

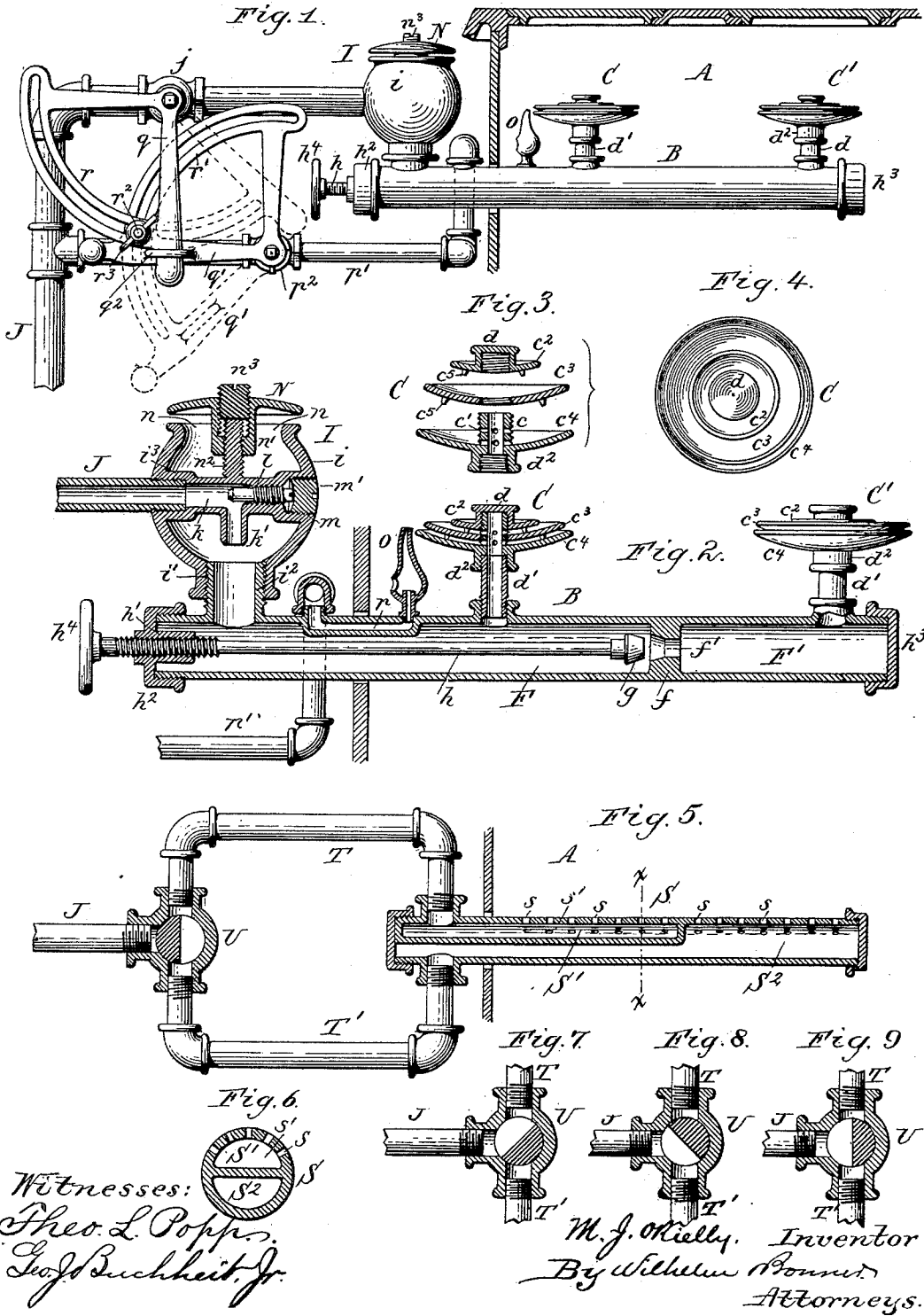
(No Model.)

M. J. O'RIELLY.

GAS STOVE.

No. 394,004.

Patented Dec. 4, 1888.



