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Chen

(54) **SAND SOURCE SELECTING STRUCTURE FOR A SANDBLASTING GUN**

(71) Applicant: **LEMATEC CO., LTD**, Taichung (TW)

(72) Inventor: **Vic Chen**, Changhua (TW)

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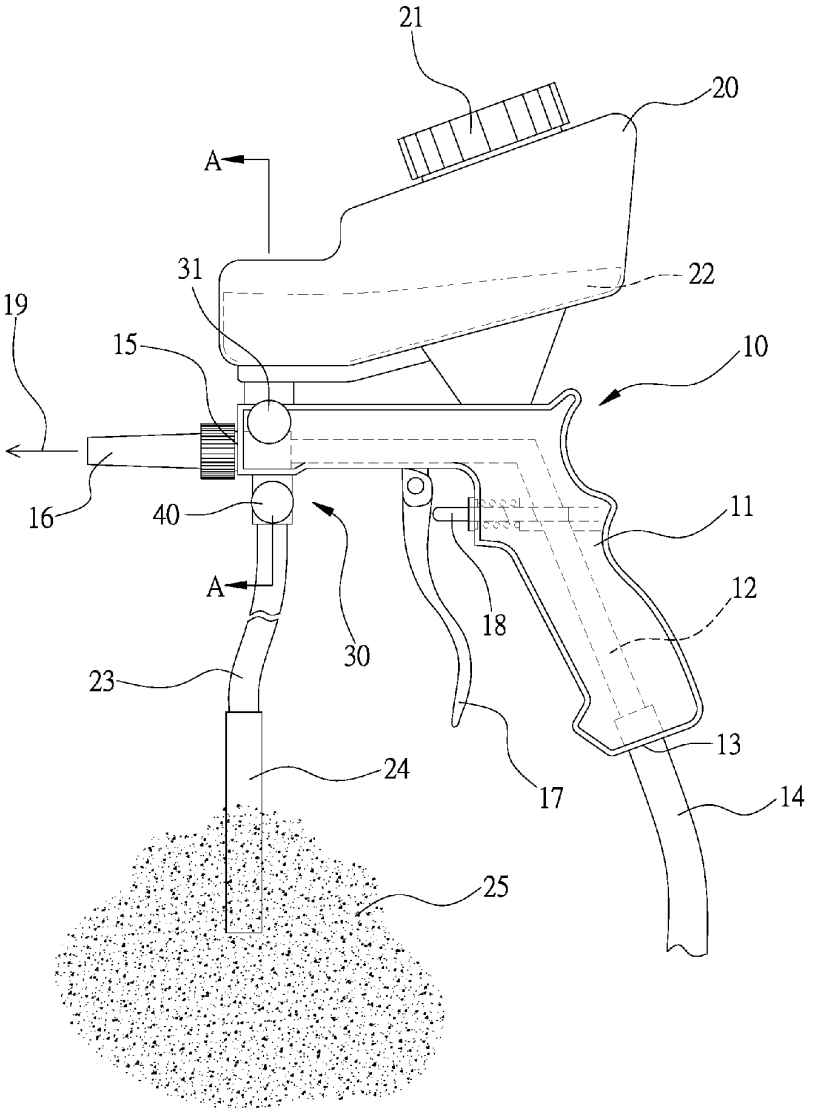
(57) **ABSTRACT**

A sand source selecting structure for a sandblasting gun has a main body; a channel provided in the main body, for passing a high pressure gas; at least two sub-channels provided in the main body respectively connected to the channel; a sandbox mounted on the main body connected to the channel through each of the sub-channels; at least one supply tube; a first control valve installed in the main body, for connecting the sandbox and at least one of the sub-channels of the channel; and a second control valve installed in the main body, for connecting the channel and another sub-channel of the supply tube. Therefore, the combination of the first control valve and the second valve provides a selecting structure, which can offer different sand supply sources.



