Sept. 2, 1958 S. GUELSON 2,850,030

SAFETY VALVE DEVICES

Filed March 24, 1953 3 Sheets-Sheet 1

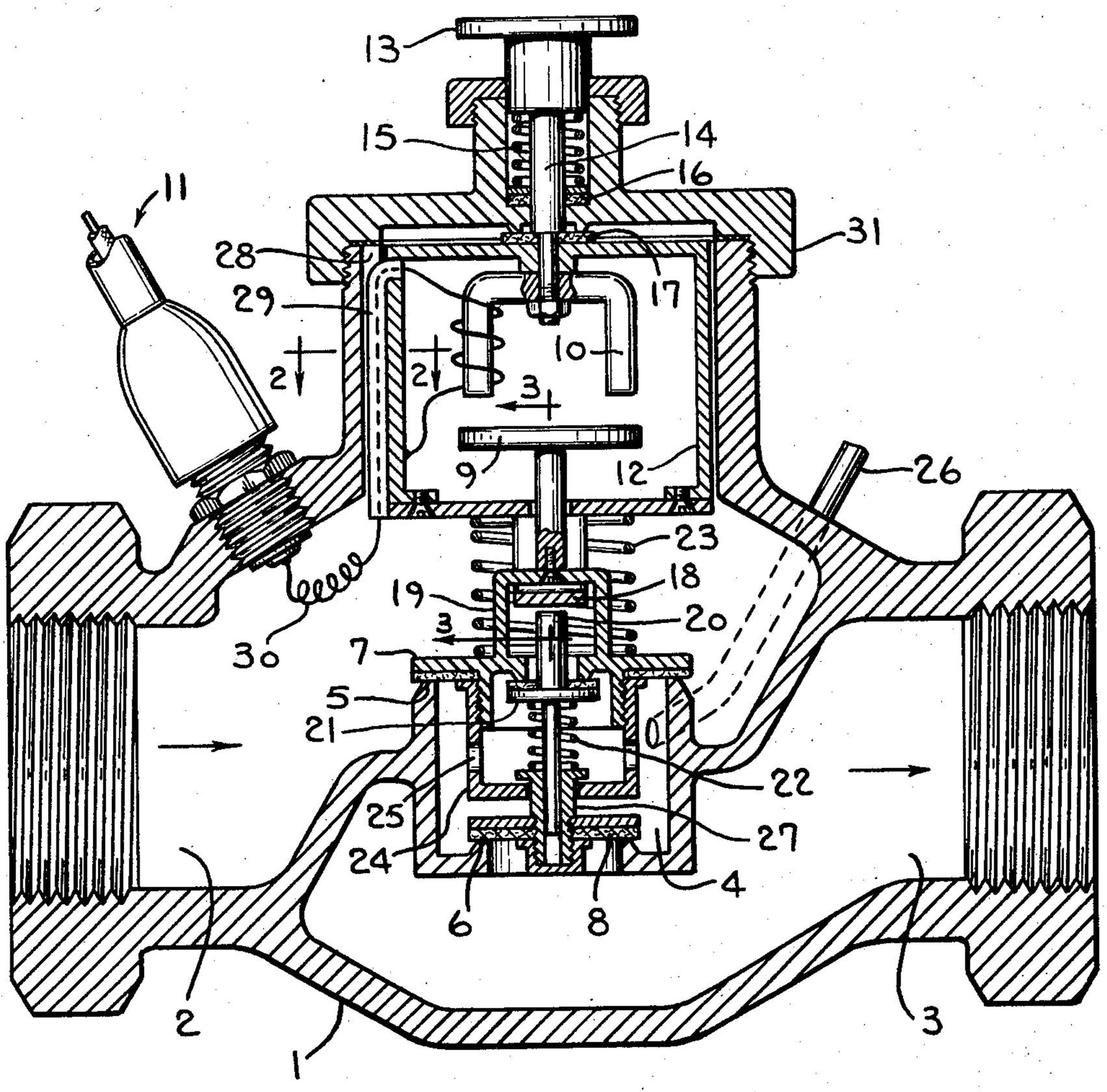

FIG. 1

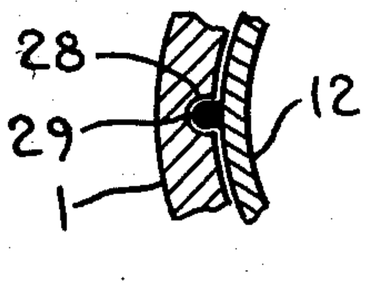

FIG. 2

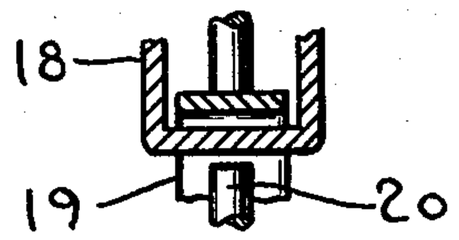

FIG. 3

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SAFETY VALVE DEVICES

Filed March 24, 1953 3 Sheets-Sheet 2

