

(No Model.)

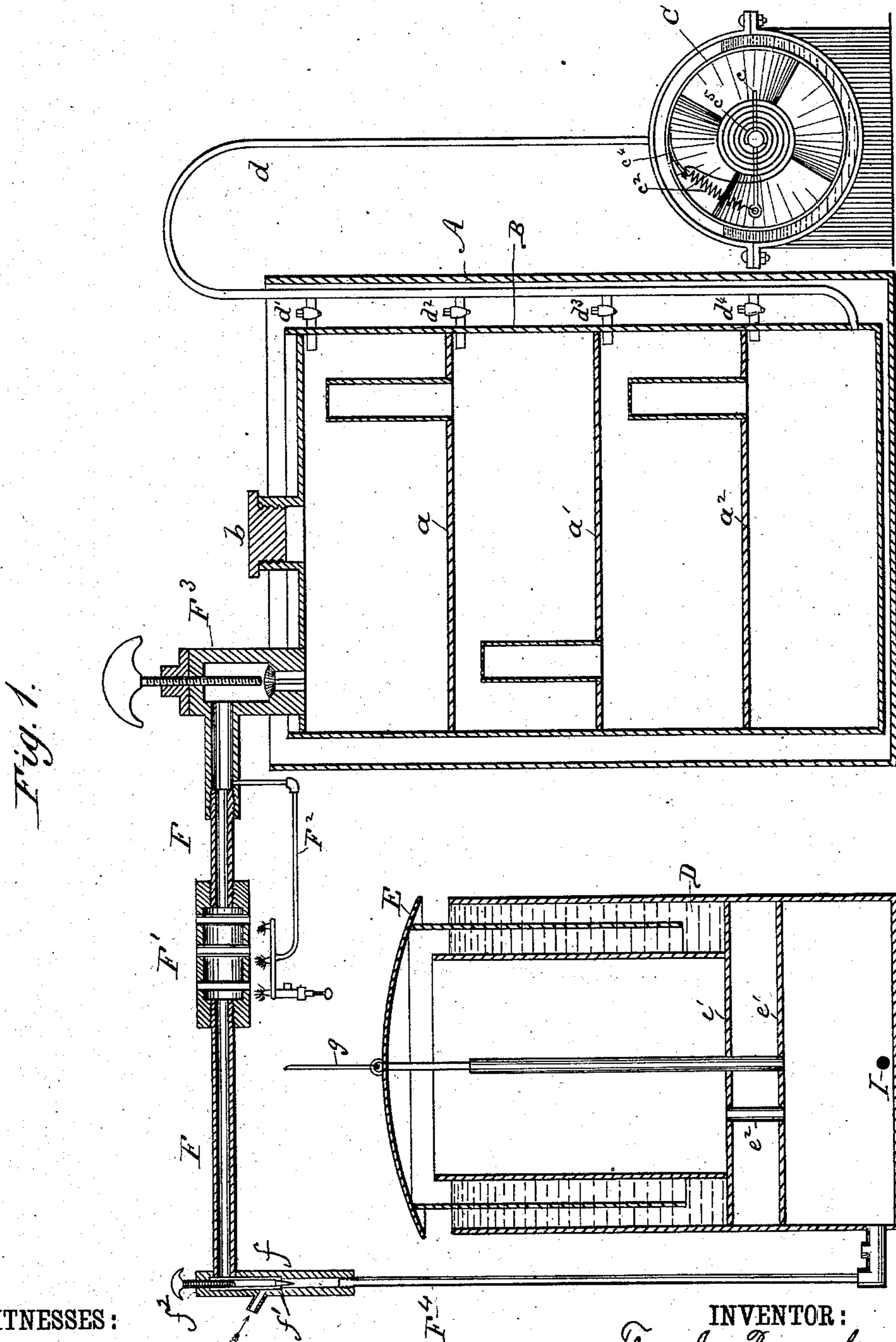
3 Sheets—Sheet 1.

T. J. BROUGH.

CARBURETOR.

No. 284,373.

Patented Sept. 4, 1883.



WITNESSES :

W. W. Hollingsworth
John Kemmer

INVENTOR:

Thos. J. Brough
BY *Mann & Co*

ATTORNEYS.

(No Model.)