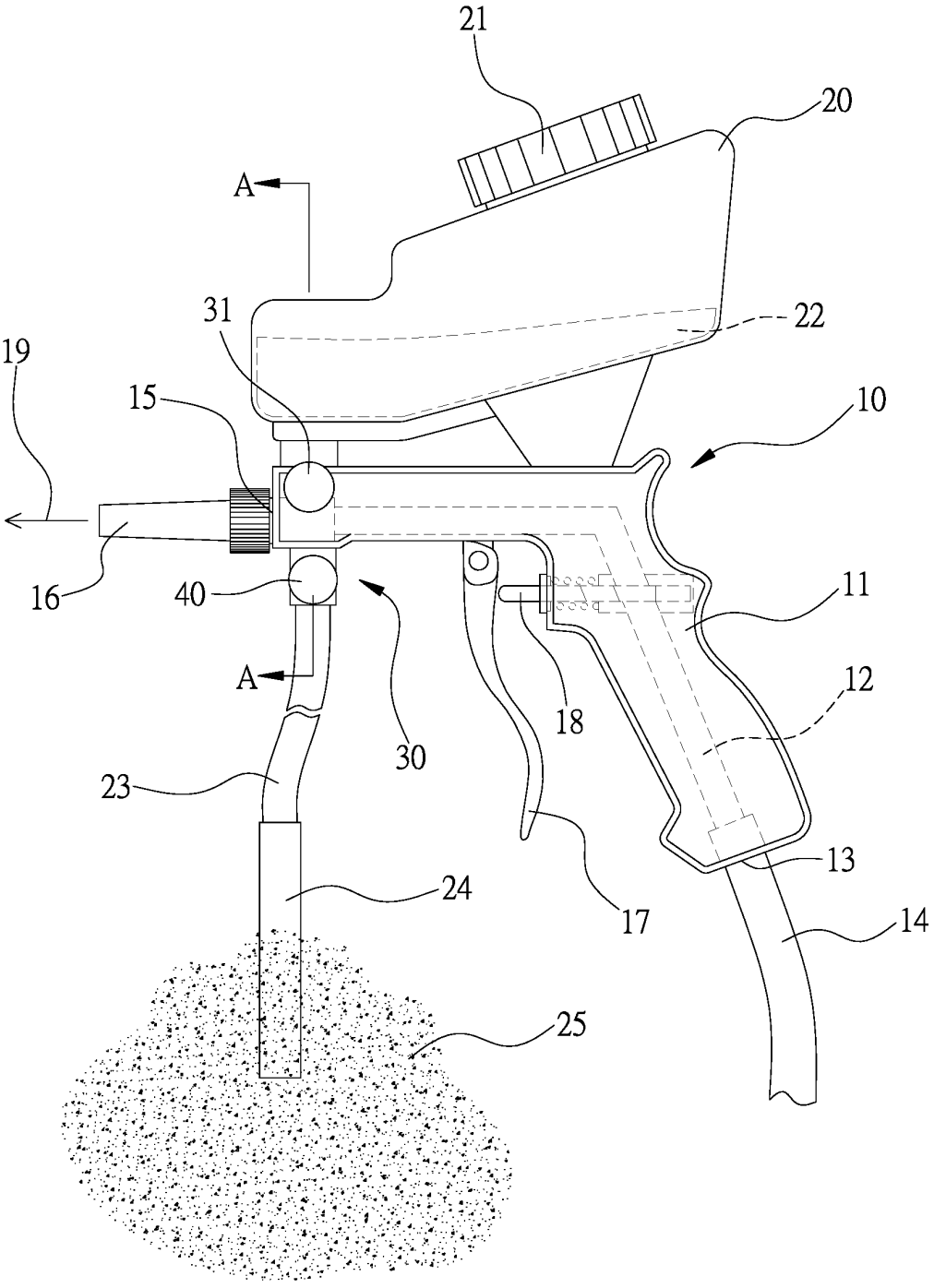


Fig. 1

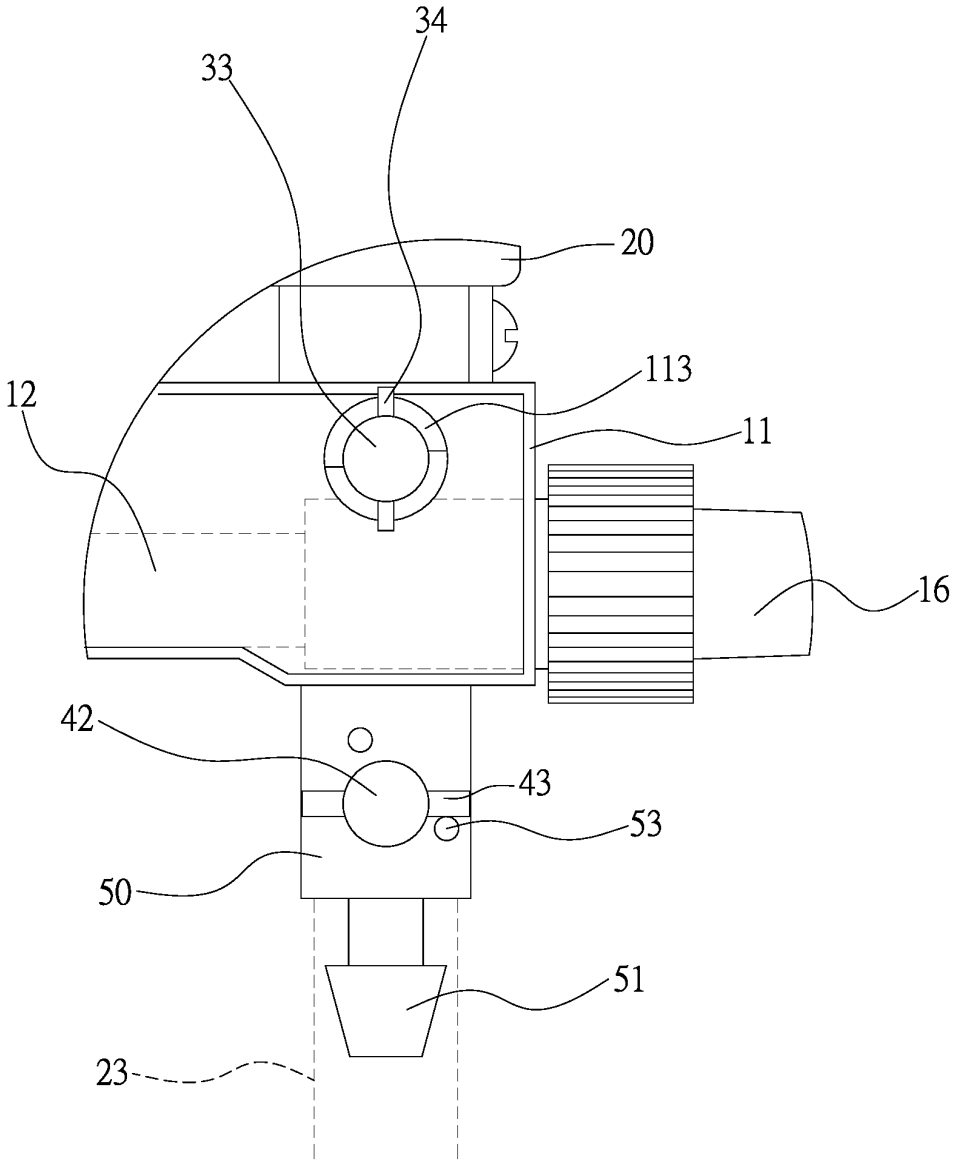


Fig. 2

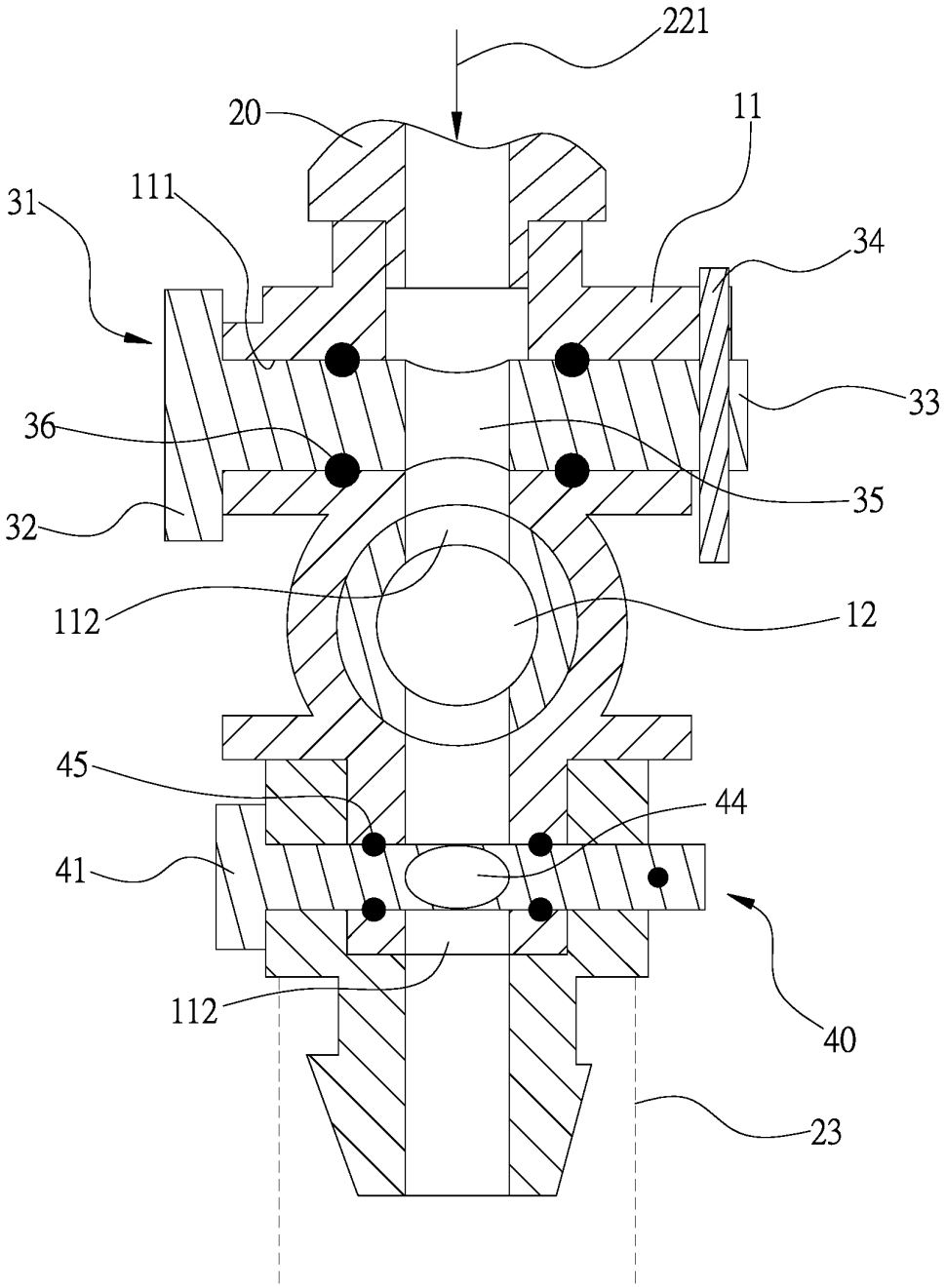


Fig. 3

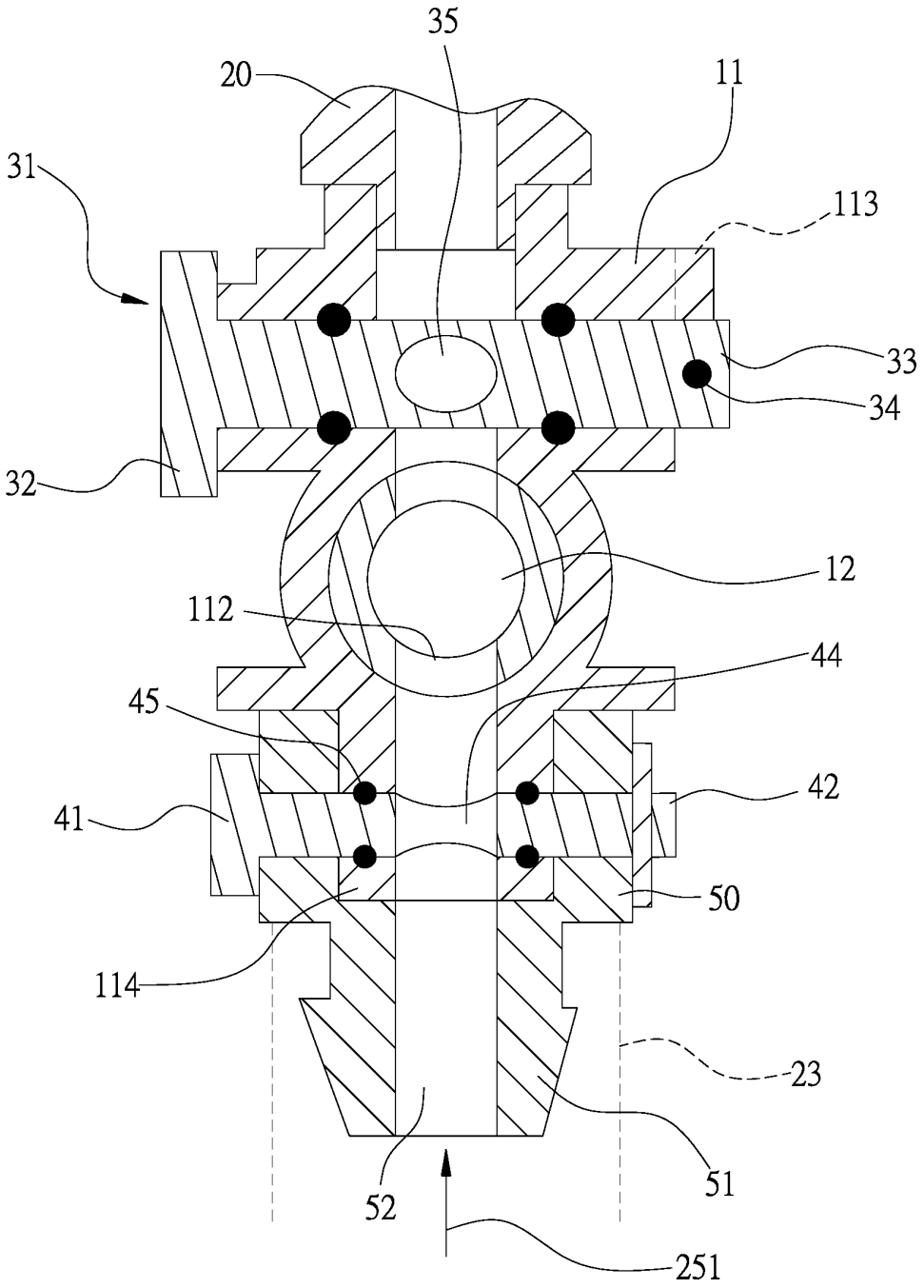


Fig. 4

SAND SOURCE SELECTING STRUCTURE FOR A SANDBLASTING GUN

BACKGROUND OF INVENTION

Field of Invention

[0001] The present invention relates to a sandblasting gun, and more particularly to a sand source selecting structure for a sandblasting gun.

Description of the Related Art

[0002] Typical sandblasting guns spray some sand particles on the surface of a metal workpiece by high-pressure gas to perform surface treatment such as rust removal and dustproof, thereby preventing water