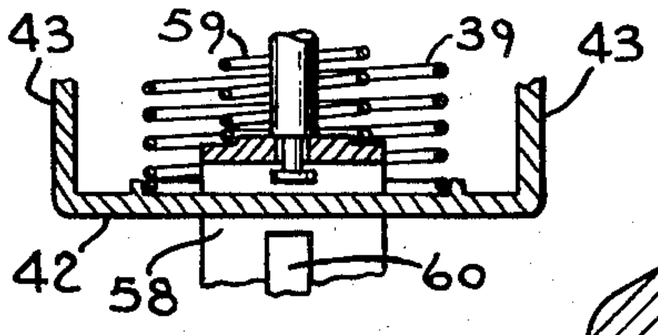

FIG. 6

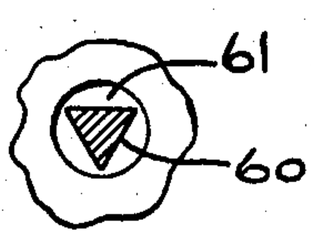

FIG. 7

FIG. 4

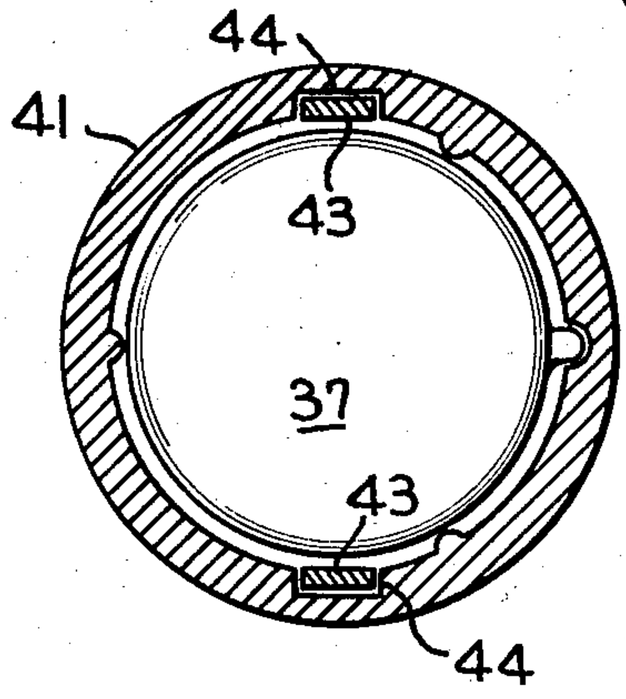

FIG. 5

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SAFETY VALVE DEVICES

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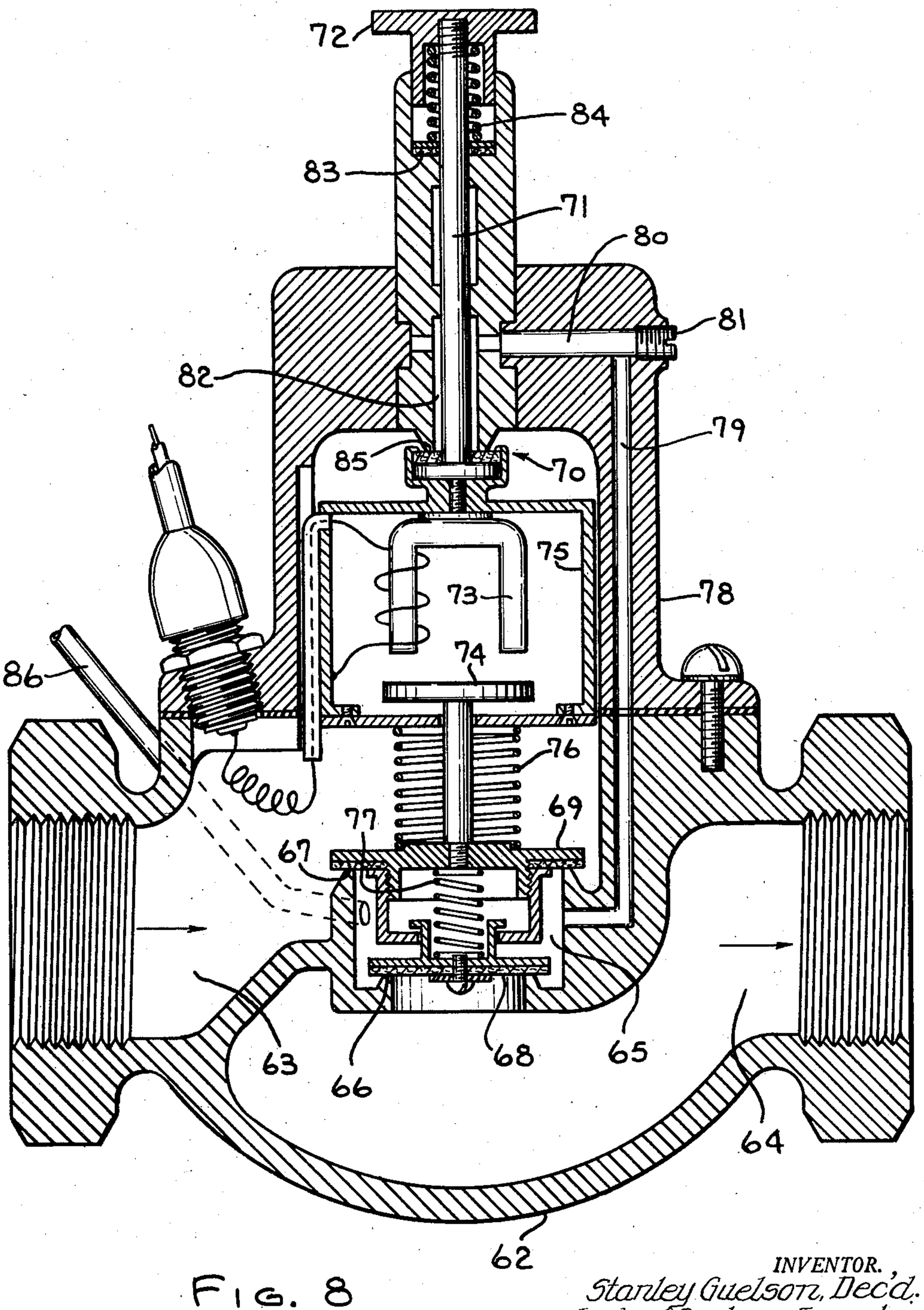

