

No. 625,832.

Patented May 30, 1899.

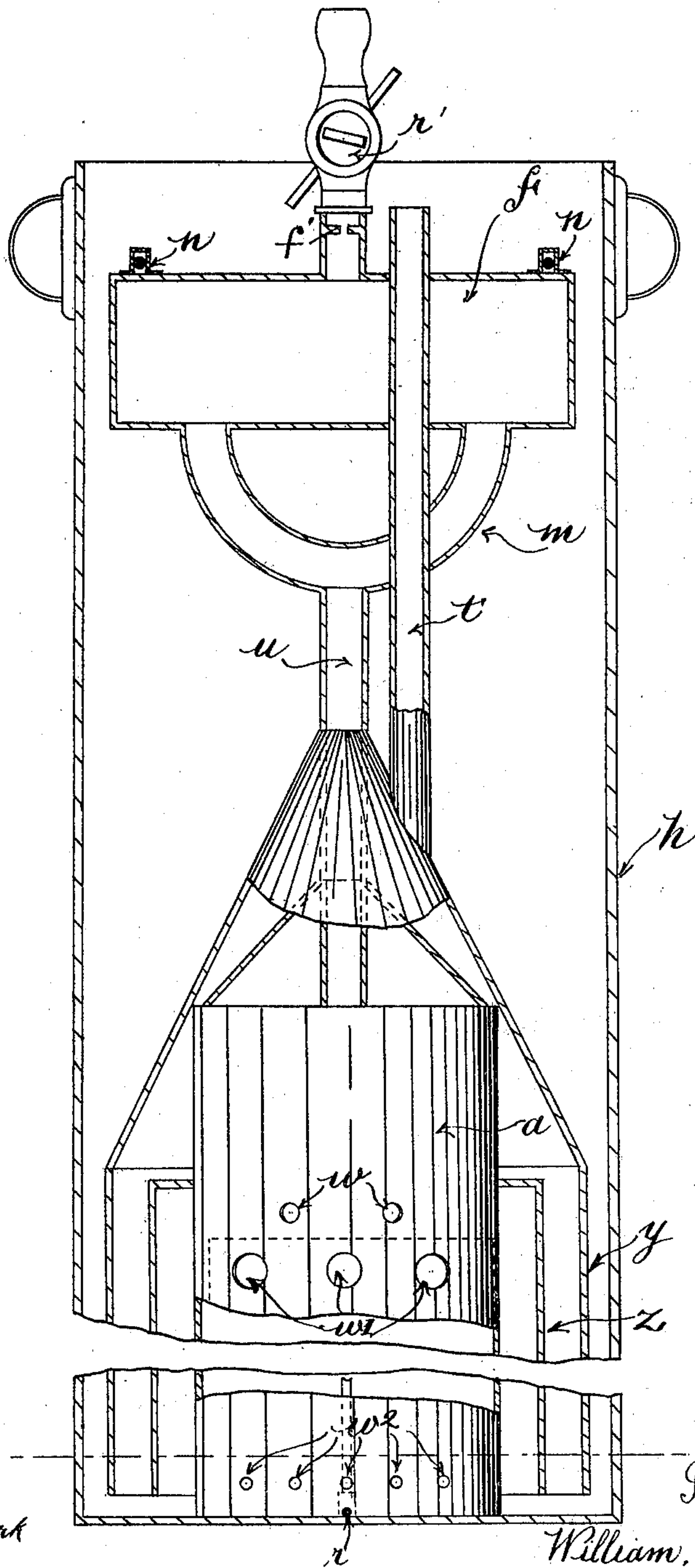
W. A. COULSON.
ACETYLENE GAS APPARATUS.

(Application filed Mar. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



Witnesses.
Benjamin Clark
Charles H. Briggs.

Inventor.
William Allan Coulson.
per E. Eaton.
His Attorney.

No. 625,832.

Patented May 30, 1899.

W. A. COULSON.
ACETYLENE GAS APPARATUS.

(Application filed Mar. 12, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 5.



Fig. 2.

