United States Patent [19]

Mitsui

[11] **3,924,608**

[45] **Dec. 9, 1975**

[54] **ENDOSCOPE**

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[73] Assignee: **Olympus Optical Company, Ltd.,** Tokyo, Japan

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May 23, 1973 Japan ..... 48-60531[U]
May 23, 1973 Japan ..... 48-60532[U]

[52] **U.S. Cl.** ..... **128/2 B;** 128/6; 356/241
[51] **Int. Cl.²** **A61B 1/06**
[58] **Field of Search** ..... 128/6–8, 3, 128/2 B, 11, 303.1; 32/69; 356/241

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Primary Examiner—Kyle L. Howell

[57] **ABSTRACT**

A suction port is opened at the outer surface of a distal end section of an endoscope and a valve member is located within the suction port. The valve member is adapted to be moved from a first position in which the suction port is fully opened, to a second position in which the suction port is restricted in its opening area. In the first position of the valve member, a body liquid or liquid substance present within the body organ of a patient is suctioned through the suction port. In the second position of the valve member, the suction port is opened substantially along a view window, whereby the liquid substance deposited onto a view window can be removed.

6 Claims, 17 Drawing Figures

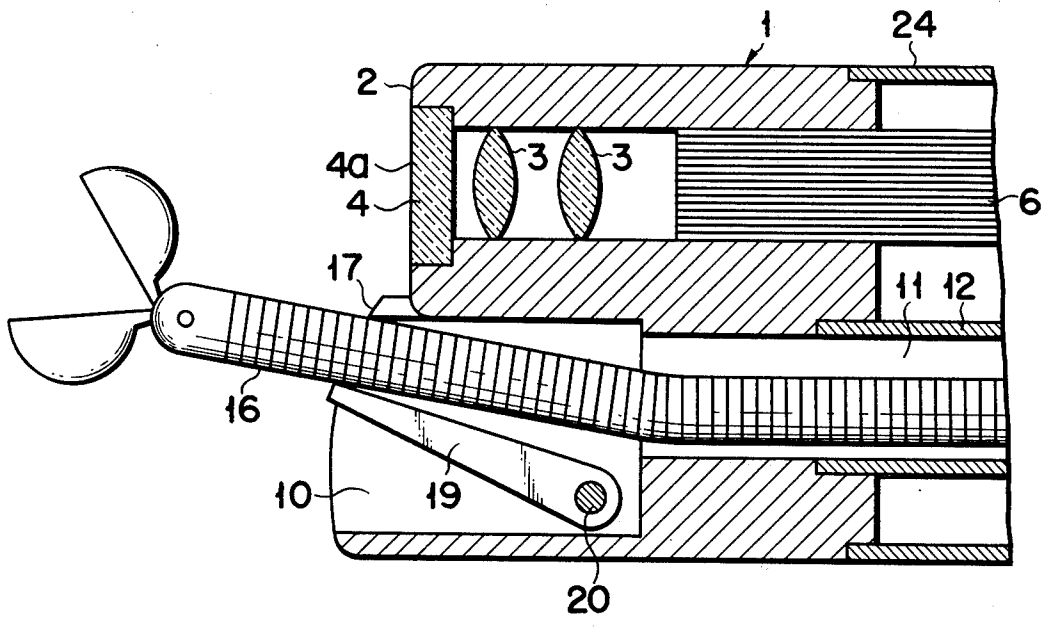


FIG. 1

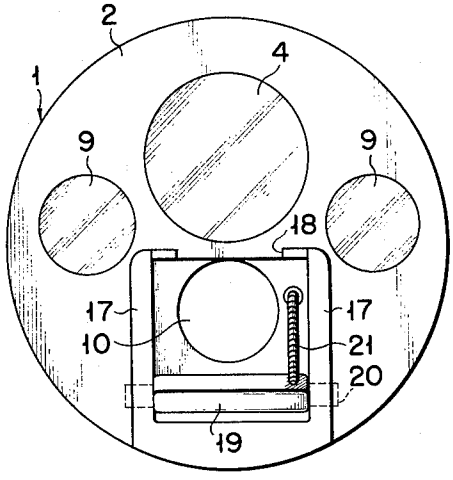


FIG. 3

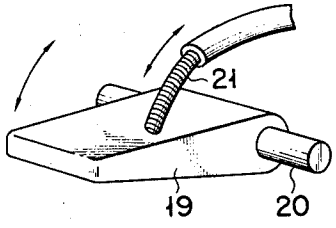
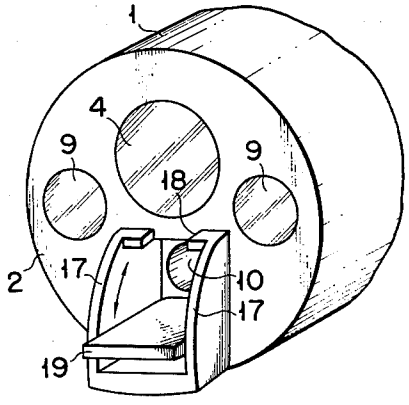


