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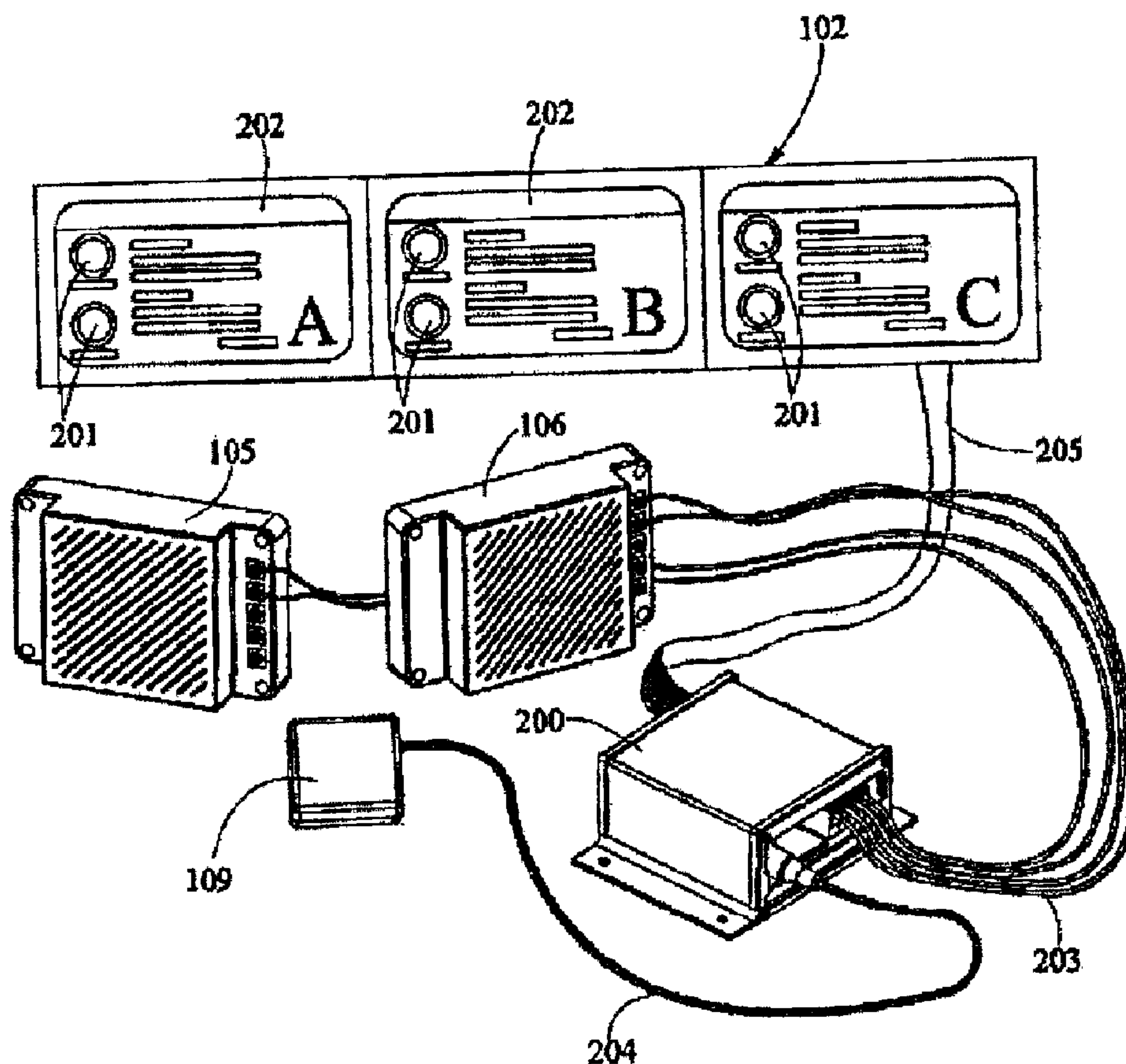
(72) Inventeurs/Inventors:
TYLICKI, SCOTT BLAISE, US;
RAPER, WILLIAM C., US;
ATKINS, BARRY LEE, US;
CORNETT, ROGER DENNIS, US

(73) Propriétaire/Owner:
HEATHCO LLC, US

(74) Agent: MACPHERSON LESLIE & TYERMAN LLP

(54) Titre : AFFICHEUR MP3 A CARILLON

(54) Title: CHIME MP3 DISPLAY



(57) Abrégé/Abstract:

A MP3 chime player and display device having a MP3 microcontroller unit being integrated with an in-store display. The in-store display of the present invention has MP3 play selection buttons and associated selection insignia. The microcontroller is in

(57) **Abrégé(suite)/Abstract(continued):**

electronic communication with a reprogrammable digital storage device, an electronic port, speakers, volume controls, as well as buttons on the button board or in-store display.

