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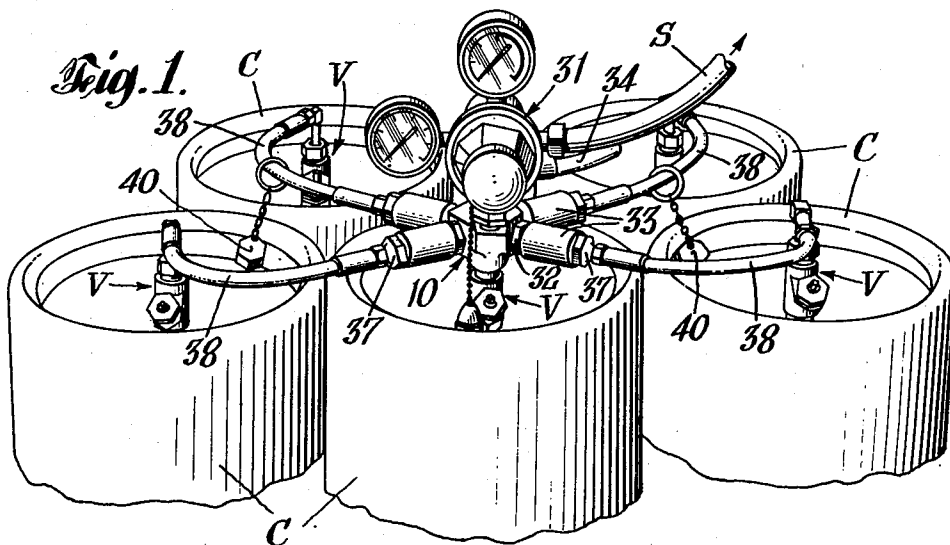
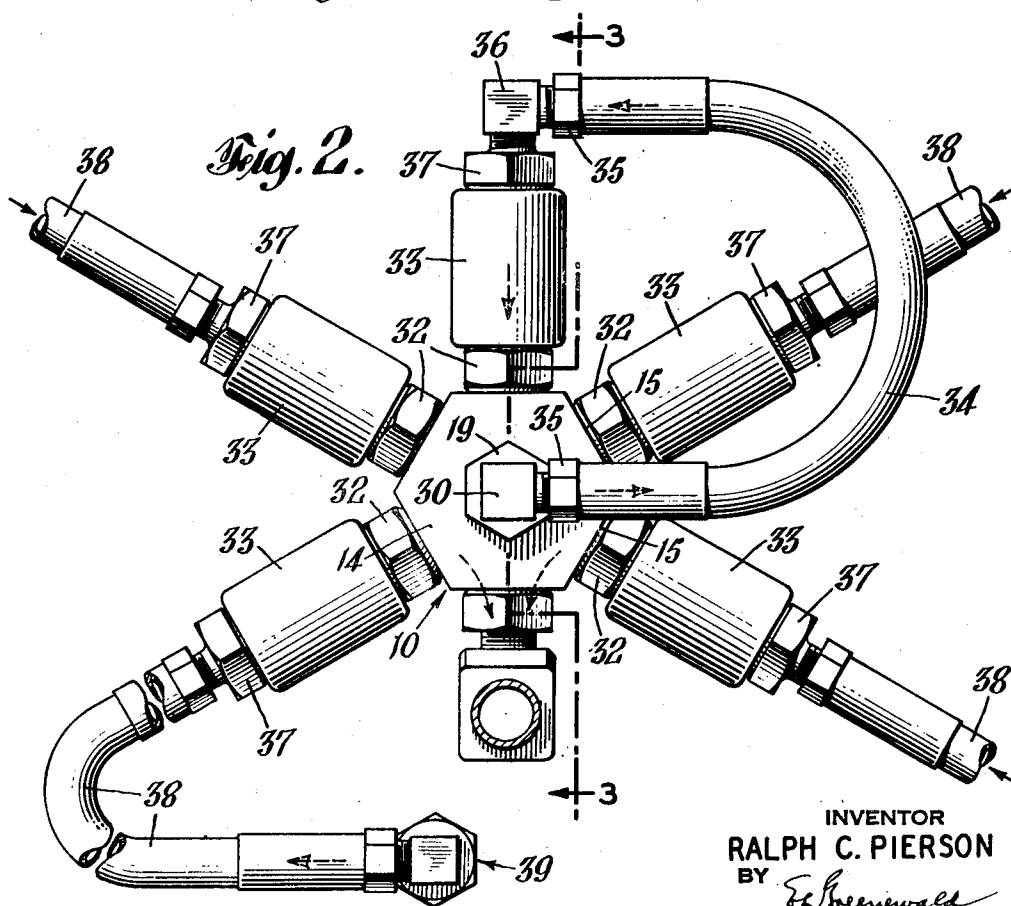
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2,518,569