FIG. 8

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United States Patent Office

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2,850,030

SAFETY VALVE DEVICES

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Application March 24, 1953, Serial No. 344,396

9 Claims. (Cl. 137—66)

This invention relates to safety valve devices such for example as those shown in the patents to Hildebrecht, 2,114,446, of April 19, 1938, for Thermoelectric Safety Device and the Like, Mantz, 2,271,506, of January 27, 1942, for Thermoelectric Safety Device, and Wantz, 2,307,870, of January 12, 1943, for Control Device, all of which are assigned to the same assignee as the present invention.

In the prior development of the art relating to thermoelectrically controlled safety valve devices, it has been the regular practice to provide for the insertion of two assemblies, one from the upper and one from the lower side of the main body of the valve device, these two assemblies controlling, respectively, the main valve and the temporary flow interrupter valve which latter interrupts the flow to the main burner during the initial portion of the cycle until after flow has been established to a pilot burner which in turn heats a thermocouple and energizes the holding electromagnet for the main valve. These prior devices also operated by moving the electromagnet down into contact with the armature on the one hand, or moving the armature up into contact with the electromagnet on the other hand. It was also the practice in some of the prior devices to provide means for supplying the pilot burner from the space between the main valve and the temporary flow interrupter valve.

This invention is designed to avoid the necessity of having access to the body portion from both the top and the bottom portion thereof. One of the primary objects of the invention is to provide safety valve devices in which the entire assembly carrying the main valve, the pilot valve, or pilot valves, and the temporary flow interrupter valve as a unitary assembly is insertable into the main body portion from one side only, for example, the top, so that there is no necessity for machining or otherwise working the other side of the main body portion, and so that there is no necessity for providing an auxiliary reset button and associated flow interrupter valve but instead in which all of the parts are insertable and manipulable from one side only of the body portion of the device.

A further object of this invention is to provide safety valve devices which are so constructed that the insertable assembly is removable as a unitary structure and may be bodily lifted from the main body of the valve for inspection, adjustment, or repair and in which no adjustment is required within the main body portion of the valve structure itself.

A further object of this invention is to provide a temporary flow interrupter valve which is normally seated when the device is not actuated and which does not have to be manually held against its seat while the pilot burner is being lighted but which is permanently biased towards its seat.

A further object of this invention is to provide a construction whereby a sequential operation of the pilot burner valve or valves, the main valve, and the temporary flow interrupter valve are secured during the opening cycle, and in which all valves are closed when energization of the device fails as for example upon extinguishing of the pilot burner and cooling of the thermocouple or breaking or shorting of the electric circuit to the electromagnet.

A further specific object is to so construct a safety valve device of the above defined type in which the temporary flow arrester valve is of smaller diameter than the opening through the main valve seat so that during insertion of the main valve assembly into the body portion of the valve, the temporary flow arrester valve may pass through the main valve seat into operative position with reference to its own valve seat.

Embodiments of the invention are shown in the accompanying drawings in which:

Figure 1 is a longitudinal sectional view through the valve device with all of the valves in closed position, such view showing one form of the invention.

