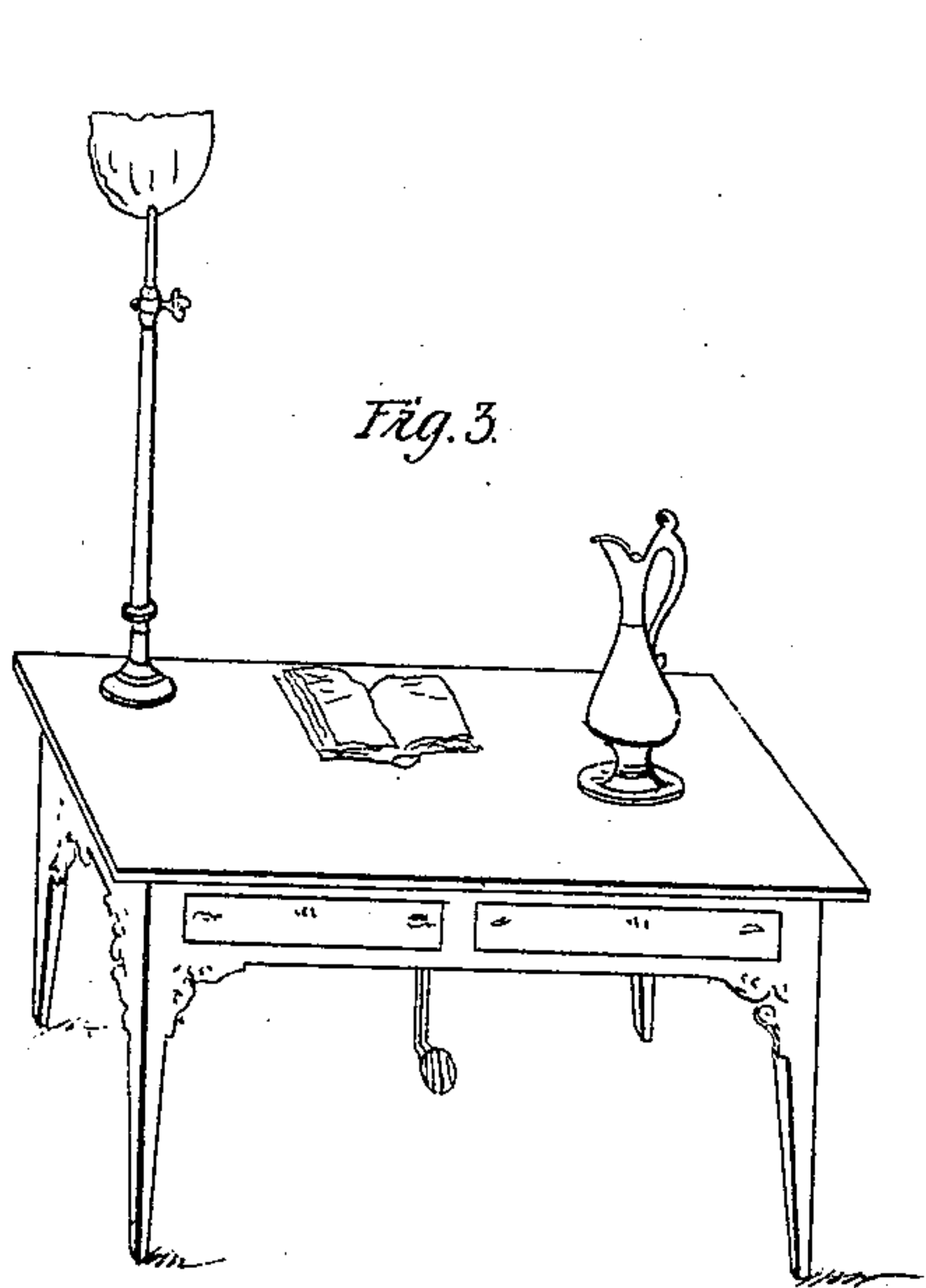


Fig. 3.