FIG. 2



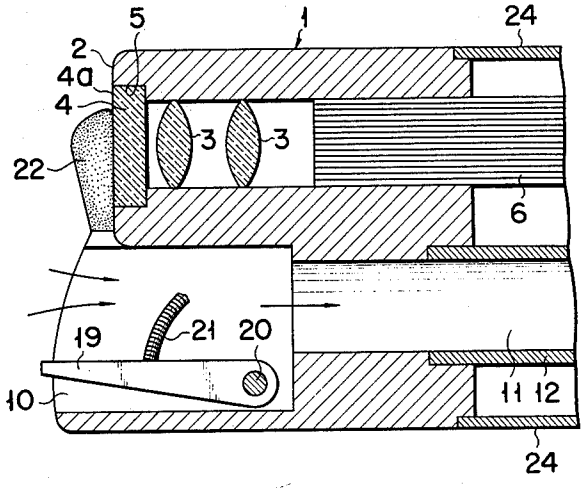
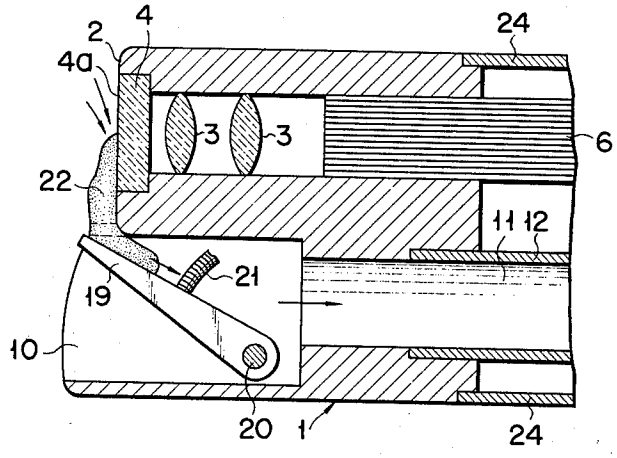