Figure 2 is a fragmentary line section on the line **2—2** of Figure 1.

Figure 3 is a fragmentary line section on the line **3—3** of Figure 1.

Figure 4 is a longitudinal sectional view through a valve device showing a further form of the invention, such view corresponding to Figure 1 and showing the valves in closed position.

Figure 5 is a line section on the line **5—5** of Figure 4.

Figure 6 is a fragmentary line section on the line **6—6** of Figure 4.

Figure 7 is a fragmentary sectional view on the line **7—7** of Figure 4.

Figure 8 is a longitudinal sectional view through a valve device showing a still further form that the invention may take, such view corresponding to Figure 1 and showing the valves in closed position.

The expressions "top portion" or "bottom portion" of the valve body are used merely for the sake of simplicity and are in no sense to be interpreted as limiting as the valve device may be mounted in any position desired.

It is believed that a clearer understanding of the different forms of the invention may be had if it is remembered that the sequential operation of the valve devices during opening is as follows:

First, the pilot burner valve opens. Second, the main valve partly opens. Third, the main valve fully opens and the temporary flow arrester valve opens. In this way there is no diminution in the pressure supplied the pilot burner during the opening of the main valve and the temporary flow arrester valve. When energization fails, due for instance, to extinguishing of the pilot burner or interruption of the electric circuit from the thermocouple to the electromagnet, all valves are closed and there is 100% cutoff. With this brief outline of the operation of the valve devices, the detailed description of the several forms that the invention may take, will be given.

Referring to Figures 1, 2 and 3 showing the first form of the invention, it will be seen that the valve device comprises a body portion or main portion **1** which has an inlet **2** and an outlet **3**. Between the inlet and outlet there is a chamber **4** which constitutes a pilot burner supply chamber and also constitutes the main flow passage when both the main valve and the temporary flow interrupter valve are open. The upper portion of the chamber terminates in a main valve seat **5** and the lower portion has the temporary flow interrupter valve seat **6**. The main valve is indicated generally by the reference character **7** and the flow interrupter valve by the reference character **8**.

The main valve is rigidly attached to an armature **9** positioned immediately below an electromagnet **10** adapted to be energized from a thermocouple, not shown, through the usual electric circuit indicated generally by the reference character **11**.

The armature **9** has a stem which projects slidably through the bottom portion of a magnet housing **12** which is rigidly attached to a manually manipulable button or member **13**. It is to be understood that the magnet housing **12** may be directly electrically connected with the body portion or "grounded" by a conductor, not shown, or dependence may be placed upon the sliding engagement of the metal parts.

It is to be noted that the temporary flow interrupter valve **8** is of smaller diameter than the opening through the main valve seat **5** so that it may be passed directly through the main valve seat during assembly of the parts of the valve device as will appear hereinafter.

The magnet housing **12** is rigidly connected to the externally located manually manipulable button or member **13** by means of a shank **14** and is upwardly urged by means of a relatively heavy spring **15**. Preferably a packing **16** is provided around the stem **14** as shown and also a small leather or sealing disk or valve **17** is carried on the upper portion of the housing **12**, so that when the parts are in the position shown in Figure 1 the case is completely sealed off from passage around the stem **14**.

It is to be noted that the housing **12** for the electromagnet is provided with a stirruplike member or transverse portion **18** which is positioned within a similar inverted stirruplike member **19** which latter is rigidly attached to the main valve **7**. These portions are not in contact with each other. The portion **18** is positioned directly above the stem **20** of the pilot valve **21**. The pilot valve **21** normally closes an aperture directly through the main valve **7** as is obvious from an inspection of Figure 1. It is urged upwardly by means of a spring **22** so that the pilot valve is normally closed. A second spring **23** is positioned between the main valve and the electromagnet housing **12**.

It is to be noted particularly that the main valve is provided with a depending casing **24** which is apertured as indicated at **25** and which communicates therefore with the space **4**.

It is to be noted also that a pilot burner pipe **26** opens into the space **4** and it is intended that this pipe be connected to a pilot burner, not shown.

It is to be noted particularly that the temporary flow interrupter valve **8** is loosely connected by means of the thimble **27** with the depending casing **24** of the main valve **7**. It is to be noted particularly that there is a limited movement permitted the main valve **7** during its opening stroke before the temporary flow interrupter valve is opened.

Any suitable means may be provided for holding the electromagnet housing **12** against rotation, for example, a keyway **28** may be formed in the main valve body **1** as shown particularly in Figures 1 and 2 and the relatively rigid insulating sheath or tube **29** of the conductor **30** for the electromagnet may be passed through such sheath. In this way the magnet housing **12** is prevented from rotation with respect to the valve body. It is to be noted further that the upper portion of the valve body is provided with an opening which is closed by means of a cap **31** which latter guides and houses the stem **14** of the button **13**.

