Nov. 6, 1956 F. H. RICHTERKESSING 2,769,460

PIVOTED GATE VALVE

Original Filed March 6, 1950

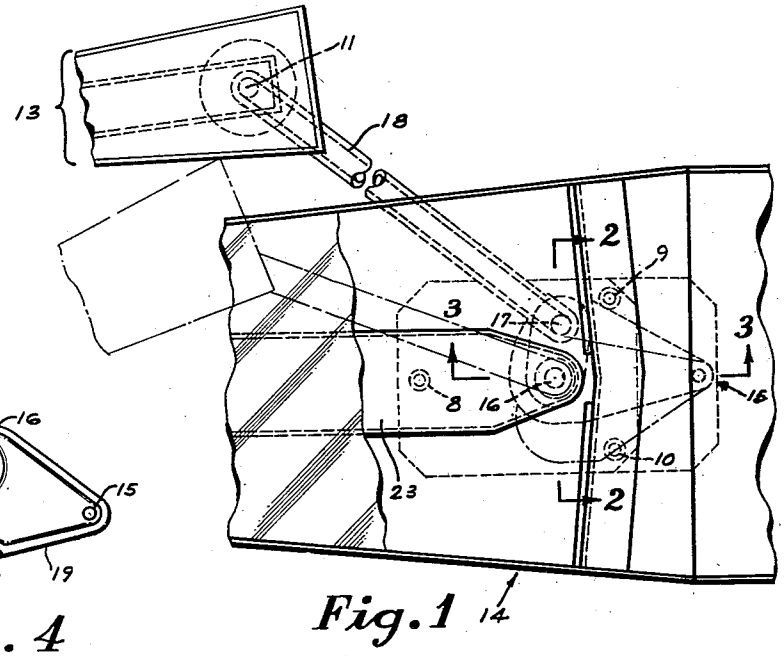

Fig. 1

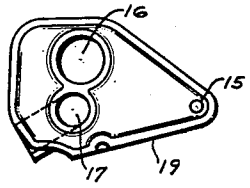

Fig. 4

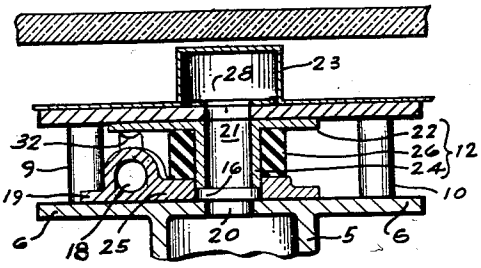

Fig. 2

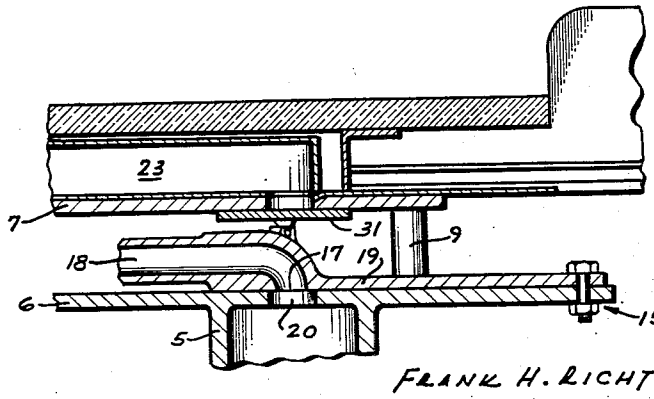

Fig. 3

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PIVOTED GATE VALVE

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Original application March 6, 1950, Serial No. 147,943. Divided and this application September 8, 1952, Serial No. 308,492

3 Claims. (Cl. 137—625.4)

This invention relates to a valve for directing the flow of fluid from either one of two sources to a common or single conduit in response to a vacuum established in said conduit. This valve is particularly adapted for use in connection with a steam spotting board for finishing or conditioning fabrics as disclosed in my co-pending application, Serial No. 147,943, filed March 6, 1950, now Patent No. 2,657,566 for "Vacuum Spotting Board," of which this application is a division.

It is the primary object of the invention to provide a valve of novel construction for transferring suction from one to the other of the main spotting board or the auxiliary or sleeve board in accordance or incidental with the position of the latter.

A further object is to provide in such a valve a resilient element functioning both as a fluid seal between relatively movable parts of the valve body, and as a compression spring element resiliently urging said movable parts into substantially fluid tight engagement with cooperating relatively stationary elements.

In this application I show and describe only the preferred embodiment of my invention, simply by way of illustration of the practice thereof as by law required. However I recognize that the invention is capable of other and different embodiments and that the several details of the invention may be altered in various manners, all without departing from my invention. Accordingly, the drawings and description herein are to be considered as merely illustrative and not as exclusive.

Figure 1 is a plan view of a fragment of my spotting board with a part of the top face board broken away to reveal structure disposed thereunder.

Figure 2 is an elevation on an enlarged scale of Fig. 1 along line 2—2.

Figure 3 is an elevation on an enlarged scale of Fig. 1 along line 3—3.

Figure 4 is a bottom view of one of the movable elements of the valve element on a reduced scale.