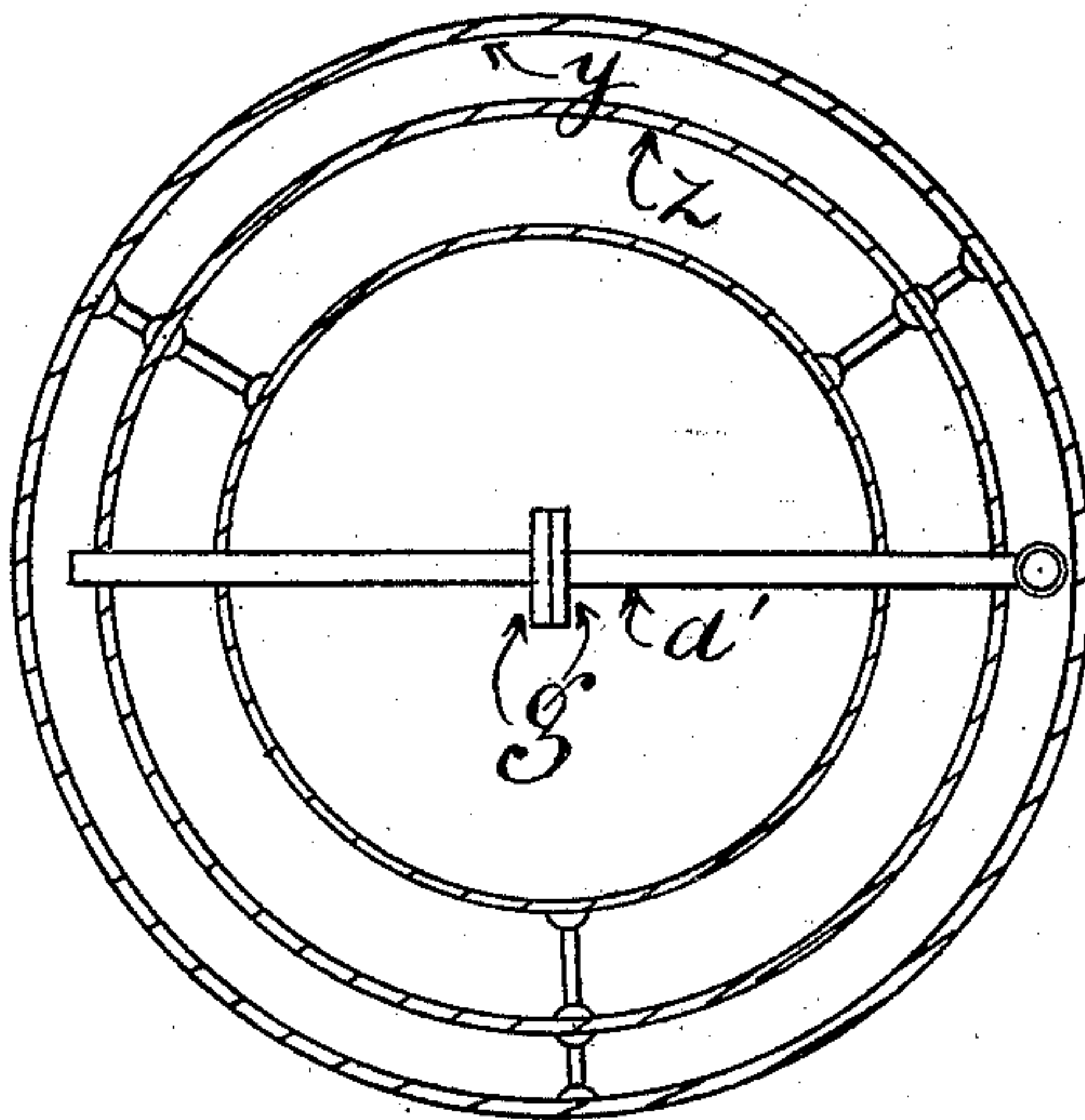


Fig. 3.

