[0074] The four player detection sensors **51** to **54** mounted on the front face of the base **110** are for detecting the movement of the 1P player when it is a one player game (or 1P player and 2P player when it is a two player game) in the left and right directions, and side plates **125** are provided for preventing the disturbance and the like upon detecting the muzzle direction (described later) with respect to the screen **121** and displaying images on the screen **121**.

[0075] Further, with the present game machine, music and the like is played in order to yield vigor, and a speaker (top) **32**, speaker (left) **33** and speaker (right) **34** for outputting sounds in the middle and high ranges, and a woofer speaker **35** for outputting sounds in the low ranges are provided in order to output such sounds during the game. The speaker (top) **32** and speaker (left) **33** form one pair and the speaker (top) **32** and speaker (right) **34** form one pair in order to playback in stereo sound.

[0076] A coin of a prescribed amount is inserted into the coin insertion slot **38**, the start button **36** is suitably pressed in accordance with the display on the screen **121**, and a one player game with only the 1P player or a two player game with both the 1P player and 2P player is selectively started.

[0077] The rectangular flat mirror **43**, as shown in **FIG. 7**, has a mirror axis **45** extending in the perpendicular direction in the diagram, and both ends of the mirror axis **45** are rotatably retained with the mirror retention member **46**. The rotation of the stepping motor **41** connected to the control unit described later is transmitted to the mirror with the timing belt **44**, and the projected image **124** shifts in the arrow A_6 direction on the screen by the mirror **43** being rotated in the direction of arrow A_7.

[0078] The reference viewpoint set at a prescribed height and position at the front of the present game machine is associated with the virtual viewpoint within the game space, and it is envisioned that a player (of an average height) is able to view the screen **121** from this reference viewpoint position.

[0079] Next, explained is the structure for detecting the direction of the muzzle **16**. Preferably a color CCD camera **6** as the imaging means is mounted in forward orientation at a prescribed height and position at the left, right and center of the screen **121** shown in **FIG. 7**. The CCD camera **6** is directed in the direction of θ so as to at least include the muzzle position in the game of the gun unit **10** operated by the player, and adopted are those which have a prescribed visual field width (solid angle of the range shown with the chain line). It is preferable that the CCD camera **6** be built in the likes of a housing **61** for blocking light such that it will not receive the projected light from the projector **31** to the screen **121**.

[0080] **FIG. 8** is a diagram showing the structure of the gun unit **10** (similar with the gun unit **20**) as an example of the controller for accepting input operations from the player, and **FIG. 9** is a diagram showing an example of the mounting structure of the marker provided to the gun unit **10** for detecting the direction of the muzzle **16** with respect to the screen **121**.

[0081] The gun unit **10**, as shown in **FIG. 8**A, simulates a pump action gun, and has a trigger switch **11** as the micro switch that is turned on when the player pulls the trigger **14** in the direction of arrow A_8, a pump trigger switch **12** as the micro switch that is turned on when the player slides the sliding unit **15** in the direction of arrow A_9, and a marker **13** for detecting the point where the direction of the muzzle with respect to the screen **121**; that is, the direction of the muzzle **16** (visual line vector) intersects with the screen **121**. Signals from the trigger switch **11** and the pump trigger switch **12** are transmitted to the main body control unit **100** via the gun cable **17**, virtual shooting is designated by the trigger switch **11** being turned on, and the loading of a prescribed number of virtual bullets is designated to the gun unit **10** when the pump trigger switch **12** is turned on. When the marker **13** is not of a reflective type and is rather a self-illuminating type, a power source supply line is included in the gun cable.

[0082] As shown in **FIG. 8**B, the marker **13** mounted on the tip (marker mounting section) of the muzzle **16** of the gun unit **10** comprises a plate shaped substrate **130**, and, for example, LEDs **131** to **135** as the five dotted light sources for emitting prescribed colors having the same shape in the present embodiment are disposed on such plate surface in prescribed intervals, preferably in prescribed equal intervals in the vertical and horizontal directions. LEDs **131** to **135** are structured such that LED **131** is at the intersecting point position of the vertical and horizontal axes in the present embodiment, LEDs **132** and **133** are disposed in equal intervals in the vertical axis direction (LED **131** and LED **132** structure the first light source unit, LED **132** and LED **133** structure the second light source unit, and LED **132** is shared in the present embodiment), and LEDs **134** and **135** are disposed in equal intervals in the horizontal direction (LED **131** and LED **134** structure the third light source unit, LED **134** and LED **135** structure the fourth light source unit, and LED **134** is shared in the present embodiment). Mounting position information on the respective plate surfaces of LEDs **131** to **135** is, for example, stored in the likes of a ROM **105** of the main body control unit **100** shown in **FIG. 12** as position information with LED **131** as the reference. It is preferable that an illuminator capable of emitting infrared light be used as the LEDs **131** to **135** for preventing the erroneous detection by outside light. In a mode where the LED **131** is not shared and respectively divided in the vertical and horizontal directions, the number of LEDs will become six. LED **132** and LED **134** do not have to be shared either. Further, the color of the substrate **130** is adopted upon being colored to a color capable of being identified with the CCD camera **6** against the luminescent color of the LED, and, as described later, enabled is the measurement of the vertical and horizontal dimension of the substrate **130**; that is, dimension of the distance to the CCD camera **6**. Needless to say, a CCD camera capable of only receiving infrared light may also be used.

[0083] **FIG. 8C** is a diagram showing an example of the image imaged with the CCD camera **6** and incorporated in the image memory, and, as illustrated therein, obtained are images of the luminescent spots **131***a* to **135***a* corresponding to the LEDs **131** to **135**. Moreover, as shown in the diagram, the image is imaged in an oval as shown with the chain line around the substrate; that is, in a posture facing the oblique direction, and it is evident that the luminescent spots **131***a* to **135***a* are compress and mapped in the left and right directions.

[0084] **FIG. 9** is a diagram showing an example of the mounting structure of the dotted light source. The LEDs **131**