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(54) **DISPLAY DEVICE WITH OPTION INTERACTION**

(75) Inventor: **Chin-Tu TSAI**, Taoyuan County (TW)

(73) Assignee: **HERAN CO., LTD.**, Taoyuan County (TW)

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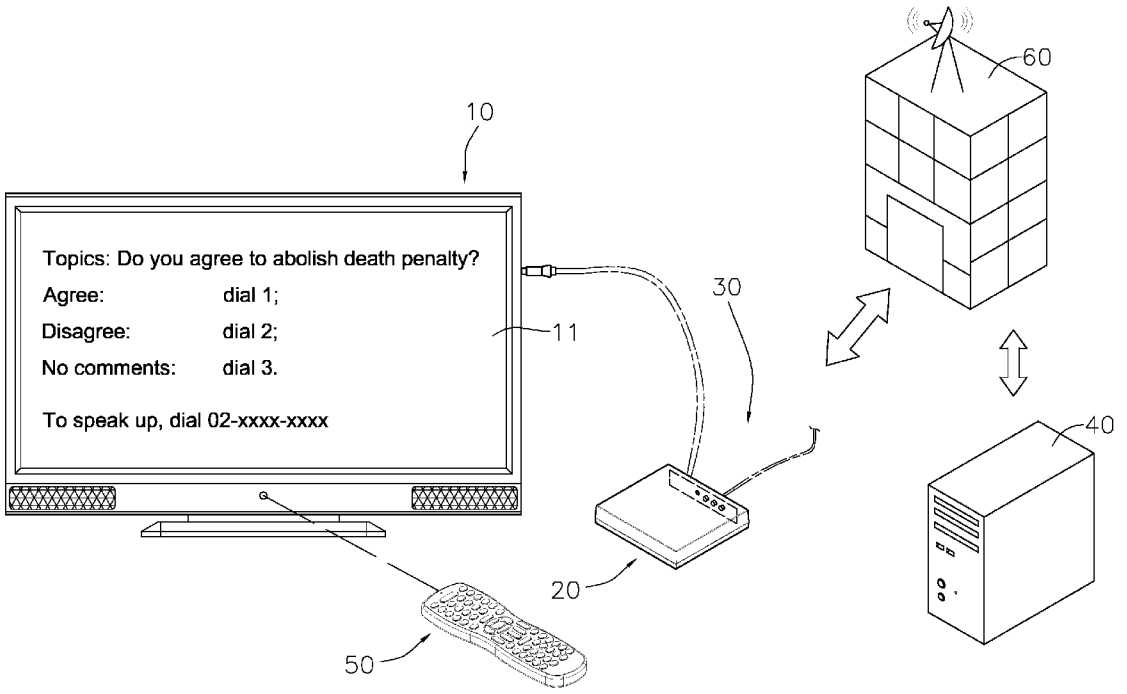
(57) **ABSTRACT**

A display device with option interaction includes a display device and is characterized in that the display device is provided with an interaction device that is connected to a signal source. When an image is displayed on the display device to proceed with option interaction, the interaction device receives an option signal of the display device and provides backward transmission so as to provide the display device with a mechanism for interacting with a consultative program, making it easy to proceed with interaction for questionnaire, sampling, and voting, thereby allowing the user of the display device to participate in opinion expression for public affairs and improving efficiency, fairness, and impartiality in sampling society opinions.



