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(54) **Gázszabályozó szerelvény**

Gas control valve

Technical field of the invention

The invention relates to a gas regulator fitting for a gas-fired heating device according to the preamble to the first claim.

Prior art

Gas regulator fittings for gas-fired heating devices serve to ignite and control or regulate a gas stream flowing to a burner. At the same time, operator and system safety must be ensured. Normally, a temperature serves here as a controlled variable and is measured by a temperature sensor connected by a capillary line to a temperature-sensitive element, for example metal bellows serving as a lifting element.

A gas regulator fitting for installation in single room heaters and operated without auxiliary energy is known for example from DE 299 05 204 U1. In this gas regulator fitting the switching system of a combined proportional and two position controller controllable by a temperature-sensitive regulating device is arranged in the housing downstream of the main valve. The regulating device comprises a temperature sensor located outside the housing and metal bellows arranged in the gas regulator fitting, both of which are interconnected by a capillary line, with all parts filled with fluid. Such regulating devices work on the principle of the expansion of fluid caused by an increase of temperature. A change in the temperature at the temperature sensor causes a correspondingly directed movement of the metal bellows which is transferred to the switching system.

Such gas regulator fittings have usually been designed for a defined setpoint range and are set accordingly during manufacture. This also applies to the gas regulator fittings described in DE 10 2009 011 611 A1 and US 2 783 946 A in which fluctuations in the ambient temperature leading to a varying distortion of the setpoint range set can be compensated.

A simple means of adjustment is desirable, however, especially in the field of culinary technology if this is required to carry out a cooking operation. Such a subsequent adjustment of the setpoint range preset by the manufacturer of the gas regulator fitting in a limited range cannot, however, be made with all these gas regulator fittings described above.

Summary of the invention

The object of the invention is to create a gas regulator fitting in which a simple adjustment can subsequently be made of the preset setpoint range in order to optimize the range of the adjustable temperature for the heating device without exceeding the permitted operating conditions for the device and/or system, and in particular without encroaching into the gas-conducting space.

The problem is solved according to the invention in that a setting element, which serves to alter the position of a temperature-sensitive element and thus activate a switch for operating a valve, has a threaded element that can be screwed into the housing of the gas regulator fitting. In this arrangement both are rigidly interconnected by a detachable locking device, wherein a tubular latching part securely connected to the threaded element is arranged between the cup-shaped setting elements partly covering the threaded element with a recess and the threaded element. The latching part protrudes into a guide contour with a stop element projecting on a front face, with said guide contour formed by an aperture located in the setting element on the front side.

A solution has therefore been found enabling the user to make a subsequent adjustment of the setpoint range preset by the manufacturer of the gas regulator. At the same time the adjustment of the setpoint range is restricted by the guide contour such that the permitted operating conditions for the device or system cannot be exceeded. The solution is characterized by its simple structure and mode of operation.

An advantageous embodiment is created if the latching part with a locking collar on at least part of its external cylindrical surface protrudes into a circumferential locking groove located in the inner wall of the recess.

The connection made by locking collar and locking groove between the setting ring and the latching part provides an additional safeguard in this embodiment in that an adjustment of the setpoint range, which causes the permitted operating conditions to be exceeded and is made by removing the stop element from the guide contour after disassembling these parts, cannot be carried out non-destructively.

Execution example

The invention is described in more detail below by means of an execution example. The illustrations show the following:

Fig. 1 a gas regulator fitting according to the invention

Fig. 2 an enlarged view Z from Fig. 1 of the gas regulator fitting according to the invention

Fig. 3 an enlarged cross-sectional view A - A from Fig. 1 of the gas regulator fitting according to the invention.

Fig. 4 an enlarged detailed view B from Fig. 1 of the gas regulator fitting according to the invention from Fig. 1.

The exemplary embodiment of the gas regulator fitting according to the invention shown in Fig. 1 is a switching and control device preferably intended for a gas-fired heating device or the like. It enables a burner to be operated and monitored, the pressure to be controlled as well as the required temperature to be set and controlled by regulating the volume of gas flowing to the burner.

