(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 940 612 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.09.1999 Bulletin 1999/36

(51) Int. Cl.[6]: **F16K 27/00**, F23N 5/10

(21) Application number: **99301547.8**

(22) Date of filing: **02.03.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **04.03.1998 GB 9804608**

(71) Applicant:
CONCENTRIC CONTROLS LIMITED
Aston, Birmingham B6 7LH West Midlands (GB)

(72) Inventor: **Garcha, Amrik Singh**
Brierley Hill, West Midlands DY5 4DP (GB)

(74) Representative:
Barnfather, Karl Jon, Dr. et al
Withers & Rogers,
Goldings House,
2 Hays Lane
London SE1 2HW (GB)

(54) Gas flow control

(57) A gas flow control (10) for a gas fire and heater comprising a body (12) having a gas inlet (14), a first (50) and second (66) outlet each having a control valve, a first (40) and second (52) pilot outlet each for a pilot light, and a first (18) and second (32) safety valve maintainable in an open position when an associated pilot light is lit, the control further comprising flow channels between the first and second control valves and respectively the first and second safety valves thereby enabling gas flow to the control valve of the first and second outlet when the associated first and or second safety valve is open.

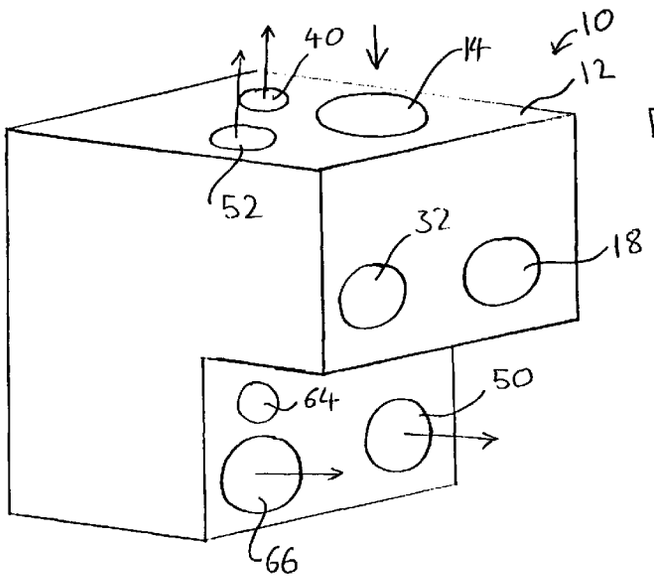

FIG 1

EP 0 940 612 A2

Description

[0001] The invention relates to a gas flow control for gas burning apparatus such as domestic gas fires and heaters. In particular, the invention relates to a gas flow control for a combined gas fire and back boiler system.

[0002] It is known to provide a domestic gas fire having a back boiler wherein two gas heaters are required, one for the fire and one for the boiler or heater. Additionally, multiple gas controls are required in order to provide the requisite flow of gas at variable rates to the gas fire and to the boiler.

[0003] The invention seeks to avoid or at least mitigate problems with known systems and in particular to provide a simplified gas control for dual gas burner apparatus.

[0004] According to one aspect of the invention there is provided a gas flow control for a gas fire and heater comprising a body having a gas inlet, a first and second outlet each having a control valve, a first and second pilot outlet each for a pilot light, and a first and second safety valve maintainable in an open position when an associated pilot light is lit, the control further comprising flow channels between the first and second control valves and respectively the first and second safety valves thereby enabling gas flow to the control valve of the first and second outlet when the associated first and or second safety valve is open.

[0005] Beneficially only a single gas inlet needs to be provided to a single body forming the gas control.

[0006] According to another aspect of the invention there is provided a gas flow control providing a body having a single gas inlet, a first and second gas outlet, and a first and second means for controlling gas flow through the respective first and second gas outlets.