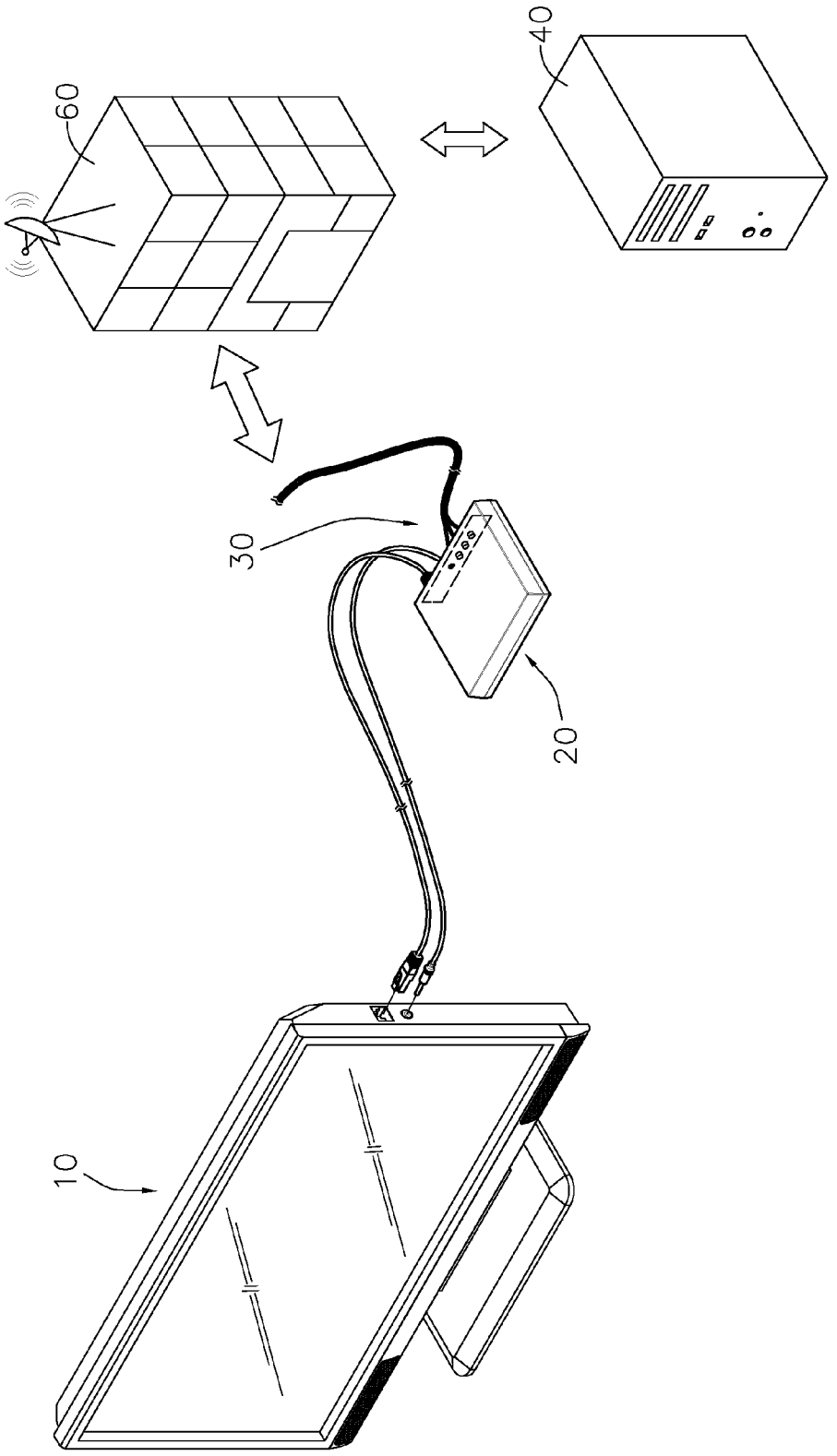


Fig. 1

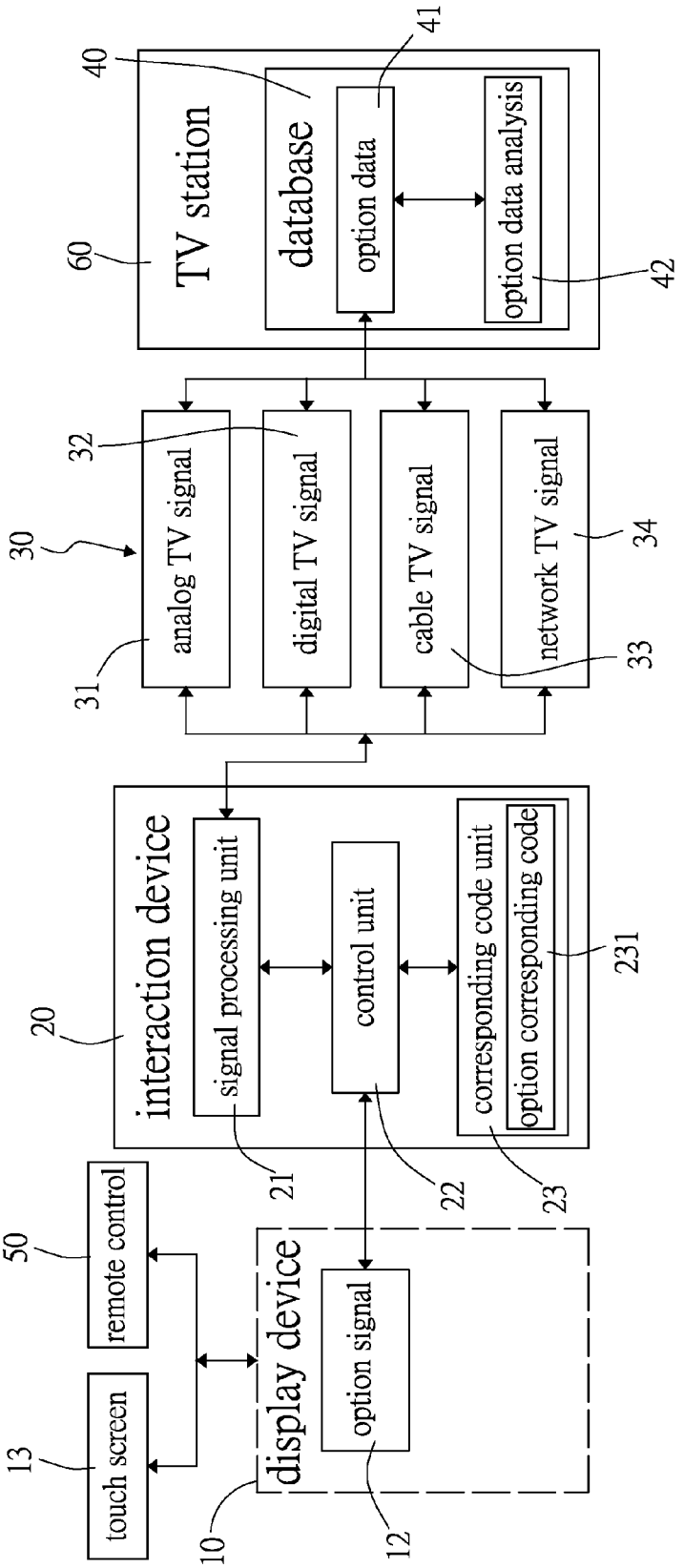

TV station
60
40
database
41
option data
option data analysis
42
analog TV signal
digital TV signal
cable TV signal
network TV signal
30
31
32
33
34
interaction device
20
signal processing unit
control unit
corresponding code unit
option corresponding code
231
21
22
23
display device
10
option signal
12
remote control
50
touch screen
13