The gas regulator fitting comprises a housing 1 with a gas inlet 2 identified by a directional arrow and a gas outlet 3 also identified by a directional arrow as well as an ignition gas outlet 4. The following functional elements looked at in the direction of flow of the gas are accommodated in the housing 1:

- Start-up with associated operating element 5
- Safety pilot valve and main valve with safety interlock device
- Pressure regulator 6
- Switching system of a combined proportional/two position controller for regulating the volume of gas flowing to the burner

A detailed description and explanation of details have not been given in this execution example because the structure and mode of operation of the start-up, the safety pilot valve and the main valve, the pressure regulator 6 and the switching system are known to those skilled in the art.

A valve forming part of the switching system regulating the volume of gas flowing to the burner can be controlled by a switch also forming part of the switching system.

A longitudinally movable tappet 7 is connected non-positively to the switch. It protrudes from the gas-conducting space of the housing 1 and is supported with its end facing away from the switch on a temperature-sensitive element 8, a metal bellows. The metal bellows 8 is connected by a capillary line 9 to a temperature sensor 10. Metal bellows 8, capillary line 9 and temperature sensor 10 are filled with a thermoactive fluid.

In order to set a temperature during manufacture, a threaded piece 12, which can be screwed into a thread located in the interior of a tubular attachment 13 forming part of the housing 1, is supported, in this execution example conveniently by means of an intermediately mounted ball 11, on the metal bellows 8 on its side facing away from the tappet 7.

In addition, a tubular latching part 14 is pressed securely and, in particular, rigidly on the threaded element 12. To that end the circumferential area of the threaded element 12 in this area has additionally been provided with a ridge. The pressed on latching part 14 is supported on the face of the threaded element 12 by a circumferential inner collar 15. In addition, the collar 15 has on its front side facing away from the threaded element 12 a projecting stop element 16 the function of which is explained in more detail below (Fig. 3).

A cup-shaped setting element 17 is fitted axially on the latching part 14 such that it covers with its recess 18 the latching part 14 and partly covers the threaded element 12, as well An aperture located in the front face of the setting element 17 serves here as guide contour 19 for the stop element 16 (Fig. 2) which protrudes into said aperture and has already been described above. In order to avoid disassembling the setting element 17 and latching part 14 to remove the stop element 16 from the guide contour 19 the latching part 14 has on at least part of its external cylindrical surface a locking collar 20, which protrudes into a circumferential locking groove 21 located in the inner wall of the recess 18.

In addition, there is a locking device in the setting element 17 for a rigid connection to the threaded element 12. In this execution example it is formed by two opposing screws 22 which can be screwed into the circumferential area of the setting element 17.

The latching part 14 has, of course, cut-outs 25 in these areas to enable the required secure connection to be made between setting element 17 and threaded element 12. The connection can be made even more secure (Fig. 4), as in this execution example, by using screws 22 that are provided with a tip, and a circumferential groove 26 made in the threaded element 12 and into which the screws 22 can be screwed.

The stops required for restricting the rotational movement of the setting element 17 are formed by a rib 23 located on the attachment 13 of the housing 1 and a partial extension 24 of the circumferential area of the setting element 17.

In order to set, as is the customary practice, a required temperature value from the setpoint range preset by the manufacturer of the gas regulator fitting, the setting element 17 is turned within the setting range limited by the stops formed by rib 23 and extension 24.

If the user is now to make a subsequent adjustment to the setpoint range preset by the manufacturer of the gas regulator fitting, the locking device between threaded element 12 and setting element 17 is first to be unlocked. The setting element 17 can then be turned within the range preset by the guide contour 19 and the stop element 16. The locking device is then to be re-locked.

The setpoint range cannot be extended further because the connection between setting element 17, latching part 14 and threaded element 12 cannot be undone non-destructively.

List of reference numerals

1	Housing
2	Gas inlet
3	Gas outlet
4	Ignition gas outlet
5	Operating element
6	Pressure regulator
7	Tappet
8	Temperature-sensitive element
9	Capillary line
10	Temperature sensor
11	Ball
12	Threaded element
13	Attachment
14	Latching part
15	Collar
16	Stop element
17	Setting element
18	Recess
19	Guide contour
20	Locking collar
21	Locking groove
22	Screw
23	Rib
24	Extension
25	Cut-out
26	Groove