FIG. 4

FIG. 5



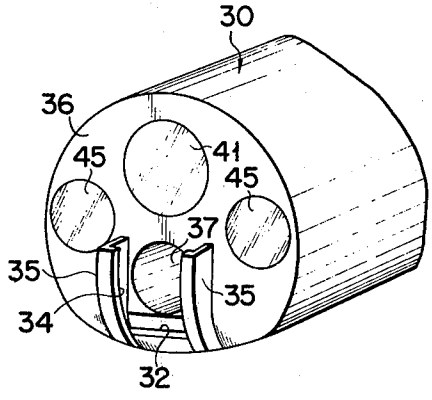


FIG. 8

FIG. 6

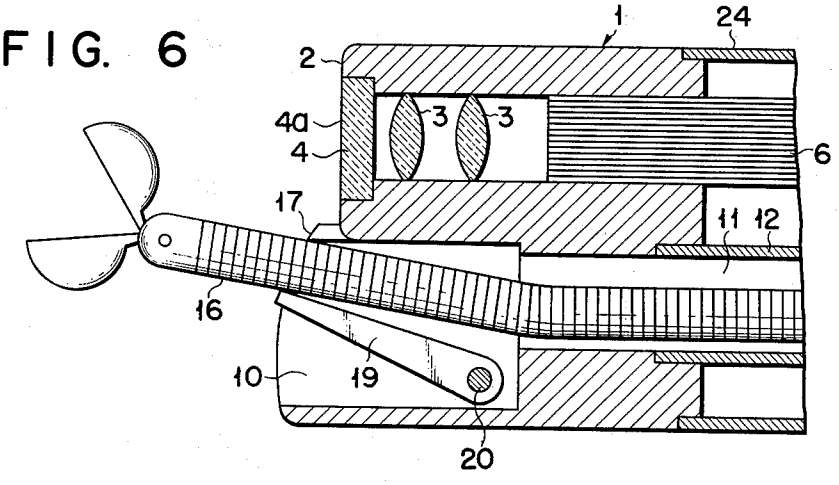


FIG. 7

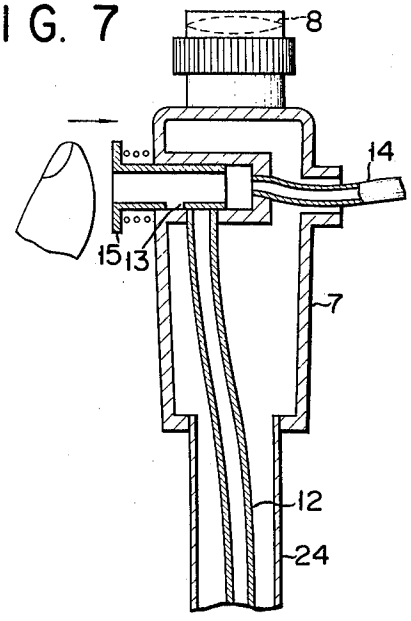


FIG. 10

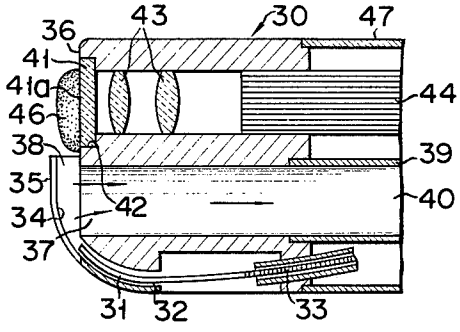


FIG. 11

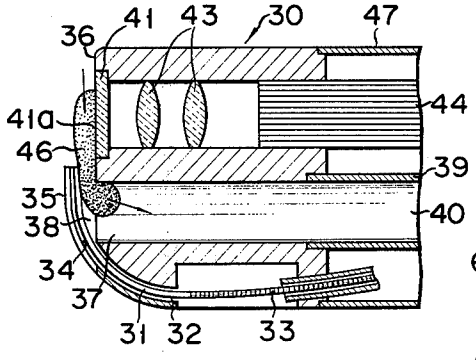


FIG. 12

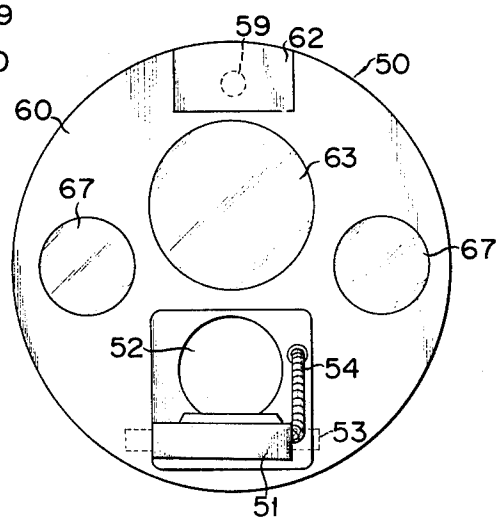


FIG. 9

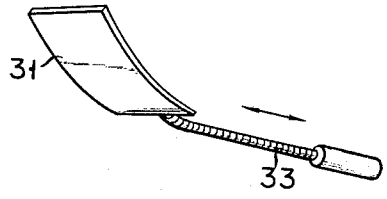


FIG. 13

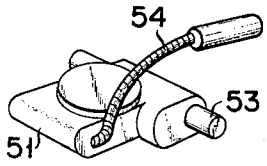


FIG. 14

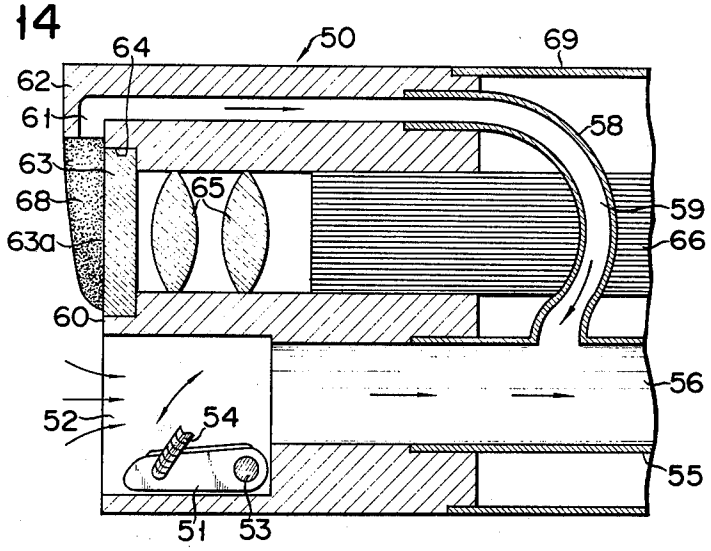


FIG. 15

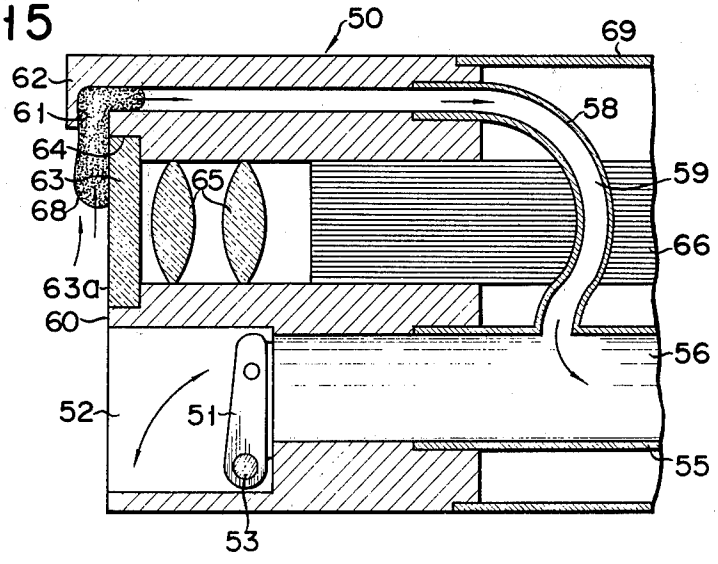


FIG. 16

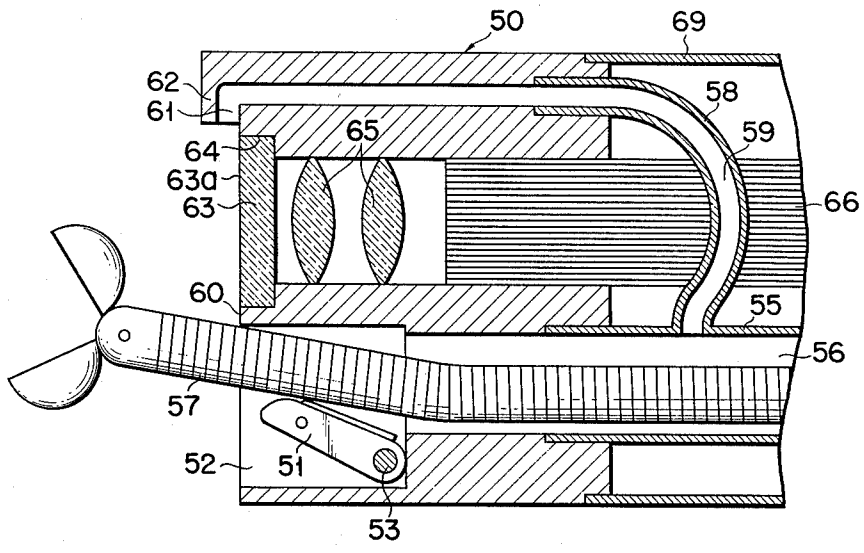

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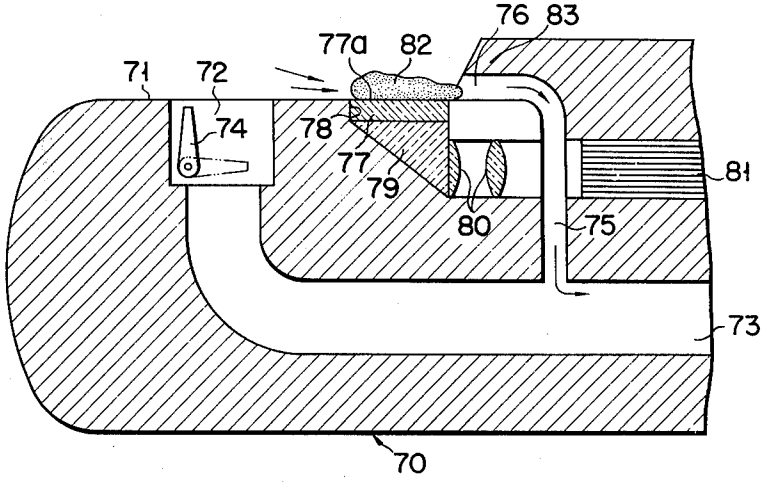
FIG. 17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ENDOSCOPE

BACKGROUND OF THE INVENTION

This invention relates to endoscope and more particularly to an improvement in the distal end section of the endoscope.

Difficulties are presented when the body cavity or body organ is visually observed, or photographed, through a view window of an endoscope i.e. through a view window leading through objective lenses to an image guiding fiber bundle and then to an eyepiece. That is, a field of view is often shut out, because a body fluid or fluid substance present within the body organ of a patient is deposited onto the outer surface of the view window. For this reason, the affected portion of the body organ or body cavity has not been fully observed or clearly photographed.

With the conventional endoscope, a suction port is provided at the outer surface of its distal end section and a body liquid or liquid substance is suctioned through the suction port into the interior of the endoscope.

Since, however, the suction port is provided on the same plane as the outer surface of the distal end section, a suction force is directed in a direction substantially perpendicular to the outer surface of the distal end section of the endoscope and a suction force does not work directly on a body fluid or fluid substance deposited onto the outer surface of the view window. It is therefore impossible to remove the liquid substance relatively firmly deposited onto the outer surface of the view window.

SUMMARY OF THE INVENTION

It is accordingly the general object of this invention to provide an endoscope of the type in which a valve member is located within the distal end section thereof and the valve member is adapted to be moved from one position to the other position to cause a suction port to be opened substantially along the outer surface of the distal end section, causing a body fluid or liquid substance to be flowed along the outer surface of the distal end section, while imparting a suction force directly to the liquid substance deposited onto a view window, to permit the deposited liquid substance to be removed from the view window.

