(No Model.)

C. P. FEST.

AIR HEATING APPARATUS.

No. 398,715. Patented Feb. 26, 1889.

Fig. 1.

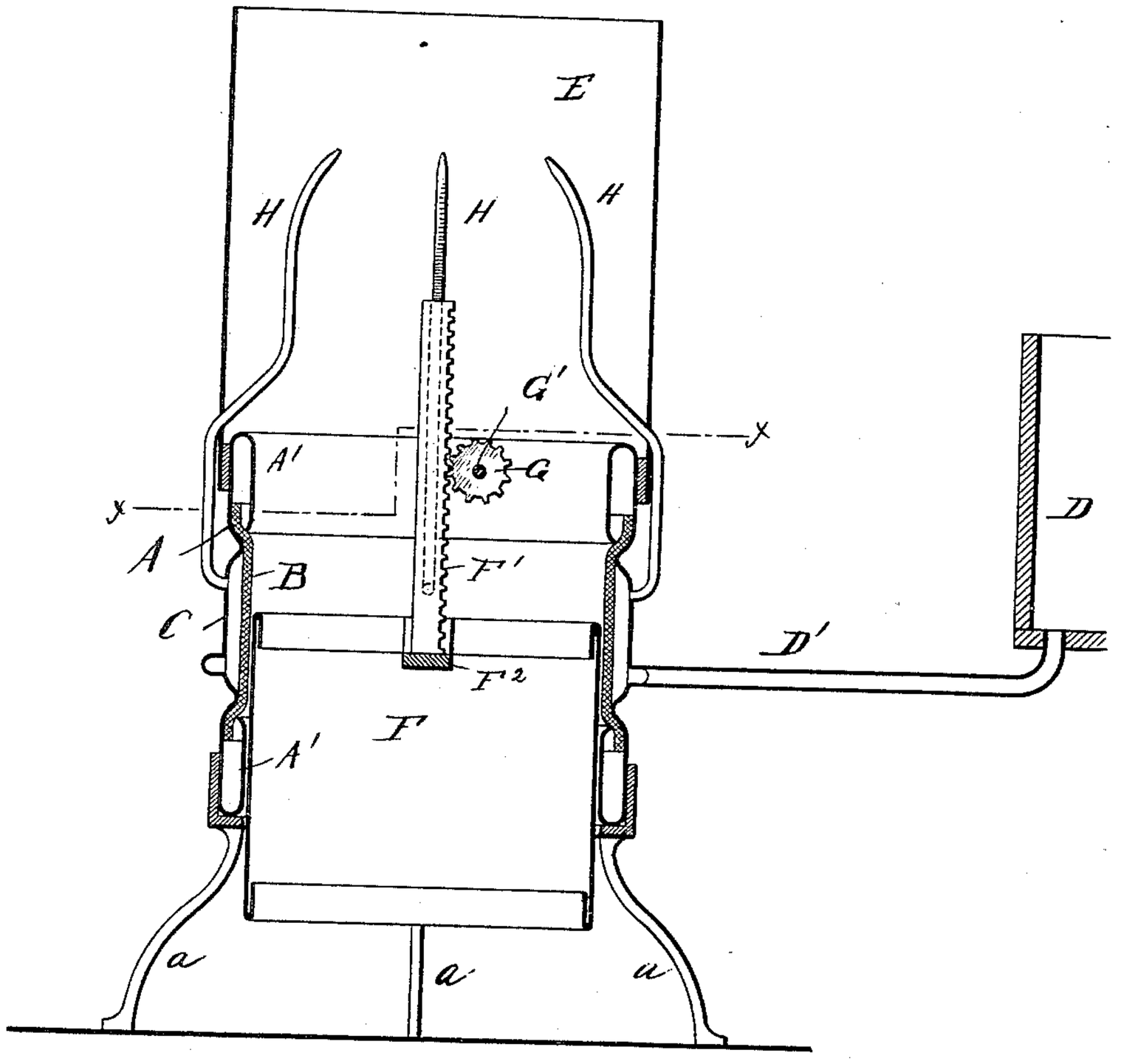
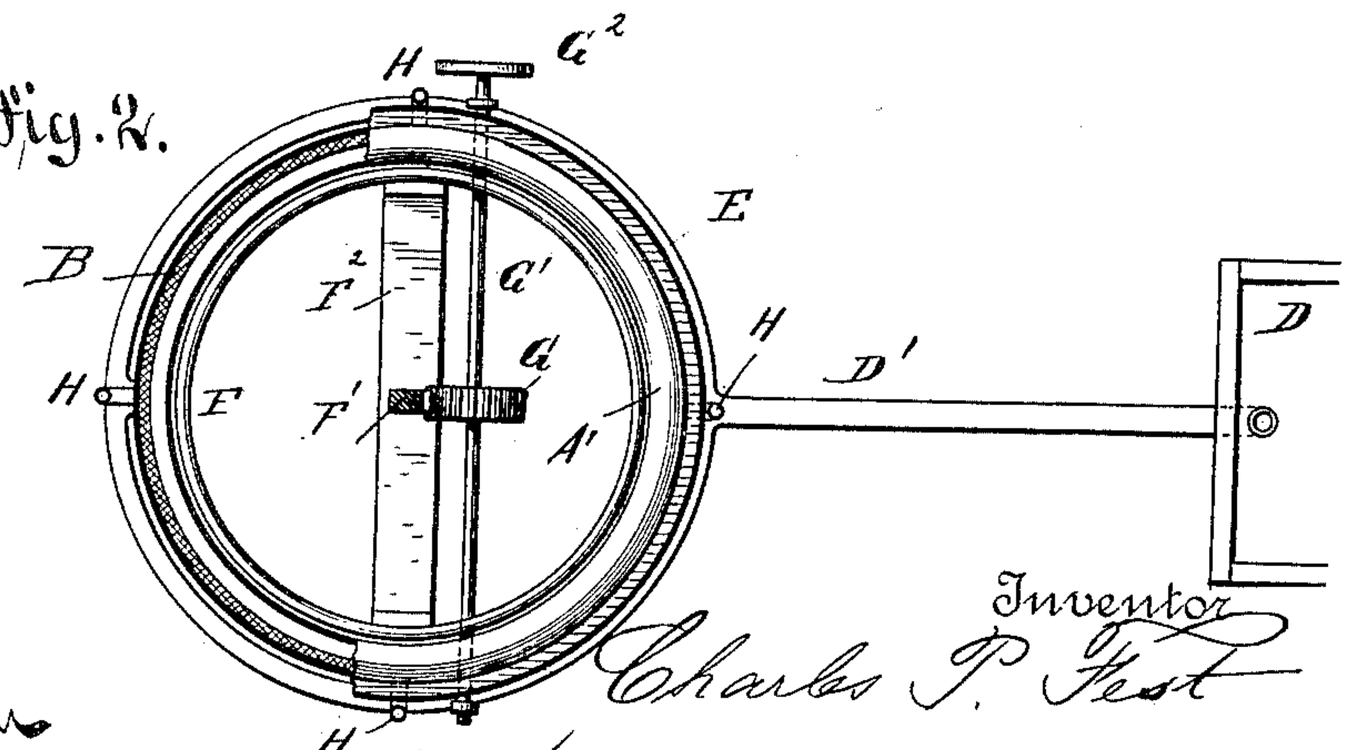