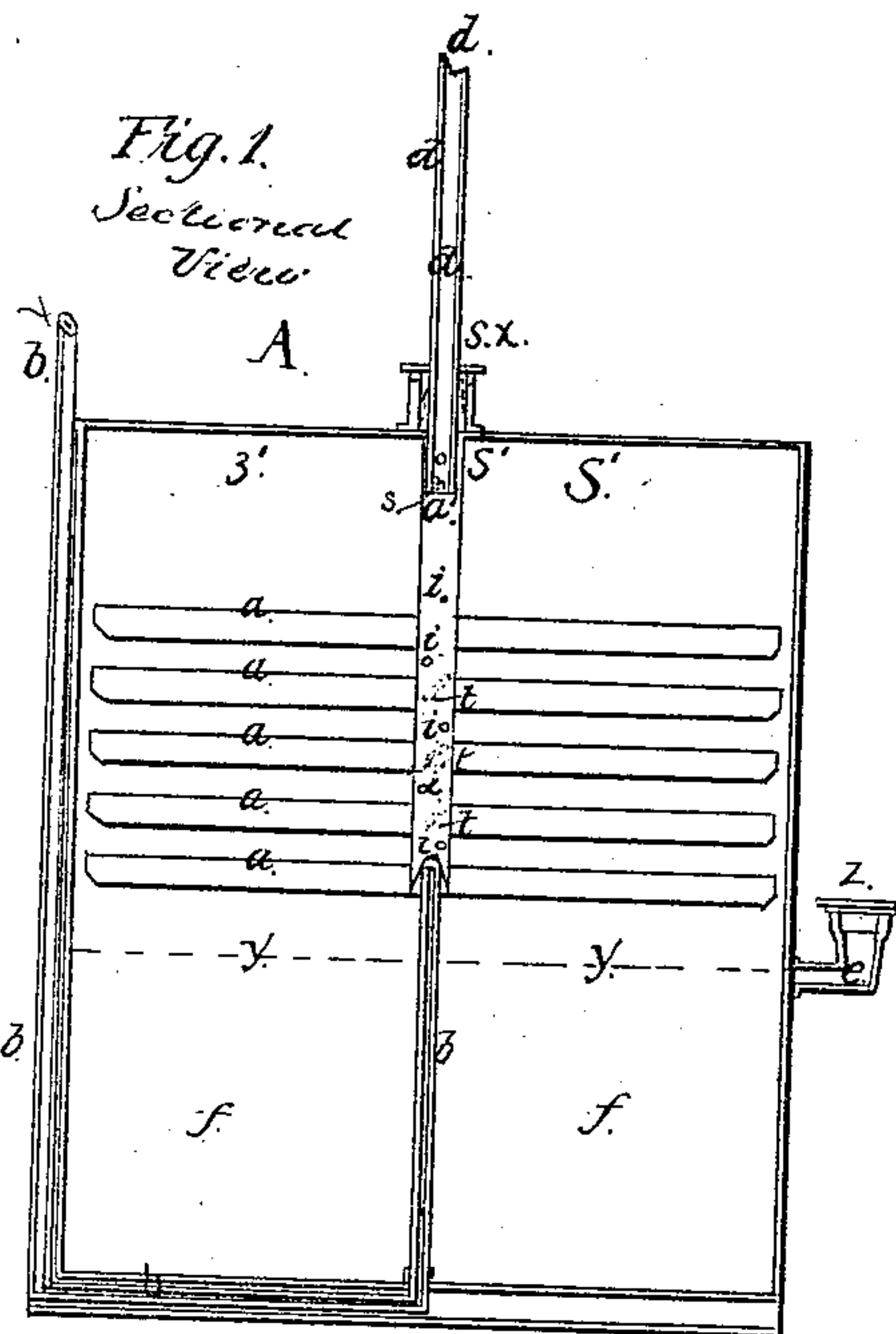


Fig. 1.
Sectional
View

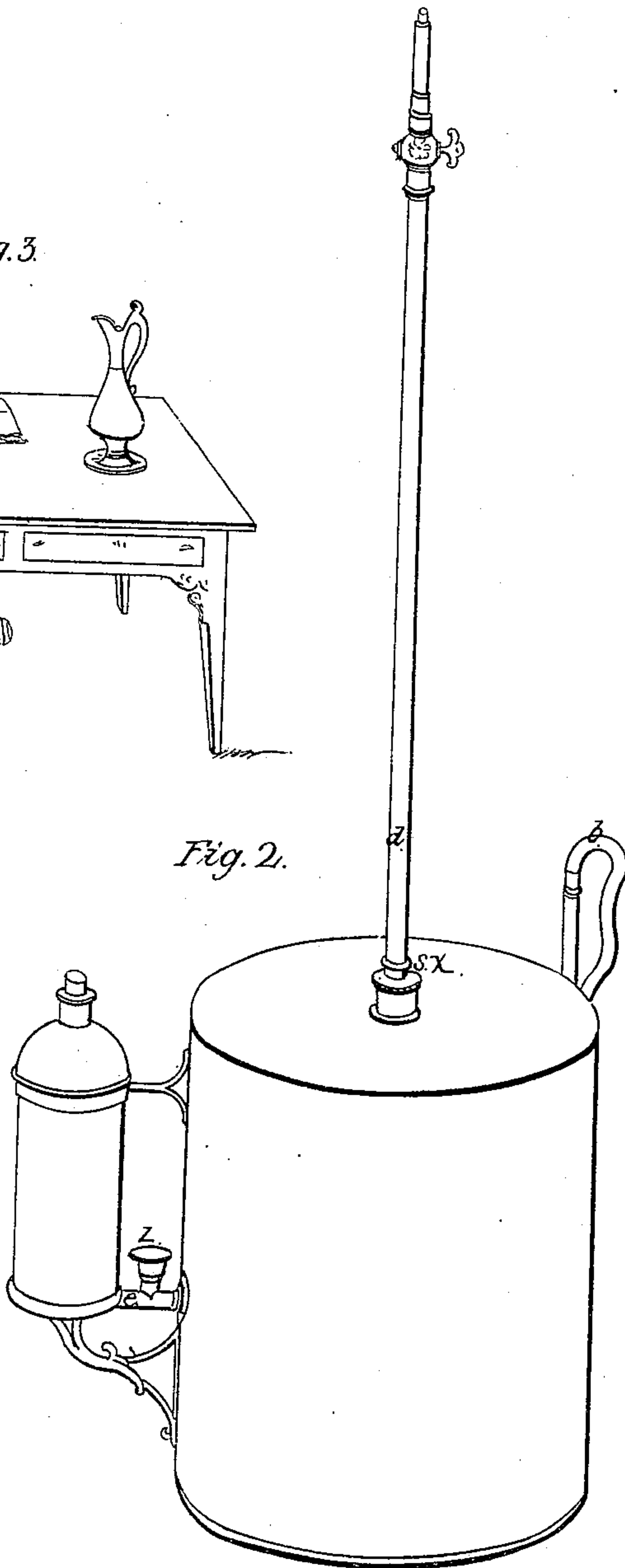


Fig. 2.

Witnesses:

Sh. Brown
Samuel Ketchum

Inventor:

Joel Tiffany

UNITED STATES PATENT OFFICE.

JOEL TIFFANY, OF ALBANY, NEW YORK.

IMPROVED APPARATUS FOR CARBURETING AND APPLYING AIR FOR LIGHTING AND HEATING.

Specification forming part of Letters Patent No. 96,364, dated November 2, 1869.

To all whom it may concern:

Be it known that I, JOEL TIFFANY, of the city and county of Albany, and State of New York, have invented a new and useful Improvement in the Construction of Apparatus for Carbureting and Applying Air for Lighting and Heating-Purposes; and I hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My improvement is of a twofold character, embracing the mode of producing the gas, and the combination and arrangement of the means for applying the same to the purposes desired.

The principle adhered to in the mode of generating the gas or carbureting the air is seen in causing a current of air to pass over an extended surface of liquid hydrocarbon, making the liquid surface large, in proportion to the space occupied.

The improved apparatus herein described is constructed with a view to such an extended surface, admitting currents of air to pass freely over such surface.

In my said improvement I carburet the air no faster than is required for use. When the use is required, to commence carbureting the air, and the use ceases, to cease carbureting the air.

It is also another part of my said improvement, always to carburet the air in near proximity to the place of consumption, by passing currents of air over secure surfaces of the liquid used for such purpose.

