(No Model.)

G. BECK.

COAL OIL GAS BURNER.

No. 436,865. Patented Sept. 23, 1890.

Fig. 1.

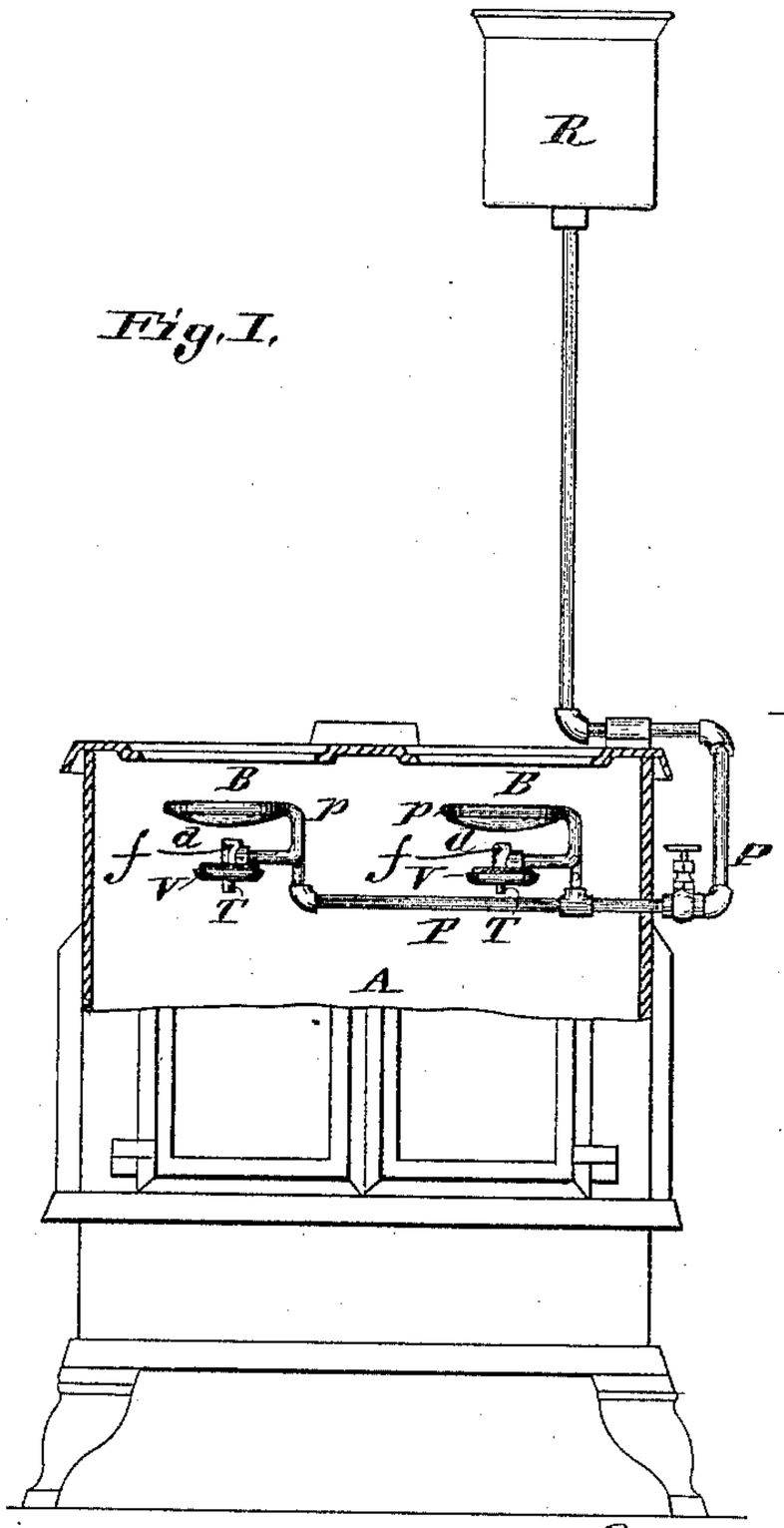


Fig. 2.

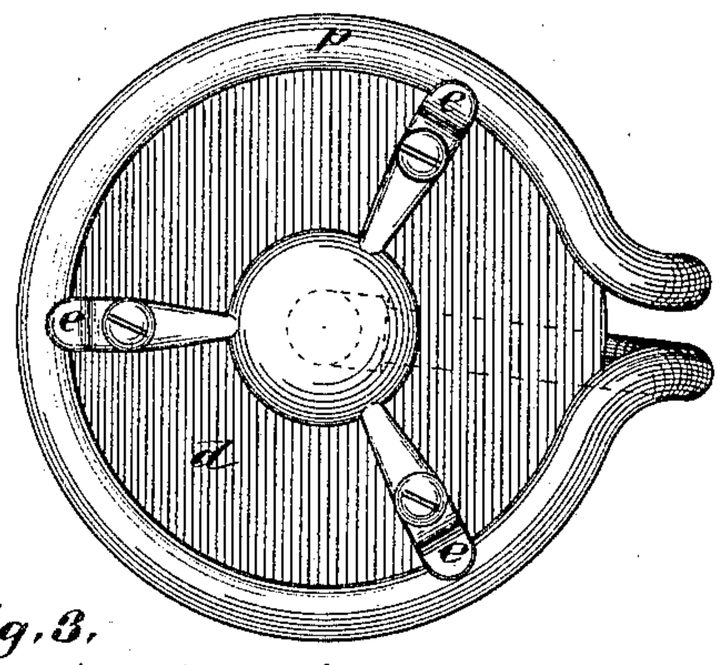


Fig. 3.