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Inventor: Tylicki, et al.
Attorney Docket: 2M466/04006

ABSTRACT

A MP3 chime player and display device having a MP3 microcontroller unit being
integrated with an in-store display. The in-store display of the present invention has MP3 play
selection buttons and associated selection insignia. The microcontroller is in electronic
5 communication with a reprogrammable digital storage device, an electronic port, speakers,
volume controls, as well as buttons on the button board or in-store display.

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Inventor: Tylicki, et al.
Attorney Docket: ZM464/04006

1. FIELD OF INVENTION

The present invention relates to an in-store display of merchandise, such as door chimes, having a MP3 player in conjunction with an insignia button board, motion sensor, or other signaling device for sounding chimes, speech, or other sounds.

5 2. DESCRIPTION OF THE PRIOR ART

Current practices for displaying door chimes involves having an in-store display comprised of a sound board and a button board. Each individual chime base or actual product is mounted to the sound board and hardwired to a specific push button or buttons on the button board that activates a specific chime when pressed. An in-store chime display typically has
10 several chimes on display which requires that the sound board holding the chimes to be quite large. Additionally, since these in-store displays have the actual chimes producing the sounds mounted on the sound board, a transformer needs to be mounted on the sound board to supply power to each individual chime since they are low-voltage. If wireless chimes are being
15 displayed, they currently need to be specially modified to convert them to hardwire use so that RF interference is eliminated. Therefore, the wireless chimes also need to be mounted on the soundboard and have power leads attached to the transformer. Since each chime is hardwired to a push button and a transformer the resulting display has a complex and cumbersome wiring arrangement. The result is an expensive and complex display requiring much labor to assemble, modify, and maintain.

20 These current practices require significant labor and expense to install a chime onto a sound board or to retrofit the sound board with a new chime sound. The resulting display is large and can become unaesthetic. Other problems associated with the current practices is that

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the soundboards need be displayed in a large area which takes up floor space and limits the locations where the in-store display may be placed. Additionally, the sounds actually come from the chimes mounted on the soundboard and consequently the in-store display must be placed in a location where it will still provide good sound quality for the customer. This further limits the locations where such an in-store display may be placed. These current practices are labor intensive, costly, difficult to retrofit with new chime sounds, undependable, difficult to place within the store, and unaesthetic.

Current practices of displaying merchandise other than door chimes often times require significant labor, expense, and floor space. Therefore, it is contemplated that this invention may be used to display a variety of items within a store where the current practices of displaying such items exhibit some of the aforementioned problems and where some of these problems will be addressed by the present invention.

BRIEF SUMMARY OF THE INVENTION

One object of the present invention is to create an in-store display of door chimes that requires less labor and cost to install, modify, and maintain.

Another objective of the present invention is to provide a smaller and more versatile in-store display requiring less floor space.

A further object of the present invention is to create a more aesthetic in-store display of door chimes.

These objects and others are accomplished according to the present invention by providing a Chime MP3 Display. The MP3 sound module chime display of the present invention

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includes a microcontroller housing which houses a microprocessor controlled electronic sound module and a reprogrammable digital storage device such as a multimedia media memory card or flash card. The microcontroller housing has front and rear control access panels. The front control access panel provides volume control switches, an electronic port such as a USB port for
5 loading or deleting sound files, and a ribbon cable receptacle for connecting a button board. The rear access panel provides a power supply receptacle, a removable digital storage device, and a speaker output terminal block.

A ribbon cable extends from the ribbon cable receptacle to a button board. The button board has the insignia or a description of each chime and associated button or buttons. The
10 button board is the only portion of the present invention that needs to be on display to the customer. The inventive design does not need to hold the actual chime bases as in the prior art since the sounds of each chime are stored on the digital memory device or MP3 sound module. Hence, the Chime MP3 Display provides for an aesthetic in-store display of chimes that requires minimal floor space.

15 The configuration of the MP3 Player provides for easy operation. The customer pushes a button, electronic input means, on the button board display to hear a specific chime sound as indicated by the insignia. The push of the button triggers an input signal to the MP3 microprocessor. The microprocessor's firmware then sends the specific MP3 file or chime tune on the digital storage device that is associated with the pushed button to a digital to audio signal
20 converter. This audio signal is then sent to an amplifier which drives the speakers. Optionally, a speaker unit may be used which houses the signal converter, amplifier, and speaker. The speakers may be mounted anywhere near the button board display to provide quality sound. The

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firmware is capable of scrolling through several different tunes for a specific electronic input so that all of the tunes for a chime that has multiple tunes may be heard.