The operation of the safety valve device is as follows:

Assuming the parts are in the position shown in Figure 1 and it is desired to light the burner supplied by the valve, the operator presses the button **13** downwardly. This brings the electromagnet **10** into contact with the armature **9** and in addition to this the downward motion of the portion **18** rigid with the casing **12** depresses the pilot valve **21** and allows gas to flow directly through the main valve **7** to the pilot burner chamber **4**. The pilot

burner not shown may then be lighted in any suitable manner and when its thermocouple, not shown, is energized the electromagnet will hold the armature **9** securely against its pole tips. The operator then allows the button **13** or manually manipulable member to rise under the influence of the spring **15** and thus bodily lifts the armature **9**, the main valve **7**, and the auxiliary valve **8**. At this point it is to be noted particularly that during this upward motion the main valve **7** is partially opened before the temporary flow interrupter valve **8** opens and this maintains pressure in the pilot pipe **26** prior to the flow to the main burner, although the main valve **7** is now executing its opening motion. Thereafter the auxiliary or temporary flow interrupter valve opens upon continued upward motion of the main valve **7** and the flow of gas to the main burner, not shown, is complete. It is to be understood that suitable gaskets, washers or other packing may be employed wherever necessary in accordance with the usual practice.

If the pilot light fails thus allowing the thermocouple to cool or if the electric circuit to the electromagnet is broken or shorted, the armature **9** immediately drops and the main valve, auxiliary valve, and pilot valve close.

It is apparent from the above that there is 100% cutoff upon failure of energization of the electromagnet.

In the form of the invention shown in Figures 4, 5, 6 and 7, it will be seen that the same general idea has been followed as that previously described. However, this form is an improvement over that shown in Figure 1, in view of the fact that the electromagnet does not have to hold against the force of two springs but instead as will be apparent as the description proceeds it has to hold against the force of merely one spring, viz., that for the main valve and not the spring for the pilot valve.

Referring in detail to Figures 4, 5, 6 and 7, it will be seen that the safety valve device comprises a body portion **32** which has an inlet portion **33** and an outlet portion **34**. It has the electromagnet **35** corresponding in all parts to the electromagnet previously described and has the armature **36** therefore. The coaction of the electromagnet and armature are identically as previously described. The magnet housing is indicated at **37**. This electromagnet housing **37**, however, is not rigidly attached to the manually manipulable externally located button or member **38** but instead is spring pressed upwardly by means of the spring **39** and rests against stops **40** carried by the upper removable head portion **41**, the head portion **41** being removably secured to the body portion **32** as shown in Figure 4. The lower portion of the spring **39** bears against a saddle member or transverse member **42** which is formed integrally with a pair of arms **43**. These arms **43** extend upwardly in keyways or guide ways **44**, see Figure 5, and are attached rigidly to the manually manipulable button or externally located member **38** by means of a stem **45**. A spring **46**, which is more powerful than the spring **39**, urges the button **38** upwardly.

It is to be noted that the usual sealing valve **47** surrounds the shank **45** and the usual packing is provided for such shank as previously described.

The inlet and outlet portions **33** and **34** are joined by means of the pilot burner supply chamber **48** in the same way as that previously described. This chamber is provided with a temporary flow interrupter valve seat **49** and with a main valve seat **50**. The main valve is indicated at **51** and the flow interrupter valve at **52**. The pilot valve is indicated at **53** and is spring pressed upwardly by means of the spring **54**. The main valve **51** carries a downwardly depending housing **55** which is apertured as indicated at **56** and is thus in communication with the chamber **48**, the chamber **48** being connected to the pilot supply pipe **57**.

It is to be noted that there is a relatively loose connection between the flow interrupter valve **52** and the valve **51** so that the main valve **51** may have a limited opening motion before the flow interrupter valve **52** is opened.

It is to be noted that the main valve **51** is provided with an inverted saddlelike structure **58** against which a spring **59** bears. This spring **59** is located inwardly of the spring **39** and thus it is apparent that the electromagnet merely has to hold against the force of the spring **59** and not against that of the pilot valve spring **54.** This will become clearer when the description of the operation is given. The stem **60** of the pilot valve **53** may be triangular or otherwise shaped so that there is clearance as indicated at **61** in Figure 7 through the main valve **51** to thus allow the free passage of gas when the pilot valve **53** is depressed.

The operation of the apparatus is as follows:

Assuming the parts are in the position shown in Figure 4, the operator presses the button **38** downwardly. The saddle portion **42** engages the stem **60** of the pilot valve **53** and opens such pilot valve. Continued downward motion of the button **38** moves the electromagnet **35** into contact with the armature **36.** The pilot light, not shown, may now be lighted and when the electromagnet is energized the operator may allow the button **38** to rise thus opening the main valve and the temporary flow interrupter valve. As previously described the main valve opens a slight amount before the flow interrupter valve opens and thus pressure to the pilot light is maintained although the temporary flow interrupter valve is subsequently opened.