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UNITED STATES PATENT OFFICE.

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GAS-STOVE.

SPECIFICATION forming part of Letters Patent No. 394,004, dated December 4, 1888.

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To all whom it may concern:

Be it known that I, MICHAEL J. O'RIELLY, of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Gas-Stoves, of which the following is a specification.

This invention relates more particularly to improvements in that class of gas-stoves which are provided with a lighter or small burner connected with the main supply-pipe and whereby the main burner is lighted.

The object of my invention is to provide a simple and compact device of this character, and also to improve the construction of the burner and provide the device with an improved air-injector.

The invention consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of my improved lighting device applied to a gas-stove. Fig. 2 is a longitudinal sectional elevation of the device on an enlarged scale. Fig. 3 is a sectional view of one of the burners, showing its parts detached. Fig. 4 is a top plan view of one of the burners. Fig. 5 is a longitudinal sectional elevation of a modified construction of my improvement. Fig. 6 is a cross-section in line *x x*, Fig. 5. Figs. 7, 8, and 9 are sectional elevations showing different positions of the plug of the cock arranged in the main supply-pipe.

Like letters of reference refer to like parts in the several figures.

A represents the fire-place or flame-chamber of an ordinary gas-stove, and B is a supply-pipe, which enters the flame-chamber through an opening in the side of the stove and with which the burners C C' are connected. Each of the latter consists of a tube, *c*, which is provided with perforations *c'* and a series of circular deflecting-plates, *c² c³ c⁴*, surrounding said tube. The tube *c* is formed on the upper side of the lower deflecting-plate, *c⁴*, and is screw-threaded externally throughout its entire length. The intermediate deflecting-plate, *c³*, is provided with a central threaded opening, which fits over the threaded tube, and the upper deflecting-plate, *c²*, is formed on a screw-cap, *d*, which closes the upper end of the tube. The plates *c²* and *c³* are provided on their under side with teats

c⁵, whereby the plates are held at the proper distance apart. The gas-exit openings *c'* are arranged between the deflecting-plates *c² c³ c⁴*, and the latter are made of gradually-decreasing diameter toward the upper end of the tube, so that two circular sheets of flame will be produced—one inclosing the other. By this construction a large and powerful flame is provided for, which will extend over a considerable area of the flame-chamber. The plates *c² c³ c⁴* are preferably made concave or curved upwardly, so as to deflect the flame upwardly toward the top of the stove. The plates *c² c³ c⁴* may, however, be made straight or flat, and instead of the teats *c⁵* radial ribs may be formed on the under side of the plates *c² c³* to divide the flame.

The burners C C' are each connected with the supply-pipe B by a short tube, *d'*, which is seated with its upper end in a screw-threaded socket, *d²*, formed on the under side of the lower plate, *c⁴*.

The burner-supply pipe B is divided into two chambers or compartments, F F', by a partition, *f*, and the burners C C' are respectively connected with these chambers.

f' is an opening formed in the partition *f*, whereby the chambers F F' are placed in communication with each other, and the gas is admitted to both burners C C'.

g is a conical valve, which is adapted to close the opening *f'*, so as to exclude the gas from the inner burner, C', if it is desired to use but a single burner. The end of the opening *f'* adjacent to the conical valve is made conical, so as to form a seat for the valve.

h represents the stem of the valve, which is screw-threaded at its outer end and works in a threaded hub or sleeve, *h'*, formed on a screw-cap, *h²*, which closes the outer end of the pipe B. The opposite end of this pipe is closed by a screw-cap, *h³*.

h⁴ is a hand-wheel secured to the outer end of the valve-stem, and whereby the same is turned so as to seat the valve against the opening *f'* and exclude the gas from the chamber F', or remove it from said opening and admit the gas to said chamber.