According to one embodiment of this invention, a valve member is located within a suction port and adapted to be swung from a first position in which a suction port is fully opened, to a second position in which the suction port is restricted in its opening area. In the second position of the valve member the suction port is caused to be opened substantially along a view window. Where a forceps is inserted into a suction channel, the valve member acts as a forceps raising member for controlling the direction in which the tip of the forceps extends.

According to another embodiment of this invention a valve member is made of a flexible material and located within the distal end section of the endoscope in a manner to be slidably movable in the neighborhood of a suction port. The valve member is slidably moved from a first position in which the suction port is fully opened, to a second position in which the suction port is restricted in its opening area. In the second position of the valve member the suction port is caused to be opened along a view window and a suction force acts directly on a body fluid or fluid substance deposited onto the view window and the deposited substance is rapidly removed under an increased suction force from the view window. The valve member serves as a forceps raising member.

With an endoscope according to a further embodiment of this invention, a large-mouthed main suction port and an auxiliary suction port smaller in opening area than the main suction port are opened in the outer surface of a distal end section of the endoscope. The auxiliary suction port leading to an auxiliary suction channel communicates with a main suction channel leading to the main suction port. That is, the auxiliary suction channel is branched from the main channel. A valve member is located within the main suction port and is adapted to be swung from a first position in which the main suction port is fully opened, to a second position in which the main suction port is closed. In the second position of the valve member only the auxiliary port remains opened and a body fluid or fluid substance is suctioned through the auxiliary port into the auxiliary suction channel. Since the auxiliary suction port is opened along a view window, a suction force acts directly on a fluid substance deposited onto the view window and the deposited fluid substance is rapidly suctioned under an increased suction force into the endoscope. The advantages of this embodiment reside in that the auxiliary port can be easily provided in proximity to the view window and that a suction device needs only to be connected to the main suction channel, since the auxiliary suction port leading to the auxiliary suction channel communicates with the main suction channel.

