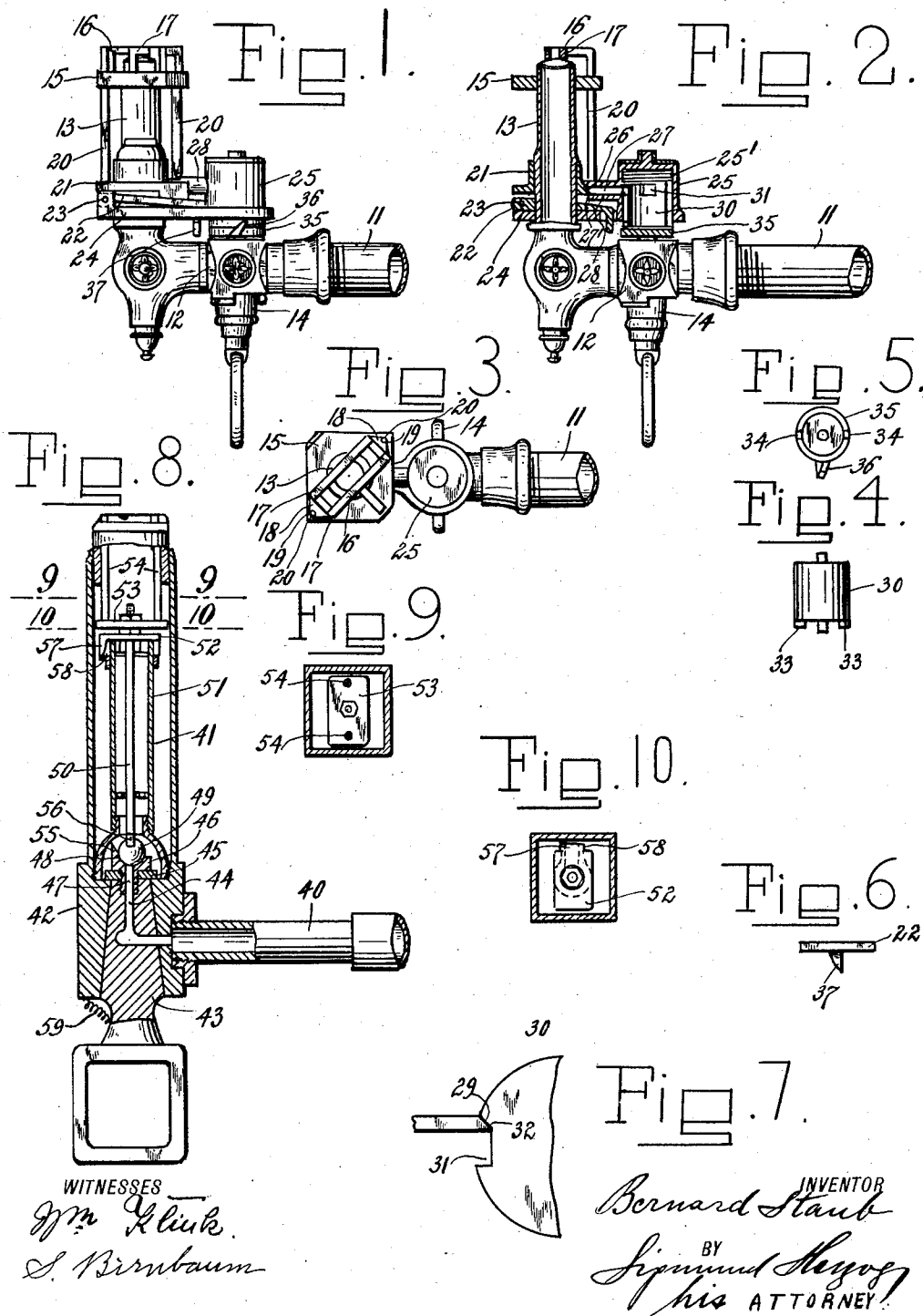


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 AUTOMATIC CUT-OFF FOR GAS BURNERS.
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UNITED STATES PATENT OFFICE.

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AUTOMATIC CUT-OFF FOR GAS-BURNERS.

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Specification of Letters Patent.

Patented Mar. 25, 1913.

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To all whom it may concern:

Be it known that I, BERNARD STAUB, a subject of the Emperor of Austria-Hungary, and resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Cut-Offs for Gas-Burners, of which the following is a specification.

10 The present invention relates to safety gas-cocks, utilizing the expansion and contraction of metal or other like rods for automatically turning off the supply of gas in case the gas flame is accidentally extinguished, 15 or if the cock is not placed in the proper position in order to fully close the communication between the burner and the gas pipe.