[0007] An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:-

FIGURE 1 is a schematic perspective view of a control according to the invention;

FIGURE 2 is a schematic sectional view taken in the direction of line BB shown in Figure 4;

FIGURE 3 is a schematic sectional view of part of the control shown in Figure 1 taken along line CC shown in Figure 4;

FIGURE 4 is a schematic sectional view of the control shown in Figure 1 taken along line DD; and

FIGURE 5 is an end elevation view of the control shown in Figure 1 taken along the direction of arrow E.

[0008] Referring to the drawings there is shown a gas flow control 10 comprising a body 12 having a gas inlet aperture 14. The aperture can be threaded to receive a suitable connection with a gas pipe.

[0009] Inlet 14 leads to a first channel 16 housing a first thermo-electric device 18, for example for a boiler. A safety device actuator 20 (see Figure 4) such as a solenoid is provided to effect movement of a closure 24 away from seat 22 between channel 25 and 16. Solenoid 20 comprises a spindle 26 to effect movement of closure 24.

[0010] Body 12 further comprises a cross-over channel 28 which leads to a second channel 30 housing a second thermo-electric device 32 for example a gas fire. Additionally, a second safety actuator or solenoid 34 (see Figure 4) is provided for effecting movement of a closure 38 away from seat 36 between channel 35 and second channel 30. Again, solenoid 34 is provided with a spindle 40 to effect movement of closure 38.

[0011] Referring to Figure 2, it can be seen that channel 25 leads to a first pilot outlet 40 and also to a channel 42 which leads to an outlet control valve. The control valve comprises an actuator such as a solenoid 44 which effects movement of a closure 46 towards and away from a seat 48 at the entrance to an outlet channel 50.

[0012] Referring to Figure 3 and 4 it can be seen that channel 35 houses a solenoid 34 and second pilot light outlet 52, it also leads to a further channel 54 which guides gas towards a second gas flow control comprising an actuator 56 such as a solenoid which effects movement of a closure 58 towards and away from a seat 60 at the entrance to an outlet channel 66. However, channel 54 also leads to a further channel 62 which enables gas flow to outlet 66 past a control 64 which can for example be a screw fitting which provides a low rate of flow to outlet 66 which might lead to a gas fire for example.

[0013] Accordingly, in use gas is fed through inlet 14 to channel 16 and channel 35 through cross-over channel 28. To ignite the first or boiler pilot light, solenoid 20 is actuated to lift closure 24 away from seat 22 thereby to enable gas flow through channel 25 and pilot outlet 40. The gas at the pilot burner can for example be lit using a known electronic igniter thereby to heat a thermo-couple (not shown) which powers the thermo-electric solenoid 18 which enables closure 24 to be retained in an open position so long as the pilot light is lit.

[0014] With the first safety valve comprising thermo-electric device 18 open, gas is also able to flow through channels 25 and 42 to a first valve control 44 which when actuated lifts closure 46 away from seat 48 thereby to enable gas flow through outlet 50 for example to the burner of a gas boiler. The gas is lit at the burner due to the presence of pilot light fed by gas through outlet 40. The burner for the boiler can be extinguished by actuating the solenoid 44 thereby to move closure 46 to a closed position.

[0015] Referring to Figure 3 it can be seen that gas

flow through cross-over channel 28 enters channel 30. In order to enable gas flow through second pilot outlet 52, solenoid 34 is actuated to move closure 38 away from seat 36. Again, the gas to a pilot burner is lit thereby to heat a thermo-couple (not shown) which powers thermo-electric device 32 enabling closure 38 to be retained in an open position away from seat 36. Accordingly, when solenoid 34 retracts spindle 40, the closure 38 is maintained in an open position and gas is enabled to flow through outlet 52 to the pilot burner and also through channel 54 to a second valve control 56 as described above. However, gas also flows from channel 54 via channel 62 through to outlet 66 to provide a low rate of burn for example at a gas fire. The gas is lit in the gas fire due to the presence of the pilot light. The rate of gas flow in the low rate setting can be adjusted for example by moving a threaded screw 64 in channel 62. However, in order to effect a high rate of burn, solenoid 56 is actuated to move closure 58 away from seat 60 thereby to enable full gas flow through channel 54 to outlet 66.