The present invention provides for an in-store display of doorbell chimes. The Chime MP3 Display has a display board with buttons and associated insignia or description of the particular chime to sound. The display board may be of almost any size or shape and consequently can be designed to take up very little floor space. The buttons are wired to a microprocessor that is in electronic communication with a digital storage device (i.e. multimedia memory card, flash card, etc.) and speakers. When a button is pressed, the microprocessor sends the associated MP3 file from the digital storage device to the speakers. This provides for a significant cost savings over the prior art by avoiding the wiring, maintenance, and floor space costs incurred by putting the actual doorbell chimes on a board to sound.

DESCRIPTION OF DRAWINGS

Figure 1 is a schematic diagram showing the elements of the present invention and their relationship to one another;

Figure 2 is a perspective view of the MP3 Player of the present invention showing details of each element;

Figure 3 is a perspective view of the rear of the microcontroller housing shown in Figure 2; and

Figure 4 is a perspective view of the front of the microcontroller housing shown in Figure

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The Chime Display of the present invention may best be described with reference to the figures. Figure 1 provides a schematic diagram showing the elements of the present invention and their relationship to each other. Firmware resides in the microcontroller unit or
5 microprocessor (μ P) 100 and is in electronic communication with each element of the present invention. A power supply 109 provides power to the microcontroller and is typically an off-the-shelf UL listed wall transformer that converts 120 V AC to 12V DC. Volume controls 101 provide input to the microcontroller 100 based on the users setting of the volume controls 101. The button board 102 displays the buttons and associated insignia or chime descriptions and
10 provides the customer with a convenient customer input device for selecting a chime to sound. When one of a plurality of buttons on the button board 102 is pressed by a customer a signal is sent to the microcontroller 100 and the firmware accesses the digital storage device or media 108 and sends the associated digital audio file or sound file such as an MP3 file to the digital to audio converter 103. The audio signal is sent to the amplifier 104 which causes the speakers 105 and
15 106 to produce the sound associated with the selected unique chime. The digital memory device or digital storage media 108, may be a multi-media memory card, flash card or other digital storage device. The digital storage device 108 may be a type that can be a type that can be removed, reprogrammed or replaced. Additionally, the digital storage device 108 may be reprogrammed in place via an electronic port 107 such as a USB, parallel, or serial port. Hence,
20 new digital or MP3 files may be loaded onto digital storage media 108 via the electronic port 107. In other words, new chimes may be easily stored by the Chime Display of the present invention.

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Figure 2 provides a perspective view of the present invention showing details of each element of the present invention. Button board 102 has insignia 202 or a description of each chime that is on display. In close proximity to each insignia 202 is an electronic input means or customer input device such as a play selection button 201 or a plurality of play selection buttons 5 201 that are associated with the proximal insignia 202 or description. A ribbon cable 205 electronically connects the buttons 201 to the microcontroller 100 that is mounted in microcontroller housing 200. Figure 2 also shows the speaker housings 105 and 106 being electronically connected to the microcontroller 100 within microcontroller housing 200 via speaker wires 203. Additionally, power supply 109 is shown to be in electronic communication 10 with the microcontroller 100 via power supply cable 204.

As can be readily seen, the chime display of the present invention allows for a user to hear the doorbell sounds associated with a plurality of chimes associated with buttons 201 and insignias 202 without the necessity of a completely wired replica doorbell chime display utilizing the actual products. The digital storage media 108 of the present invention stores a plurality of 15 sound files associated with each button 201 and insignia 202 so that a customer may hear the associated doorbell chime.

Figure 3 provides a perspective view of the rear control access panel 300 of the microcontroller 100 within microcontroller housing 200. The rear control access panel 300 has a power supply receptacle 303 that receives power supply cable 204. On the opposite side of the 20 rear control access panel 300 is a speaker output terminal block 301 that provides a digital signal to the digital to audio converter 103 via speaker wires 203. Alternatively, digital to audio converter 103 may be contained within housing 200. In this alternate embodiment, speaker

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output terminal block 301 provides an audio signal to speaker wires 203. Between the speaker output terminal block 301 and power supply receptacle 304 is digital memory device 108 in electronic communication with microcontroller 100. Digital storage media 108 is shown to be installed in a holder recessed in the rear control access panel 300. Digital storage media 108 may be removed from this holder and replaced if so desired or reprogrammed. Figure 3 also depicts mounting flanges 302 extending from microcontroller housing 200.

Figure 4 is a front perspective view of the microcontroller housing. Front control access panel 400 has ribbon cable receptacle 403, volume control switches 402, and an electronic port 401, all of which are in electronic communication with microcontroller 100 within housing 200.

