



Explanation of Plate

Fig 1st
Single Shielded Syphon.
[A] Bulb
i stop cock in barrel of Bulb
[D] Shield

Fig 2nd
Single (Unshielded) Syphon.
[A] Bulb
[i] stop cock in barrel of Bulb
h stopcock in Syphon barrel.

Fig 3rd
Double Syphon.
Represented as when applied and acting.
[X] Furnace and Boiler combined
[Y] Bath or receiving vessel

Section 2nd
A Bulb
a top or upper end of Bulb
b lower or under end of Bulb
i hollow barrel or neck of Bulb

Figure - 4th
Double Syphon
Section 1st
[A] Bulb represented by dotted lines
B - Upper Syphon of Double Syphon
c collar of Upper Syphon receiving barrel (b) of Bulb
C - Under Syphon of Double Syphon
[D] Shield
g point of junction between shield and syphon (C)
h plates attaching syphons and shield
E - Tube of connection between Syphons B & C
m top or opening of Tube (E)

Section 3rd
D - Shield
d top of Shield being open
e bottom of Shield closed with plate
f opening through bottom of plate

Section 1st
A Bulb
b barrel of bulb

Section 2nd
B - Upper Syphon of Double Syphon
c collar of Upper Syphon (B) receiving the barrel of Bulb (A)

Section 3rd
C - Under Syphon of Double Syphon
h plates attaching syphons
E - Tube of connection between Syphons
m top or opening of tube (E)
n shows the place of plate h

Section 4th
D - Shield
h h-plate attaching to syphon
D Shows the place of Shield D.

A Shows the place of bulb (A)

B Shows the place of Upper Syphon (B)

Witnesses to the Signature of
Thos. A. Ward
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UNITED STATES PATENT OFFICE.

GEORGE JOHNSON, OF NEW YORK, N. Y.

CONSTRUCTION OF SIPHONS AND MODE OF CHARGING THEM.

Specification of Letters Patent No. 2,401, dated December 23, 1841.

To all whom it may concern:

Be it known that I, GEORGE JOHNSON, of the city of New York, in the county and State of New York, have invented a new and useful improvement in the manner of charging or loading the siphon, and also a guard or shield against heat to be used with a single or double siphon where it is intended to use the same for supplying cold liquid from a reservoir adjoining into hot liquid contained in a boiler or other vessel, as also a method of connecting two siphons which I call a "double siphon" in such a manner as to be charged or loaded with the same facility as the single one, which improvements and arrangements I believe to be new; and I do hereby declare that the following is a full and exact description.

The charging or loading of the siphons is effected by means of bulb A (see drawings, Figure 4 Sec. 2nd) which is a hollow barrel of varying length and diameter, with its two ends *a a* tapering or finished in cones, to the one end *a* (and which I call the lower end) is attached a barrel or neck *b* communicating with the interior of said bulb A and except through this barrel or neck *b* there is no opening to, or into bulb A.

The connecting barrel *b* is a hollow pipe or neck, one or more inches in length which is made of sufficient size or diameter to fit tightly into the collar *c* of siphon B (Fig. 4 Sec. 1st) its length is sometimes greater to admit the introduction of a stop cock *i* as in single siphons (Figs. 1 and 2). The bulb A for single siphons is made of sufficient size to contain a quantity of liquid greater than the capacity of the siphon, and for the double siphon, is made of size sufficient to suit the volume of air in the siphon after it is immersed in the liquid.

The guard shield D (see drawings, Fig. 4 Sec. 3rd) is a straight hollow pipe or barrel of varying length and diameter, opened at the top *d* but which is closed at the bottom by means of a metallic plate *e*, equal to and covering its diameter, which when firmly attached by soldering or brazing to the lower end of this shield forms its base; through the center of this plate *e* is an opening *f* which is made of size sufficient to permit the end of the siphon to pass through which is then soldered or brazed to the plate *e*, as at letter *g* (Fig. 4 Sec. 1st) or made tight and fast by means of a male and female screw; the one screw being at-