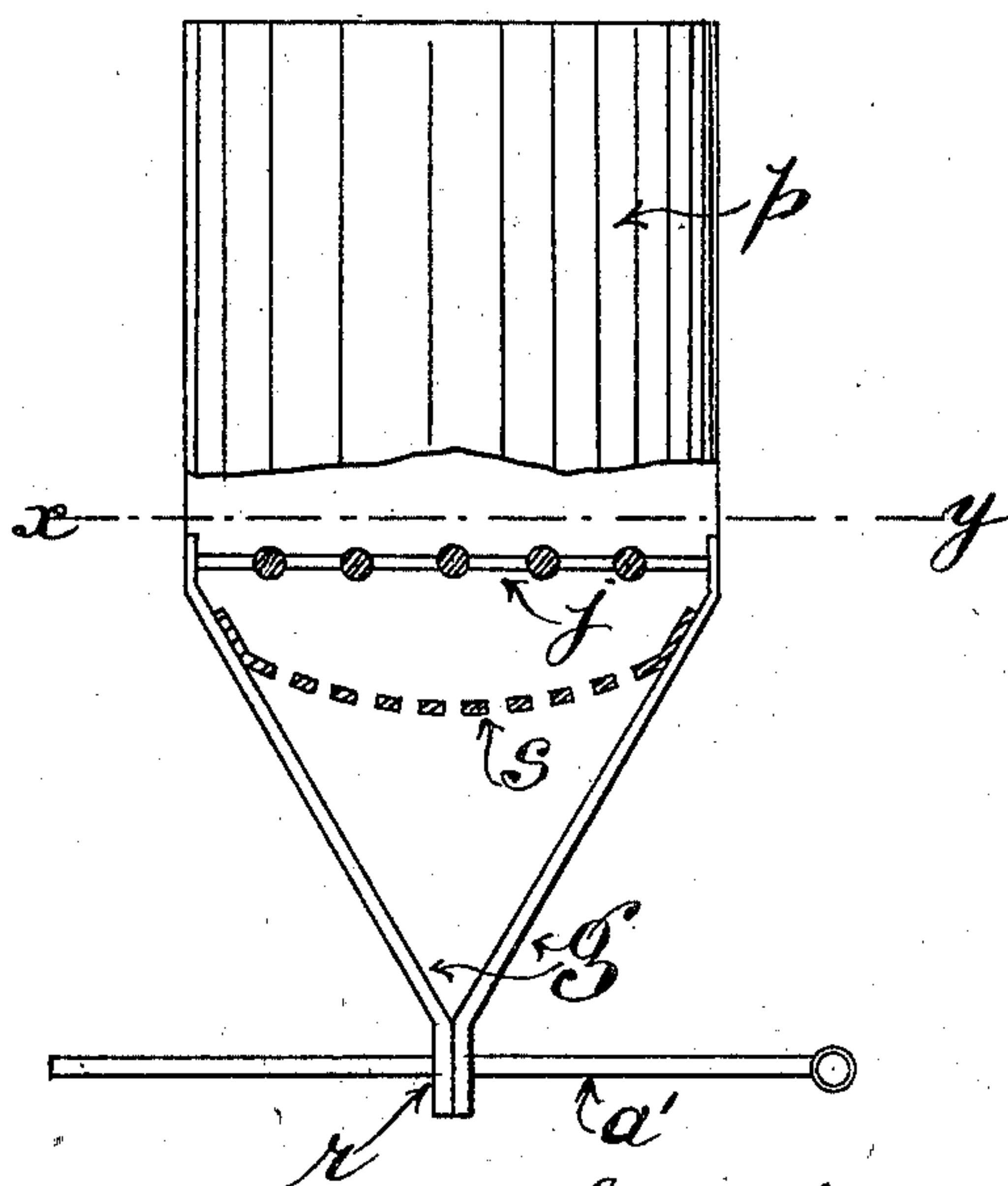