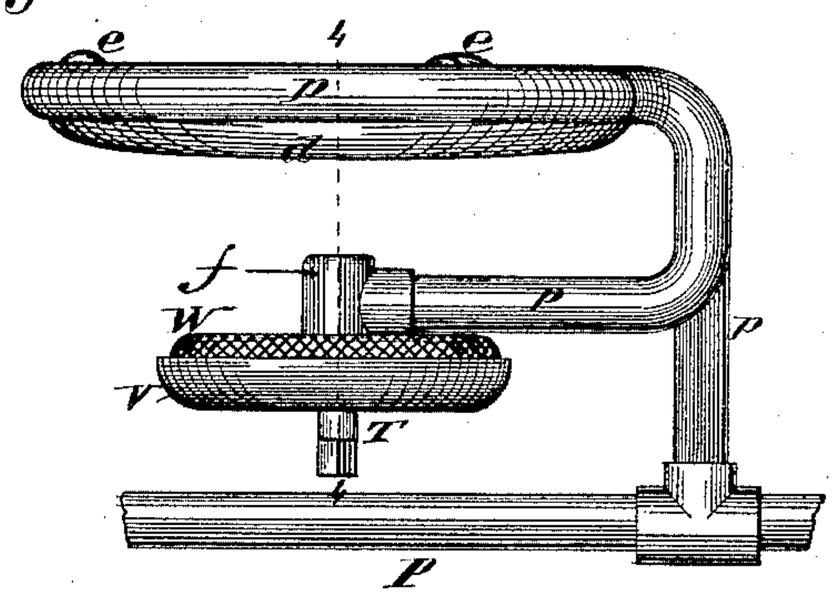


Fig 4.

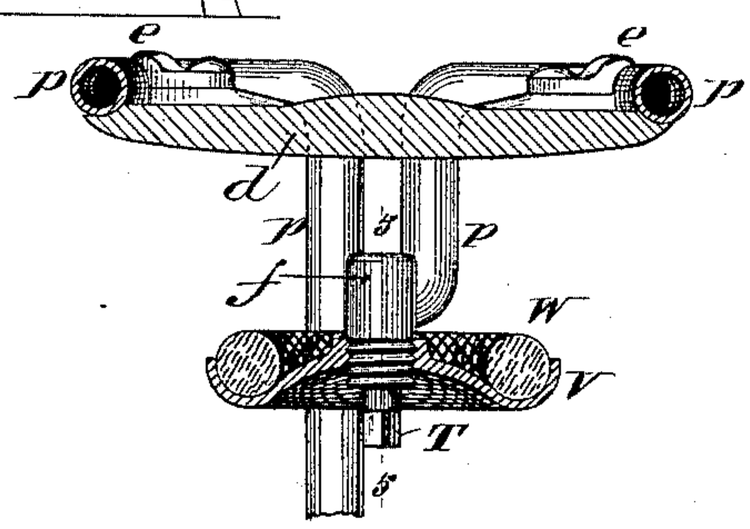
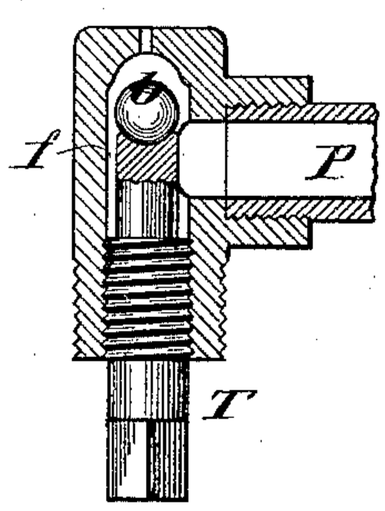


Fig. 5.



Attest,

Wm M Eccles.

Wm N. Manley

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UNITED STATES PATENT OFFICE.

GEORGE BECK, OF ST. LOUIS, MISSOURI.

COAL-OIL-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 436,865, dated September 23, 1890.

Application filed September 20, 1889. Serial No. 324,548. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BECK, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have invented a new and useful Coal-Oil-Gas Burner, of which the following is a specification.

My invention relates to that class of burners which convert the coal-oil into vapor as it burns; and it consists in the arrangement and combination of parts hereinafter claimed.