Fig. 2

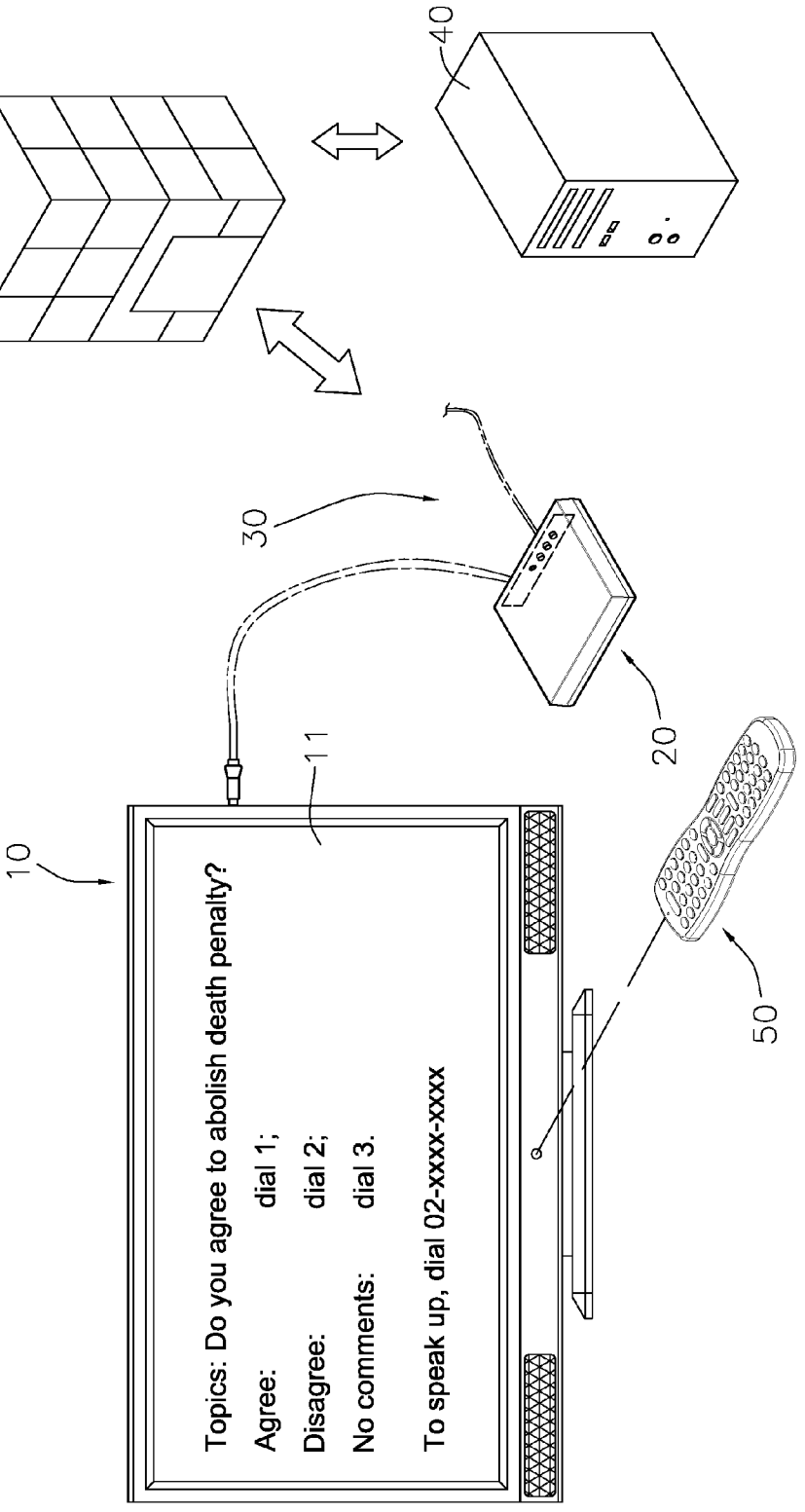

60
40
30
20
11
10
50
Topics: Do you agree to abolish death penalty?
Agree: dial 1;
Disagree: dial 2;
No comments: dial 3.
To speak up, dial 02-xxxx-xxxx

