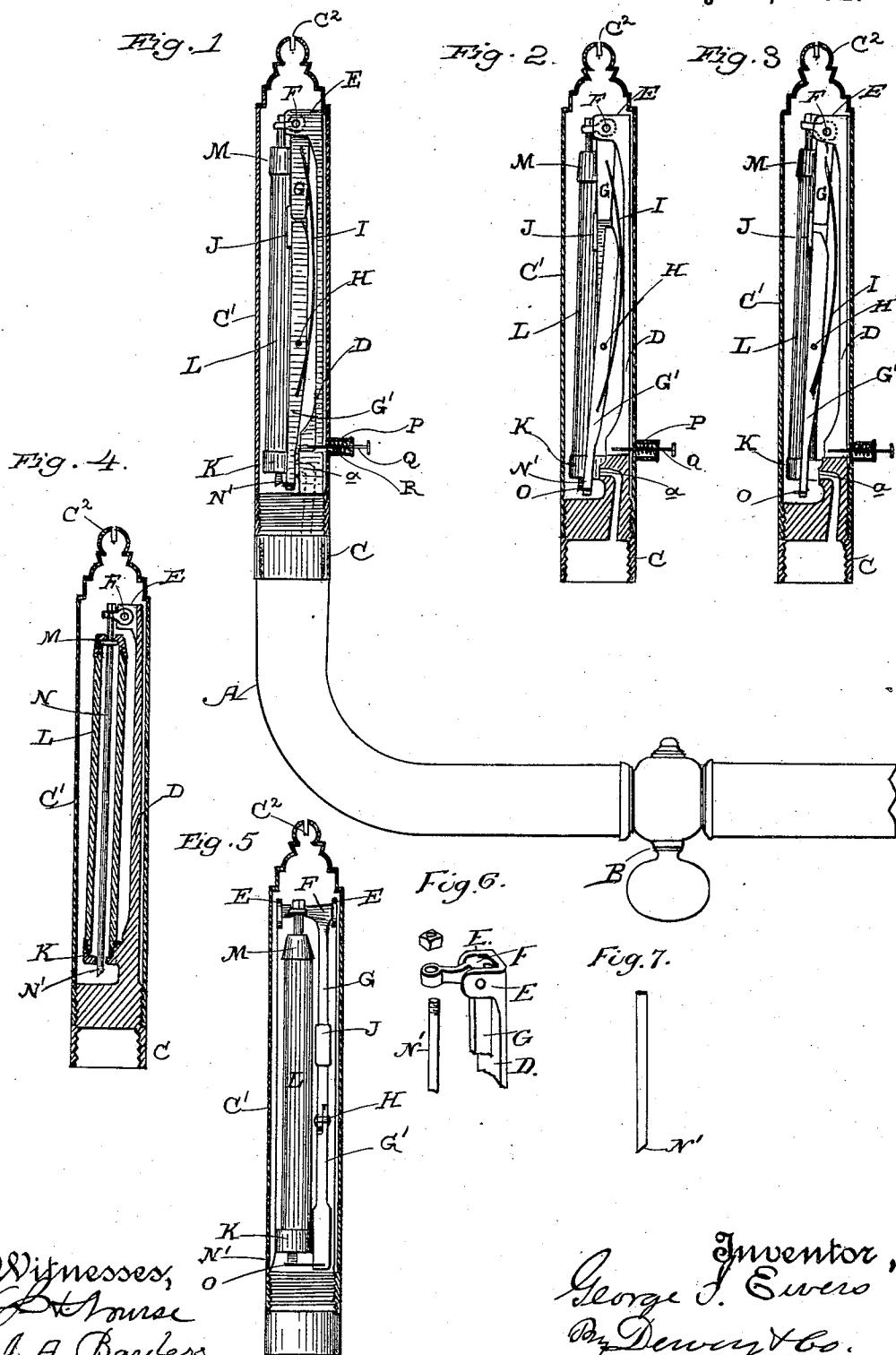


(No Model.)

G. I. EWERS.
GAS BURNER.

No. 475,012.

Patented May 17, 1892.



Witnesses,
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UNITED STATES PATENT OFFICE.

GEORGE I. EWERS, OF SAN FRANCISCO, CALIFORNIA.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 475,012, dated May 17, 1892.

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To all whom it may concern:

Be it known that I, GEORGE I. EWERS, of the city and county of San Francisco, State of California, have invented an Improvement in Gas-Burners; and I hereby declare the following to be a full, clear and exact description of the same.

My invention relates to an improvement in gas-burners or to an attachment for gas-burners, the object of which is to automatically shut off the flow of gas when the flame from any cause becomes extinguished while the stop-cock remains open.