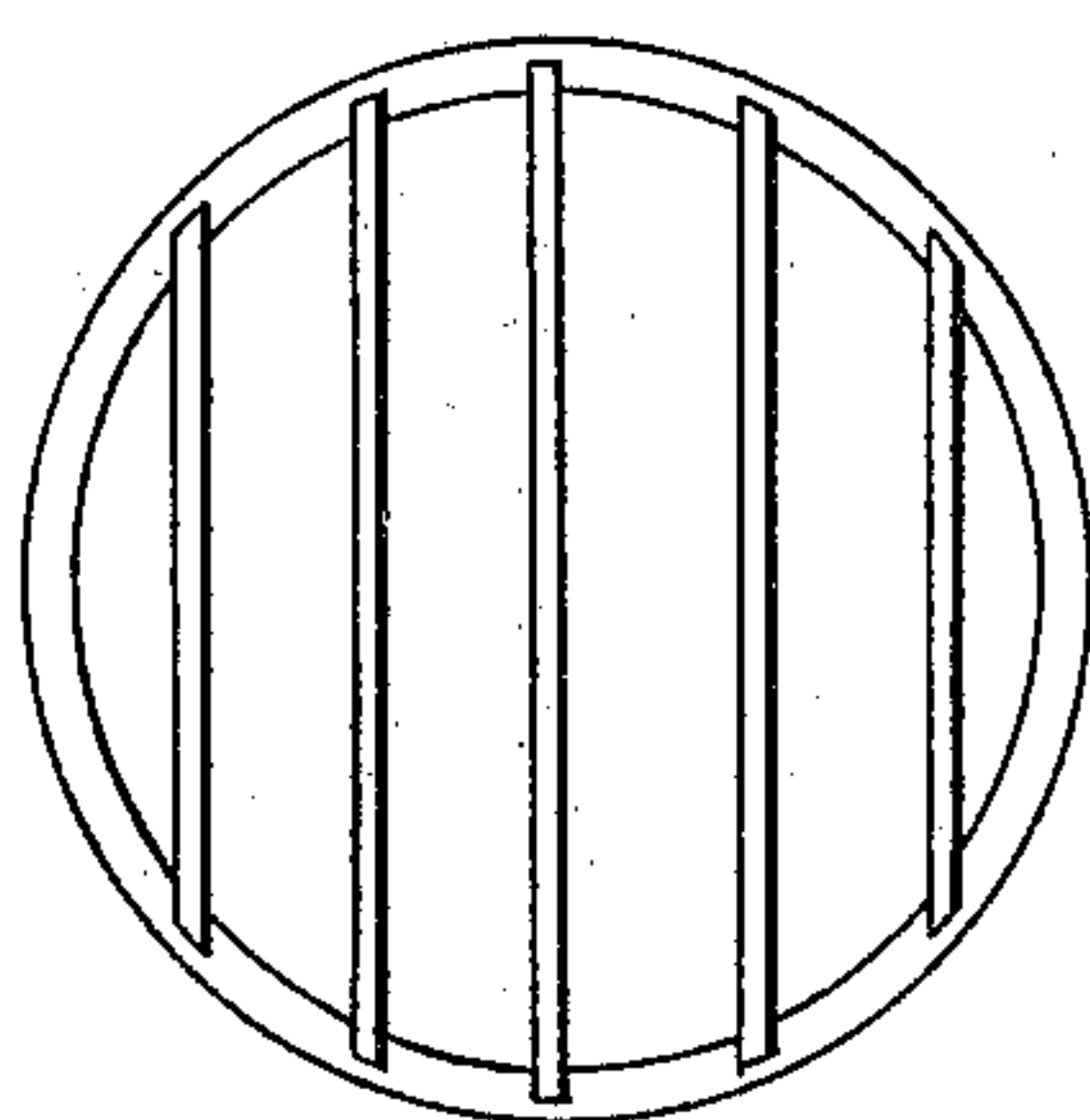