Fig. 2.



Witnesses.
F. H. Rosenbaum
Carl Kaus

Inventor
Charles P. Fest
By his Attorneys
Goepel & Naegueri

UNITED STATES PATENT OFFICE.

CHARLES P. FEST, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM G. TOPLIS, OF SAME PLACE.

AIR-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 398,715, dated February 26, 1889.

Application filed May 22, 1888. Serial No. 274,714. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. FEST, of Philadelphia, (Germantown,) in the county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Air-Heating Apparatus, of which the following is a specification.

This invention relates to an improved apparatus for heating quickly large quantities of air for the purpose of inflating balloons and causing them to rise, and for other purposes in which a large body of heated air is required; and the invention consists of an air-heater composed of a wick-holding cylinder supported on suitable legs, said wick-holding cylinder being provided with an exterior annular chamber for the admission of liquid hydrocarbon fuel and with upwardly-extending tubes, through which the vapors generated in the annular chamber are emitted.

The chimney is attached to the upper end of the wick-cylinder, and a vertically-adjustable interior cylinder is provided at the lower inside part of the wick-cylinder for regulating the size of the flame and thereby the quantity of air heated by the apparatus.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved apparatus for heating air; and Fig. 2 is a horizontal section of the same in line $x\,x$, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a wick-cylinder that is made of suitable sheet metal and is partly covered at the inside by a wick, B, of asbestus or other suitable non-combustible substance. The wick B is retained at the upper and lower ends by the inwardly-bent overlapping ends A′ of the cylinder A, so as to expose an interior cylindrical surface to the flame. The wick-cylinder A is provided outside of the wick B with an annular channel, C, which forms a supply-chamber for the liquid hydrocarbon that is supplied by pipes D′ from a suitable tank or reservoir, D, which is located some distance from the air-heating burner. The annular chamber C keeps the wick B supplied with liquid fuel, so that on igniting the same at its inner surface a cylindrical flame is produced, which establishes a strong air-current by drawing in the air from below the wick-cylinder. The wick-cylinder A is supported on suitable legs, *a a*, and is provided at the upper end with a chimney, E, and at the lower part with an interior wick-regulating cylinder, F, that is adjustable higher or lower by means of a fixed rack, F′, attached to a diametrical bar, F^2, of the cylinder F, and a pinion, G, the spindle G′ of which is operated by a milled disk, G^2, the pinion meshing with the rack and raising or lowering the cylinder F, so as to expose a greater or smaller surface of the wick, and consequently produce a greater or smaller flame by the same, according to the quantity of air that is to be heated. From the annular channel C tubes H extend in an upward direction, said tubes passing to the interior of the chimney E and conveying the vapors generated in the channel by the heat of the burner to the upper part of the chimney, where they are emitted and utilized. The tubes H have to be of such length that their orifices are above the level of the liquid fuel. By the heat of combustion the liquid fuel is vaporized, so that a rapid and lively combustion takes place, which draws in the air with suitable force at the lower part of the apparatus and emits it in highly-heated condition at the upper end of the chimney, from where it is conducted to the place of use.

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

1. The combination of a wick-cylinder having a channel, an asbestus or other wick supported by the wick-cylinder, a chimney applied to the upper end of the wick-cylinder, and a vertically-adjustable interior cylinder for regulating the size of the flame, substantially as set forth.

2. The combination of a wick-cylinder, a wick supported at the upper and lower ends by said cylinder, an annular channel formed in the wick-cylinder outside of the wick, a pipe for supplying liquid fuel to the same, upwardly-extending tubes for conducting the vapors from said channel, and a chimney at the upper end of the wick-cylinder, substantially as set forth.

3. The combination, with a wick-cylinder, a wick supported at the upper and lower ends

by said cylinder, an annular channel in the wick-cylinder extending around the wick, a pipe for supplying liquid fuel to said channel, a chimney applied to the upper end of the wick-cylinder, a vertically-adjustable interior cylinder for regulating the size of the flame, and vapor-tubes connected to said channel and extended in upward direction into the chimney, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHARLES P. FEST.

Witnesses:
WM. G. TOPLIS,
CHAS. W. SWEENEY.