It consists of a supplemental valve, a means for opening said valve and retaining it open to permit the gas to flow when the stop-cock is turned on to allow the gas to be lighted, a means by which said valve is released from its holding-catch, but still retained in its open position while the gas is burning, and a means by which it is closed after the gas is extinguished.

It also consists in certain details of construction, which will be more fully explained hereinafter, and illustrated by the accompanying drawings, in which—

Figure 1 is a view showing the end of the gas-bracket, the supplemental valve, and mechanism, with a section of the inclosing cap or casing, which holds the burner-tip, the valve being closed. Fig. 2 shows the valve open, ready for the gas to be lighted. Fig. 3 shows the position of the parts while the gas is burning. Fig. 4 is a vertical section of the casing and the vulcanite tube. Fig. 5 is a vertical section of the casing and a front view of all the parts. Fig. 6 represents details of the upper portion of the arm G with its swivel-head F and attachments. Fig. 7 is a detail showing the catch N' on the lower end of the bar N.

A is the end of the pipe conveying the gas to the burner.

B is the stop-cock or key by which the supply of gas is admitted to or cut off from the burner.

C is the support or base for the mechanism of the automatic valve, and it is provided with a socket and screw-threads for attaching it to the end of the pipe A.

C' is a casing screwed to the base C and inclosing the mechanism hereinafter described

and having its upper end adapted to receive any suitable burner or top. The gas passes through this casing to the burner. From one side of the top of the base C a standard D extends upwardly within the casing C'. A hole is made through the top of the base C, and leads from the socket in the base up into the lower part of the standard, and thence opens out toward the inner side of the standard, which at this point presents a flat face with a small annular projection or raised ring, with a smooth uniform surface, which forms a seat for the valve. From the upper end of the standard lugs E project, as shown, and between these lugs a swivel-head F is pivoted, so as to turn on its horizontal pivots. From this swivel-head an arm G extends downward toward the base C, and has a hinge, as shown at H, with an extension G' downwardly from the hinge to a point near the top of the base C. One end of a spring I is fixed to the part G and the other end thereof is placed in a slit in G', and the elasticity of the spring keeps the two parts G and G' normally in a straight line with each other. The pivot H, which unites the two parts, passes through the part G' a little distance below its upper end, and this upper end normally presses against lug J, which extends outward from one side of the part G; but when the lower end of the part G' is pushed away from the standard D, G' turns on the pivot H and the upper end of G' moves away from the lug J. As soon, however, as the lower end of G' is released the spring I pulls G' back toward D and the upper end of G' comes in contact with the lug or stop J, which arrests further movement in that direction just as the two parts G and G' attain a straight line. It will thus be seen that G' can be turned on its pivot and pushed away from the standard D to open the valve; but it cannot be drawn in the opposite direction beyond a point corresponding to a straight line with G. Under ordinary conditions the lower part G' will be pressed against the valve-seat of the port *a* in the standard D, so as to act as a valve and close the port *a*. The end of the arm G' has fastened to it a washer of any suitable material, which will make a tight-closing valve, and when the valve is pressed against the rest which encircles the port *a* no gas can pass into the burner.

A lug or support K projects from the lower part of the standard D, and an expansible tube L has its lower end screwed into this lug, while the upper end has a cap M, through which passes a rod or tube N, the latter being fixed in said cap M so as to be immovable lengthwise independently of the tube L, and so that any expansion or contraction of the tube L, which has its lower end fixed, will carry N with it. The lower end of N passes loosely through the tube L and the support K and is allowed to move freely up and down by the expansions or contractions of L, which, being greater than N, will carry the latter with it.

I have found that vulcanite is a very suitable material for the exterior tube L, and the rod or tube N is made of metal or any other suitable material which expands and contracts less by heat and cold than the vulcanite, the latter having a very considerable range of expansion. By passing the metal rod or tube N through the vulcanite tube L the latter is reinforced and prevented from bending, which it might easily do when softened by the heat if not prevented in some way.

The rod N, which passes loosely down through the vulcanite tube L and also through the support K, has at its lower end a catch N'. From one side of the arm G' an elastic arm or lug O projects, and when the arm G' is forced away from its contact with the standard D this lug O will engage with the catch N' at the lower end of the rod N, and the valve will thus be held open.

The outer casing C', which is secured to the base C and incloses all the mechanism of the burner, has a small hole made in one side of it, with a short tubular extension P, through which passes a small pin Q, which fits gas-tight, and has a press-button upon its outer end.

