

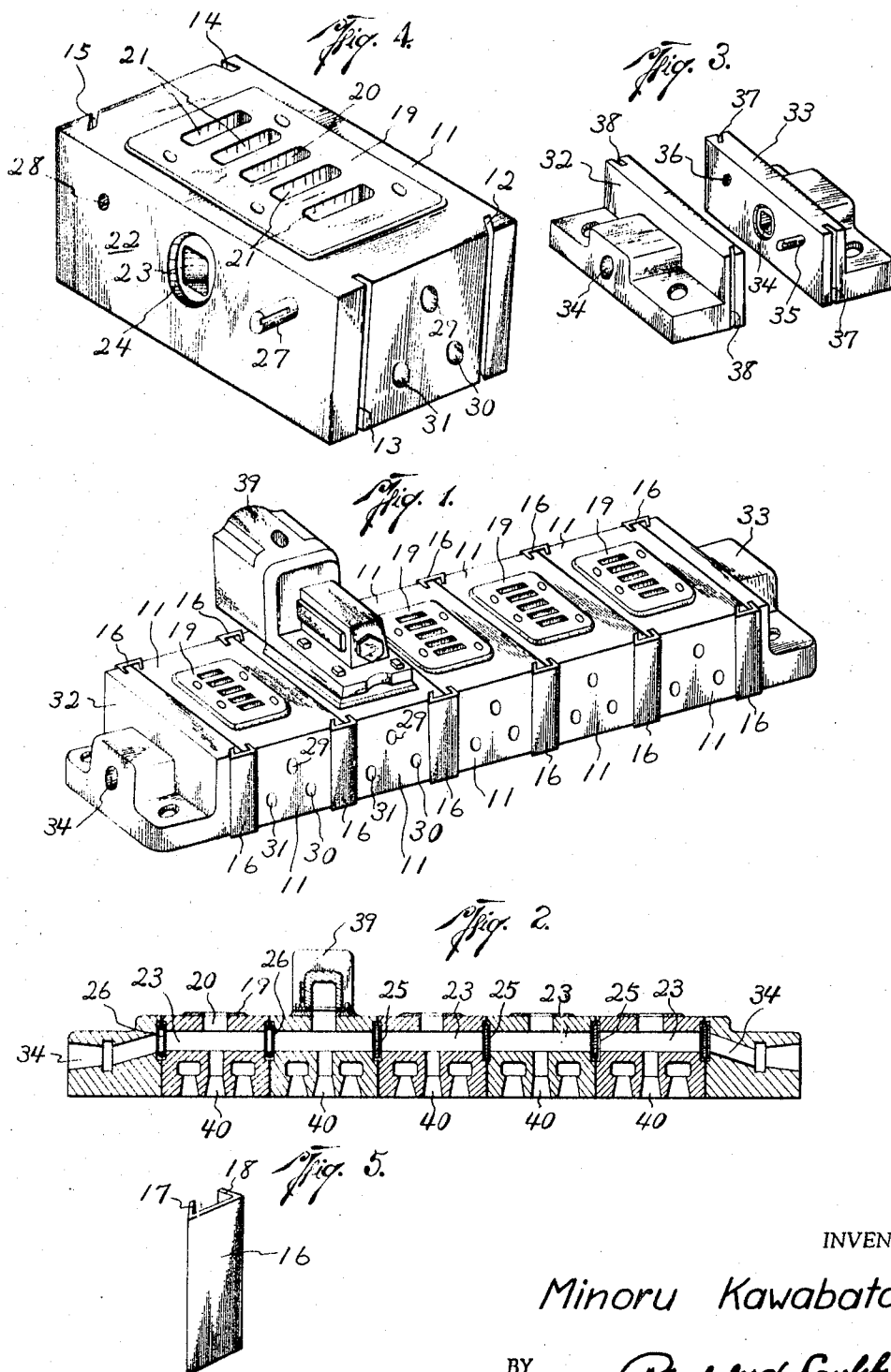
July 29, 1969

MINORU KAWABATA

3,457,943

MANIFOLD PEDESTAL

Filed Aug. 22, 1967



INVENTOR

Minoru Kawabata

BY

Polachek & Saulsbury
ATTORNEYS

1

2

3,457,943

MANIFOLD PEDESTAL

Minoru Kawabata, Chiba-ken, Japan, assignor to Kuroda Seiko Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1967, Ser. No. 662,389