Fig. 3

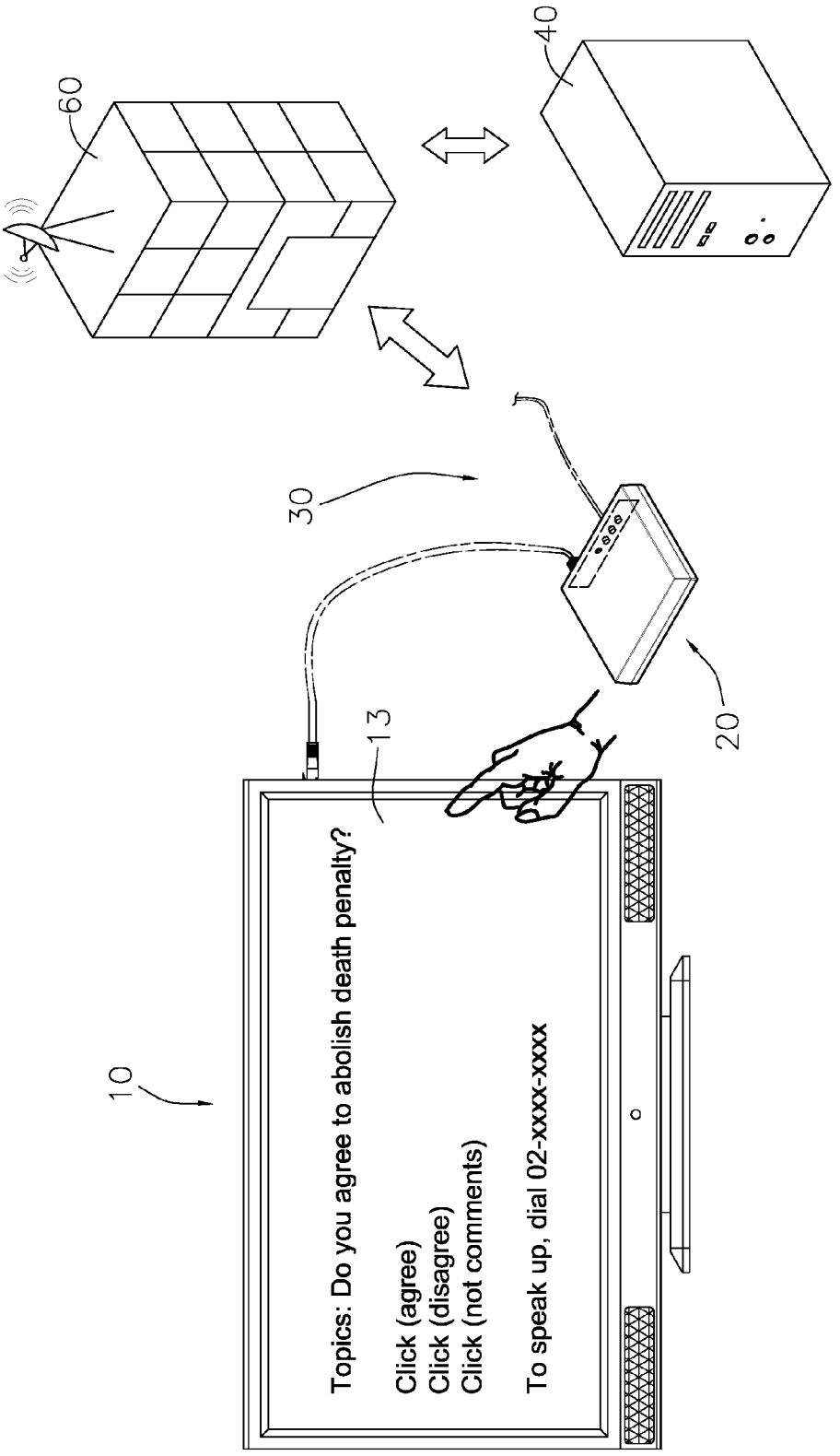

60
40
30
20
13
10
Topics: Do you agree to abolish death penalty?
Click (agree)
Click (disagree)
Click (not comments)
To speak up, dial 02-xxxx-xxxx

