

(No Model.)

W. M. JACKSON.

DEVICE FOR PROMOTING COMBUSTION.

No. 300,080.

Patented June 10, 1884.

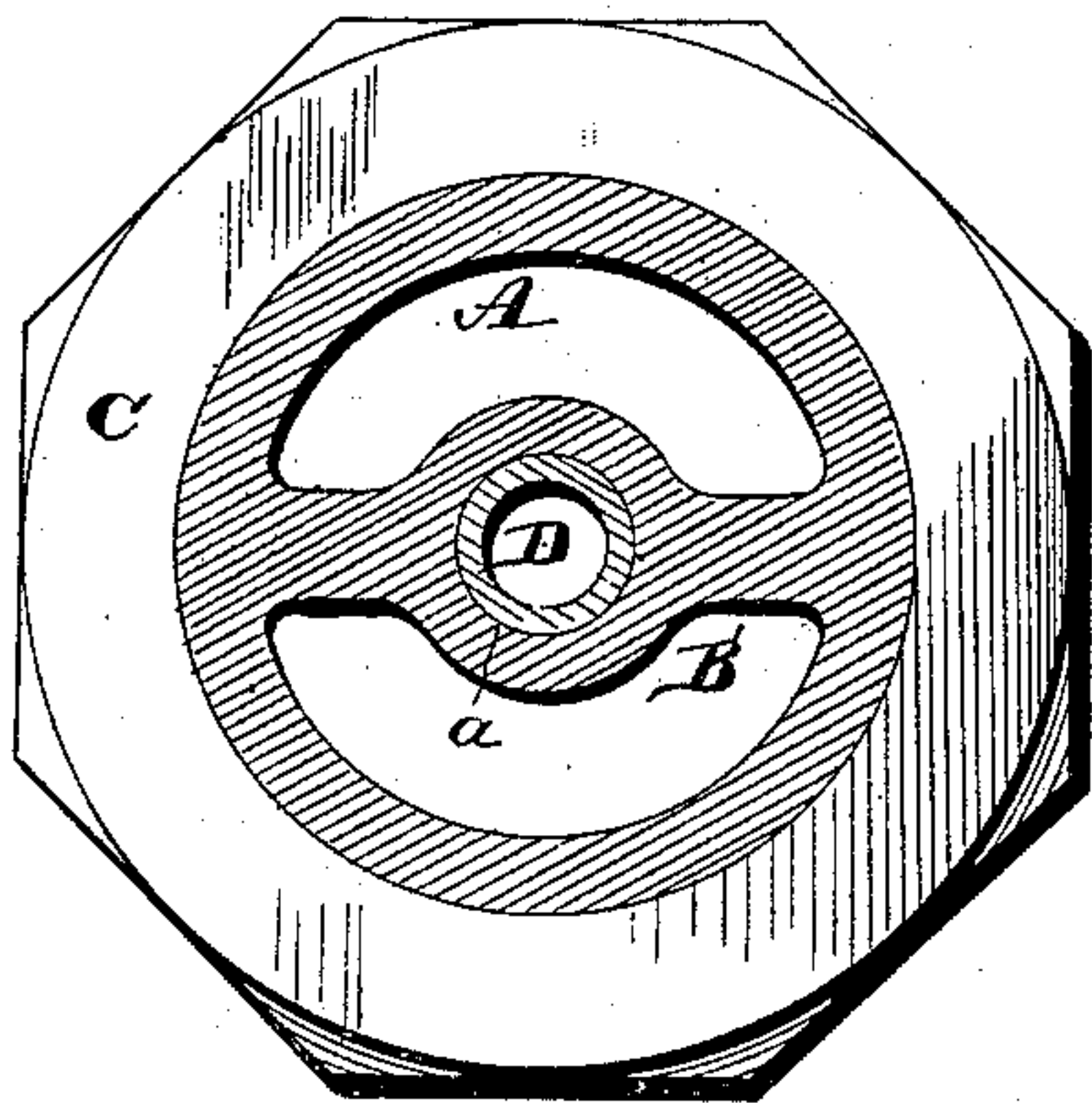