Ribbon cable receptacle 403 receives ribbon cable 205 which connects to the play selection buttons 201 on button board 102. The volume control switches 402 are connected to microcontroller 100 in microcontroller housing 200 and provide the user the ability to adjust the loudness of the chimes being sounded in speakers 105 and 106. Electronic port 401 provides electronic access to microcontroller 100 and hence all of the elements in electronic communication with microcontroller 100. Electronic port 401 may be used to access the chime files or MP3s on the digital storage media 108 so that the digital storage device 108 may be reprogrammed without having to be removed. Typically this is done by connecting a computer to the microcontroller 100 via electronic port 401. Electronic port 401 may be a USB, parallel, serial, or other port that provides electronic communication with microprocessor 100. The firmware in conjunction with the computer software allows the user to delete, add, or rearrange chimes on digital memory device 108 via electronic port 401.

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These figures provide for a single embodiment of the present invention. As one skilled in the art can appreciate, there are many alternative embodiments of the present invention. For instance, front panel 400 and rear panel 300 could be combined by having a single top panel which would provide for the microcontroller 100 access. The housing 200 could provide for a larger surface area on the front panel 400 or rear panel 300 providing enough area to place all of the controls or microcomputer 100 access ports 401 on a single panel thus eliminating one of the access panels. Alternatively, electronic port 401 could be a USB, serial or parallel port or even be eliminated. This may then require digital storage media 108 to be removed to be reprogrammed, yet the present invention would still provide a useful and novel function.

Therefore, the figures serve to describe only a single embodiment of the present invention and do not serve to limit the many alternative embodiments claimed herein. In fact the present invention may be used to display a variety of merchandise within a store and still be within the scope of the presently claimed invention. For example, a heater system could be displayed by the present invention where the electronic input device 201 may have buttons 201 on a button board 102 and/or a motion sensor associated with specific electronic files that describe the heater with a sensory output device such as an audio/visual output device that may deliver voice (i.e. description or instructions), graphics, video, or other audio/visuals.

(Claims- clean copy)

1. A reprogrammable merchandise display for door chimes comprising a microcontroller unit and a button board with a plurality of buttons, wherein each of said buttons is electronically connected to said microcontroller unit and is associated with a unique sound file as corresponds to a different door chime and wherein the microcontroller substitutes for demonstration purposes for each of the different door chimes.
2. The merchandise display of claim 1 wherein said microcontroller unit is in electronic communication with a digital memory device.
3. The merchandise display of claim 1 wherein said microcontroller unit is in electronic communication with an electronic port.
4. The merchandise display of claim 1 wherein said microcontroller unit is in electronic communication with at least one speaker.
5. The merchandise display of claim 1 wherein said microcontroller unit is in electronic communication with a power supply.
6. The merchandise display of claim 1 wherein said microcontroller unit is enclosed within a housing.
7. The merchandise display of claim 6 wherein said housing has at least one control access panel.
8. The merchandise display of claim 7 wherein said at least one control access panel has a receptacle for an electric cable leading to said button board.
9. The merchandise display of claim 1 wherein said merchandise display

has at least one volume control.

10. A reprogrammable merchandise display comprising a microcontroller unit and a button board with a plurality of buttons, wherein each of the buttons is electronically connected to said microcontroller unit and is associated with a unique sound file, the microcontroller unit is enclosed within a housing, the housing has at least one control access panel, and the least one control access panel has a speaker output terminal block.

11. A method of displaying merchandise comprising:
displaying a button board having a plurality of buttons and associated insignia as correspond to varying items of the merchandise;
associating a unique sound file as corresponds to each of the varying items of merchandise with each of said plurality of buttons;
storing each of said unique sound files on a digital storage media; and
playing a selected one of said plurality of sound files on said digital storage media when an associated button on said button board is depressed to thereby provide an audible demonstration of the corresponding item of merchandise.

12. The method of displaying merchandise of claim 11 having the additional step of converting said sound file to an audio signal with a digital to audio converter.

13. The method of displaying merchandise of claim 12 having the additional step of amplifying said audio signal.

14. The method of displaying merchandise of claim 11 wherein said digital storage media is removable and reprogrammable.

15. The method of displaying merchandise of claim 11 further comprising an electronic port for reprogramming said unique sound files stored on said digital storage media.

16. An in-store display for a plurality of doorbell chimes, comprising:
a display board having a plurality of doorbell buttons, each of said doorbell buttons being associated with one of a plurality of sounds and each being associated with a corresponding doorbell chime indicator such that a user can readily visually associate each of the doorbell buttons with a given corresponding one of the doorbell chimes;
a microcontroller contained within a housing and in electrical communication with a memory storage, said memory storage having a plurality of sound files, each of said doorbell buttons associated with at least one of said plurality of sound files,
wherein said in-store display allows a user to depress one of said plurality of doorbell buttons and in response hear a unique one of said plurality of sound files and wherein a single microcontroller serves to playback the sounds as correspond to any of the doorbell chimes.
17. The in-store display of Claim 16 wherein each of said plurality of sound files contains sound representations of door bell chimes.
18. The in-store display of Claim 16 further comprising at least one speaker in electrical communication with said microcontroller for replaying said unique one of said plurality of sound files.
19. An in-store display for a plurality of doorbell chimes, comprising:
a button display board having a plurality of insignia displayed thereon, wherein each of said plurality of insignia is disposed in close proximity to a corresponding doorbell button and each of the plurality of insignia corresponds to a different one of the plurality of doorbell chimes;
a microcontroller housing having a processor and a digital storage media in electrical communication with said processor, each of said plurality of doorbells in communication contact with said microprocessor;