[0016] The device can comprise an electric controller and one or more user input devices such as buttons, a thermostat or timer to enable actuation of the solenoids 20,34,44 and 56. However control could also be totally or partially manual.

Claims

1. A gas flow control for a gas fire and heater comprising a body having a gas inlet, a first and second outlet each having a control valve, a first and second pilot outlet each for a pilot light, and a first and second safety valve maintainable in an open position when an associated pilot light is lit, the control further comprising flow channels between the first and second control valves and respectively the first and second safety valves thereby enabling gas flow to the control valve of the first and second outlet when the associated first and or second safety valve is open.

2. A gas control according to Claim 1 having a single gas inlet in a single body forming the gas control.

3. A gas control according to Claim 1 or 2 comprising independent passageways between the inlet and the first and second outlet.

4. A control according to Claim 3 wherein the inlet passes into the first passageway and a connecting passage is provided to the second passageway.

5. A control according to any preceding claim wherein a further gas flow control is provided in parallel with the first and/or second control valve thereby to enable at least two levels of gas flow to at least one of the outlets.

6. A control according to Claim 5 wherein the further gas flow control comprises a screw type valve maintainable in a fixed position in order to enable a predetermined gas flow rate.

7. A control according to any preceding claim wherein the first and/or second safety valve comprises a solenoid valve actuated by a thermocouple.

8. A control according to any preceding claim wherein an actuator is provided for the first and/or second safety valve.

9. A control according to any preceding claim wherein the actuator comprises a solenoid.

10. A control according to any preceding claim wherein the first and/or second pilot outlets are positioned in the gas flow path between the associated first and/or second safety valve and corresponding associated first and/or second control valve.