Particular emphasis is placed on the fact that the electromagnet **35** does not have to hold against the pressure of the spring **39.** The pressure of the spring **39** is borne by the yoke or stirrup **42** and this yoke communicates mechanically with the stem **45** so that the spring **46** holds the spring **39** compressed. The other end of the spring **39** bears against the underside of the housing **37** of the electromagnet which in turn rests against the stops **40.** The problem was to maintain the pilot valve open until after the main valve opens, but thereafter to relieve the magnet of the force of the spring **54.** This is accomplished by virtue of the fact that as the valve assembly is moved upwardly under the influence of the spring **46,** the spring **39** insures movement of the housing **37** with the saddle **42** merely holding the pilot valve open during this opening stroke of the main valve. When the casing **37** rests against the stops **40,** the saddle **42** is permitted to overtravel to allow reclosure of the pilot valve. Then only the spring force opposing that of the magnet is that of the spring **59** which moves the main valve to closed position upon the deenergization of the magnet. This spring **59** has to be calibrated to afford sufficient sealing force to cut off the flow of gas, but must not be so strong as to overwhelm the holding force of the magnet. This is a delicate calibration which would be immeasurably complicated if the force of a second spring also had to be taken into account. In production it is much easier to match one spring to the magnet holding force than to match two springs, especially in view of the tolerances necessary under production techniques.

In the form of the invention shown in Figure 8, the main body portion of the valve device is indicated by the reference chracter **62** and is provided with the inlet portion **63** and the outlet portion **64.** Between these portions is located the pilot burner supply chamber **65** which is provided with the flow interrupter valve seat **66** and the main valve seat **67** which cooperates with the flow interrupter valve **68** and the main valve valve **69**, respectively.

It is to be noted also that there is a loose fit between the flow interrupter valve **68** and the main valve **69** so that the main valve may partly open before the flow interrupter valve opens.

This form of the invention is provided with a directly manually operable by-pass valve indicated generally by the reference character **70** which is carried directly by the manually manipulable stem **71** provided with the outer button **72.**

The electromagnet is indicated by the reference character **73** and the armature by the reference character **74** and the electromagnet housing by the reference character **75.** The functioning of these parts is identically the same as that previously described particularly in the form of the invention shown in Figure 1.

A spring **76** is positioned between the magnet housing **75** and the main valve **69** and a spring **77** is positioned between the temporary flow interrupter valve **68** and the main valve **69** as shown in Figure 8. The body portion **62** has its upper opening closed by means of the head **78** which is secured thereto in any suitable manner, as indicated in Figure 8. A duct **79** extends downwardly through the head **78** and the body portion **62** and opens into the pilot burner supply chamber **65.** This duct **79** communicates with a transverse duct **80** the outer portion of which is closed by means of a plug **81.** The duct **80** communicates with a space **82** immediately surrounding the stem **71.** However, gas is prevented from reaching the duct **80** by means of the valve **70** which is rigid with the stem **71** and cooperates with the seat **85.** A suitable packing **83** surrounds the stem **82** and is held in place by the spring **84** which urges the button **72** upwardly. The pilot burner supply pipe is indicated by the reference character **86** and communicates with the pilot burner supply chamber **65.**

The operation of this apparatus is as follows:

When the manually manipulable button **72** is depressed the by-pass valve **70** moves away from its seat **85** and gas passes through the passageways **82, 80** and **79,** which afford a by-pass duct communicating between the inlet **63** and chamber **65.** The gas passes through chamber **65** to the auxiliary outlet through which the pilot burner supply pipe **86** opens. The pilot burner may now be lighted. The downward motion of the button **72** brings the poles of the electromagnet **73** into contact with the armature **74** and when the electromagnet is energized the operator may allow the button **72** to rise thus lifting the main valve **69** and the auxiliary or temporary flow interrupter valve **68** from their seats. It is to be noted that the main valve opens slightly before the temporary flow interrupter valve opens and thus the pressure in the pilot line is maintained. The by-pass valve **70,** which may be called the manual valve or stem valve hereinafter, finally closes upon completion of the upward stroke of the button **72** but nevertheless pressure is maintained in the pilot burner supply chamber **65** due to the opening of the main valve before closure of the valve **70.**

It is to be noted that in the form of the invention shown in Figure 8 only one spring opposes the holding force of the electromagnet.

It is to be noted that in all forms of the invention the valves are equipped with suitable leather or other type of sealing disks and that suitable gaskets are employed at usual places where junction between parts is effected.