Gázszabályozó szerelvény

Szabadalmi igénypontok

1. Gázszabályozó szerelvény gáztüzelésű fűtőkészülék számára, amely legalább egy szeleppel rendelkezik, amely az áramlási irányt tekintve a főszelep után van a főégő gázáramának áramlási útjában elrendezve, amely főszelep egy kapcsolón keresztül vezérelhető, és amely további, másodlagos funkciós elemekkel együtt egy házban (1) van elhelyezve, ahol a kapcsoló egy hosszirányban mozgatható emelőrúdon keresztül működtethető, amely kivezet a ház (1) gázvezető tartományából és amelynek helyzete egy hőmérsékletre érzékeny elemen (8) keresztül változtatható, ahol a hőmérsékletre érzékeny elem (8) egy a helyzetét befolyásoló beállító elemre (17) támaszkodik, amelynek a hőmérsékletre érzékeny elem (8) helyzetbefolyásolására szolgáló működtetése a házon (1) és a beállító elemen (17) található ütközők által van behatárolva, amely beállító elem (17) manuálisan és/vagy egy hajtóegység által működtethető, ahol a beállító elem (17) egy a házba (1) becsavarozható menetes idommal (12) rendelkezik és a kettő egy oldható arretáló eszközön (22) keresztül elfordulás ellen biztosítottan van egymással összekötve, ***azzal jellemezve,*** hogy a menetes idomot (12) egy mélyedéssel (18) részben körülvevő fazék alakú beállító elem (17) és a menetes idom (12) között egy a menetes idommal (12) szilárdan összekötött cső alakú reteszelő idom (14) van elrendezve, amely egy a homlokoldalon kiálló ütközőelemmel (16) egy megvezető kontúrba (19) nyúlik be, amelyet egy a beállító elemben (17) található homlokoldali áttörés képez.

2. Az 1. igénypont szerinti gázszabályozó szerelvény gáztüzelésű fűtőkészülék számára, ***azzal jellemezve,*** hogy a reteszelő idom (14) egy, a külső hengeres felületén legalább részben meglevő reteszvállal (20) benyúlik egy a mélyedés (18) belső falában található körbefutó reteszelő horonyba (21).