FIG 1

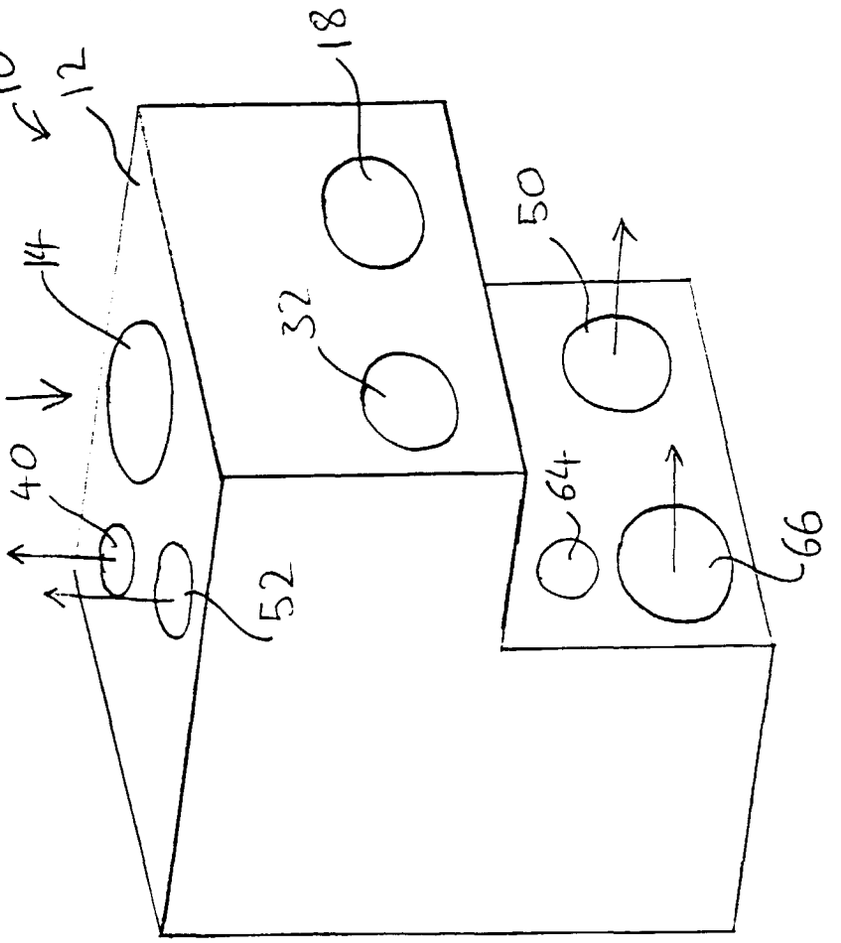

FIG 2