Referring in detail to the accompanying drawings, the reference character 5 therein designates a hollow standard or support that is carried by a floor pedestal equipped with means (not shown) for applying a partial vacuum to the chamber in the standard. Integral with this standard is a horizontally disposed lower valve plate 6, on which is mounted rigidly a top valve plate 7 by means of three posts 8, 9 and 10, respectively, that maintain these plates in rigid relation so that the inner flat smooth faces thereof will be parallel at all times. Swingably disposed between and in contact with these plates is an assembly of parts which constitute a movable valve element assembly 12 that carries the sleeve spotting board 13. Rigidly secured onto the top plate is the main spotting board 14.

The movable valve element is pivotally mounted between the valve plates 6, 7, as at 15, for swinging movement between the opposite horizontal surfaces of said plates between limits which may be defined by posts 9, 10. The lower part of the valve assembly 12 bearing on the

upper face of plate 6 is provided with two ports 16 and 17 positioned to register with suction port 20 in plate 6 in the two limiting positions of the valve assembly, respectively.

Carried by and swingable with said valve element assembly 12 is the hollow supporting arm 18 having an upwardly directed free end portion 11 on which is fixedly mounted the sleeve board 13 at a level somewhat above the main board 14. Such a sleeve board, except for being of relatively smaller size, is constructed and functions in substantially the same manner as the main board. The arm 18 is affixed as an extension to lower valve element 19 and communicates with a downwardly opening passage or port 17 in the lower face of said valve element.

The port or passage 17 opens at such a location in valve 12 as to register with the suction port 20 of the lower valve plate when the sleeve board is swung to operative position above the main board, as shown in broken lines in Fig. 1. In such position the valve element assembly will abut against one of the posts which thus serves as a stop to accurately determine said position.

As is clearly shown in Fig. 2, a through port or passage 21 extending completely through the valve element assembly 12 between the upper and horizontal faces thereof in a location to establish communication between the suction port 20 in lower plate 6 and the evacuation port 28 in the upper valve plate, when the sleeve board is swung to its inoperative position out of vertical registry with the main board, as indicated in full lines. With the valve assembly thusly positioned the full suction from the interior of standard 5 is exerted on channel 23 of the main board.

While the movable valve element 12 may be constructed in any of various manners, considering the invention from its broader aspects, I prefer to form such element in the novel manner hereinafter described to minimize the leakage of air therethrough into the vacuum passages. According to such preferred construction the valve element assembly 12 comprises two separate sections 19, 22, respectively, the upper section 22 being guided for vertical movement on the lower section 19 by means of an integral sleeve 24 slidable in a bore forming the port 16 through the lower section 19, the sleeve and bore together defining the through passage 21 aforementioned. In order to permit free vertical movement of the upper section into engagement with the upper plate 7, the supporting hollow arm 18 for the sleeve board, as indicated above, is secured only to the lower section 19 and the pivoted connection 15 is similarly made only between the lower section 19 and the lower valve plate 6. An annular gasket 26 of rubber or other resiliently compressible material is disposed about the sleeve 24 and compressed between the two sections 19, 22 as they are placed between the respective plates 6, 7, so that the gasket will tend to resiliently urge the two sections into engagement with their respective valve plates. Obviously the gasket will function as a fluid seal to prevent leakage of ambient air into the port or passage 21 and/or port 20. Also, the gasket will compensate for wear and maintain a tight seal indefinitely.

In order to close evacuating port 28 in the upper valve plate 7 and thereby prevent leakage of residue solvents from the main board onto the outer surfaces of the lower valve section 19 during use of the sleeve board, it has been found desirable to provide the upper valve section 7 with a lateral extension 31 which, if desired, may have a vertically depending projection 32 slidably disposed in a recess in lower valve section 19, as shown in Fig. 2, to prevent relative rotary movement of the co-related sections.

I claim:

1. In a vacuum spotting board, a suction control valve comprising a pair of oppositely ported valve plates having

relatively spaced opposed parallel surfaces, and a movable valve element having the external surfaces thereof exposed to atmospheric pressure and including a first valve section pivoted to one of said plates for swinging movement between both of said plates and across the ports thereof, said valve section having a bore therethrough for registry with the port in said one plate in one position of said valve element and being closed by said one plate in a second position of said valve element, a second valve section having a bore therethrough for registry with the port in the other of said plates in said one position of said valve element, a sleeve connected to one of said sections in communication with the bore therein and slidably disposed in the bore of said other section, and an annular gasket of resiliently axially compressible material disposed about said sleeve between said respective valve sections urging said sections into resilient engagement with said respective plates while also providing a fluid seal between said respective sections.

2. In a vacuum spotting board, a suction control valve comprising a pair of oppositely ported valve plates having relatively spaced opposed parallel surfaces, a valve element having the external surfaces thereof exposed to atmospheric pressure, means pivotally mounting said valve element for swinging movement between said plates, said valve element having a passage therethrough disposed for registry with said respective ports to establish communication therebetween in one position of said valve element and to be closed by said plates in a second position of said valve element, said valve element comprising a pair of separate sections respectively engaging said valve plates, and a resilient annular gasket disposed between said sections in engagement therewith and around the passage therethrough resiliently urging said sections into engagement with their respective valve plates and also providing a fluid seal between said valve sections.

3. A structure according to claim 2 and including an externally formed conduit connected with one of said valve sections and terminating in a port in said one valve section registering with the port in the adjacent plate when said valve element is in its second position, said conduit serving as the operating member for said valve element.

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