Claims priority, application Japan, Sept. 14, 1966, 41/86,062

Int. Cl. F16k 51/00; F16l 3/50

U.S. Cl. 137—269

5 Claims

ABSTRACT OF THE DISCLOSURE

The present invention relates to a manifold pedestal device for mounting a valve assembly thereon, comprising the manifolds (bases) for mounting the actuators thereon, each of said base members being shaped like a square box and being provided in its inside with a pressure air hole, a distribution hole, a secondary feeding hole and an air vent, on its surface, with a valve assembly mounting face, and on its side with a pressure hole opening and a receiving seat thereof. These base members can be coupled together, or separated, in any optional number by a simple engaging operation of the connecting frames, and the intercommunication of the pressure air holes attained by said coupling can be kept air-tight, or such intercommunication may also be shut off, and a selective driving operation for each actuator can be effected by feed of the pressure air from the secondary feeding hole.

The present invention relates to a pedestal device for mounting a fluid valve assembly thereon, and more particularly to a continuous manifold pedestal device arranged to be suitable for mounting one or more fluid valve assemblies.

Most of this type of conventional manifold pedestals are composed in a continuous integral block structure and are provided on the surface thereof with the mounting faces of the same form for mounting the actuators thereon, said mounting faces being formed in a number corresponding to the number of the actuators to be mounted. They are thus stereotyped from the beginning to a three-throw, five-throw, seven-throw or other such types, wherein only a fixed amount of pressure air supply can be made to each actuator and it was also impossible to selectively alter the operation of the actuators or to optionally increase or decrease the number of the manifold pedestals.

However, in practical use of a manifold pedestal for mounting a valve assembly, it has often been needed to make different supplies of pressure air for each actuator mounted and to increase or decrease the number of the actuators in relation to the apparatus used.

It is a primary object of the present invention to provide a manifold pedestal device in which it is possible to couple, or separate, a desired number of uniform manifold pedestals on each of which may be mounted a valve assembly.

Another object of the invention is to realize the desired valve actuation with a single or a plurality of manifold units each having a valve assembly mounted thereon, by forming a working hole necessary for driving the valve assembly on each juncture face of the uniform manifold pedestals while providing on the other face a communication hole linked to actuation from other units.

It is still another object of the invention to enable mounting of a plurality of valve assemblies in a limited area, to simplify the fluid piping, and to permit easy optional increase and decrease of the manifold pedestals for mounting the valve assemblies as occasion demands.

It is also a subsidiary object of the present invention

to provide an arrangement in which the fluid pressure from the outside to the coupled valve assembly-manifold pedestal blocks is supplied separately for each unit pedestal so as to induce operation of the actuators having different operational pressures.

The characteristic structure for achieving the above-described objects and features of the present invention will be more fully understood in the course of reading of the following descriptions with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of several coupled manifold pedestals embodying the invention, with the base members being provided at both ends thereof and with a valve assembly being mounted on the surface of only one such pedestal.

FIG. 2 is a longitudinal section taken through the center of the structure of FIG. 1.

FIG. 3 is a perspective view of a pair of base members.

FIG. 4 is a fairly enlarged perspective view of one manifold pedestal, and

FIG. 5 is a perspective view of a connecting frame element for coupling the manifold pedestals, said element being shown in a size corresponding to the manifold pedestal illustrated in FIG. 4.