A primary object of this invention is to provide an endoscope equipped with an improved distal end section capable of rapidly removing, under an increased suction force, any body liquid or fluid substance deposited onto a view window.

A second object of this invention is to provide an endoscope equipped with an improved distal end section capable of removing any body liquid or fluid substance deposited onto the view window, without involving any complicated construction or operational difficulty.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an end view of the distal end section of an endoscope according to a first embodiment of this invention;

FIG. **2** is a perspective view of the distal end section of FIG. **1**;

FIG. **3** is a perspective view of a valve member provided at the distal end section of FIG. **1**;

FIG. **4** is a sectional side view showing the distal end section of FIG. **1**;

FIG. **5** is a sectional side view of the distal end section of FIG. **1**, in which the valve member is in a raised position;

FIG. **6** is a sectional side view of the distal end section of FIG. **1**, in which a forceps is inserted through a suction channel;

FIG. **7** is a sectional side view of a proximal end of an endoscope according to the first embodiment of this invention;

FIG. **8** is a perspective view showing the distal end section of an endoscope according to a second embodiment of this invention;

FIG. **9** is a perspective view of a valve member provided at the distal end section of FIG. **8**;

FIG. 10 is a sectional side view of the distal end section of FIG. 8;

FIG. 11 is a sectional side view of the distal end section of FIG. 10, in which the valve member is in a shifted position;

FIG. 12 is an end view showing the distal end section of an endoscope according to a third embodiment of this invention;

FIG. 13 is a perspective view showing a valve member provided at the distal end section of FIG. 12;

FIG. 14 is a sectional side view of the distal end section shown in FIG. 12;

FIG. 15 is a sectional side view of the distal end section of FIG. 12, in which the valve member is in a closed position;

FIG. 16 is a sectional side view of the distal end section of FIG. 12, in which a forceps is inserted through a suction channel; and

FIG. 17 is a sectional side view of the distal end section of an endoscope according to a fourth embodiment of this invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1 to 7 show a first embodiment of an endoscope according to this invention. FIG. 1 shows an outer end surface 2 of a distal end section 1 of the endoscope. The endoscope is of a forward view type and has a view window 4 at the end surface 2 of the endoscope. The view window 4 is defined by a window opening 5 and a transparent cover glass constituting the view window is fitted to the opening 5. An outer surface 4a of the view window 4 is placed on the same plane as the end surface 2 of the distal end section. Objective lenses 3 constitute an image guide means, together with a fiber bundle 6 and an eyepiece 8 provided in a control unit 7 which is located at the proximal end of the endoscope. An observer can observe a body cavity or body organ —hereinafter referred to merely as a body organ— through the view window leading to the image guide means. A pair of illumination windows 9 are provided one on the right side of the view window 4 and one on the left side thereof. A light source, not shown, is provided, for example, at the control unit 7. A light from the light source is directed through fiber bundles to the illumination window 9 so as to illuminate the body organ. As shown in FIG. 1 a relatively wide-mouthed suction port 10 having a predetermined opening area is provided immediately below the view window 4. The suction port 10 communicates with a suction channel 11 formed in the longitudinal direction of the endoscope, and serves as means for receiving a body liquid or fluid substance from the body organ. The suction channel 11 permits the body liquid to be passed up to the control unit 7. That is, a tube 12 having the suction channel 11 extends into the control unit 7 of the endoscope and communicates with one end of a suction tube 14 through a switching valve 13. The other end (not shown) of the suction tube 14 extends outwardly of the endoscope and is connected to a suitable suction device. An operating button 15 with the switching valve 13 can be manually depressed in a direction indicated by an arrow in FIG. 7. Upon depression of the operating button 15 the suction channel 11 of the tube 12 communicates with the suction device through the suction tube 14 and suction is effected. Upon release of the operating button 15, communication with the suction device is cut off. When suction is effected, a body liquid within the body organ is suctioned from the suction port 10 into the suction channel 11 of the tube 12 and discharged outside of the endoscope. Since the suction channel 11 has a relatively great inner diameter, the body liquid can be very rapidly suctioned and discharged outside of the endoscope. Into the suction channel 11 a biopsy forceps 16 for treating the interior of the body organ can be inserted, for example, as shown in FIG. 6. That is, the suction channel 11 of the tube 12 can be utilized as a forceps channel. Where the forceps is inserted through the suction tube 12, the entry end of the suction tube 12 may be open to the exterior of the endoscope without being connected to the operating valve 13, through such a construction is not shown in the Figures.

A substantially rectangular projecting frame 17 is formed on the end surface 2 of the distal end section in a manner to surround the suction port 10. A cutout 18 is provided in that portion of the projecting frame 17 which is closest to the view window 4.