It is to be noted particularly that the directly manually manipulable valve **70** of Figure 8 may be used, with either of the first described forms of the invention shown in Figures 1 and 4. Under these conditions the duct **79** of Figure 8 is dispensed with and the plug **81** is replaced by an additional or auxiliary pilot burner supply pipe, not shown. This auxiliary pilot supply pipe may lead to a charging pilot such as shown in the patent to Witzel, 2,527,286, of October 24, 1950, for Safety Shutoff Control for Plural Pilot Gaseous Fuel Burner Systems, such patent being owned by the same assignee as the present invention. It is to be noted that while both the usual pilot line and charging pilot line are open initially, that the charging pilot line is closed as soon as the shutoff control is in operation.

In all forms of the invention the opening through the upper portion of the body part of the valve device is larger than the diameter of the main valve and, as previously explained, the diameter of the temporary flow interrupter valve is smaller than the opening through the seat of the main valve. Thus it is possible to insert the

main valve assemby directly through one side only of the main valve body and it is not necessary to have an additional opening through the other side of the main valve body.

Another advantage arising from the constructions described hereinabove resides in the fact that the main valve assembly can be lifted bodily as a unit from the main valve body. In the forms shown in Figures 4 and 8 all of the electric connections are lifted free of the body portion as they are carried by the head of the device. In the form shown in Figure 1 a suitably flexible and extensible portion of the conductor **30** is provided to allow the ready removal of the valve assembly. The operator, if he desires, may thereafter detach the conductor **30**.

It is to be distinctly understood that the terms "upper" and "lower" appearing hereinafter or in the preceding description are not to be interpreted as limiting for as stated previously the valve devices may be installed in any position desired. These terms are therefore used merely to lessen the number of limiting phrases that would otherwise have to be used. Further it is to be understood that where the expression "manually manipulable" external member is employed that such member is not necessarily limited to one which may be manipulated by hand but is intended to define a member which is manipulated from any means whatsoever.

Although this invention has been described in considerable detail, it is to be understood that such description is intended as illustrative rather than limiting, as the invention may be variously embodied and is to be interpreted as claimed.

What is claimed is:

1. A safety valve device comprising a body portion having an inlet and an outlet and having a pilot burner supply chamber between said inlet and outlet, said chamber having spaced first and second valve seats, and said body portion also having an opening through a side thereof and having a pilot burner outlet communicating with said pilot burner supply chamber, and a unitary valve assembly insertable through said opening and including first and second valve means, said first valve means cooperating with said first valve seat, said second valve means cooperating with said second valve seat and insertable through said first valve seat, and operating means forming a portion of said assembly for operating said valve means, said unitary valve assembly further including third valve means operatively associated with said inlet and said pilot burner supply chamber and movable, when said first and second valve means are closed, to an open position affording communication between said inlet and said pilot fuel supply chamber for initially establishing communication between said inlet and said pilot fuel outlet before opening of said first and second valve means.

2. A safety valve device for main and pilot burners, comprising a body portion having an inlet and an outlet for a main burner and having a pilot burner supply means including a chamber between said inlet and outlet, said chamber having an upper and a lower valve seat, said body portion having an opening on its upper side, and a valve assembly insertable through said opening and including a main valve cooperating with said upper valve seat and a temporary flow arrester valve cooperating with said lower valve seat and insertable through said upper valve seat, and operating means forming a portion of said assembly for operating said valves, said valve assembly including a pilot burner valve cooperable with said supply means and mechanism for operating said pilot burner valve from said operating means.

3. A safety valve device for main and pilot burners comprising a body portion having an inlet and an outlet and having a pilot burner supply means including a chamber between said inlet and outlet, said chamber having an upper and a lower valve seat, said body portion having an opening on its upper side, and a valve assembly insertable through said opening and including main valve means cooperating with said upper valve seat and temporary flow arrester valve means cooperating with said lower valve seat and insertable through said upper valve seat, said valve assembly including a pilot burner valve means operable when open to afford communication between said inlet and said chamber, and operating means including mechanism for sequentially actuating said pilot burner valve means and thereafter both said main and temporary flow interrupter valve means.

4. A safety valve device for main and pilot burners comprising a body portion having an inlet and an outlet and having a pilot burner supply means including a chamber between said inlet and outlet, said chamber having an upper and a lower valve seat, said body portion having an opening on its upper side, and a valve assembly insertable through said opening and including a main valve cooperating with said upper valve seat and a temporary flow arrester valve cooperating with said lower valve seat and insertable through said upper valve seat, said valve assembly including a pilot burner valve means operable when open to afford communication between said inlet and said chamber, and operating means including mechanism for sequentially opening said pilot burner valve means, partially opening said main valve, and simultaneously fully opening said main valve and said temporary flow interrupter valve.