As shown in FIGS. 1 and 2, each of the pedestals 11 arranged to be joinable at the sides is uniformly shaped and is provided at the corners thereof with the longitudinal parallel slots 12, 13, 14 and 15. When it is desired to join together two or more pedestals 11, both flanged edges 17 and 18 of the connecting frame 16 having the same length as the height of the pedestal 11 are respectively fitted into said slot 12 or 14 of a pedestal 11 and slot 13 or 15 of the adjoining pedestal to thereby secure the adjoining pedestals.

The connecting frame 16 has an external configuration as shown in FIG. 5 and is generally made of an elastic material so that its fitting into the slots 12, 13, 14 and 15 of a pedestal 11 is made elastically.

As best shown in FIG. 4, on the surface of each pedestal 11 is formed a mounting face plate 19 on which a valve assembly 39 is seated, and on said mounting face plate are formed a central hole 20 and a desired number of parallel holes 21 which are respectively in communication with the corresponding working holes (not shown) in the valve assembly 39 when it is mounted.

A pressure hole 23 opened at the center of each joined side of the pedestal 11 is in communication with said central hole 20 in the inside of the pedestal, and at the opening of said hole 23 is formed a receiving seat 24 for a blockade 25 or a gasket 26. Also provided on each joined side face of the pedestal are a check pin 27 projected from a certain predetermined position thereon and a hole 28 for receiving a similar check pin from the adjoining pedestal.

On the other side faces continuous and adjacent to said joined sides 22 of the pedestal 11 are also formed the air holes 29, 30 and 31 which communicate together or separately with said parallel holes 21 in the inside of the pedestal.

As shown in FIG. 3, the mounting base members 32 and 33 form a symmetrical pair, each having the vertical slots 37 and 38 formed at both end portions thereof. On the inner face of each of said base members are formed an air hole 34 in the center thereof, a check pin 35 projected from a certain fixed position on said face and a receiving hole 36. When said base members are joined to a train of coupled pedestals 11 in the manner shown in FIGS. 1 and 2, the connecting frames 16 are fitted to the vertical slots at the corners of the pedestals 11 and the similar slots formed on the base members, thus integrally securing the base members to the pedestals.

This joining produces a situation in which the air hole 34 of each of the mounting base members 32 and 33 is registered with the pressure hole 23 of each pedestal 11 and the check pin 35 is fitted into the receiving hole 28 of the pedestal and the check pin 27 of the pedestal into the receiving hole 36 of the base member, whereby secure coupling of the blocks is attained, thus forming a unitary structure. In coupling the pedestals, if a gasket 26 is placed to be held between the receiving seats of the adjoining pedestals, the air hole 34 and the pressure hole 23 are kept in a mutually communicated condition, but if a blocking plate 25 is placed in position, the pressure hole 23 is accordingly closed.

The pressure hole 20 and the parallel holes 21 opened at the surface of the pedestal 11 are at one end in communication in a known manner to the corresponding working holes (not shown) of the valve assembly 39 mounted thereon, and at the other end in communication with an outside pressure air source through the air holes ramified from the inside of the pedestal 11.

The pedestals 11 and the mounting bases 32 and 33 are thus coupled together to compose a manifold pedestal block for mounting the valve assemblies thereon. In the course of composing said block, the adjoining sides of a desired number of pedestals 11 are joined together, with their respective check pins 27 and 35 being fitted into the corresponding receiving holes 28 and 36 and with a gasket 26 being interposed in the receiving seat 24 of the pressure hole between each adjoining pedestal, thereby to keep the air-tight condition at the pressure hole junctures. However, if a blocking plate 25 is interposed in said receiving seat 24, the communication of the pressure holes 23 is blockaded at this section, and different pressure supply having no relation to actuation from these pressure holes 23 is made to other valve assemblies (not shown) mounted on other pedestals. It should also be noted that the pedestals or pressure supply means joined to the particular blockaded pedestal 11 may be optionally removed from the linkage as so desired. It is also possible to effect alternation of the supply system, cessation of actuation, repairs, etc., with no need of changing other operations.