said digital storage media having a plurality of sound files stored thereon, each of said buttons associated with at least one of said plurality of sound files;

and further having instructions on said digital media storage to instruct said microprocessor to play a unique one of said plurality of sound files stored on said digital storage media when a unique doorbell button is depressed on said button display board.

20. The in-store display of Claim 19 wherein said microprocessor is in direct electrical contact with said button board.

21. The in-store display of Claim 19 wherein said microprocessor is in wireless communication contact with said button board.

22. The in-store display of Claim 19 wherein said digital media storage is a removable digital media storage device.

23. The in-store display of Claim 19 wherein said digital media storage is reprogrammable through an electronic port on said microprocessor housing.

24. A display for providing audio feedback representing a plurality of items of merchandise comprising doorbell chimes, comprising:

a button board having a plurality of doorbell buttons fixed thereon, each of said plurality of doorbell buttons in communication with a microcontroller and each corresponding to a different one of the items of merchandise, said microcontroller in communication with an electronic storage media, said electronic storage media having stored thereon a plurality of sound files, each of said plurality of sound files being associated with one of said plurality of doorbell buttons on said button board and hence to a corresponding one of the items of merchandise, wherein by depressing a button on said button board, said microcontroller plays an associated sound file corresponding to said button through at least one speaker, said electronic storage media allowing said plurality of sound files representing said doorbell chimes to be reprogrammable by an

operator in order to change the sound associated with each of said doorbell buttons to thereby audibly represent different items of merchandise.

25. An in store doorbell chime display of a plurality of items of merchandise allowing a user to listen to a plurality of sound files, each sound file associated with one of a plurality of doorbell buttons and a corresponding one of the plurality of items of merchandise, comprising:

a button board having a plurality of doorbell buttons mounted thereon, each of said doorbell buttons having a unique sound associated therewith and each being associated with a different one of the items of merchandise;

a memory storage having a plurality of sound files, said plurality of sound files representing said unique sounds of said doorbell buttons;

a micro-controller in electronic communication with said plurality of doorbell buttons, said micro-controller having instructions to access one of said sound files stored on said memory storage upon actuation of one of said buttons;

wherein said memory storage may be re-programmed with additional sound files to replace said plurality of sound files associated with said plurality of doorbell buttons.

26. The reprogrammable merchandise display of claim 1 wherein the sound file comprises an MP3 file.

27. The method of claim 11 wherein storing each of said unique sound files on a digital storage media comprises, at least in part, storing MP3 files on the digital storage media.

28. The in-store display of claim 16 wherein the plurality of sound files comprise, at least in part, a plurality of MP3 files.

29. The in-store display of claim 19 wherein the plurality of sound files comprise, at least in part, a plurality of MP3 files.

30. The display of claim 24 wherein the plurality of sound files comprise, at least in part, a plurality of MP3 files.

31. The in store doorbell chime display of claim 25 wherein the plurality of sound files comprise, at least in part, a plurality of MP3 files.