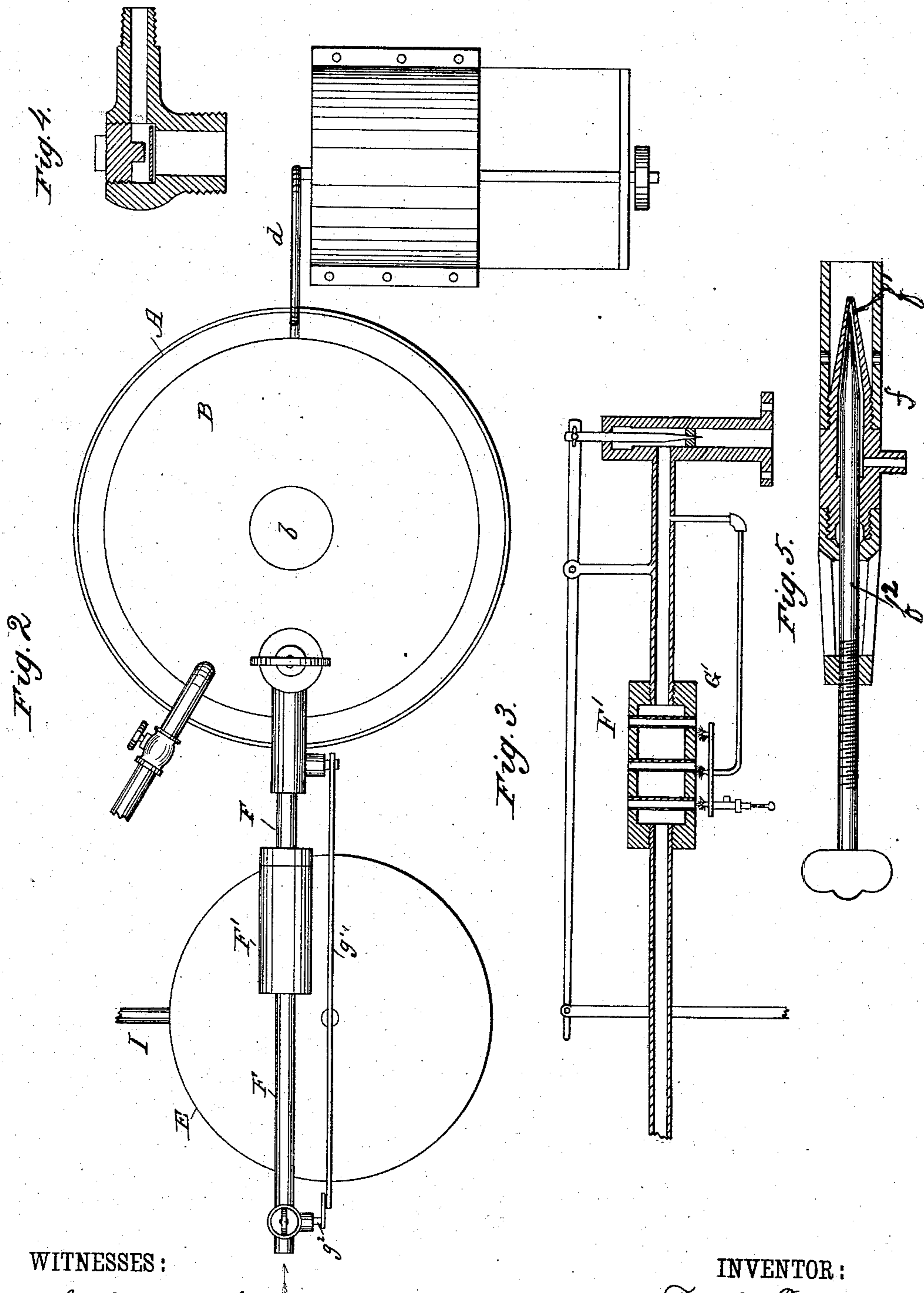
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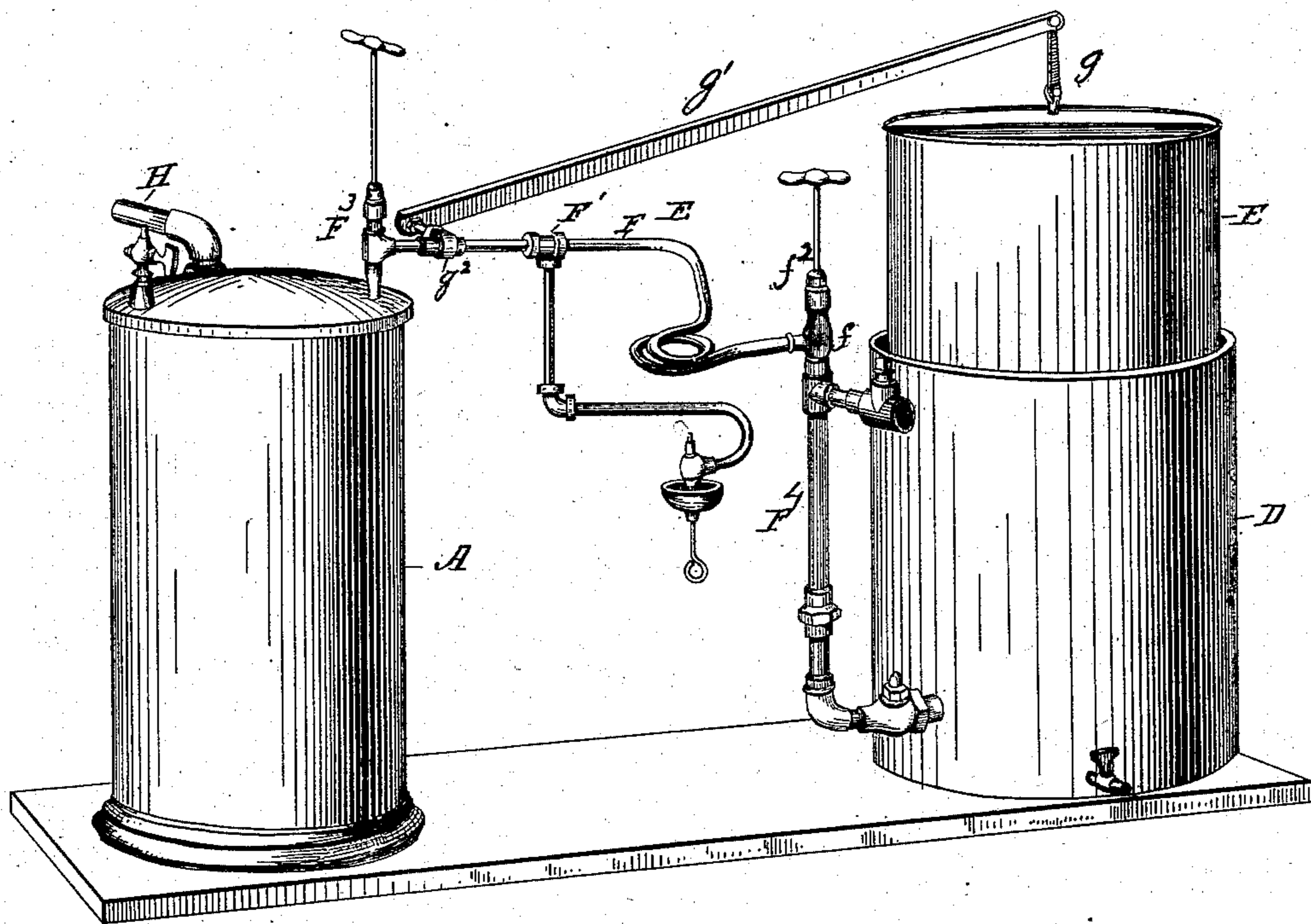
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Fig. 6.