One of the objects of the present invention is to provide a new and improved automatic cut-off for gas burners, which is simple and durable in construction, permits a convenient turning on and off of gas in the usual manner, and turns off automatically the gas if for any reason the lighted jet should be 25 blown out.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

40 Two of the many possible embodiments of the invention are illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of a gas cock provided with an automatic cut-off constructed in accordance with the present invention; Fig. 2 is a vertical central sectional view thereof; Fig. 3 is a plan view of the same; Fig. 4 is a side elevation of a detail of construction; Fig. 5 is a plan view of a detail of the plug; Fig. 6 is a front elevation of another detail of construction; Fig. 7 is a plan view of another detail; Fig. 8 is a central vertical section taken through a modification of the device; Fig. 9 is a section 55 taken on line 9—9 of Fig. 8; and Fig. 10 is a section taken on line 10—10 of Fig. 8.

Referring now more particularly to Figs. 1 to 7, inclusive, the numeral 11 indicates the supply pipe, which is provided with the usual gas cock 12, controlling the flow of gas to a gas burner 13 of any suitable construction. The plug of the cock is denoted by the numeral 14.

A support 15 is attached to the burner 13, and sustains a thermostat 16 above the gas tip in near proximity to the flame. This thermostat may be made of any suitable material which is easily expanded by heat and consists, preferably, of two yoke-shaped members 17, 17, which are connected by bridges 18, 18, the latter resting upon the support 15. In the bridges 18 are formed recesses 19, in which are seated rods 20 extending through apertures in the support 15 vertically downward, and being attached to a sleeve 21, which is slidably arranged upon the burner 13. The sleeve 21 rests normally upon an arm 22, which is fulcrumed at 23 to a base plate 24. This base plate is attached in any suitable manner to the burner 13, and extends in a horizontal direction from the burner 13 toward and beyond the casing of the plug 14, and carries above the plug a cylindrical housing 25.

That edge of the sleeve 21 which faces the housing 25 is tapered, as clearly shown at 26, and engages the beveled outer end 27 of a stop pin 27, which is slidably arranged in an extension 28 of the housing 25. The inner end of the stop pin 27 is beveled at 29, and bears continuously against a cylindrical body 30, which is oscillatably arranged in the housing 25. This body is provided with a recess 31 in the plane of the pin 27, said recess having a tapered edge 32, which is adapted to cooperate with the beveled edge 29 of the stop pin in a manner hereinafter to be described. From the base of the cylindrical body 30 project downward fingers 33, which are in engagement with upwardly extending lugs 34, 34, arranged upon diametrically opposite points of a disk 35, which is secured to the plug 14. A spring 25' is attached at one of its ends to the housing 25 and at its other end to the cylindrical body 30. This spring keeps the said cylindrical body normally in the position shown in Figs. 1 and 2 of the drawings, and, by the intermediary of the coacting lugs 34 and fingers 33, the plug in a closed position. Upon the disk 35 is furthermore arranged a beveled projection 36, which is adapted to

coact with a beveled extension 37 upon the lower face of the arm 22.

The operation of the device is as follows: When it is desired to light the burner, the plug 14 is given a quarter of a turn in the usual manner. By this operation the projection 36 acts against the beveled extension 37 upon the arm 22, raises the latter and thereby the sleeve 21 with the rods 20 thereon. The lugs 34 upon the disk 35 carry the fingers 33 upon the cylindrical body 30 with them, giving thereby the latter a quarter of a turn and winding up the spring 25'. As the sleeve 21 is being raised, its tapered edge 26 forces the stop pin 27 toward the cylindrical body 30 and its inner beveled end 29 into the recess 31. The gas passes thus freely from the supply pipe to the burner, on which the escaping gas is ignited. The burner heats the thermostat which quickly expands, the bridges 18, 18 thereof receding from each other, thereby keeping the rods 20, 20 in their elevated positions. Obviously the sleeve 21 is held thus also in its raised position, thereby preventing the pin 27 from moving toward the longitudinal axis of the burner, or in other words the spring 25' from closing the plug. Should the flame at the gas tip be extinguished for any reason, the thermostat contracts, releasing thereby the rods 20, 20. The sleeve 21 descends by its own weight, when the tapered edge 32 of the recess 31, under the action of the spring 25', forces the stop pin 27 toward the longitudinal axis of the burner. The cylindrical member is thus made to turn, its fingers 33 carrying the plug 14 by the intermediary of the lugs 34 into its closed position.

It should be observed that, as there is no positive connection between the lugs 34 and the fingers 33, the operator can turn the plug into a closed position to shut off the gas and extinguish the flame; the spring 25' will then, on cooling of the thermostat 16, cause the disengagement of the parts above mentioned, whereby the cylindrical body 30 will return to its normal position in which the fingers 33 again engage the lugs 34 of the plug 14; in other words, the plug can be readily opened and closed by the operator when turning the gas on or off, but the supply of gas is automatically cut off in case the flame is accidentally extinguished. Moreover, since the cylindrical body 30 and the plug 14 are not positively connected, the supply of gas can be regulated by simply setting to any predetermined position the plug 14 after it has been turned to its wide open position.