5. A safety valve device comprising a main body portion having passage means therein, said passage means including a main and an auxiliary valve seat and pilot burner supply chamber means between said seats arranged to be connected to a pilot burner, and a valve assembly including a movable member having an externally operable element for moving said movable member, a main valve and an interconnected temporary flow arrester valve cooperable with said main and auxiliary seats, respectively, a pilot burner valve normally biased toward a closed position and operatively associated with said externally operable element and movable to an open position affording communication between said chamber means and said passage means upstream of said main valve seat by depression of said externally operable element depressing said movable member, first biasing means between said main valve and said movable member biasing said main and arrester valves toward said main and auxiliary seats, an armature connected to said main valve, second biasing means for returning said movable member to its initial position following depression thereof, and an electromagnet carried by said movable member and arranged to be moved into engagement with said armature against the bias of said first biasing means when said movable member is depressed and arranged to hold said armature attracted thereto against said first biasing means for movement therewith effecting opening of said main and flow arrester valves on return of said movable member to its initial position under the bias of said second biasing means when said externally operable element is released.

6. A safety valve device comprising a main body portion having passage means therein, said passage means including a main and an auxiliary valve seat and a pilot burner supply chamber means between said seats arranged to be connected to a pilot burner, a valve assembly comprising a movable member having an externally operable element for moving said movable member, a main valve and a temporary flow arrester valve loosely coupled to said movable member by coupling means for sequential movement thereof, said main and flow arrester valves normally seating on said main and auxiliary valve seats, respectively, a pilot burner valve biased towards closed position and movable to open position by means actuated from said externally operable element, said open position of said pilot burner valve affording communication between said chamber means and said passage means upstream of said main valve seat by depression of said

externally operable element, an armature connected to said main valve, an electromagnet carried by said movable member and arranged to be moved into engagement with said armature and arranged to hold said armature when energized, first spring means between said main valve and said movable member biasing said main valve towards said main seat and normally holding said armature away from said magnet, and second spring means biasing said flow arrester valve towards said auxiliary valve seat.

7. A safety valve device for main and pilot burners comprising a main body portion having passage means therein, said passage means having an inlet and an outlet and having a main and auxiliary valve seat between said inlet and outlet and having a pilot burner chamber between said seats arranged to be connected to a pilot burner, and a valve assembly including a movable member having a stem and an externally operable element operatively connected to said stem, biasing means biasing said stem upwardly, a pilot valve between said inlet and pilot burner chamber operatively associated with said stem for establishing communication between said inlet and said pilot burner chamber when said stem is depressed, a main valve and a temporary flow arrester valve arranged to seat, respectively, on said main and auxiliary valve seats, connection means, an armature connected to said main valve and loosely connected by said connection means to said temporary flow arrester valve for sequential operation thereof, and an electromagnet movable by said externally operable element into contact with said armature, said biasing means raising said electromagnet when said externally operable element is released to sequentially open said main and temporary flow arrester valves, and biasing said main and temporary flow arrester valves toward closed position.

8. A safety valve device comprising, a main body portion having passage means therein, said passage means including a main and an auxiliary valve seat and having a pilot burner chamber means between said seats arranged to be connected to a pilot burner, a valve assembly comprising a movable member having an externally operable element for moving said movable member, interlinking means, a main valve operatively connected to said movable member by a portion of said interlinking means, a temporary flow arrester valve loosely coupled to said main valve by another portion of said interlinking means for operation thereof, said valves normally seating on said main and auxiliary valve seats, respectively, a pilot burner valve biased towards closed position and carried by said main valve and movable to open position affording communication between said chamber means and said

passage means upstream of said main valve seat by said interlinking means, an armature connected to said main valve, an electromagnet carried by said movable member and arranged to be moved into engagement with said armature and arranged to hold said armature when energized, spring means between said main valve and said movable member biasing said main valve towards said main seat and normally holding said armature away from said magnet, spring means biasing said flow arrester valve towards said auxiliary valve seat, and spring means for returning said movable member to its initial position, all of said valves being closed when said electromagnet is deenergized while said externally operable element is released.

9. A safety valve device comprising a main body portion having passage means, said passage means having an inlet and a main outlet, said passage means also having main and auxiliary valve seats and a chamber between said seats, said body also having an auxiliary outlet communicating with said chamber, a valve assembly including a movable member having an externally operable element for moving said movable member, a main valve and a temporary flow arrester valve operatively connected to said movable member and normally seated on said main and auxiliary valve seats respectively, said body also being formed with a by-pass duct affording communication between said inlet and said chamber, and a by-pass valve for said duct normally biased closed and operatively connected with said externally operable element and movable member and movable to open position when said externally operable element is depressed to permit flow from said inlet through said by-pass duct and chamber to said auxiliary outlet, releasable coupling means operatively associated with said movable member for coupling the latter to said main and flow arrester valves on depression of said externally operable element and for moving said valves to open position on return of said externally operable element to its initial position to permit flow through said main valve seat to said main and auxiliary outlets, said by-pass valve returning to closed position to stop flow through said by-pass duct on such return movement, said coupling means being releasable to permit return of said main and flow arrester valves to closed position for shut off of flow through said main and auxiliary outlets.

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