Coupling between the pedestals 11 and between the pedestals 11 and the mounting bases 32, 33 is attained by clamping engagement of the elastic connecting frames 16. As will be seen, both flanged edges 17 and 18 of each connecting frame are bent slightly inwardly, and the vertical slots formed on the pedestal 11 and the mounting bases 32, 33 are also formed at a slant so as to snugly receive said edges 17 and 18. In this formation, the connecting frames 16 when mounted are not easily dislodged.

At both ends of a train of linked pedestals are joined the mounting bases 32, 33 to thereby form an integral manifold block, and a valve assembly 39 is mounted on the hole-formed surface of each pedestal 11. In FIGS. 1 and 2 is shown such a block in which five (5) individual pedestals are coupled together.

Now, with the air hole 34 of one of the mounting bases joined at both ends of the coupled pedestals being closed in a suitable manner, with the air hole 34 of the other mounting base being connected to a pressure air supply source (not shown) and with the secondary supply hole 40 at the bottom of each pedestal 11 being also closed, when the pressure air is supplied from the air hole 34 into the pressure holes 23, pressure is distributed to the valve assemblies through their respective communicating pressure holes 23 and central holes 20, permitting each assembly to work on a constant performance.

When it is desired to switch the operation of one of the valve assemblies to the other, a suitable blocking plate 25 is interposed in the receiving seat 24 at the juncture of the adjoining pedestals 11, whereby commu-

nication between the pressure holes 23 is shut off, insulating the coupled pedestals, while the secondary supply holes 40 of these pedestals are opened, so that if suitable piping from a secondary pressure air source (not shown) is applied thereto, the pressure air different from that supplied to other pedestals is supplied. It is thus possible with the present device to separately supply pressure to each individual pedestal and thereby to conduct the diversified operations by the valve assemblies mounted on the pedestals.

Such feature can be realized by dint of the characteristic arrangement of the present invention in which any desired number of uniform pedestals 11 can be joined up, extremely solidly, by an extremely simple means and, on attaining such coupling, the pressure air supply common to each pedestal and breakdown of such supply to the so-desired pedestals can be optionally effected, with an additional advantage that separation of any of these pedestals can be easily achieved.

In summary, the present invention is characterized by its superiority in the economic aspects and rationality in that any desired number of unit pedestals 11 can be joined up in accordance with the number of working mechanisms to compose as a whole an integral block and that the number of such pedestals can be optionally increased or decreased as occasion demands.

What is claimed is:

1. A manifold pedestal device for mounting valve assemblies thereon characterized in that several uniform pedestals, each being provided in the inside thereof with a pressure air hole, a distribution hole, a secondary supply hole and an air hole, on the surface thereof, with a valve assembly mounting face plate and at the sides thereof with a pressure hole are joined together, and mounting bases coupled to both ends of the train of said joined pedestals to thereby form an integral unitary block.

2. A manifold pedestal device for mounting valve assemblies thereon according to claim 1 characterized in that the pedestals have vertical slots formed at the corners of said pedestals and at the end portions of said mounting bases, and connecting frames dovetailed into the vertical slots thereby forming an integral unitary block.

3. A manifold pedestal device for mounting the valve assemblies thereon according to claim 2, in which the connecting frames are made of an elastic material and have both their long edges bent slightly inwardly.

4. A manifold pedestal device for mounting the valve assemblies thereon according to claim 1, wherein the pressure holes of said pedestals are in communication with each other and a gasket is interposed in the receiving seat at the juncture of the adjoining pedestals to thereby maintain an air-tight condition at this juncture.

5. A manifold pedestal device for mounting the valve assemblies thereon according to claim 1, wherein each pressure hole is formed with a receiving seat at the juncture of adjoining pedestals and a blocking plate interposed in the receiving seat so as to selectively close the pressure hole of the desired pedestals.

References Cited

UNITED STATES PATENTS

456,546	7/1891	Blankerts	137—608
3,371,682	3/1968	Flint	137—271 XR

M. CARY NELSON, Primary Examiner

R. J. MILLER, Assistant Examiner

U.S. Cl. X.R.

137—608