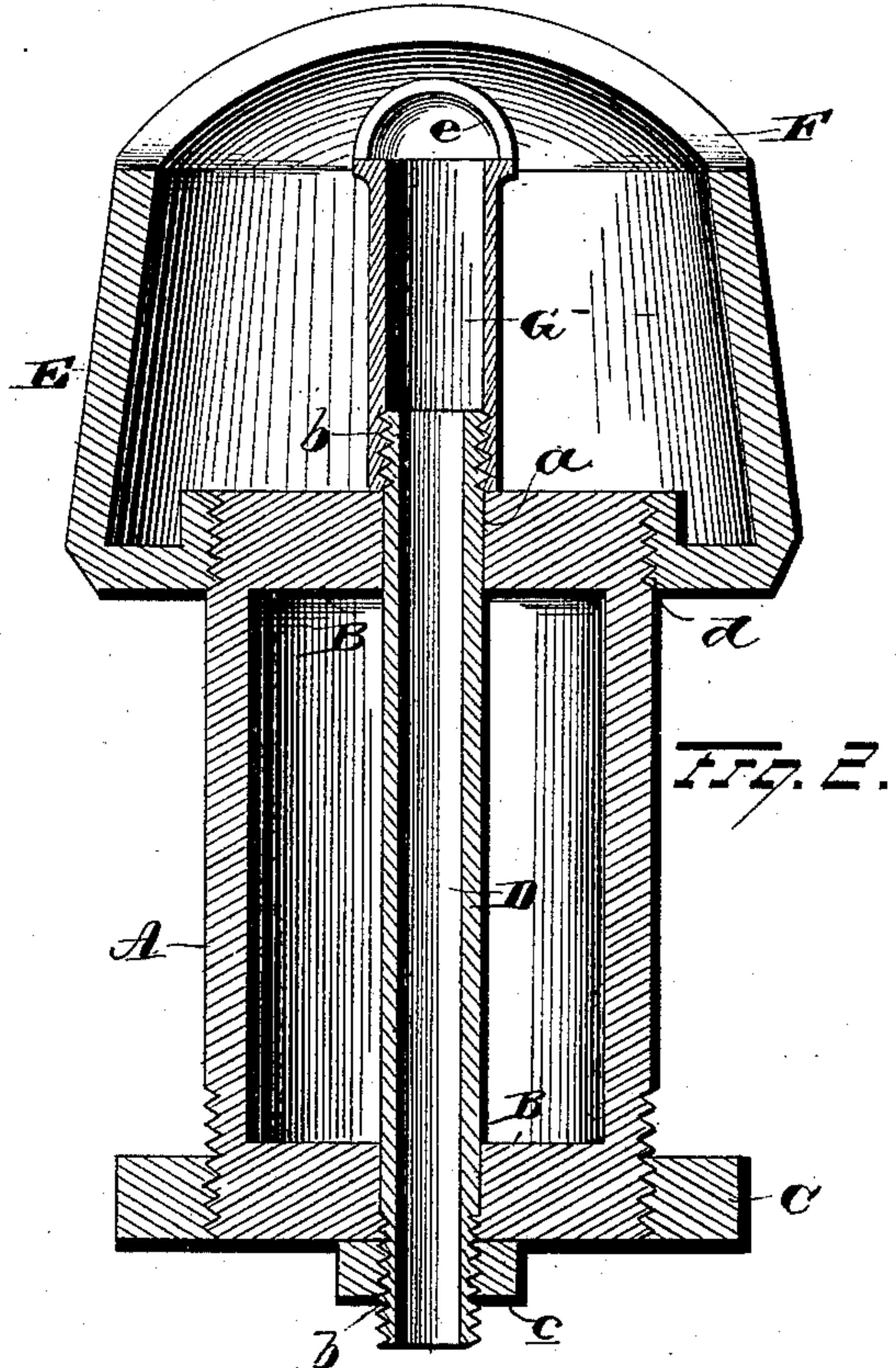