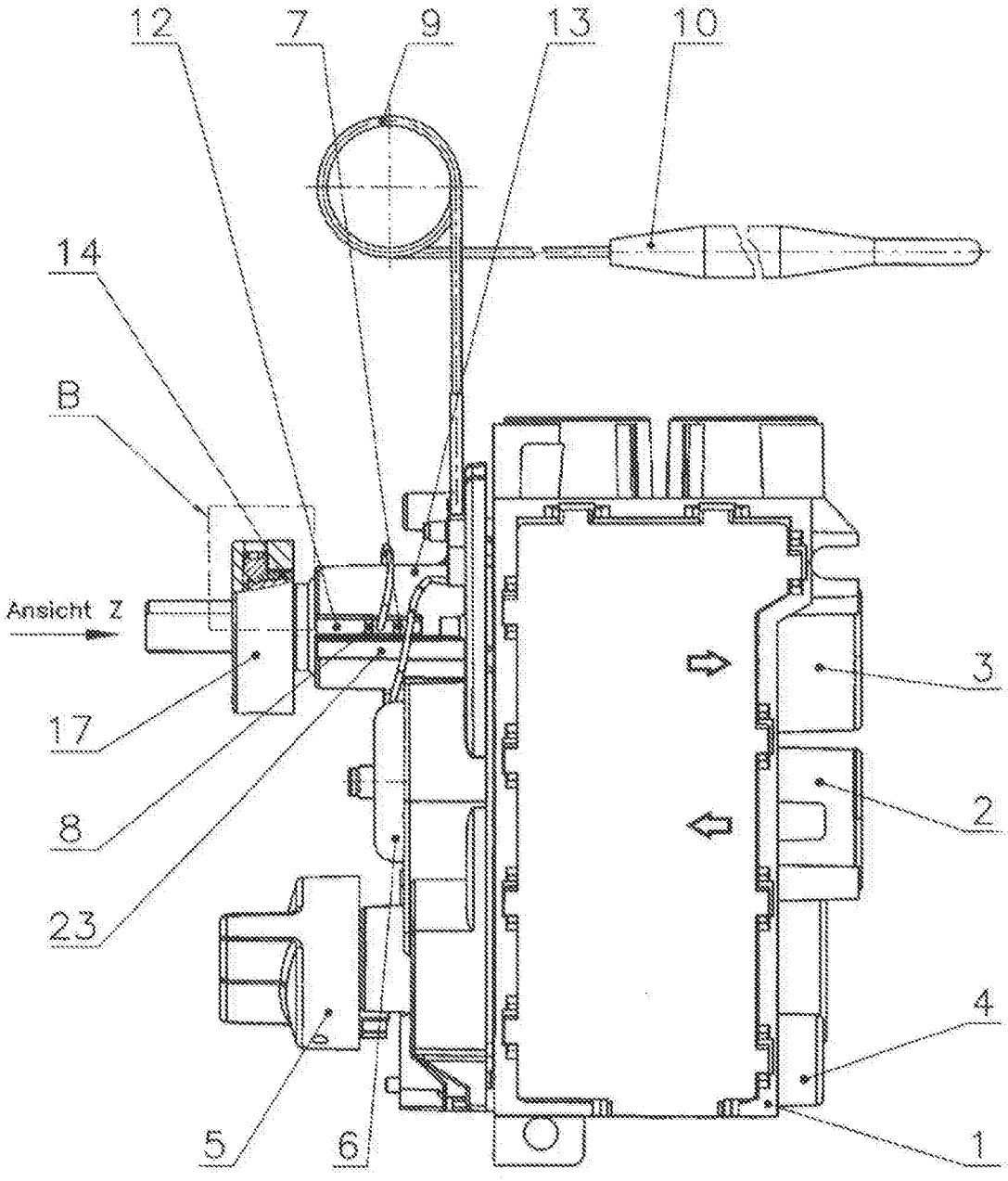

Fig. 1

A nézet

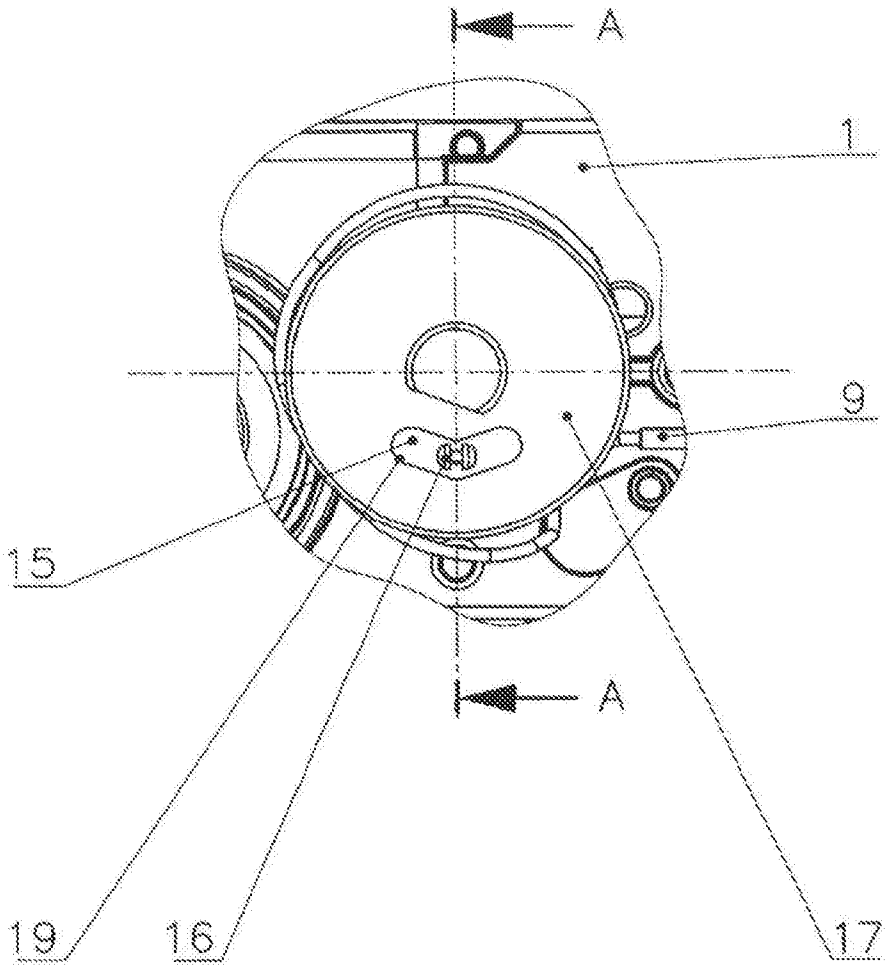

Fig.2

A-A metszet