molecules or impurities from adhering to the surface of the metal and preventing the metal workpiece from being rusted or damaged.

[0003] For larger metal workpieces, sandblasting guns require more sand, and smaller metal work pieces emit less sand.

[0004] However, typical sandblasting gun is equipped with a sandbox, and the sandbox obtains a fixed amount of sand and cannot increase the amount of sand easily.

[0005] Therefore, it is desirable to provide a sand source selecting structure for a sandblasting gun to mitigate and/or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

[0006] An objective of present invention is to provide a sand source selecting structure for a sandblasting gun, which is capable of improving the above-mention problems.

[0007] In order to achieve the above mentioned objective, sand source selecting structure for a sandblasting gun has:

[0008] a main body;

[0009] a channel provided in the main body, for passing a high pressure gas;

[0010] at least two sub-channels provided in the main body respectively connected to the channel;

[0011] a sandbox mounted on the main body connected to the channel through each of the sub-channels;

[0012] at least one supply tube;

[0013] a first control valve installed in the main body, for connecting the sandbox and at least one of the sub-channels of the channel; and

[0014] a second control valve installed in the main body, for connecting the channel and another sub-channel of the supply tube.

[0015] Therefore, the combination of the first control valve and the second valve provides a selecting structure, which can offer different sand supply sources.

[0016] Other objects, advantages, and novel features of invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0017] FIG. **1** is a structure plan view of a preferred embodiment for use with a sandblasting gun according to the present invention.

[0018] FIG. **2** is a plan view of another angle of the selecting structure.

[0019] FIG. **3** is a cross-sectional view along a line A-A of FIG. **1**.