A modification of the device is shown in Figs. 8 to 10, inclusive, in which the numeral 40 designates the supply pipe, leading to a burner 41. The burner is mounted upon a valve casing 42, which is attached

to said supply pipe. In the valve casing is arranged a plug 43, provided with a bore 44, which is adapted to communicate with the supply pipe 40. Upon the upper end of the plug is held a disk 45 by means of a screw 46, said screw having a bore 47 communicating with the bore 44 in the plug. In the upper face of the screw is formed a valve seat 48 for a ball valve 49, which is carried by a rod 50, extending upward in the burner, more particularly through a tube 51 in said burner. On top of said tube is placed a plate 52, which is attached to the rod 50 and supports another plate 53, to which are fastened upwardly extending rods 54, 54, the latter engaging recesses in a thermostat which is in all respects identical with the one above described in connection with Figs. 1 to 7, inclusive. From the screw 46 extends upward a beveled lug 55, which is adapted to coact with a beveled finger 56 upon the ball valve 49. To prevent a rotation of the rod 50, the plate 52 is provided with a downwardly extending projection 57, which is in engagement with extensions 58, 58 of the tube 51. A spring 59 is attached to the plug 43 and to the valve casing 42.

The operation of this device is as follows: The plug 43 and the ball valve 49 keep the communication between the supply pipe and the burner normally closed. In turning the plug 43, the lug 55 upon the screw 46 acts against the finger 56 upon the ball valve, forces the said ball valve and the parts carried thereby upward, thus permitting the gas to flow to the tip. If the gas is lit, and thereby the thermostat heated, the latter expands and keeps the rods 54 in their elevated positions, and thus the ball valve from its seat. The spring 59 returns the plug to its fully open position. If from any cause the flame is extinguished, the thermostat contracts, releases the rods 54, 54, whereby the ball valve 49 is returned to its seat by the weight of its parts, thereby shutting off the gas. The supply of gas can be easily regulated by simply turning the cock to a more or less closed position. It is to be observed that when the ball valve returns to its seat, the cock remains fully open. This, however, does in no way impair the safety of the device, inasmuch as the ball valve effectively closes the communication between the supply pipe and burner.

What I claim is:—

1. In an automatic cut-off for gas burners, the combination with a gas pipe having a burner, of a rotary plug in said pipe having lugs thereon, an oscillatable cylindrical member provided with fingers adapted to engage the lugs of said plug, a spring tending to turn said cylindrical member, whereby its fingers in cooperation with the lugs of said plug turn the latter into its closed position.

tion, means adapted to hold said plug in an open position against the action of said spring, a thermostat exposed to the heat of the gas flame, a sleeve slidably arranged on said burner having means in constant engagement with said thermostat, coacting means upon said sleeve and said holding means for engaging the latter with said cylindrical member as said sleeve is being raised, and means upon said plug for raising said sleeve, the latter being held in its raised position when said thermostat is heated and automatically lowered when the gas flame is extinguished, whereby said holding means is disengaged from said cylindrical member.

2. In an automatic cut-off for gas burners, the combination with a gas pipe having a burner, of a rotary plug in said pipe, means tending to close said plug, means for arresting the operation of said closing means, whereby said plug may be held in an open position or turned to any intermediate position, at will, in order to regulate the flow of the gas, a thermostat exposed to the heat of the gas flame, a sleeve slidably arranged upon said burner having means in constant engagement with said thermostat, coacting means upon said sleeve and said arresting means for bringing the latter into its operative position as said sleeve is being raised, and means upon said plug for raising said sleeve, the latter being held in its raised position when said thermostat is heated and automatically lowered when the gas flame is extinguished, whereby said closing means is rendered operative.

3. In an automatic cut-off for gas burners,

the combination with a gas pipe having a burner, of a rotary plug in said pipe, means tending to close said plug, means for arresting the operation of said closing means, whereby said plug may be held in an open position or turned to any intermediate position, at will, in order to regulate the flow of the gas, a thermostat exposed to the heat of the gas flame comprising yoke-shaped members connected by bridges having recesses, a sleeve slidably arranged upon said burner having rods seated in the recesses of said thermostat, coacting means upon said sleeve and said arresting means for rendering the latter operative as said sleeve is being raised, said sleeve being held in its raised position when the bridges of said thermostat recede from each other due to being heated and automatically lowered when the gas flame is extinguished, whereby said closing means is rendered operative.

4. In an automatic cut-off for gas burners, the combination with a gas pipe having a burner, of a thermostat exposed to the heat of the gas flame comprising yoke-shaped members connected by bridges having recesses, a sleeve slidably arranged upon said burner, upwardly extending rods carried by said sleeve seated in said recesses, substantially as and for the purpose specified.

Signed at New York, in the county of New York and State of New York, this 4th day of November, A. D. 1912.

BERNARD STAUB.

Witnesses:

SIGMUND HERZOG,
S. BIRNBAUM.