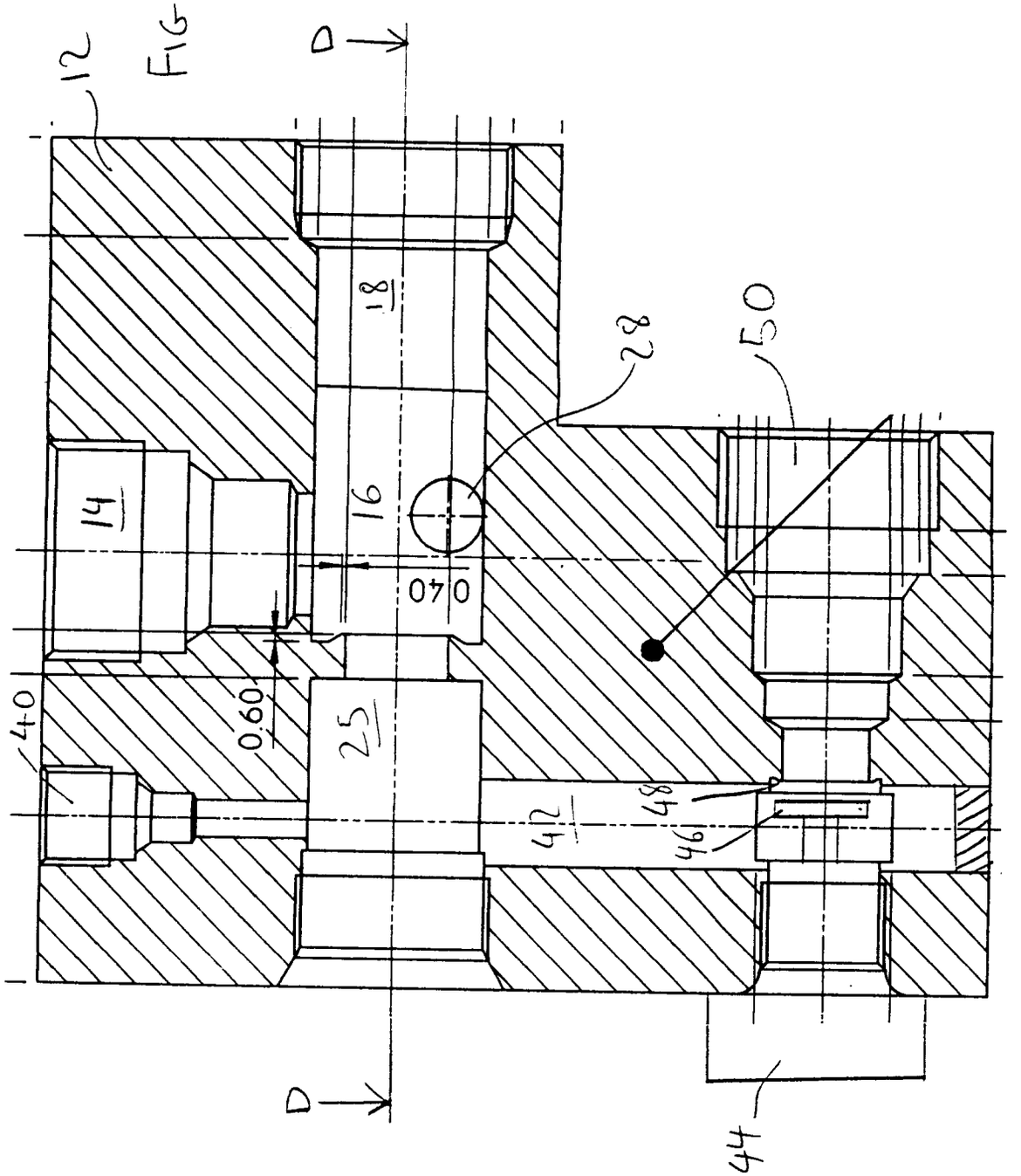

FIG3

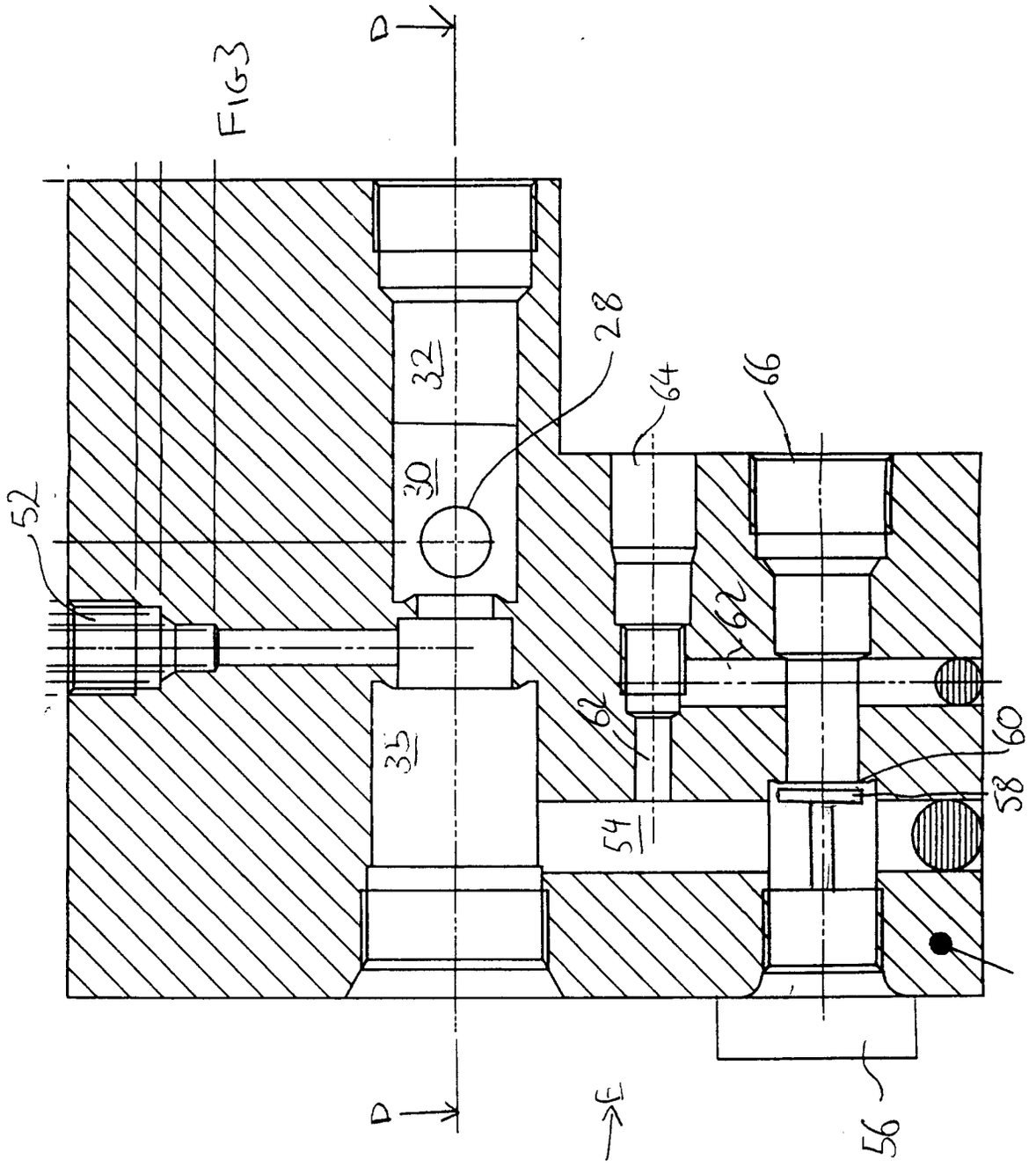