The object of my invention is to regulate the flow of vapor from the end of the burner and avoid the puffing movement of the same so common with all other burners. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my burner attached to a cooking-stove. Fig. 2 is a top view of the burner-disk and the part of the heating-pipe surrounding the same. Fig. 3 is an enlarged elevation of the burner. Fig. 4 is a vertical section drawn on line 4 4 in Fig. 3. Fig. 5 is an enlarged vertical section drawn on line 5 5 in Fig. 4.

A in the drawings is a common cook-stove, and has attached thereto in its interior two of my burners under each cap (designated by the letter B.) These burners are connected by a pipe P, which extends back and up at the rear of the stove and communicates with a reservoir at the rear, (marked R.) This pipe is supplied with a regulating-cock C, which is an ordinary stop-cock usually used by gas-fitters or in coal-oil or gasoline stoves, and which serves to regulate the flow of oil into the burner.

d is a metallic disk with a convex under surface and made circular in form and adapted to receive a continuous pipe *p* all around its upper surface near its periphery and provided with clamps *e*, which are made with lips at their ends that partly encircle the pipe *p*, and serve to retain it in position and clamp it fast to the disk *d*. These clamps are fastened to the disk by means of a screw, which passes down through the body of the clamp and into the disk. This pipe *p* is bent down over the periphery of the disk, one end being extended downward and connected and communicating with the interior of the supply-pipe P, and the other end being extended downward and bent under the disk and communicating with an upright chamber *f*. The pipe *p*, being close to the periphery of the disk, will be kept free of soot and receive the full power of heat from the flame, and will thus more rapidly convert the coal-oil which it contains into vapor.

The chamber *f* is a metal cylinder having a small opening at the top for the escape of coal-oil in the first lighting of the burner and for the escape of the generated vapor after the burner has been set in full operation, and it communicates with the interior of one end of the pipe *p*. It is provided with a shaft T, having a screw-thread fitting a corresponding screw-thread in the interior of the chamber at the lower end vapor-light, but adapted to be screwed up and down. The upper part of this shaft is smaller than the interior of the chamber *f*, which will leave a space between the interior of the chamber and the outer portion of the shaft for the passage of the vapor up the chamber from the pipe. The shaft is designated by the letter T, and is made to screw up and down to elevate the ball at the top, and also in order that it may be taken out and the chamber *f* cleaned. It is made square at the end to receive a key or wrench with which to move it. On top of this shaft is a metal ball *b*, which is smaller than the interior of the chamber at this point, and when in position its top reaches to within about a thirty-second part of an inch of the top of the chamber, and its sides are about the same distance from the inside walls of the chamber. This space will vary in proportion to the capacity of the burner, it being only necessary to leave space enough between the ball and the top and sides of the chamber to allow a free passage of the vapor and to allow the ball to have a free up-and-down movement. This ball *b* operates to distribute and divide the vapor in its progress through the chamber, and thus regulate the flow, which prevents the puffing usual to other burners. When a sudden rush of vapor strikes the ball, it will bob up and partly close the small opening at the top of the chamber, and when the force is less will fall back and let the vapor out in greater volume, thus operating as a regulating-valve and permitting the vapor to have an even and regular flow out of the chamber *f*.

The large surface of the pipe *p* exposed to the heat around the disk *d* enables me to convert coal-oil into vapor before it reaches the chamber *f* and to keep up a sufficient supply of the same, so that I can use coal-oil instead of gasoline, which is much cheaper and much safer. This chamber has a cup V fitted onto it on the lower end. It is screwed on, so as to be more readily taken off. It is cup-shaped, rising in the center, however, to about the same plane as its outside edge rises, and has thus formed a groove on its upper face near the periphery and adapted to hold in this groove an asbestus rope W, as well as oil. This asbestus rope is made large enough to project above the outer edge of the cup about one-half its diameter, so that that portion will never be immersed in the oil, but will always be above the oil and easily ignited when it is desired to light the burner.

To operate this burner I turn the oil on until the cup V is full, then turn it off in the usual way and apply the match to the asbestus rope, and the flame will heat up the disk and pipe *p* surrounding it and generate vapor out of the coal-oil in the pipe *p*. After it is started and vapor has been formed the cock *m* in the pipe P is turned and the vapor flows into the chamber *f*, and there always being enough vapor formed in the pipe *p* around the disk to supply the chamber there is always complete and regular combustion.

I know that there have been oil-cups used with stoves before to retain oil for the purpose of starting the vapor of the oil; but I have never known of one which had a recess in which was placed a rope of any material which projected above the outside of the cup, so as to prevent the rope from ever being submerged beneath the oil. The objection to cups containing nothing but gasoline or oil is that it is difficult to light, and when it is lighted it does not produce free combustion. These are the difficulties which are overcome by my invention, in which the asbestus rope projects above the upper surface of the cup sufficiently far to always insure its being out of the oil and easily ignited, while in all others there is no such function performed by the packing.

Now, what I claim as new, and for which I ask Letters Patent of the United States to be granted to me, is—

In a coal-oil-gas burner, a chamber communicating with a gas-generating pipe and provided with a loose-acting ball situated within the chamber and a shaft supporting said ball, in combination with said gas-generating pipe, substantially as described.

GEORGE BECK.

Attest:
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