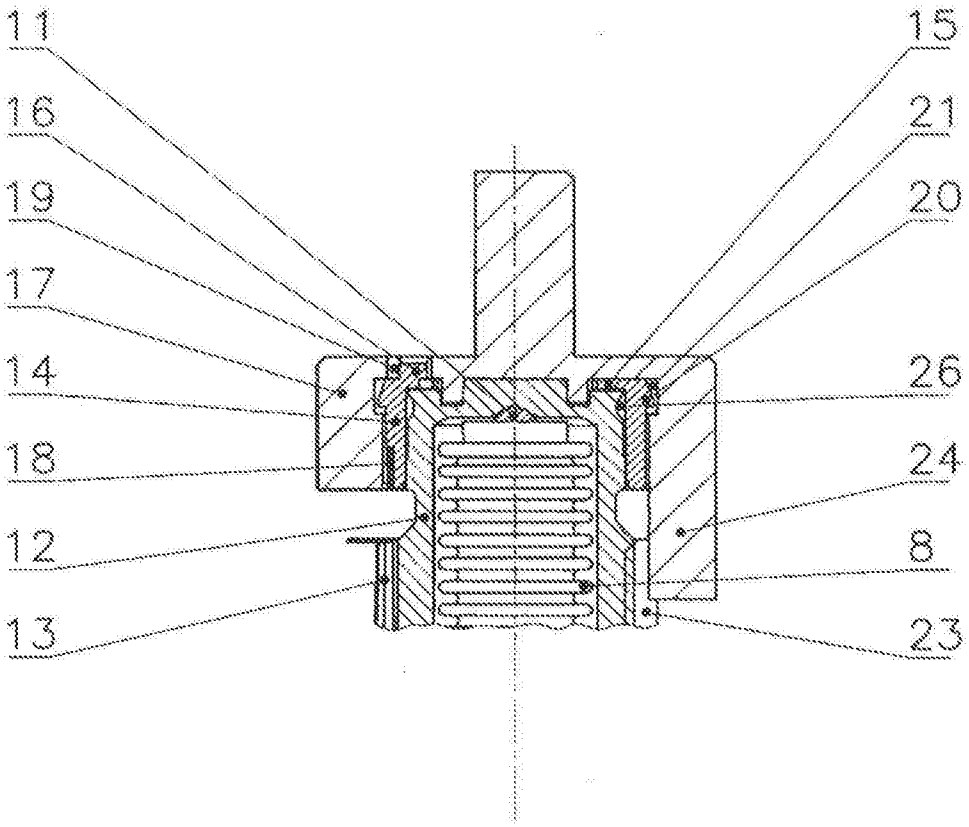

Fig.3

B részletnézet

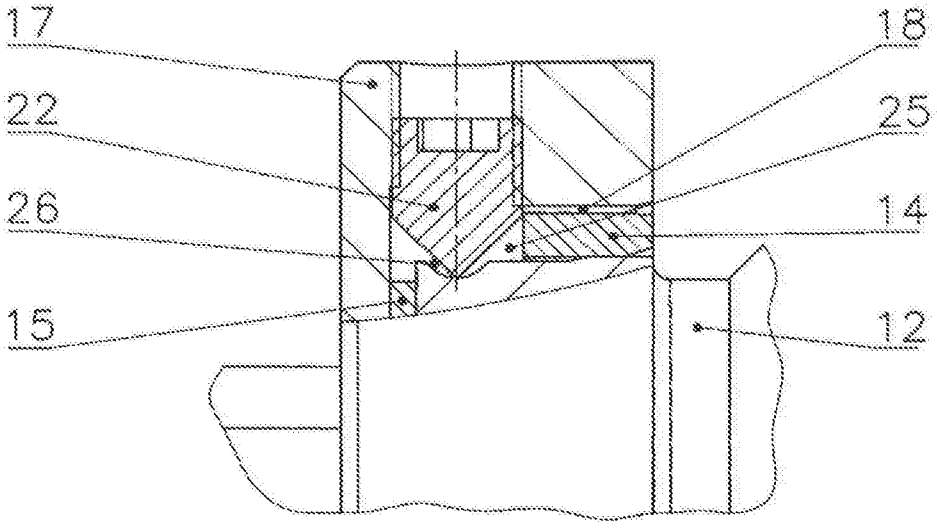

Fig.4