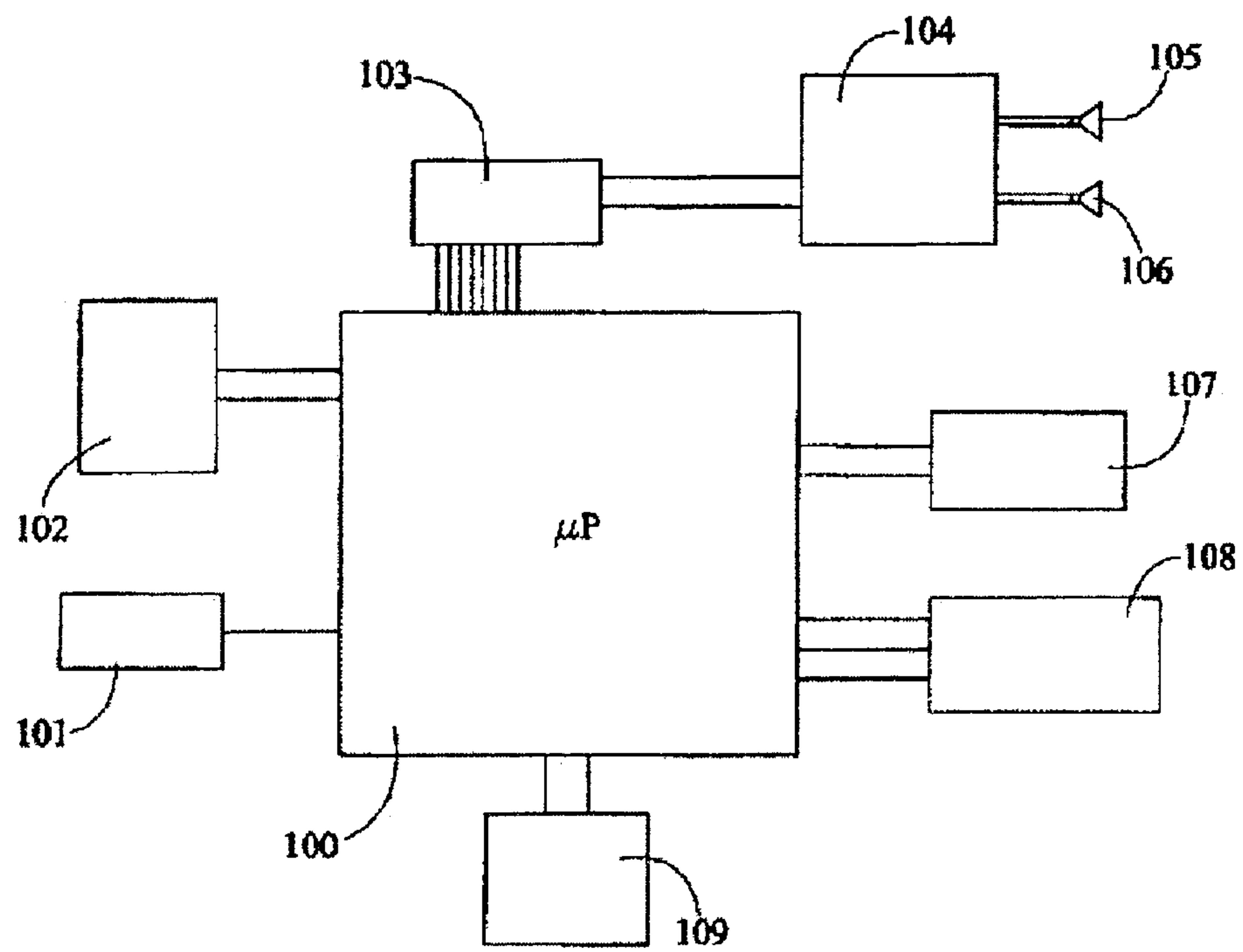


FIG. 1

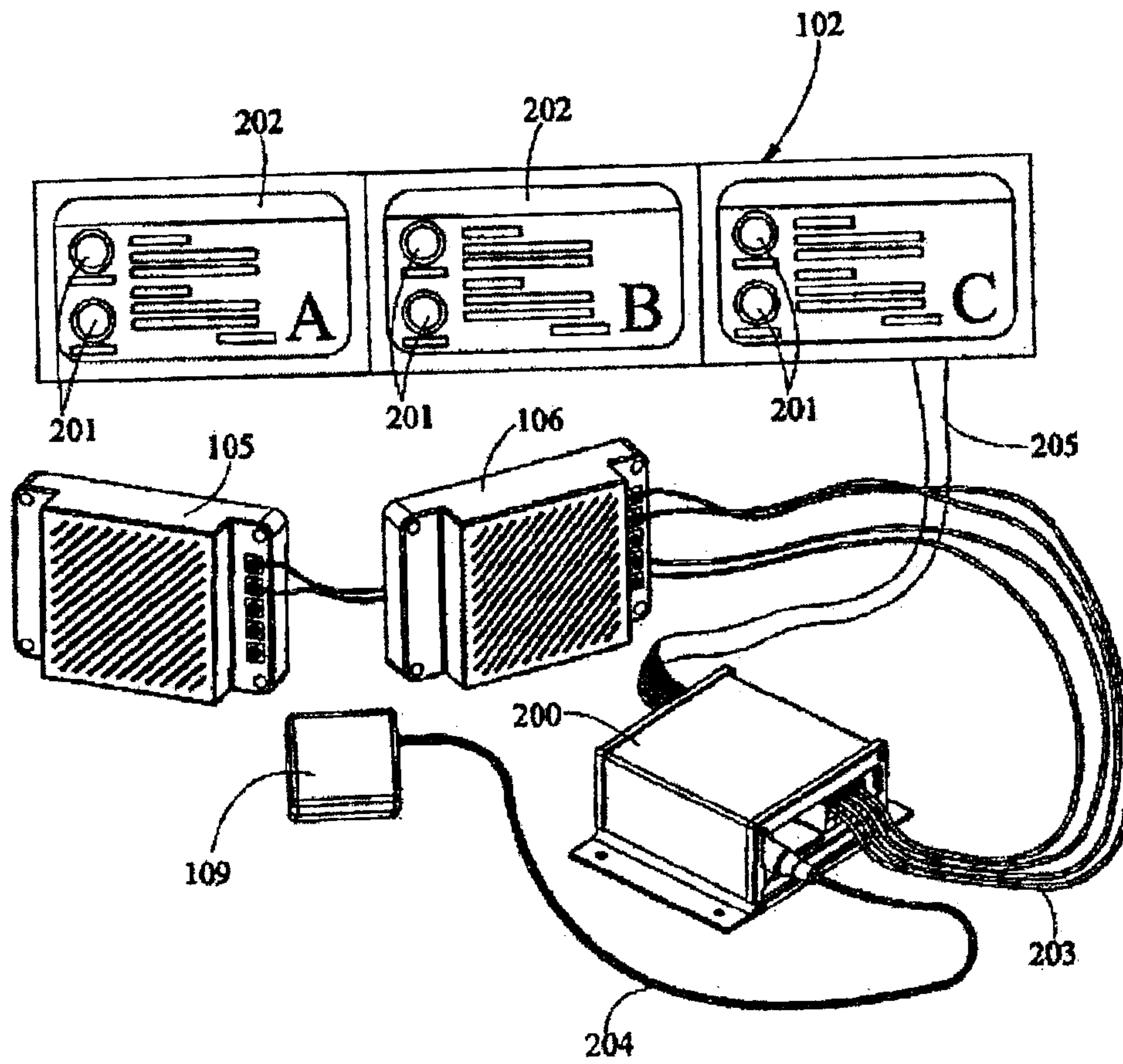