Within the suction port 10 surrounded with the projecting frame 17 a plate-like valve member 19 is swingably supported. To the valve member 19 one end of an operating wire 21 is fixed. The other end, not shown, of the wire 21 extends into the control unit 7 of the endoscope. The other end of the wire 21 can be pulled or pushed by an operating means provided at the control unit 7. When the wire 21 is pulled, the valve member 19 is swung about an axis 20 i.e. from an open position shown in FIG. 4 to a restricted position shown in FIG. 5 where the suction port 10 is restricted in its opening area. When the wire 21 is pushed, the valve member 19 is returned to the open position. The extent of pulling or pushing the wire 21 can be adjusted. As a result, the angle through which the valve member 19 is swung from the open position to the restricted position can be adjusted. When the forceps 16 is inserted through the suction channel 11 as shown in FIG. 6, the valve member 19 is swung from the open position to the restricted position shown in FIG. 6. The direction in which the tip of the forceps 16 extends can be controlled by the swinging movement of the valve member 19. That is, the valve member 19 acts as what is called a forceps raising member.

Generally, the endoscope comprises the distal end section 1, control unit 7 disposed at the proximal end, and flexible tube 24 connecting the distal end section 1 to the control unit 7. Though the flexible tube 24 is partially shown in FIGS. 4 to 7, the construction and material of the flexible tube, per se, are known in the art. Within the flexible tube 24 the fiber bundle 6 and suction tube 12 with the suction channel 11 are received along the longitudinal direction of the flexible tube 24. Let us explain the operation of an endoscope so constructed.

The distal end section 1 of the endoscope is inserted into a human body and the suction port 10 is fully opened by bringing the valve member 19 into the open position. When suction is effected by the suction device provided at the control unit 7, a body fluid or fluid substance is suctioned through the suction port 10 into the suction channel 11 and discharged outside the endoscope. The interior of the body organ is observed or photographed through the view window 4 leading to the image guide means. Where the body liquid or fluid substance present within the body organ of a patient is deposited onto the outer surface 4a of the view window 4 as shown in FIG. 5, it is necessary to remove it from

the outer surface 4*a* of the view window **4.** It is because that the field of vision is shut out due to the presence of the fluid substance or body fluid and that it is impossible to fully observe the interior of the body organ or sometimes it is impossible to make such an observation. If in such a case a photograph is taken, a blurred image is obtained or in a worst case no image is obtained. When suction is effected with the valve member **19** in the open position, a fluid substance deposited onto the view window **4** is suctioned in a direction indicated by arrows in FIG. **4.** If, however, it is firmly deposited onto the view window **4,** it can not be removed from the view window **4.** Since most of the fluid substance is suctioned in a direction substantially perpendicular to the outer surface 4*a* of the view window **4,** the suction force does not work directly on the deposited fluid substance.

In such a case, the valve member **19** is swung, under the suction force, into the restricted position as shown in FIG. **5** to cause the suction port **10** to be opened substantially along the view window **4** to permit the fluid substance to be flowed along the view window **4** at an increased speed. In the restricted position of the valve member **4** the suction port **10** is defined by the valve member **19,** end surface **2,** cutout **18** and projecting frame **17,** and the suction force acts directly on the fluid substance deposited onto the outer surface **4a** of the view window **4** to cause it to be suctioned along the outer surface 4*a* of the view window **4** as shown in FIG. **5.** As a result, the fluid substance firmly deposited onto the outer surface 4*a* of the view window **4** can be easily removed. After the fluid substance is so removed, the interior of the body organ is fully observed, or photographed, through the view window **4** led to the image guide means. As a result, a clear-cut image of an affected portion of the body organ can be obtained.

FIGS. **8** to **11** show a second embodiment of an endoscope according to this invention. In the respective Figures, the construction of a distal end section **30** to which this invention is directed is shown. In this embodiment, a valve member **31** performing the similar function as the valve member **19** of the first embodiment is provided. The valve member **31** is slidably fitted to a curved slot **32** provided near a suction port **37.** One end of the valve member **31** is connected to an operating wire **33.** Upon pulling the wire **33** the valve member **31** is moved from a position shown in FIG. **11** to a retracted position shown in FIG. **10** and, upon pushing the wire **33,** it is moved from the retracted position to the position shown in FIG. **11** where a suction port **37** is restricted in its opening area. As will be understood from FIGS. **10** and **11** the valve member **31** is made of a flexible material and can be flexibly and pliably bent when it is slid from one position to the other position.

A guide rail **34** is provided in each of a pair of projecting members **35.** The guide rail **34** is curved in a manner to meet the curve of the slot **32** and constitutes an extension of the curved slot **32.** The pair of projecting members **35** are provided one at each side of the suction port **37** i.e. one at the right side of the suction port and one at the left side thereof. Consequently, the valve member **31** is guided along the right and left guide rails **34** and moved from the retracted position to the restricted or shifted position. When the valve member **31** is moved to the retracted position, the suction port **37** is in a fully opened state. Upon sliding the valve member **31** into the restricted or shifted position, the suction port is restricted in its opening area. The restricted opening area **38** is defined by the valve member **31,** outer end surface **36** of the distal end section, and the pair of projecting members **35.** The suction port **37** communicates with a suction channel **40** of a tube **39** and acts as means for receiving a body fluid or fluid substance. The suction channel **40** is connected to a suction device provided in a control unit which is disposed at the proximal end of the endoscope, and serves as means for passing the body fluid therethrough.