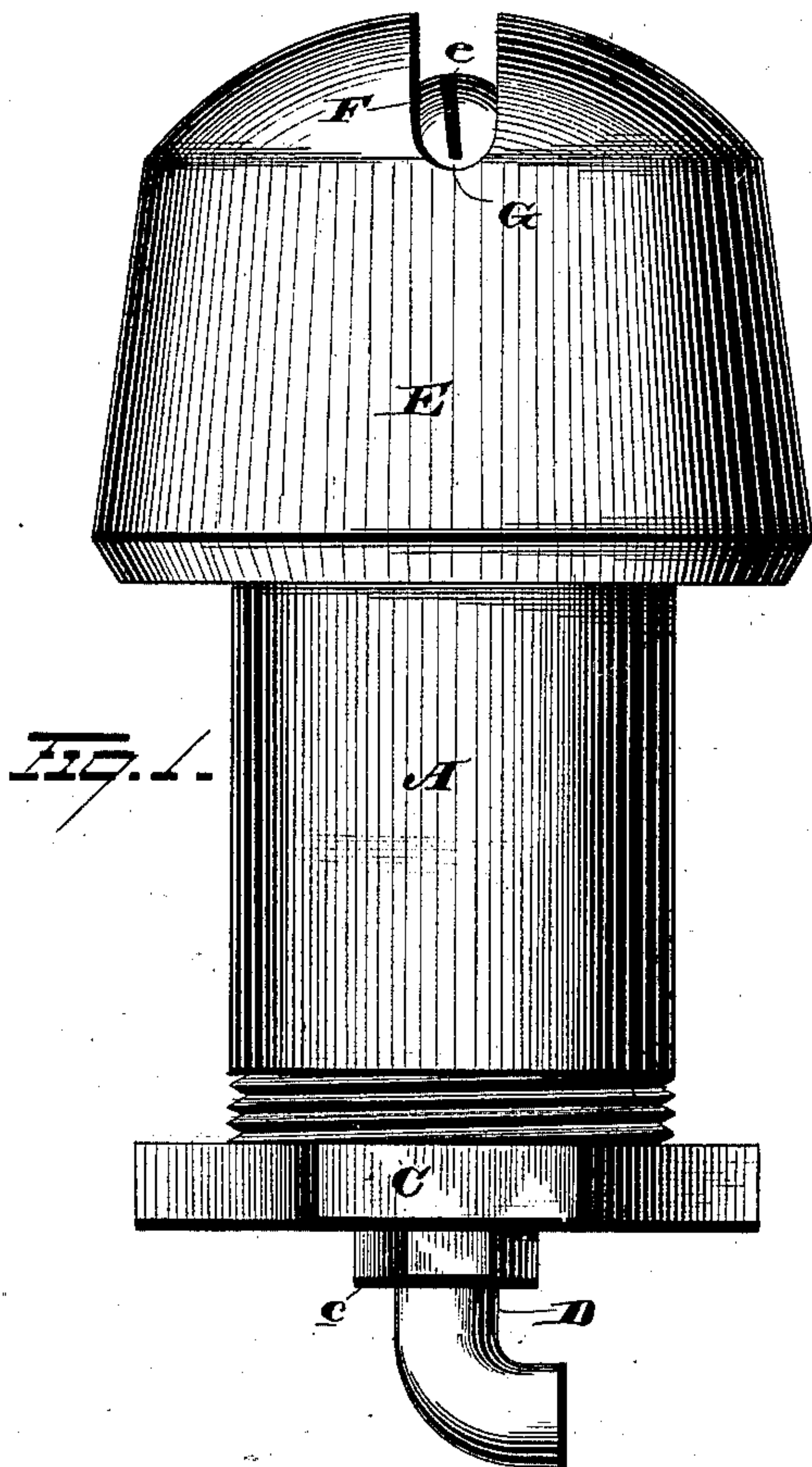
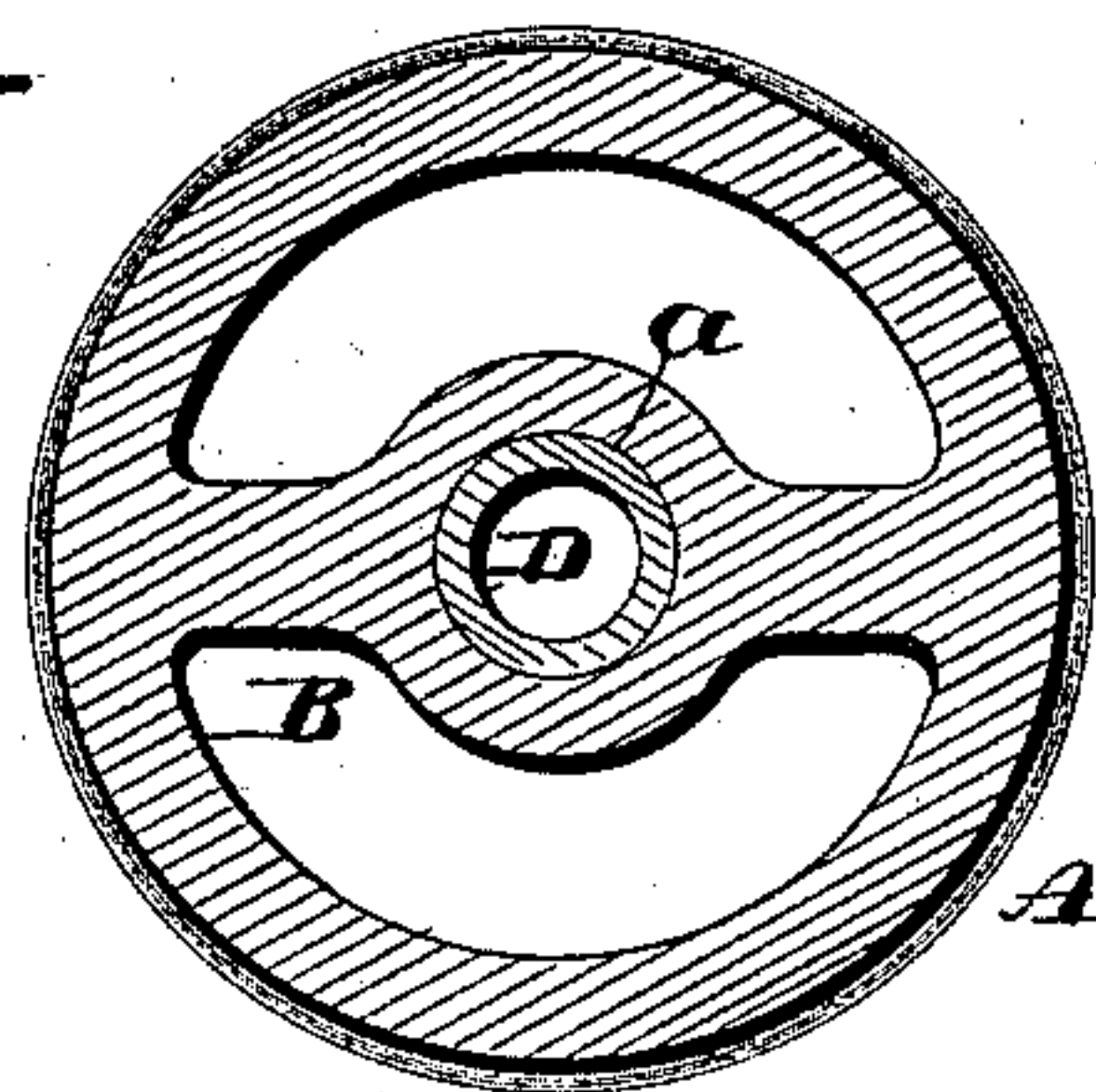