FIG. 2

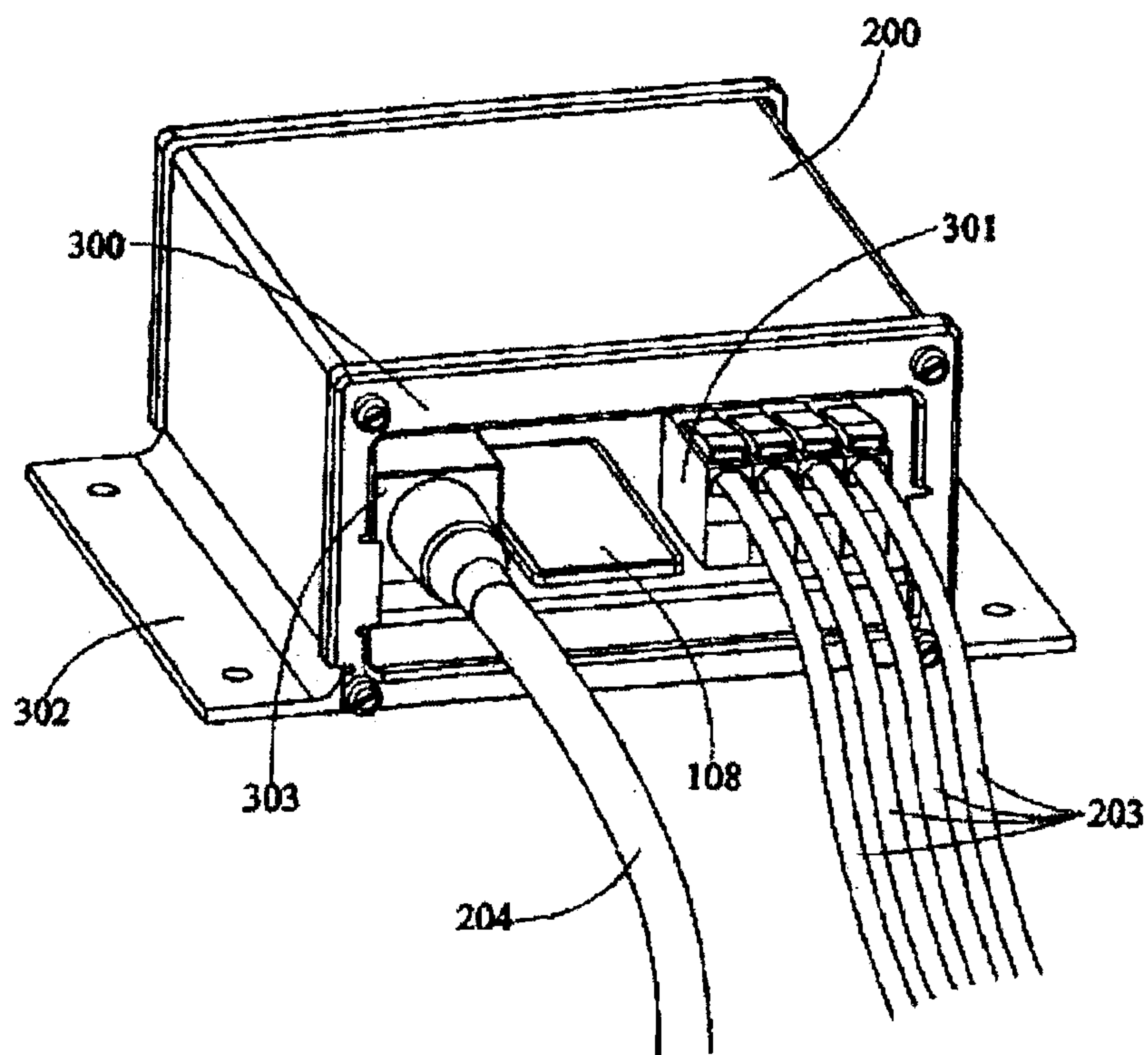


FIG. 3