In my improvement I provide for using the most volatile and combustible hydrocarbons, such as gasoline, naphtha, benzine, &c., in such a manner as to make accidents from their use impossible; that is, so as to render their use absolutely safe, even in the hands of the most inexperienced.

In the accompanying drawings—

Figure 1 is a representation of the internal arrangement of an apparatus for carbureting the air, by causing currents over an extended surface of the liquid.

In this figure, (fig. 1,) *a a a a a* represent

shallow basins, to contain the liquid from which the gas is generated.

These basins are perforated by and attached to the tube *t t t*.

Immediately under each basin are perforations on every side of the tube, marked *i i i i*.

The top of the tube *t t*, &c., at *a'*, is closed tight, so to admit of the passage of no air beyond the point *a'*.

The bent tube *b b b b* is for the admission of a current of air into the bottom of the tube *t t t t*, to pass thence up said tube, and out through the perforations *i i i i*, over the surface of the liquid in the basins *a a a*, &c.

The tube *d d* is attached to the upper part of the tube *t t t* at *a'*, for the purpose of raising or depressing the basins, for charging and operating them in the manner hereafter described.

The chamber *f f*, beneath the basins, is charged with the liquid carbon used, up to the line *y y*, in fig. 1, through the lateral opening at *e'*, at which point it may be so connected with another vessel, containing liquid carbon, as to be self-charging, as shown in Figure 2.