FIG. 3.



WITNESSES
E. J. Nottingham,
George Cook.

INVENTOR
Wm. Jackson.
B. P. A. Symmon.
Attorney

UNITED STATES PATENT OFFICE.

WALTER MARSH JACKSON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
THE AMERICAN COMBUSTION COMPANY, OF SAME PLACE.

DEVICE FOR PROMOTING COMBUSTION.

SPECIFICATION forming part of Letters Patent No. 300,080, dated June 10, 1884.

Application filed March 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALTER M. JACKSON, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Devices for Promoting Combustion; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in devices for the promotion of the combustion of fuel, the object of my invention being to provide a device of this character which shall be adapted to conduct a thin sheet or jet of steam enveloped in heated fresh air into and upon the ignited surface of a bed of combustible material, for the purpose of decomposing said steam by being brought in contact with carbon in an incandescent state and burning the gases resulting from such decomposition, and thereby promoting combustion by preventing the escape of the free carbon, the parts to be so constructed and arranged that the products of combustion will be prevented from mixing with the steam or air before they issue from a common outlet; and with these ends in view my invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of my improvement. Fig. 2 is a vertical section thereof. Fig. 3 is a plan view of the upper and lower ends of the tube or air-supply pipe.

A represents the tube or air-inlet of my improved device, being provided at its upper and lower ends with the cross-arms or supports B, said tube being held in position in the walls of the fire-box by the nut C. The central portion of the bracket B is enlarged in cross-section, as shown in Fig. 3, and is provided with a hole or perforation, *a*, through which passes the steam-pipe D, the lower end of which extends a short distance beyond the lower end of the tube, and is provided with a male screw-thread, as shown at *b*, the said steam-pipe D being held in proper position by a lock-nut, *c*, fitting on the steam-pipe and

impinging against the bracket or support B. The upper end of the tube A is provided with a male screw-thread, *d*, on which fits the head or shell E, preferably of the form shown, the curved end of which is provided with an elongated slot, F, through which passes the heated air from the tube A.

To the screw-threaded end of the steam-pipe D and within the shell E is secured the nozzle G, the lower end of which extends within a short distance of the lower end of the shell E, said nozzle being provided at its lower end with the slot *e*, registering and running in the same direction with the slot F, said slot *e* being preferably formed a little slanting.

My improved device is placed over the burning fuel, the tube A being connected with the fire-box and the pipe D with the boiler, through which pipe the steam passes and issues through the slot *e*, which, being made slanting, throws the widened jet of steam at an angle on the fire. The steam, passing out of the slot in the shell E, draws the heated air up through the tube A and envelops and passes out with the jet of steam. By this construction and arrangement of parts the material products of combustion—such as carbonic, sulphurous, and phosphorous acids and nitrogen—are prevented from becoming mixed with either the steam or heated air before they escape into or over the fire through the common outlet, the shell E being tightly closed around the tube A.

Instead of using the tube A, the shell E might be tightly secured to the fire-pot, and a cemented or packed joint may be made against the inner wall of said pot, to prevent the admixture of the products of combustion with the air or steam before they issue from the shell.

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

1. The combination, with an air-heating tube provided at one end with a shell having an elongated air-discharge opening, of a steam-pipe provided with a discharge-nozzle located within said shell, said nozzle having an elongated opening formed therein, the opening in the steam-nozzle being located in close proximity to the air-discharge opening, the parts being constructed and arranged to inject into

the fire-box a thin jet of steam enveloped by a thin stratum of heated air and prevent the ingress to the shell of the products of combustion, substantially as set forth.

5 2. The combination, with an air-heating tube provided at one end with a shell forming an enlarged air-chamber, said shell having an elongated air-discharge opening, of a steam-pipe provided with a nozzle located within
10 the shell, said nozzle being provided with an elongated opening located in close proximity to the similar shaped opening in the shell, substantially as set forth.

3. The combination, with the tube provided

at or near its opposite ends with the centrally- 15
perforated supports formed integral therewith, and the pipe passing through the tubes and supports, of the enlarged shell secured to the outer end of said tube, and the nozzle secured to said pipe and resting within the shell, all of 20
the above parts combined as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WALTER MARSH JACKSON.

Witnesses:

CHAS. H. SAWYER,
CHAS. H. JACKSON.