FIG 4

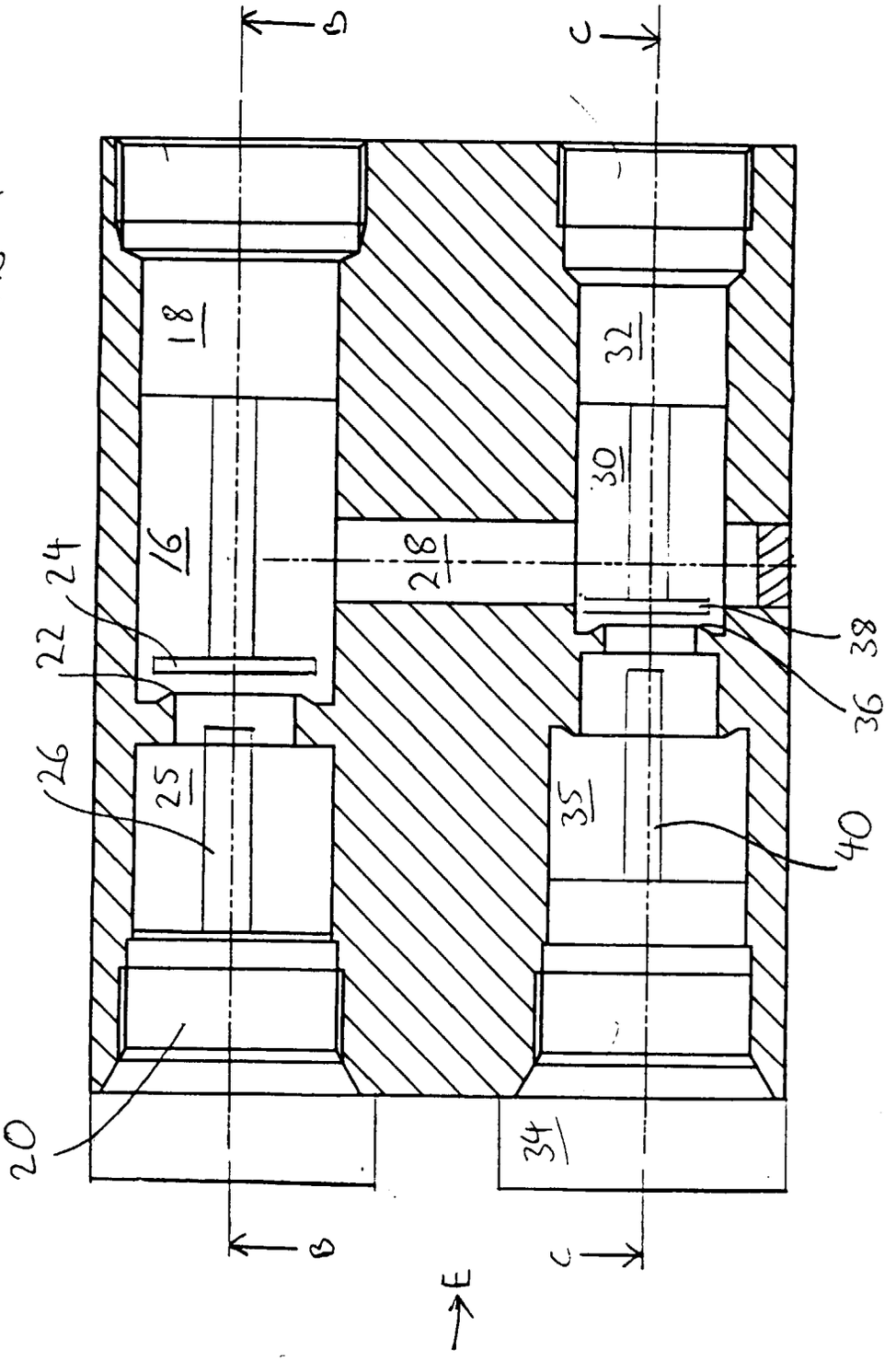

FIG 5