[0020] FIG. **4** is an action drawing for selecting a sand source.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] Please refer to FIG. **1**. A sandblasting gun **10** has a main body **11**, and the main body **11** has a handgun-shaped profile. The main body **11** has a channel **12**, and the channel **12** is provided with an entering end **13** and an exiting end **15**, and the entering end **13** and a high pressure gas device (such as an air compressor) are connected by a gas pipe **14**. A detachable nozzle **16** is connected with the main body **11**, and the nozzle **16** is connected to the exiting end **15** of the channel **12**.

[0022] A gas valve **18** is installed onto the main body **11** to intercept the channel **12**. A trigger **17** is mounted to the main body **11** and able to swing back and forth, and the trigger **17** controls the gas valve **18** to keep the entering end **13** and the exiting end **15** of the channel **12** clear, so that the high pressure gas in the gas pipe **14** enters into the channel **12**. With the guidance of the nozzle **16**, a gas flow **19** is injected out of the main body **11** outside.

[0023] As shown, a sandbox **20** is secured to the main body **11** for receiving some sand particles **22**. A cover **21** locks the sandbox **20** to prevent the sand **22** from exiting the sandbox **20**.

[0024] Further, a selecting structure **30** is composed of a first control valve **31** and a second control valve **40**, and the first and second control valves **31**, **40** are mounted on the main body **11** adjacent to the nozzle **16**.

[0025] Please refer to FIG. **2** with FIG. **3**. The coupling relationship between the main body **11** and the first control valve **31** is described in following detail. The two sub-channels **112** are formed inside the main body **11**, and the sub-channels **112** are connected to the channel **12** of the main body **11** respectively. Secondly, the first control valve **31** has a first valve rod **33**, the first valve rod **33** is provided with a knob **32** and a first through aperture **35**. The knob **32** is formed at one end of the first valve rod **33**, and the first through aperture **35** connects both sides of the first valve rod **33**.

[0026] When one end of the first valve rod **33** passes through an assembly aperture **111** of the main body **11**, a pin **34** is inserted into a portion the first valve rod **33** that exposed outside the main body **11**, which prevents the first valve rod **33** from leaving the main body **11** and not affect the knob **32** to drive the first valve rod **33** to rotate around the main body **11**. In addition, a set of the first O ring **36** is embedded in the surface of the first valve rod **33** around the first through aperture **35** while contacting the main body **11** to form a wall for the assembly aperture **111**, thereby providing sealing effect to prevent pressure leakage.

[0027] In a preferred embodiment, the main body **11** further has a baffle **113** protruding out from the surface and disposed on two sides of the first valve rod **33**, and the baffle **113** blocks the pin **34** and limits the first valve rod **33** to only move in longitudinal and lateral positions.

[0028] When the first valve rod **33** is at the longitudinal position, the axial direction of the first through aperture **35** is substantially parallel to the length direction of the sub-channel **112**, so the sub-channel **112** is opened. Therefore, the high pressure gas in the channel **12** produces suction to the sub-channel **112**. Since the sandbox **20** is internally connected to the sub-channel **112**, the sand in the sandbox **20**

is mixed with high pressure gas in the sub-channel **112** along the direction of arrow **221** and is injected together to the outside of the main body **11** via the channel **12**.

[0029] As shown in FIG. **4**, in the lateral position, the axial direction of the first through aperture **35** is substantially perpendicular to the length direction of the sub-channel **112**, so the sub-channel **112** is cut-off by the surface of the first valve rod **33**. Therefore, the high pressure gas in the channel **12** does not make effect on the sandbox **20**, and the sand of the sandbox **20** naturally does not enter the channel **12**.

[0030] In other words, the first control valve **31** controls whether the sand in the sandbox **20** enters the channel **12** or not.

[0031] Next, please refer to FIGS. **2** and **4**. The main body **11** has a protruding portion **114**, the protruding portion **114** and the sandbox **20** are disposed on either side of the main body **11**, and another sub-channel **112** extends through the interior of the protruding portion **114**. Furthermore, the second control valve **40** is composed of a second valve rod **42** and a connector **50**. The second valve rod **42** is substantially identical with the first valve rod **33**, and also has a second knob **41**, a second through aperture **44** and a second O ring **45**. The connector **50** has an inserting portion **51**, and the inserting portion **51** is a round tube and has an inner chamber **52**.