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John Kemmer

INVENTOR:

Thos. J. Brough
BY *Man*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS J. BROUGH, OF BALTIMORE, MARYLAND.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 284,373, dated September 4, 1882.

Application filed April 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS JAMES BROUGH, a citizen of the United States, residing at Baltimore, in the county of Baltimore and State of Maryland, have invented a new and Improved Carburetor, of which the following is a specification.

This invention relates to that class of devices which are known in the art as "carburetors," and are designed to intermingle the vapors of a liquid hydrocarbon with atmospheric air in such proportions as will render the resulting mixture combustible and fit for use as an illuminating or heating agent.

The invention also relates to that class of devices which are designed to increase the illuminating power of coal or other gas by mingling therewith the vapors of a hydrocarbon.

My invention consists in certain novel features and in the combination of parts herein set forth, and shown in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the apparatus, and Fig. 2 a top view of the same. Figs. 3, 4, and 5 are sectional views of different parts; and Fig. 6 is a perspective view of a modified form of the apparatus, but differing in construction and operation in no essential particulars.

In all the figures like letters refer to corresponding parts.

A is a metallic or other case, within which I locate the carburetor proper. B. This carburetor is of the ordinary construction, having a series of trays within, located one above the other, and communicating with each other by means of short tubes, as shown. The opening in the case shown at *b* is for the purpose of admitting the liquid hydrocarbon. It is here shown as being closed by a plug. The space between the carburetor and its case may be filled with water, or a packing of material designed to guard to some extent the carburetor from sudden atmospheric changes, as is well known, or to make it fire-proof when located within a building.

C is the fan-wheel for forcing air into and through the carburetor. It may be of the ordinary construction, except that the wings thereof, instead of being attached to a solid shaft, as is commonly done, are attached to a hollow

shaft or cylinder, through which the axial shaft (designed to carry the wheel) passes, and through this shaft is passed a pin, *c*, to one end of which is attached a spiral spring, *c*², said spring being also rigidly attached to the periphery of the fan (or meter) wheel in the manner shown. This spring is designed to act as a governor for the wheel, the rotating of the axial shaft *c*³ causing the pin *c* to rotate, and through the spring *c*² the rotation of the meter-wheel. Other styles of springs may be used—such, for instance, as the one shown and designated *c*⁴; or both such springs may be used, if desired.

d, *d'*, *d*², *d*³, and *d*⁴ are pipes for the passage of the air or gas to be carbureted.