Fig. 4

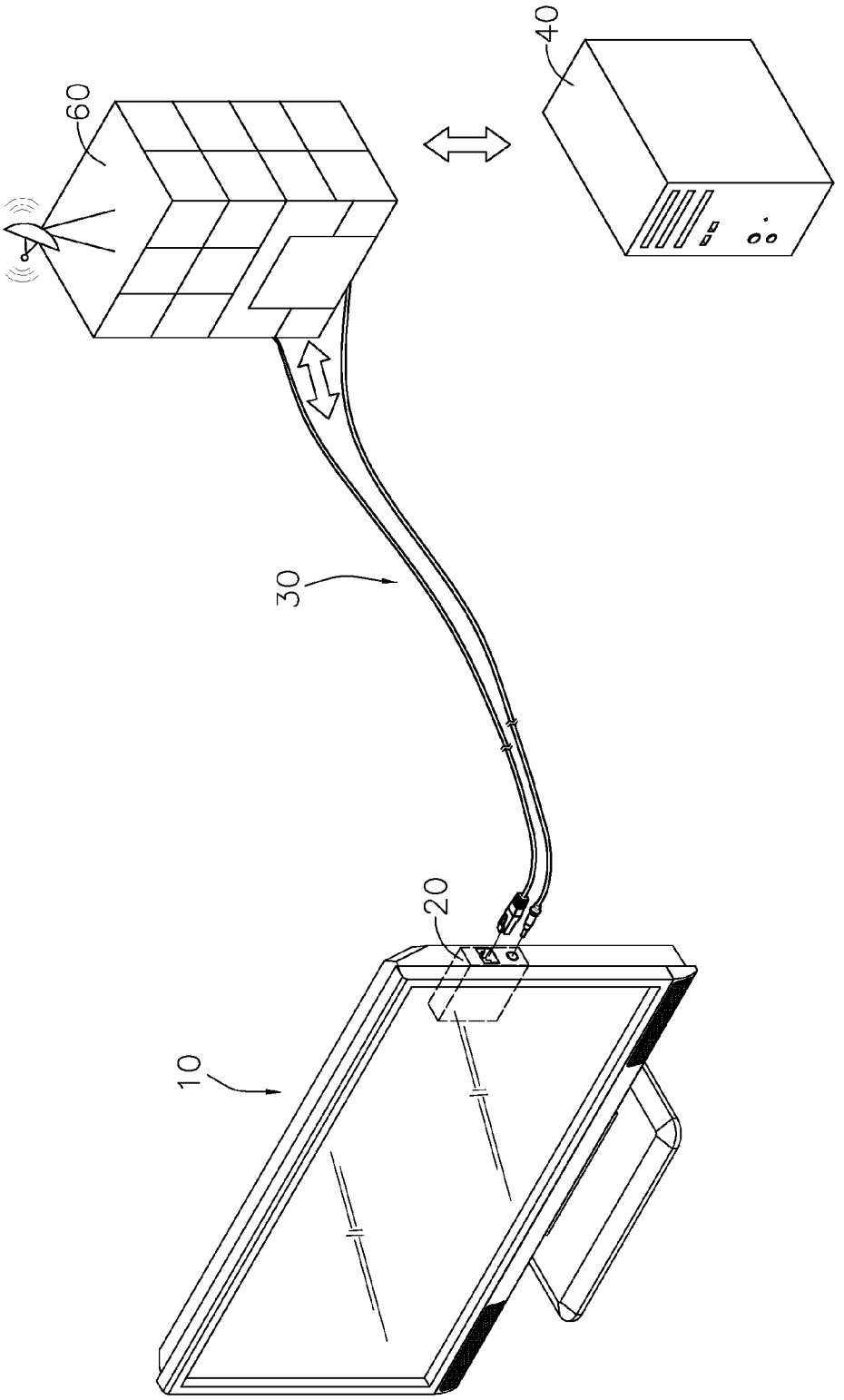


Fig. 5

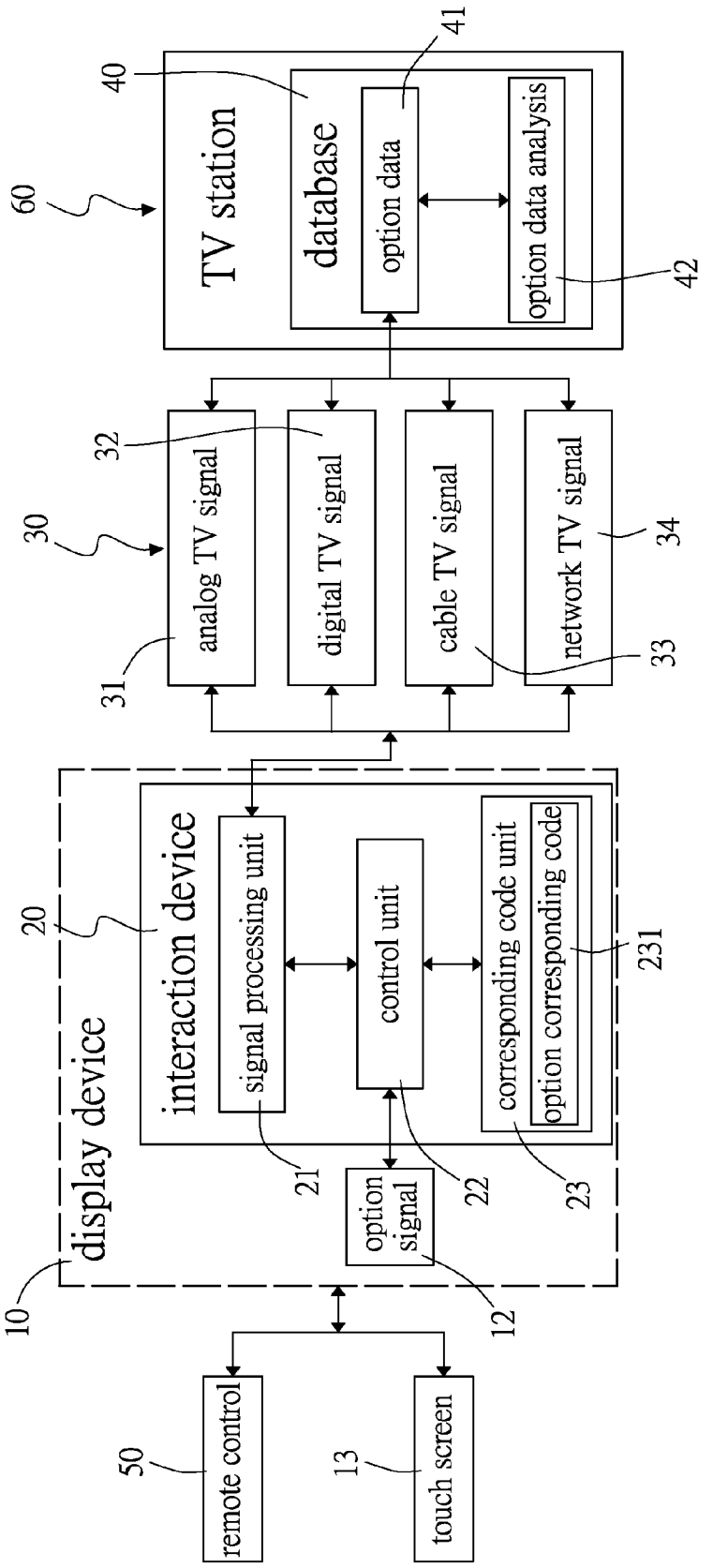
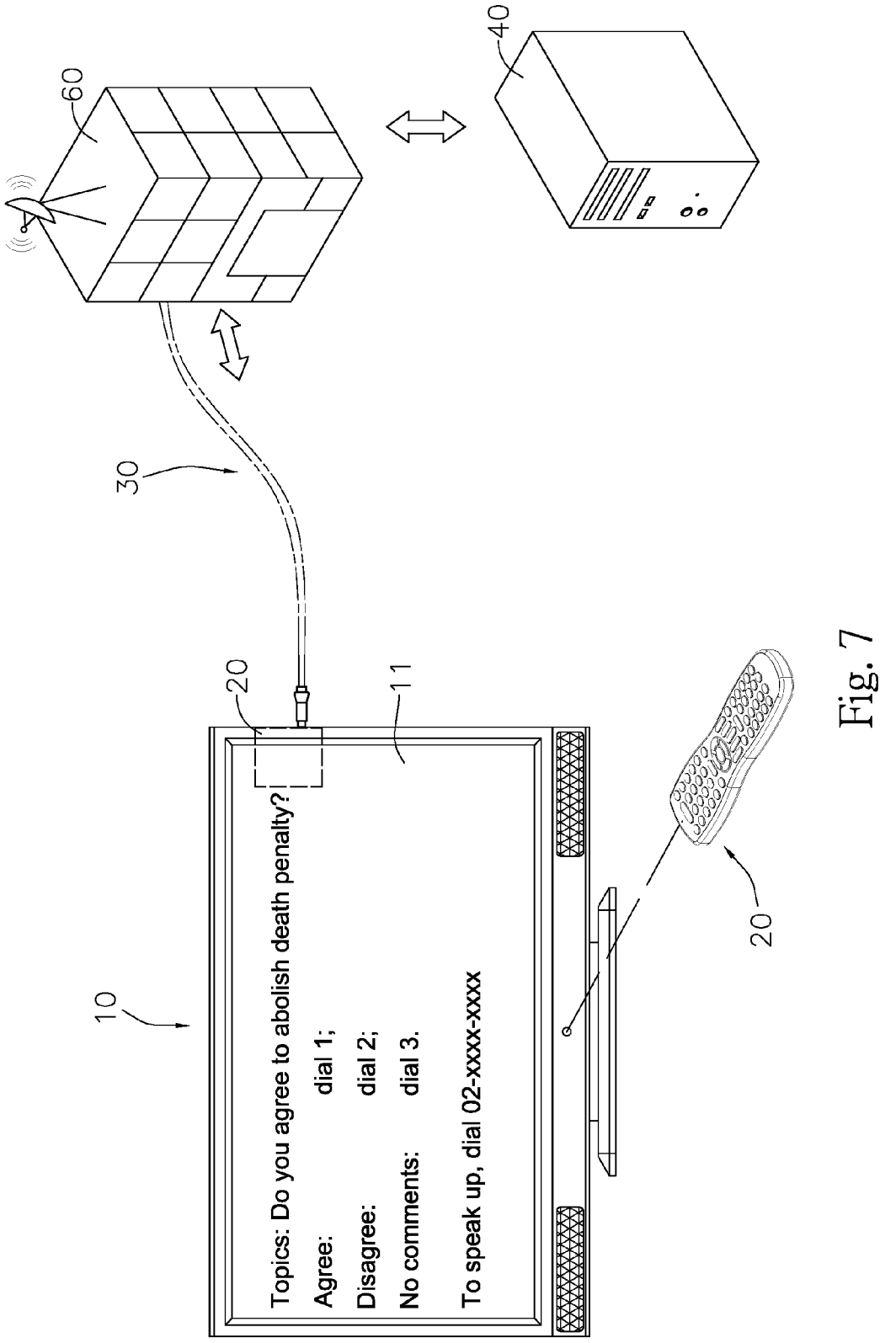