Above the projecting member **35,** a view window **41** made of a cover glass is fitted to an opening **42** provided in the end surface **36** of a distal end section **30.** Into a bore provided at the back of the window **41,** objective lenses **43** and fiber bundle **44** are provided as in the case of the first embodiment. The outer surface **41a** of the view window **41** is placed on the same plane as the end surface **36** of the distal end section **30.** A pair of illumination windows **45** are provided one at each side of the view window **41** as in the case of the first embodiment. In this embodiment, the control unit disposed at the proximal end of the endoscope is omitted and a flexible tube **47** is partially shown.

Let us now explain how the interior of the body organ in observed and how a body liquid is discharged outside of the endoscope.

The valve member **31** is pulled by the wire **33** into the retracted position where the suction port **37** is in a fully opened state. Under the influence of the suction device a body liquid or fluid substance is suctioned through the suction port **37** into a suction channel **40** as shown in FIG. **10.** At this time, the body liquid is flowed in a direction substantially perpendicular to the outer surface **36** of the distal end section as shown by arrows in FIG. **10.** Where the fluid substance is firmly deposited onto the view window **41,** no sufficient suction force can be imparted to the fluid substance in an attempt to suction the fluid substance into the suction port **37.** In such a case, the wire **33** is pushed to cause the valve member **31** to be moved from the retracted position to the position shown in FIG. **11,** where the suction port **37** is restricted in its opening area. When the suction port **37** is so restricted, the fluid substance is suctioned, at an increased speed, along the end surface **36** of the outer and into the suction port through the restricted opening area **38,** since a suction force acts directly on the fluid substance. As a result, the interior of the body organ can be fully observed, or photographed, through the view window **41** leading to the object lens **43,** fiber bundle **44** etc. As a result, a clear-cut image of the affected portion of the body organ can be obtained.

The suction channel **40** has a relatively large opening area to permit a fair amount of body liquid to be passed therethrough at rapid speed, and it can also be utilized as a channel for a forceps as in the first embodiment. The valve member **31** can act as a forceps raising member.

FIGS. **12** to **16** show a third embodiment of an endoscope according to this invention. In these Figures the construction of a distal end section **50** of the endoscope is shown. In this embodiment a valve member **51** similar to those valve members shown in the first and second embodiments is mounted within a main suction port **52.** The valve member **51** is supported in a manner to be swingable about an axis **53.** The valve member **51** can be swung from a fully opened position shown in FIG. **14** to a closed position shown in FIG. **15.** As in the above-mentioned embodiments, the swinging move-

ment of the valve member **51** can be effected by an operating wire **54.**

One end of the tube **55** having a main suction channel **56** communicates with the main suction port **52.** The other end, not shown, of the tube **55** is connected, as in the above-mentioned embodiments, to a suction device provided in a control unit which is located at the proximal end of the endoscope. The main suction channel **56** has a relatively large opening area as in the above-mentioned embodiments and it is possible to insert a forceps **57** into the main suction channel **56** as shown in FIG. **16.** That is, the main suction channel **56** can also be utilized as a forceps channel.

Where the forceps **57** is inserted into the suction channel **56,** the valve member **51** can serve as a forceps raising member.

Short of one end of the tube **55** one end of a diameter-reduced tube **58** is opened and communicates with the main suction channel **56.** The tube **58** is bypassed from the tube **55** and has a channel **59** constituting an auxiliary suction channel. The other end of the tube **58** communicates with an auxiliary port **61.** The auxiliary port **61** is defined by an outer end surface **60** of the distal end section and a section **62** projecting ahead of the end surface **60.** The port **61** is opened along an outer surface **63a** of a view window **63.** The view window **63** consisting of a cover glass if fitted to a window opening **64,** and the outer surface **63***a* of the view window lies on the same plane as the end surface **60** of the distal end section. Into that bore of the distal end section **50** which is provided behind the view window, objective lenses **65** and fiber bundle **66** are located as in the above-mentioned embodiments. A pair of illumination windows **67** are provided one at each side of the view window **63.** A flexible tube **69** is partially shown in FIGS. **14** to **16.**

Let us now explain how the interior of the body organ is observed and how a body liquid is discharged outside the endoscope.

The distal end **50** of the endoscope is inserted into the human body and the main suction port **52** is fully opened by bringing the valve member **51** into an open position. A body liquid present within a body organ is suctioned, under the suction force of the suction device, through the main suction port **52** into the main suction channel **56** as indicated by arrows in FIG. **14,** while at the same time the body liquid is suctioned through the auxiliary port **61** into the auxiliary channel **59** and then into the main channel **56.** In this case, the amount of body liquid passed through the port **61** will be much smaller than the amount of body liquid passed through the main port **52.**

Suppose that a fluid substance is deposited onto the outer surface **63***a* of the view window **63** as shown in FIG. **14.** Where such fluid substance is removed from the outer surface **63***a* of the view window **63,** the valve member **51** is swung into a closed position as shown in FIG. **15,** where the main suction port **52** is closed and only the auxiliary port **61** remains opened. This means that an imaginary suction port having an opening area corresponding to a summed opening area provided by both the main and auxiliary suction ports **52** and **61** is restricted to the opening area of the auxiliary suction port **61.** As a result, the body fluid or fluid substance is suctioned, under an increased suction force and at increased speed, through the auxiliary port **61** into the auxiliary suction channel **59.** At this time, the fluid substance is flowed along the end surface **60** of the endoscope as shown in FIG. **15.** Since the suction force acts directly on the fluid substance deposited onto the outer surface **63***a* of the view window **63,** any deposited fluid substance can be removed from the view window **63.**

In this embodiment the tube **58** is disposed within the distal end section of the endoscope in a manner to cross the fiber bundle **66** without interference.