[0032] When the connector **50** is sleeved onto the protruding portion **114**, and the second valve rod **42** passes through the protruding portion **114** and the connector **50**. Moreover, a second pin **43** is inserted into a portion of the second valve rod **42** exposed outside the connector **50**, therefore the connector **50** can be prevented from leaving the protruding portion **114** without affecting the second knob **41** to drive the second valve rod **42** to rotate relative to the connector **50**. Additionally, a baffle **53** protrudes from the surface of the connector **50**, since the second pin **43** limits the movement of the second valve rod **42** back and forth in the longitudinal and lateral positions, the second O ring **45** touches the protruding portion **114** (or the connector **50**) and also has a sealing effect that prevents pressure leakage.

[0033] An opening of a hose **23** is jacketed onto the inserting portion **51**, and the inner chamber **52** of the inserting portion **51** is connected to the hose **23**. Another opening of the hose **23** is connected to a rigid tube **24** inserted into the sand pile **25** (see FIG. **1**).

[0034] When the second valve rod **42** is at the longitudinal position, the axial direction of the second through aperture **44** is also parallel to the length direction of the sub-channel **112**, so the sub-channel **112** is opened. The high pressure gas in the channel **12** generates suction to the sand pile **25** (see FIG. **1**) through the hose **23** and the rigid tube **24**, so that the sand particles are mixed with the high pressure gas and sprayed out of the main body **11** via the channel **12** as the direction of the arrow **251**.

[0035] As shown in FIG. **3**, when the second valve rod **42** is at the lateral position, the axial direction of the second through aperture **44** is substantially perpendicular to the length direction of the sub-channel **112**, therefore the sub-channel **112** is cut-off by the surface of the second valve rod **42**. The high pressure gas is blocked by the second valve rod **42** and has no effect on the sand pile **25** (see FIG. **1**), and the sand naturally does not enter the channel **12** via the hose **23**.

[0036] Basically, the second control valve **40** is the controller that controls the high pressure gas in the channel **12** to extract the sand pile **25** (see FIG. **1**) through the hard tube and the hose **23**.

[0037] Even the first control valve **31** and the second control valve **40** are independent of each other and can be turned on and off respectively, but simultaneously turning on or off the first and second control valves **31**, **40** should still be applied within range of the present invention.

[0038] Although the present invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of invention as hereinafter claimed.

What is claimed is:

1. A sand source selecting structure for a sandblasting gun comprising:
- a main body;
- a channel provided in the main body, for passing a high pressure gas;
- at least two sub-channels provided in the main body respectively connected to the channel;
- a sandbox mounted on the main body connected to the channel through each of the sub-channels;
- at least one supply tube;
- a first control valve installed in the main body, for connecting the sandbox and at least one of the sub-channels of the channel; and
- a second control valve installed in the main body, for connecting the channel and another sub-channel of the supply tube.

2. The sand source selecting structure of a sandblasting gun as claimed in claim **1**, wherein the first control valve further comprises a first valve rod with a first through aperture, the first valve rod is placed in the main body, the first through aperture is parallel or perpendicular with the sub-channel, and the first control valve controls the sub-channel.

3. The sand source selecting structure of a sandblasting gun as claimed in claim **2**, wherein the first control valve further comprises a knob and a pin, the knob and the pin are respectively disposed at two ends of the first valve rod, and the pin engages a baffle of the main body to limit the first valve rod.

4. The sand source selecting structure of a sandblasting gun as claimed in claim **2**, wherein a first O ring is disposed around the first through aperture, and the first O ring makes contact with the first valve rod and the main body for a sealing purpose.

5. The sand source selecting structure of a sandblasting gun as claimed in claim **1**, wherein the second control valve comprises:
- a second valve rod with a second through aperture; and
- a connector having an inserting portion with an inner chamber, the inserting portion engaging the supply tube, and the inner chamber is connected to the supply tube and the sub-channel;

wherein when the connector jackets onto a protruding portion of the main body, the second valve rod passes the protruding portion and the connector, the second through aperture is parallel or perpendicular with the sub-channel, and the second control valve controls the sub-channel.

6. The sand source selecting structure of a sandblasting gun as claimed in claim **5**, wherein the second control valve

further comprises a second knob and a second pin, the second knob and the second pin are disposed at two ends of the second valve rod, the second pin engages with a baffle of the of the connector to limit the second valve rod.

7. The sand source selecting structure of a sandblasting gun as claimed in claim **5**, wherein a second O ring is disposed around the second through aperture, and the second O ring makes contact with the second valve rod and the protruding portion for a sealing purpose.

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