TV station
database
option data
option data analysis
41
40
42
60
analog TV signal
digital TV signal
cable TV signal
network TV signal
32
30
31
33
34
display device
interaction device
signal processing unit
control unit
corresponding code unit
option corresponding code
231
20
21
22
23
option signal
12
10
remote control
touch screen
50
13

Fig. 6


60
40
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20
11
10
20
Topics: Do you agree to abolish death penalty?
Agree: dial 1;
Disagree: dial 2;
No comments: dial 3.
To speak up, dial 02-xxxx-xxxx

Fig. 7

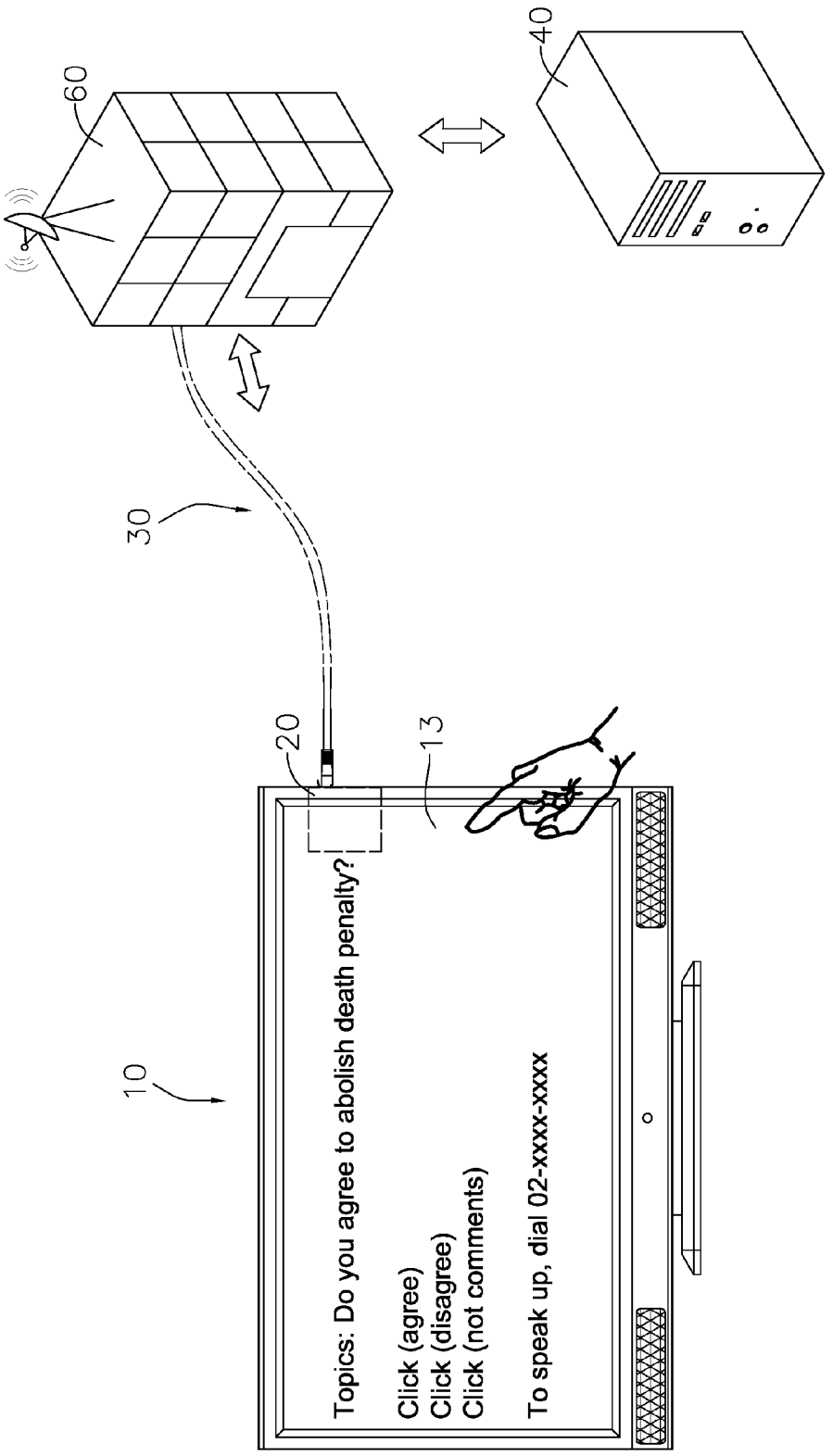
60
40
30
20
13
10
Topics: Do you agree to abolish death penalty?
Click (agree)
Click (disagree)
Click (not comments)
To speak up, dial 02-xxxx-xxxx

Fig. 8

DISPLAY DEVICE WITH OPTION INTERACTION

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a display device with option interaction, and more particular to an arrangement that provides a display device with an interaction device to allow the display device to demonstrate interaction mechanisms, such as questionnaire, sampling, and voting, with a consultative programs and is applicable to various televisions, displays and the likes.

[0003] 2. Description of Related Art

[0004] Television program channels have been increased from just a few channels in the early days to more than 100 channels of TV programs nowadays. In the early days, TV news channels provide only domestic and international news and announcement and publication of government decrees and today, a large number of news channels quickly emerge and make news broadcast available to the public for 24 hours every day, resulting in severe competition for audience rating.