Inside the casing P is a spiral spring R, which forces the pin Q out. The inner end of the pin Q presses directly against the hinge-arm G', and when it is thus pushed inward it presses this arm away from the standard D until the projection O engages the catch N' and the valve-port *a* is open. The spring R retracts the pin Q as soon as it is released. In this position, when the cock B is open, the gas will flow through the port *a* into the casing C', and thence from the burner-tip C² at its upper end. As the parts become heated by the combustion of the gas the tube L expands upwardly from its fixed support K, and by reason of its expansion being greater than the interior rod N, it carries the latter upward with it until the catch N' is disengaged from the projection O. This allows the spring I to act and to draw the hinge-arm G' backward until its upper end engages the projection J of the arm G, when the two parts G and G' will stand in line. If no other action than the above described had taken place it will be manifest that the valve on the arm G' would by this operation again

close the valve of the port *a*; but to prevent this taking place the upper end of the rod N connects with the hinged swivel-head F of the arm G at a point to one side of its pivots and the expansion of the tube L causes this head to turn about its pivots, carrying with it the arm G until the latter no longer stands in a vertical position. Its lower end is thus moved outwardly, so that when the hinged portion G' stands in line with the part G it will not close the port *a*, as plainly shown in Fig. 3. This condition of the parts will remain so long as the gas is burning and the heat keeps the tube L expanded. As soon as the gas is extinguished, however, the parts begin to cool and the contraction of the tube L, acting through the rod N upon the swivel-head F, causes the arm G to turn about its pivots and gradually returns the arms G and G' into such a position that the valve at the lower end of G' will again close the port *a*, and thus prevent a further escape of gas into the casing C' and out of the burner. It will be seen that by this construction I have a supplemental automatically-closing valve, which will always act independently of the main cock B, and after the gas is extinguished if this cock be left open, either accidentally or otherwise, no escape of gas through the burner can take place after the burner has cooled.

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

1. In a gas-burner, the hollow extension or casing having a burner at its upper end, a base to which said casing is secured, having an upwardly-extending standard at one side, said standard having a gas-port opening through its inner side, a two-part pivotally-secured arm suspended from the top of the standard and having its lower member adapted to open and close the gas-port, a spring-retracted pin for forcing the lower member of the arm away from the port to open the same, and a latch by which said member is maintained away from the port, substantially as herein described.

2. In a gas-burner, a hollow casing or extension attached to a base, a standard extending upwardly within said casing and near one side thereof, a gas-port passing through the lower part of said standard to the interior of the casing, a hinged arm G G', having its upper end pivoted to swing in the upper part of the standard and its lower end provided with a valve by which the gas-port is closed, a spring I, uniting the two parts of arm G G', acting to close the valve and yielding to allow the part G' to be pressed backward when the valve is open, a tube L, made of expansible material, having its lower end supported from the standard and its upper end movable, a rod or tube N, of less-expansile material, fixed to the upper end of the tube L, extending downwardly and having a catch at its lower end, and a projection upon the hinged arm G', adapted

to engage said catch and retain the valve open, substantially as herein described.

3. In a gas-burner, a hollow casing having a burner-tip at its upper end, a standard extending upwardly within the casing near one side, having a port through its lower part, whereby gas is admitted into the casing and to the burner-tip, an arm G, having its upper end pivoted to swing from the upper part of the standard, and a hinged extension G', pivoted to said arm, having a valve at its lower end which closes the gas-port, and a spring I, connecting the two parts G and G', an expansion tube L, having its lower end fixed and its upper end free to move by expansion, a rod or tube N, of less expansible material, secured to the upper end of the tube L, having a catch at the lower end which projects through the bottom of the tube and support, a projection from the hinge-arm G', adapted to engage said catch and retain the valve open when the parts are cold, said catch being released to allow the arm to spring backward when the parts are expanded by the heat, and a connection between the upper part of the expanding tube L and the pivoted head about which the arm G swings, whereby the latter is turned and the valve at the lower end of the part G is prevented from closing when the catch is released and as long as the parts are

in a heated condition, substantially as herein described.

4. In a gas-burner, the exterior casing having a burner at its top, a fixed standard projecting upwardly within the casing, having a gas-passage opening through its side, the stop-lug J, and a two-part arm consisting of an upper member pivotally hung from the top of the standard and a lower member pivotally secured to the upper member, so that it may turn about its pivot in one direction and be arrested by said stop and prevented from turning in the opposite direction beyond a line parallel with the upper member, substantially as herein described.

5. In a gas-burner, the exterior casing connected with the gas-supply, an expansion-tube supported in said casing and composed of vulcanite, and a metal bar inclosed by the vulcanite tube and serving as a stay or reinforcement therefor, said metal bar being movable by the expansion and contraction of the encircling vulcanite tube, substantially as herein described.

In witness whereof I have hereunto set my hand.

GEORGE I. EWERS.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.