The wheel may be dispensed with when gas is being carbureted, as ordinarily the pressure in the gas-mains will be sufficient to accomplish the purpose. All these pipes are provided with suitable cocks, as shown, whereby the air may be admitted to one tray or to all the trays, according as more or less lights are to be used—as, for instance, if but five lights are to be used the air or gas may be admitted only through the pipe *d'*, thereby utilizing the tray *a*; and if ten lights are to be lighted another cock, *d*², may be opened and the tray *a'* utilized, and for fifteen lights open *d*⁴, and so on to the full capacity of the carburetor.

The pipe F is the eduction-pipe for conveying the carbureted air or gas from the carburetor to the burners, or to a gas-holder when one is used. The one here shown is peculiar in construction, and will be more fully set forth hereinafter. In this eduction-pipe here shown is the valve F³, for shutting off all exit for gas from the carburetor. The valve *g*² in pipe F is operated by the lever *g'* and arm *g*, connected with the floating bell E, through the rise and fall of the latter, and the retort F', for "fixing" the gas, said retort being a mere enlargement of the pipe F, or a retort constructed with heat-flues passing through the same, whereby the passing gas may be highly heated by a burner receiving its supply of gas from either side of the retort in the manner shown, the oil-vapor carried by the gas or air being thereby further vaporized or "gasified" in a manner well known. The gas, being thus increased in volume, passes with great force

through the injector *f*. (Shown on an enlarged scale at Fig. 5.) The injector *f* is provided with a back-pressure valve, *f'*, and stop-cock *f*², and opens into the pipe *F*⁴, connected
 5 with the holder *D*. This jet is represented in this figure as it appears before I inclose the same in a metallic sleeve. (Shown in Fig. 6.) This sleeve is screwed onto the pipe *F*, and has upon one side a projection or teat, designed to
 10 receive a short tube against back-pressure from the gas or carbureted air, and to open for the admission of atmospheric air, the amount of which admitted is governed by a stop-cock. The construction of this sleeve, the manner of
 15 attaching it to the pipe, the valve, its seat, and stop-cock, are all of ordinary construction and well known, and the manner of constructing them may be varied without departing from the spirit of my invention. The object of the
 20 jet is to draw in atmospheric air for the purpose of increasing the volume of the gas, and at the same time, should the gas be too rich, thereby producing a smoky flame, it may be further diluted by a second admixture of at-
 25 mospheric air by means of the branch pipe *H*, in an obvious manner.

In some instances the retort need not be heated at all, and where but few lights are used the eduction-pipe *F* may lead directly to the burn-
 30 ers without having inserted therein either the retort jet or valve, or either or all may be inserted, as deemed most expedient.

The holder *D*, unlike the ordinary holder, has two false bottoms, with an air-chamber be-
 35 tween them; otherwise it is of a construction well known. The object of these false bottoms is to provide a chamber below the inverted bell *E*, which shall modify, to some extent at least, the action of the water (surrounding the
 40 bell *E*) upon the warm or hot gases entering the holder, thereby preventing condensation, to some extent at least.

The manner of introducing the oil to the several trays of the carburetor and the operation of the apparatus as a whole are too well known 45 to require further description here. I will add, however, that the eduction-pipe may have inserted therein, at a point near its entry into the gasometer, a valve of ordinary construction, operating so as to be closed by back-pressure 50 from the gasometer, and opened by pressure from the carburetor, thereby preventing the escape of gas into apartments from the gas-holder.

Having thus described my invention, what I 55 claim as novel, and desire to secure by Letters Patent, is—

1. In a device for carbureting air or gas, the combination of the carburetor *B*, having a series of trays, induction, eduction, and filling 60 pipes, of the connecting-pipes for each tray, and the meter-wheel having a hollow shaft, through which an axial shaft passes and imparts motion to the meter-wheels by means of a pin or bolt passing therethrough, to one end 65 of which is affixed a spring which is attached to the periphery of the wheel, whereby the force of the moving wheel is governed by the spring, substantially as set forth.

2. The combination of the carburetor *B*, fan- 70 wheel *C*, retort *F'*, injector *f*, having back-pressure valve *f'* and stop-cock *f*², holder *D*, having false bottoms *e e'*, connected by tube *e''*, and floating bell *E*, connected by rod *g* to lever *g'*, operating valve *g*², for controlling the 75 flow of gas, and the gas-eduction pipe *I*, all substantially as shown, and for the purpose set forth.

THOMAS J. BROUGH.

Witnesses:

SOLON C. KEMON,
 CHAS. A. PETTIT.