To the tube *d d* is attached the burner, with its stop-cock, as shown in fig. 2.

The top of the bent tube *b b*, within the vessel, must be permanently above the line of the surface of the liquid in the chamber *f f*, so as to prevent the liquid from entering the air-tube *b b*, &c.

This apparatus is operated in the manner following:

The chamber *f f* being properly charged with the liquid hydrocarbon as high as the line *y y*, fig. 1, the tube *e* is closed air-tight, so far as external air is concerned. If connected with a perpetual charger, as in fig. 2, then the opening between the two vessels is maintained, as in fig. 2.

By means of the pipe *d d d* passing through the packed joint *s x*, the basins are depressed into the liquid in the chamber *f f*, and then raised above the same, so as to present numerous surfaces of the liquid to the currents of air passing over the same.

When these basins are in position, a current of air, passing through the bent tube *b b*

United States Patent Office.

BENJAMIN C. TILGHMAN, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 96,365, dated November 2, 1869; antedated October 30, 1869.

IMPROVEMENT IN MAKING TANNING AND DYEING-EXTRACTS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, BENJAMIN C. TILGHMAN, of the city and county of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Making Tanning and Dyeing-Extracts; and I do hereby declare that the following is a full and exact description thereof.

My invention consists in a process of extracting tanning and dyeing-materials from roots, barks, woods, and other vegetable substances, by digesting them with a solution of sulphurous acid, in water, heated to the proper temperature, and, if necessary, confined in a strong, close vessel, under pressure, so as to prevent the escape of the steam and acid gas.

In most cases, I have found the addition of sulphite of lime, or the sulphite of other suitable base, to be advantageous.

When open vessels are used, the acid solution should be weak, and the heat not exceeding 212°, Fahrenheit, or thereabouts, and a considerable time is necessary to make a thorough extraction.

When stronger acid solutions, or higher temperatures are employed, close, strong vessels are necessary, and the action is more rapid.

The vegetable substance is to be treated with successive doses of the acid solution, until the tanning or dyeing-material is thoroughly extracted, and the acid solution is to be applied to successive charges of the vegetable substance, so as to become well saturated with the material dissolved.

When properly charged with the tanning or dyeing-material, the acid liquid is to be run off and boiled, so as to expel its acid gas. It may then be concentrated by evaporation, in the usual manner. The acid gas driven off is to be absorbed by cold water, and reused.

The following is a method of carrying my invention into effect, taking, for example, the case of logwood:

A strong vessel, of any convenient size and shape, made of copper, or of iron lined with lead, is provided with a steam-jacket, and with the necessary man-holes, pipes, and cocks, for filling and emptying, and also with a safety-valve, pressure-gauge, and thermometer.

It is to be about three-fourths filled with chipped

logwood, which is held down by a grating, and covered with a solution of sulphurous acid, in water, of specific gravity about 1.025, at 60° Fahrenheit, in which has been dissolved enough sulphite of lime to raise its specific gravity to about 1.07.

The vessel is then closed and heated by the steam-jacket to about 260° Fahrenheit, for about six or eight hours. The steam is then shut off, and the liquid extract is drawn off into a suitable covered vessel, where it is boiled by a close steam coil, until its acid gas is expelled.

Any remaining traces of acid may be neutralized by carbonate of lime, and the extract concentrated by evaporation in the usual manner. The acid gas given off is to be absorbed by cold water, in suitable condensers.

The wood remaining in the digester is to be treated with several successive doses of water, to dissolve out the extract remaining absorbed in its pores.

It would be advantageous to have several vessels connected in a series, so that the partly-saturated solution could be digested with successive charges of wood, and the partly exhausted wood could be treated with successive charges of acid solution.

When operating at pressures not exceeding that of the atmosphere, I use a solution of sulphurous acid, of about specific gravity 1.01, at 60° Fahrenheit, in which has been dissolved as much sulphite of lime as it will retain at 180° Fahrenheit, and maintain the temperature at about 180° to 200°, Fahrenheit.

What I claim as my invention, and desire to secure by Letters Patent, is—

The process of extracting tanning and dyeing-materials from roots, barks, woods, and other vegetable substances, by digesting them with a solution of sulphurous acid, in water, with or without the addition of sulphites, either in close vessels, at a high temperature and pressure, or at temperatures not exceeding 212° Fahrenheit, and at atmospheric pressures.

B. C. TILGHMAN.

Witnesses:

E. TILGHMAN,
SAML. P. JONES, Jr.