Fig. 4.



Witnesses.

Benjamin Clark.
Charles H. Briggs.

Inventor,
William, Allan, Coulson.
per, E. Eaton,
His Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM A. COULSON, OF LONDON, ENGLAND.

ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 625,832, dated May 30, 1899.

Application filed March 12, 1898. Serial No. 673,639. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ALLEN COULSON, a subject of the Queen of Great Britain, and a resident of London, England, have invented certain new and useful Improvements in Acetylene-Gas Apparatus, (for which I have obtained a patent in Great Britain, No. 29,571, dated December 14, 1897; in Germany, No. 39,322, dated March 5, 1898, (pending,) and in France, No. 267,378, dated July 8, 1898,) of which the following is a full, clear, and exact specification.

This invention relates to a new or improved apparatus for the production of acetylene gas, the object being to enable gas to be readily produced and at the same time regulate the supply and provide a means of escape for any superabundant gas.

In order that my invention may be fully understood, I will now refer to the annexed drawings, in which—

Figure 1 is a sectional elevation showing my apparatus; Fig. 2, a sectional plan through line *c d* in Fig. 1; Fig. 3, a sectional elevation of the receptacle for the carbid of calcium; Fig. 4, a plan view through line *x y* in Fig. 3; Fig. 5, an elevation of filter for use with the apparatus.

a is a cylinder which is open at its lower end and is provided with the apertures *w*, *w'*, and *w''*.

u is a tube which communicates with the cylinder *a* through the medium of the curved tubes *m* and with the vessel *f*, *r'* being a tap or outlet carried upon the vessel *f*, a perforated disk *f'* being employed when required for the purpose of regulating the escape of the gas in the event of the tap being fully opened. Surrounding this cylinder and connected to same is placed a gallery or casing *z*. Surrounding the gallery and cylinder and connected to the tube *u* is an outer casing *y*, and is for the purpose of allowing any excess of gas formed to escape and from which it may be conveyed to any suitable place. The carbid of calcium is carried in the receptacle *p*, which has the grated or perforated bottom *j*, and is also provided with the semicircular perforated plate *s*, which is attached to the two supports *g*.

When it is required to use the apparatus, the receptacle *p* is charged with carbid of

calcium and is then placed within the cylinder *a* and secured in position by means of the pin or rod *a'*, which is passed through the apertures *r* in the cylinder *a* and the aperture in the supports *g* at or about the position *r*. The whole is then placed in the outer vessel *h*, in which the required amount of water is carried. It will be seen that the water will be allowed to come into contact with the carbid of calcium when the tap or cock *r'* is opened, and thus the acetylene gas will be generated. *n* are eyelets or catch-pieces which are secured to the vessel *f* and through which pins or rods are passed and through apertures in the outer cylinder, thus securing the vessel in position. If the tap *r'* is now closed, the pressure of the gas generated will tend to force the water away from contact with the carbid of calcium, and any excess of gas after driving the water from the space inclosed by the gallery or casing *z* will pass underneath the same and escape through the pipe *t*. By this arrangement it will be seen that owing to the employment of the bent or semicircular tubes *m* and vessel *f* the gas will be cooled, owing to the large area of cooling-surface to which the gas is subjected, thus condensing steam which might be mixed with it, so freeing the gas to a great extent from such impurities. When required, I also employ a filter, as shown in Fig. 5, which consists of a tube containing suitable filtering material, such as amianthus and pumice-stone in a suitable state of division, this tube being provided with two smaller tubes for the purpose of enabling the filter to be interposed between the cock *r'* and the tube or pipe conveying the gas to the burner. By this arrangement it will be seen that the production of the gas will be regulated according to the pressure existing in the cylinder *a*, and as soon as this pressure rises beyond a certain point the water will be more or less removed from the carbid of calcium and upon the pressure falling will be allowed to come into further contact with the carbid of calcium. By this arrangement it will be seen that the production of the gas is regulated by the pressure produced in the cylinder *a* and in case of pressure will pass through the apertures *w*, and so displace the water from the casing *z*, thus removing the water from

contact with the carbid of calcium, and if the pressure generated is sufficient an escape will take place from the casing *z* into the casing *y*, and thence to the tube *t*, from which
5 it may be carried away to any suitable place through the medium of a tube or pipe.

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

- 10 In apparatus for producing acetylene gas: in combination a cylinder which carries a receptacle for carbid of calcium said receptacle being secured in the aforesaid cylinder; an outer casing surrounding the cylinder afore-
15 said so as to leave an auxiliary space for the reception of an excess of gas between this outer casing and the receiver, said cylinder being provided with apertures at suitable parts thereof; a casing surrounding said outer
20 casing and provided with an escape-tube for the passage of surplus gas generated; a tube or tubes communicating with the cylinder containing the carbid-receptacle and a vessel having an outlet-valve from which the gas

may be conveyed to the point of consumption; 25 said tube or tubes being bent or curved at a suitable part for the purpose of facilitating the condensation of water-vapor; a vessel for containing water in which vessel the apparatus is carried and maintained in position by 30 suitable means; the dimensions of the various parts being so arranged that upon a suitable quantity of water being placed in the vessel containing the apparatus the pressure of the gas generated will tend to regulate the supply according as the water is removed by 35 such pressure from contact with the carbid of calcium in the receptacle, the surplus gas escaping through the medium of the two surrounding casings. 40

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of February, 1898.

W. A. COULSON.

Witnesses:

BENJAMIN CLARK,
WILLIAM JOHN WEEKS.