[0005] Starting several years ago, news talk shows became available in the non-popular hours and guests were invited to joint the shows to discuss issues. Later, it became desired that the audience who sits in front of television to attend the shows and express their opinions. This lead to the emergence of call-ins, which allow the audience to express their opinions in the TV shows. However, due to the limited time period available in the TV shows, audience often get angry due to being incapable to have their calls answered and speaking out their comments in the shows. Nowadays, through to cooperation with telecommunication companies, some of the talk shows allow the audience to express their opinions through voice calls by providing telephones voting that allows audience to vote for options including "pro" and "con", "yes" and "no", or "like" and "dislike", for certain questions discussed in the shows.

[0006] However, make voice calls t express opinions is every expensive, for each call is usually charged quite an amount. In addition, for each call made, the audience has to first listen to a voice message or instruction, which usually takes quite a period of time. Consequently, the telephone companies or the television station often earn quite an amount by simply receiving the calls from the public for opinion expression. This attracts other news channels to follow the voice call voting mechanisms. Other types of program, such as variety shows and competition shows, also apply the same mechanism of voice call voting to allow the audience to vote for their favor candidates or players. However, the high cost of making such calls also hinders the public from jointing such shows, preventing the public from expressing their opinions.

[0007] Thus, in view of the above discussed problems, the present invention aims to provide a display device with option interaction that allows a mechanism of interaction to be performed between the display device and a TV program and being easily controllable by a user.

SUMMARY OF THE INVENTION

[0008] The primary object of the present invention is to provide a display device with option interaction, which provides an arrangement that a display device is provided with an interaction device that is connected to a signal source, whereby when an image is displayed on the display device to proceed with option interaction, the interaction device receives an option signal of the display device and provides backward transmission so as to provide the display device with a mechanism for interaction with a consultative program, thus improving the overall efficiency and easiness of operation.

[0009] Another object of the present invention is to provide a display device with option interaction, which is connectable to a database through a signal source, wherein the database stores data of options and may carry out analysis of option data so that instantaneous statistics can be made on the result for topics related to questionnaires, sampling, and voting and fast computation can be made to process various analyses of data to thereby improve the instantaneousness and convenience of the overall operation of the present invention.

[0010] In order to achieve the foregoing objects, the present invention provides a display device with option interaction, which comprises a display device and is characterized in that the display device is provided with an interaction device that is connected to a signal source, whereby when an image is displayed on the display device to proceed with option interaction, the interaction device receives an option signal of the display device and provides backward transmission so as to provide the display device with a mechanism for interaction with a consultative program, making it easy to proceed with interaction for questionnaire, sampling, and voting, thereby allowing the user of the display device to participate in opinion expression for public affairs and improving efficiency, fairness, and impartiality in sampling society opinions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The present invention can be fully understood from the following detailed description and preferred embodiment with reference to the accompanying drawings, in which:

[0012] FIG. **1** is a schematic view showing an externally-mounted interaction device according to the present invention;

[0013] FIG. **2** is a block diagram showing the architecture of the externally-mounted interaction device according to the present invention;

[0014] FIG. **3** is schematic view showing operation of the externally-mounted interaction device according to the present invention with a remote control;

[0015] FIG. **4** is schematic view showing operation of the externally-mounted interaction device according to the present invention with touch control;

[0016] FIG. **5** is a schematic view showing a built-in interaction device according to the present invention;

[0017] FIG. **6** is a block diagram showing the architecture of the built-in interaction device according to the present invention;

[0018] FIG. **7** is schematic view showing operation of the built-in interaction device according to the present invention with a remote control; and

[0019] FIG. **8** is schematic view showing operation of the built-in interaction device according to the present invention with touch control.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Referring to FIGS. **1-8**, the present invention provides a display device with option interaction, which comprises a display device **10** and is characterized in that the

display device **10** is provided with an interaction device **20**. The interaction device **20** is connected to a signal source **30**. When an image **11** is displayed on the display device **10** to proceed with option interaction, the interaction device **20** receives an option signal **12** of the display device **10** and provides backward transmission so as to provide the display device **10** with a mechanism for interacting with a program.

[0021] The interaction device **20** can be arranged outside the display device **10** and is connected to the display device **10** for transmission of signals. Alternatively, the interaction device **20** is built in the display device **10**. The interaction device **20** comprises a signal processing unit **21**, a control unit **22**, and a corresponding code unit **23**. The control unit **22** is connected to the signal processing unit **21** and the corresponding code unit **23**. The signal processing unit **21** functions to supply an input of signal source **30** to display device **10**. Further, when an option signal of the display device **10** is transmitted to the control unit **22** of the interaction device **20**, the control unit **22** converts the option signal **12** of the display device **10** into an option corresponding code **231** through the corresponding code unit **23** and the option corresponding code **231** is then transmitted backward through the signal source **30** for immediate recognition. The signal source **30** is further connected to a database **40**. The database **40** stores therein option data **41** and proceeds with instantaneous option data analysis **42**. Further, the signal source **30** can be one of an analog TV signal **31**, a digital TV signal **32**, a cable TV signal **33**, and a network TV signal **34**. The option signal **12** of the display device **10** can be operated with a remote control **50**. Alternatively, the option signal **12** of the display device **10** can be selected through clicking of the image **11**. The display device **10** may comprises a touch screen **13** for clicking through touch. Further, the display device **10** can be any one of a liquid crystal display (LCD), a thin-film transistor liquid crystal display (TFT-LCD), an organic light-emitting display (OLED), a low temperature poly-silicon (LTPS) display, a projector display (PD), a vacuum fluorescent display (VFD), a plasma display panel (PDP), and a video display (TV).