tached to the barrel of siphon as at *g* and the other inserted in the opening *f* of the plate *e* which forms the base of the shield. This method, of attaching the shield, is adapted, when it is requisite, to adjust and disconnect the same, in adapting the siphon to special uses. This guard or shield D (Fig. 4 Sec. 3rd) is designed to be attached to and to cover the discharging end of the shielded siphons (Figs. 1 and 4) and is made of sufficient length to rise above the level of the liquid, in such boiler, or receiver, as to which it may be applied. The shield is also of greater diameter than the siphon, to admit a column of air between it and the siphon; the object of this shield is to protect the descending column of cold liquid, entering by the discharging end of the siphon, from the heat of the liquid in the boiler, or receiver, to which it may be applied, and thus secures its full operation, guarding against reaction, which otherwise would occur, in conformity with the natural law governing the ascent of heated particles of fluid bodies. This guard or shield is used upon single as well as double siphons, its object being to secure the descent of a cold stream through a hot one, will make it applicable where such an end is desired.

I form a single (unshielded) siphon (see drawings, Fig. 2) for drawing water, acid, oils, &c., by simply detaching the upper siphon B (see Fig. 5) of my double siphon; adding the stop cock *k* to the discharging end as in Fig. 2, which see.

I form a single shielded siphon (see drawings, Fig. 1) for the purpose of supplying cold liquid, to a receiver of hot liquid, by detaching the under siphon C (see Fig. 5) of my double siphon and applying my guard or shield D (Fig. 5 Sec. 4th) which is attached to and covers the discharging end of this my single shielded siphon.

I form my double siphon (see drawings, Fig. 4) by means of two single siphons as B and C (Fig. 5) placing the one over the other and fastening them together by means of four oblong square pieces of metal *h h* (Fig. 4, Sec. 1st *h h*) to which they are brazed or soldered. The upper or discharging siphon B is made shorter in its legs than the under or charging siphon C. There is an internal connection, or communication, formed by means of the tube E (Fig. 4, Sec. 1st) which is a simple hollow tube, with its length and diameter suited to

the extent and capacity of bulb A and its barrel *b*, which tube *E* (see Fig. 5) passes from the lower or charging siphon C (which it opens into) through the upper siphon B by or through the center of collar *c* and is of sufficient length to extend nearly to the top of bulb A when the same is adjusted; its upper end *m* is open, thus forming, through this tube, the means of connection, or communication, between the siphons; therein permitting the two siphons B and C to be loaded in one operation, by means of bulb A.

The charging or loading the single unshielded siphon, Fig. 2, is effected in the following manner: Dip the receiving end into the liquid to be drawn off; the stop cock *k* being shut, place the barrel *b* of the bulb (A) into collar *c*, having previously filled the bulb with the same liquid as that to be drawn; the siphon will then become heated by the liquid which is discharged from the bulb into the siphon, thereby displacing the air in the siphon barrel, which air passes into the bulb (A) occupying the former place of the liquid.

The charging or loading the single shielded siphon, Fig. 1, is effected through the agency of bulb (A) in the same manner as that before described, by simply immersing the receiving or unshielded end of the siphon into the liquid of the reservoir, and the discharging or shielded end into the liquid of the boiler or receiver.

The charging or loading of the double siphon, Fig. 4, Sec. 1st, is also effected through the agency of the bulb (A) which loads the upper or discharging siphon B of the double siphon, in the same manner as that described in single siphon, and also loads the lower or charging siphon C of the double siphon through the agency of tube

E as hereinafter described, the descending column of liquid from bulb (A) and upper siphon B drawing or sucking the volume of air in the lower or charging siphon C through the tube *E* into the upper part of bulb (A) at which time the liquid from the reservoir is drawn up into and loads the lower or charging siphon C; when applied to a boiler of hot liquid, the operation of loading this double siphon is further facilitated by the heat and steam generated in the lower siphon C and the column of hot liquid passing over by means of the upper or discharging siphon B. The liquid descending from the bulb (A) into the upper siphon B and the air ascending from the lower siphon through tube *E* into bulb (A) at the same moment causes the twofold action.

The ends of my lower or charging siphon C of the double siphon are cut off in a slanting direction; this cutting off the ends in a slanting direction applies equally to single siphons; by this contrivance the siphons will act freely, although the ends might rest on the bottom of the vessels.

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

1. My improved method of charging either single or double siphons, by means of my bulb A.

2. My improved method of shielding either single or double siphons against reaction, by coming in contact with heat, by means of my guard or shield D.

And 3. The combination, or manner, in which the bulb A is combined with the double siphon by means of the said tube *E*.

GEORGE JOHNSON.

Witnesses:

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