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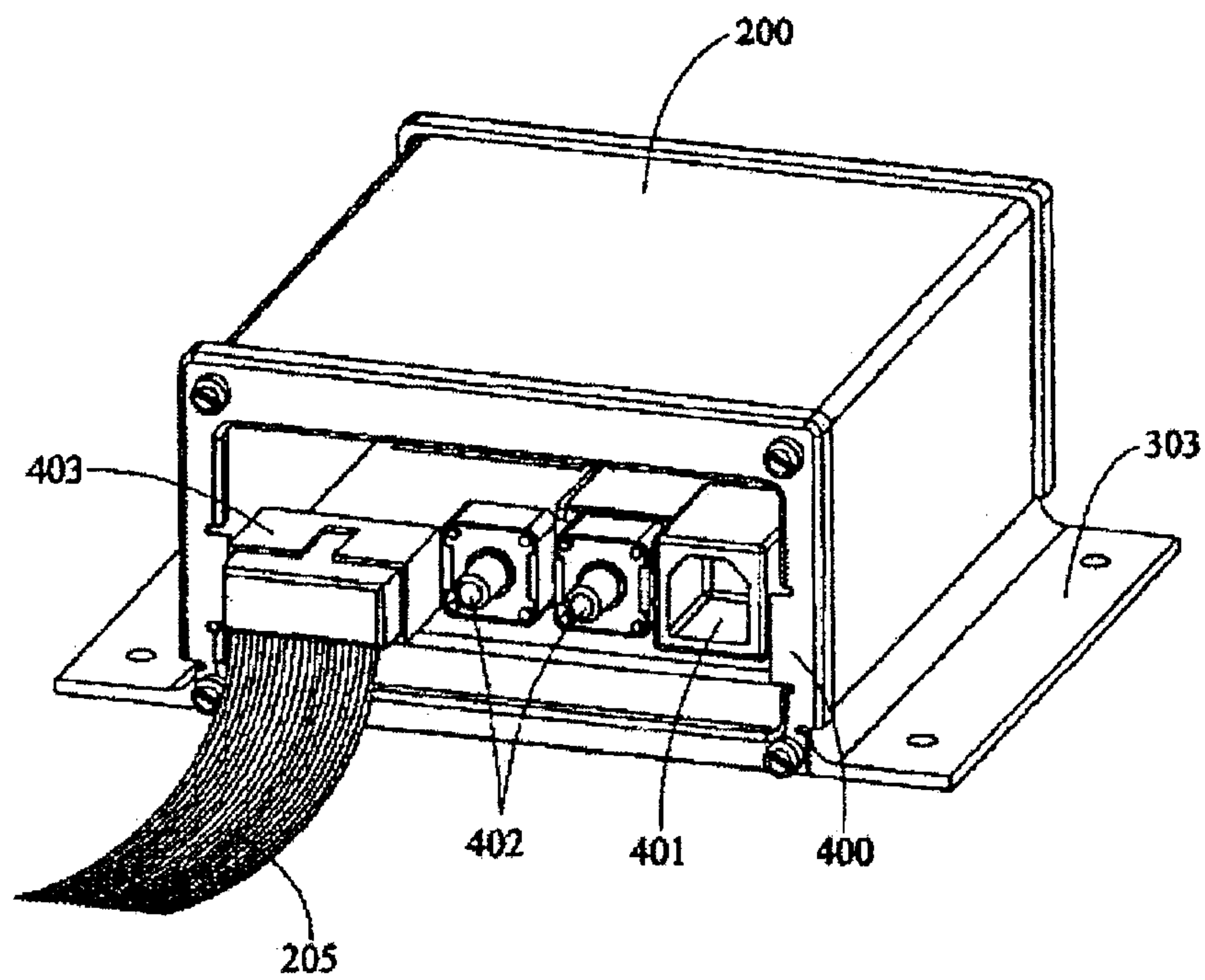


FIG. 4