[0022] Referring to FIGS. **1-8**, the present invention provides a display device with option interaction and a preferred way of practicing the present invention is to be embodied on a display device **10**. The display device **10** can be any one of a liquid crystal display (LCD), a thin-film transistor liquid crystal display (TFT-LCD), an organic light-emitting display (OLED), a low temperature poly-silicon (LTPS) display, a projector display (PD), a vacuum fluorescent display (VFD), a plasma display panel (PDP), and a video display (TV). The video display, which is a television set, has the function of watching television programs. The display device **10** according to the present invention is provided with an interaction device **20**. The interaction device **20** can be arranged outside the display device **10** and is connected to the display device **10** for transmission of signals (see FIG. **1**). An alternative way of embodiment is that the interaction device **20** is built in the display device **10** (see FIG. **5**). Whether being externally mounted or built in, the interaction device **20** is connected to internal control of the display device **10** to allow a signal source **30** to be transmitted through the interaction device **20** to the display device **10**. The interaction device **20** is connected to the signal source **30** and the signal source **30** is one of an analog TV signal **31**, a digital TV signal **32**, a cable TV signal **33**, a network TV signal **34** so that the interaction device **20** may receive interactive program contents transmitted from various signal sources **30** and interaction signals can be transmitted through the interaction device **20**. The interaction device **20** comprises a signal processing unit **21**, a control unit **22**, and a corresponding code unit **23**. The control unit **22** is connected to the signal processing unit **21** and the corresponding code unit **23**. The signal processing unit **21** functions to supply an input of signal source **30** to display device **10** (see FIG. **2** or **6**). As such, when interactive program contents are displayed on the image **11** of the display device **10** (or a TV screen) and an attempt is made to proceed with option interaction (such as voting options designed for a subject of debate in news programs, or answer options designed for questions of current affairs or general senses in variety shows, or questionnaire designed for products provided for an advertiser produced show), the audiences or consumers sitting in front of the display device **10** (TV set) may use a remote control **50** to operate (see FIG. **3** or **7**) by pushing buttons corresponding to the options provided on the screen to generate an option signal **12**. Alternatively, the display device **10** (TV set) comprises a touch screen **13** and buttons can be properly pressed down according to the options provided on the touch screen **13** so as to generate an option signal **12** (see FIG. **4** or **8**). Both the option signal **12** generated with the remote control **50** and the option signal **12** generated through touch screen **13** are transmitted to the control unit **22** of the interaction device **20**. The control unit **22** converts the option signal **12** into an option corresponding code **231** through the corresponding code unit **23** and the option corresponding code **231** is then transmitted via the signal source **30** back to a TV station **60** or a cable TV channel provider or a network provider. The signal source **30** is further connected to a database **40**. The database **40** stores therein option data **41** and proceeds with instantaneous option data analysis **42** (see FIG. **2** or **6**) so that instantaneous statistics can be made on the result for topics related to questionnaires, sampling, and voting to allow the result for the topics related to the questionnaires, the sampling, and the voting to be immediately displayed on the show, realizing a mechanism of interaction between the display device **10** (TV set) and the show to facilitate interactions for questionnaire, sampling, and voting, and encourage the participation of consumers to improve fairness thereof.

[0023] The description given above is sufficient to allow a person skilled in the art to understand that the present invention indeed achieves the objects mentioned above and completely complies with the requirements of patent regulations based on which a patent application is made for the present invention.

[0024] However, it is noted that what described above is only a preferred embodiment of the present invention, which is not given for limiting the scope of the present invention. Thus, all those simple and equivalent variation and modification made on the basis of the appended claims and the above disclosure are considered within the scope of patent protection of the present invention.

What is claimed is:

1. A display device with option interaction, comprising a display device, characterized in that the display device is provided with an interaction device that is connected to a signal source, wherein when an image is displayed on the display device to proceed with option interaction, the interaction device receives an option signal of the display device and provides backward transmission so as to provide the display device with a mechanism for interacting with a consultative program.

2. The display device with option interaction according to claim **1**, wherein the interaction device is arranged outside the display device and is connected to the display device for transmission of signals.

3. The display device with option interaction according to claim **1**, wherein the interaction device is built in the display device.

4. The display device with option interaction according to claim **1**, wherein the interaction device comprises a signal processing unit, a control unit, and a corresponding code unit, the control unit being connected to the signal processing unit and the corresponding code unit, the signal processing unit functioning to supply an input of signal source to display device, whereby when an option signal of the display device is transmitted to the control unit of the interaction device, the control unit converts the option signal of the display device into an option corresponding code through the corresponding code unit and the option corresponding code is then transmitted backward through the signal source for immediate recognition.

5. The display device with option interaction according to claim **1**, wherein the signal source is connected to a database, which stores therein option data and proceeds with instantaneous option data analysis.

6. The display device with option interaction according to claim **1**, wherein the signal sources are selected from an analog television signal, a digital television signal, a cable television signal, or a network television signal.

7. The display device with option interaction according to claim **1**, wherein the option signal of the display device is operated with a remote control.

8. The display device with option interaction according to claim **1**, wherein the option signal of the display device is operated with clicking performed on an image and the display device comprises a touch screen for clicking through touch.

9. The display device with option interaction according to claim **1**, wherein the display device is selected from a liquid crystal display (LCD), a thin-film transistor liquid crystal display (TFT-LCD), an organic light-emitting display (OLED), a low temperature poly-silicon (LTPS) display, a projector display (PD), a vacuum fluorescent display (VFD), a plasma display panel (PDP), and a video display (TV).

10. The display device with option interaction according to claim **2**, wherein the interaction device comprises a signal processing unit, a control unit, and a corresponding code unit, the control unit being connected to the signal processing unit and the corresponding code unit, the signal processing unit functioning to supply an input of signal source to display device, whereby when an option signal of the display device is transmitted to the control unit of the interaction device, the control unit converts the option signal of the display device into an option corresponding code through the corresponding code unit and the option corresponding code is then transmitted backward through the signal source for immediate recognition.

11. The display device with option interaction according to claim **3**, wherein the interaction device comprises a signal processing unit, a control unit, and a corresponding code unit, the control unit being connected to the signal processing unit and the corresponding code unit, the signal processing unit functioning to supply an input of signal source to display device, whereby when an option signal of the display device is transmitted to the control unit of the interaction device, the control unit converts the option signal of the display device into an option corresponding code through the corresponding code unit and the option corresponding code is then transmitted backward through the signal source for immediate recognition.

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