I represents the air-injector, which is connected with the burner supply-pipe B outside of the stove, and J is the main gas-supply

pipe connected with the injector, and which is provided with a valve or cock, *j*, for controlling the flow of gas to the burners.

i represents the spherical casing of the injector, provided at its lower end with a threaded collar, *i'*, which is screwed upon a nipple, *i*², of the burner supply-pipe B, and in its side with a screw-threaded socket, *i*³, into which is fitted the end of the gas-supply pipe J.

k is a horizontal tube or passage arranged centrally in the casing *i*, and communicating at one end with the gas-supply pipe J. The tube K is provided with a downwardly-projecting nozzle, *k'*, which delivers the gas into the nipple *i*² of the burner supply-pipe B.

l represents a valve arranged in the opposite end of the horizontal tube *k*, and projecting into the latter above the nozzle *k'*, so that by moving the valve inwardly the pipe will be partly obstructed and the supply of gas to the burner-pipe B diminished. The valve *l* consists of an externally-screw-threaded stem, which works in a threaded opening formed in the end of the tube *k*. The outer end of the stem is provided with a notch, so that it can be turned by a suitable tool or wrench. The casing *i* is provided in its side with a threaded socket, *m*, which is closed by a screw-plug, *m'*.

When the device is first applied to the stove, the valve *l* is adjusted to the maximum supply of gas desired, and the plug *m'* is then secured in the socket *m*. This construction prevents the attendant from tampering with the valve and increasing the gas-supply after the valve has been properly adjusted.

n represents an opening formed in the upper end of the casing *i*, and through which air is admitted to the injector and commingled with the gas issuing from the nozzle *k'* before it passes to the burners.

N represents an adjustable valve or disk arranged above the opening *n*, and whereby the admission of air to the injector is regulated. The valve N is provided on its under side with an internally-screw-threaded sleeve or collar, *n'*, which engages over a threaded shank or stem, *n*², projecting upwardly from the tube *k*.

*n*³ is a screw-plug, which is arranged in a threaded opening in the valve N and the upper portion of the sleeve *n'*, and which bears upon the upper end of the screw-stem *n*² and firmly holds the valve against movement on the stem. Upon loosening the screw-plug *n*³ the disk N can be adjusted to increase or reduce the supply of air to the injector.

O represents the lighter or small burner, which is arranged within the flame-chamber and in such close proximity to the burner C that the gas issuing from this burner will be ignited by contact with the flame of the lighter. The gas issuing from the other burner, C', when the latter is used, is lighted by contact with the flame of the burner C.

p represents a supply pipe or passage with which the lighter O is connected, and which

terminates with its inner end in the flame-chamber A and with its outer end outside of the stove. The outer end of the supply-pipe *p* is connected with the main supply-pipe J beyond the cock *j* by a branch pipe, *p'*, which is provided with a regulating valve or cock, *p*². The supply-pipe *p* is arranged within the burner supply-pipe B, and is cast in one piece therewith, as clearly shown in Fig. 2. This construction of the lighter supply-pipe *p* and burner supply-pipe B dispenses with an extra opening in the side of the stove, which is necessary when these pipes are made separate from each other, thereby rendering the device more compact.

The cocks *j* and *p*² are provided with handles *q* *q'*, whereby they are turned. These handles are so arranged that they will stand at right angles to each other when both cocks are closed, as indicated in the drawings in the full-line figures of the same. The dotted-line figures in the drawings show the position of the handles when the cocks are partially open, and when the cocks are entirely open the handle *q* will lie parallel with the main supply-pipe J and the handle *q'* will lie at right angles to the branch pipe *p'*. The handle *q'* of the cock *p*² is provided with a loop, *q*², in which the lower end of the handle *q* of the cock *j* engages when the latter is in a closed position. By this construction the attendant is compelled to open the lighter-cock *p*² before opening the cock *j* of the main supply-pipe.

r is a slotted segment formed on or secured to the handle *q*, and *r'* is a similar segment formed on the handle *q'* and intersecting the segment *r*.

*r*² represents a pin or bolt passing through the slots of the segments *r* *r'*, and provided with a thumb-nut, *r*³, whereby the segments are clamped against each other and the handles are securely held in the desired position. Upon loosening the thumb-nut *r*³, the handles can be moved so as to regulate the valves.