FIG. **17** shows a fourth embodiment of the endoscope according to this invention. The above-mentioned three embodiments are all directed to what is called "a forward view type endoscope". However, the invention can also be applied to what is called "a side view type endoscope". The fourth embodiment is directed to a side view type endoscope having main and auxiliary suction channels as in the third embodiment.

A main suction port **72** is opened into an outer side surface **71** of a distal end section **70** of the endoscope. The main suction port **72** communicates with a substantially L-shaped main suction channel **73** provided in the distal end section **70** of the endoscope. A valve member **74** similar to the valve member **51** of the third embodiment is swingably mounted within the main suction port **72.** The valve member **74** can be swung from an open position as shown in a solid line to a closed position as shown in a broken line. An auxiliary suction channel **75** is branched from the main suction channel **73** and has a smaller opening area than the main suction channel **73.** The auxiliary suction channel **75** leads to an auxiliary port **76** which opens along an outer surface **77***a* of a view window **77.** The view window **77** consisting of a cover glass is fitted to a window opening **78** provided in that side surface **71** of the distal end section **70** which is in close proximity to the auxiliary port **76.** The outer surface **77***a* of the view window **77** is flush with the side surface **71** of the distal end section. Immediately below the view window **77** is located a prism **79** which leads to an image guide means such as objective lenses **80,** fiber bundle **81** etc. disposed within the distal end section **70** of the endoscope.

When the interior of the human body is observed, the distal end section **70** of the endoscope is inserted into a body organ and the valve member **74** is brought into an open position. Under the suction force of a suction device a body liquid or fluid substance is rapidly suctioned in greater amounts through the main suction port **72** to the main suction channel **73,** while at the same time it is suctioned through the auxiliary port **76.** When any fluid substance **82** deposited onto the outer surface **77***a* of the view window **77** is desired to be removed, the valve member **74** is swung to a closed position to cause the main suction port **72** to be closed. This permits the fluid substance to be suctioned under an increased suction force and an increased speed. Since the auxiliary port **76** is defined by a projecting wa**l** **83** and side surface **71** of the distal end section and opened along the outer surface **77***a* of the view window **77,** the fluid substance is flowed along the side surface **71** of the distal end section **70** and then along the outer surface **77***a* of the view window **77** as indicated by arrows. In this case, a suction force is imparted directly to the fluid substance deposited onto the outer surface **77***a* of the view window **77** and the deposited fluid substance is easily suctioned through the port **76** into the auxiliary suction channel **75.**

In this embodiment a forceps can be inserted into the main suction channel **73** and the valve member **74** can act as a forceps raising member, as in the above-mentioned embodiments. Though only the distal end sec-

tion 70 of the endoscope is shown in this embodiment, it is needless to say that the endoscope includes a control unit provided at the proximal end and a flexible tube connecting the control unit to the distal end section.

It will easily occur to those skilled in the art that this invention can also be applied to the other type endoscope, for example, an oblique view type endoscope.

What is claimed is:

1. An endoscope to be inserted in the human body cavity including a distal end section having an outer surface provided with a view window, a control unit provided at the proximal end, and a flexible tube connecting said distal end section to said control unit, said endoscope further comprising:

port means formed in said distal end section so as to open at the outer surface, including a main suction port, and adapted to receive liquid substance from the body cavity under suction;

channel means including a forceps channel communicating with the main suction port of said port means and adapted to let the liquid substance pass therethrough from said port means; and

a valve member disposed in the main suction port of said port means and made movable between an open position in which the opening area of the main suction port is fully open and a restricting position where it restricts the opening area of the main suction port, said valve member being positioned relative to said view window and said suction port such that when the valve member is moved to the restricting position, the direction of flow of the liquid substance being taken into said port means under suction is changed to one substantially parallel to said view window and the flow of the liquid substance is accelerated thereby removing the liquid substance deposited on the view window.

2. An endoscope according to claim 1, in which said valve member includes means pivoting said valve member about an axis from the open position to the restricting position thereof.

3. An endoscope according to claim 1, in which said valve member is made of flexible material, retracted in a curved slot formed in said distal end section while resting at the open position, and shifted toward the restricting position slidably in said curved slot, and guided by a guide rail curving in conformity with said curved slot.

4. An endoscope according to claim 1, in which said port means includes an auxiliary suction port which opens in a direction parallel to the view window and which has an opening area smaller than that of said main suction port; said channel means including an auxiliary suction channel formed in said distal end section as to have one end communicating with said auxiliary suction port and the other end communicating with said main forceps channel; said main suction port and said auxiliary suction port remaining respectively closed and opened while said valve member rests in the restricting position.

5. An endoscope according to claim 4 in which said auxiliary suction port is defined by the outer surface of the distal end section and a section projecting from the outer surface.

6. An endoscope according to claim 1, in which said valve member in intermediate positions, provides a forceps raising means for controlling the direction of the tip of a forceps which is extended from the main suction port.

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