When it is desired to light the stove, the cock *p*² is opened by turning its handle into the position shown by dotted lines in Fig. 1, whereby the gas is permitted to pass to the lighter O through the branch pipe *p'* and supply-pipe *p*. The lighter is then lighted from the interior of the stove. The gas-exit opening of the lighter is so small that but a small quantity of gas escapes therefrom, which is insufficient to cause explosions when lighting the lighter. When the latter has been lighted, the cock *j* of the main supply-pipe J is opened by turning its handle into the position indicated by dotted lines in Fig. 1, thereby admitting the gas to the burner supply-pipe B and burners C C' through the injector I, in which latter the gas mixes with air induced through the opening *n*. As soon as the gas issues from the burner C, it is ignited by the flame of the lighter, and the burner C' is lighted in turn by the flame of the burner C.

When the gas is turned off from the main burners, a puff or concussion of the air takes

place at the mouth of the burners, which has a tendency to extinguish the lighter O. To prevent this the lighter is provided with a small hole, *o*, arranged near the lower end thereof, as shown in Fig. 2.

In the modified construction represented in Fig. 5 a tubular burner, S, is employed, which is provided with gas-jets *s*. The burner is divided into two compartments or chambers, S' S², so that the gas can be admitted to either or both chambers at desire, so as to have the flame under one or both utensil holes of the stove.

The chamber S² is formed by the main portion of the burner-tube S, and the chamber S' is formed by a pipe, *s'*, arranged within the tube S, the construction of the inner partition, *s'*, being in all respects similar to that of the lighter supply-pipe *p*, except that in the modified construction the inner pipe is closed at both ends.

The chamber S' is connected with the main supply-pipe by a branch pipe, T, and the chamber S² is connected therewith by a branch pipe, T'.

U represents a three-way cock located at the junction of the branch pipes T T' with the main supply-pipe, and whereby the admission of gas to these branch pipes is controlled. The plug of this three-way cock is so arranged that the gas can be admitted to either branch pipe separately or to both pipes simultaneously. When the plug is in the position represented in Fig. 7, the gas passes through the branch pipe T to the chamber S' and is cut off from the chamber S². When the plug is in the position indicated in Fig. 8, the gas is admitted to the branch pipe T' of the chamber S², and when in the position shown in Fig. 9 the gas passes through both branch pipes and into both chambers S' S². In the position illustrated in Fig. 5 the cock is closed.

I claim as my invention—

1. The combination, with the supply-pipes J and *p'*, provided with cocks *j* and *p*², of a handle, *q'*, secured to the plug of the cock *p*², and provided with a loop, *q*², and handle *q*, secured to the plug of the cock *j* and engaging in the loop *q*², substantially as set forth.

2. The combination, with the cocks *j* and *p*², provided with handles *q* *q'*, having slotted segments *r* *r'*, and the loop *q*² upon handle *q'*, of a clamping-screw, *r*², connecting said segments, nut *r*³, and pipes J and *p'*, substantially as set forth.

3. The combination, with the supply-pipe B, of a burner composed of a perforated tube, *c*, and deflecting-plates adjustable toward or from each other upon the perforated tube at or near the points of perforation, substantially as and for the purpose stated.

4. In a burner, the combination, with the perforated tube *c*, provided with an external screw-thread, of a lower deflecting-plate, *c*¹, formed on said tube, an upper deflecting-plate, *c*², formed on a screw-cap, *d*, closing the upper end of the perforated tube, and an intermediate deflecting-plate, *c*³, provided with a screw-threaded opening engaging over said threaded tube, substantially as set forth.

5. In an injector, the combination, with a casing, *i*, provided with an air-inlet opening, *n*, of a tube, *k*, arranged in said casing and provided with a nozzle, *k'*, opening into said casing, a gas-regulating valve, *l*, arranged in said tube, an adjustable valve or disk, N, arranged above the air-inlet opening *n*, and provided with a screw-threaded sleeve, *n'*, a screw-stem, *n*², upon which the valve N is arranged, and a screw-plug, *n*³, arranged in the screw-sleeve *n'* and bearing upon the screw-stem *n*², substantially as set forth.

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