PORTABLE MANIFOLD FOR GAS CONTAINERS

Filed June 6, 1947

2 Sheets-Sheet 1



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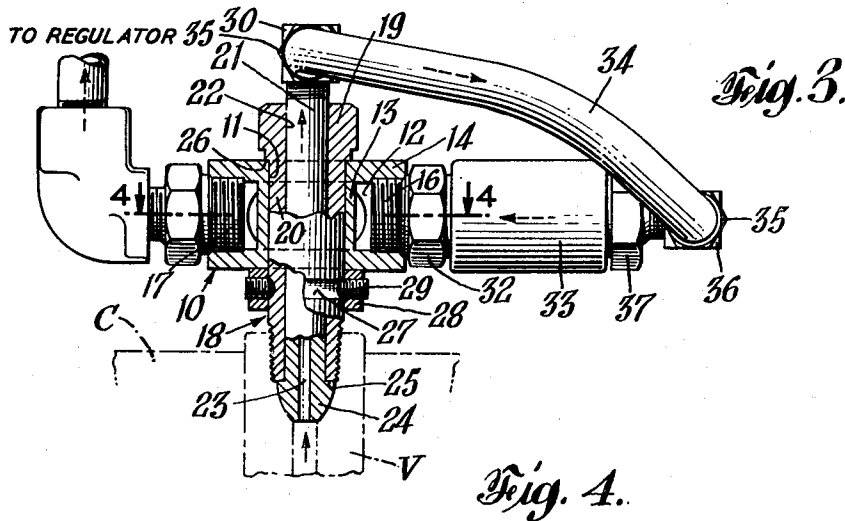
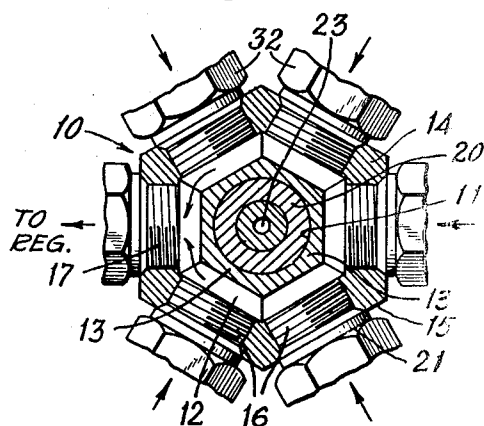
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PORTABLE MANIFOLD FOR GAS CONTAINERS

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PORTABLE MANIFOLD FOR GAS CONTAINERS

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5 Claims. (Cl. 48—192)

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This invention relates to portable manifolds and refers more particularly to a novel multi-cylinder manifold and improved mounting means adapted to support such manifold on one of a group of gas cylinders to be manifolded for discharging the gas from the cylinders into a single service conduit.

In prior manifolds used in the field for draining a plurality of gas cylinders into a common discharge conduit, the cooperating parts together with the necessary auxiliary equipment, such as regulator and gages, extend high above the cylinders and consequently are often inadvertently struck by an operator's elbows, hands, or tools. Because the immovable rigid parts are securely attached to one another they frequently bend or break when accidentally struck.

Furthermore, when arranging a group of adjoining cylinders in the field, it is not always possible to find flat, level ground on which to stand the cylinders side by side so that their outlets are substantially in the same plane. Thus, when arranging several cylinders close together in a group it is not unusual to force upwardly or downwardly the semi-rigid metal connecting tubes of conventional manifolds to compensate for irregularities in the cylinder positions. Nor is it unusual to stretch a connecting tube to make the connection, rather than to move the cylinder closer to the attachment. In either instance there is frequent breakage of the brass connecting tubes which are both costly and time consuming to replace.

The principal object of this invention is to provide a sturdy, compact, portable manifold having movable parts which extends a minimum height above the manifolded gas cylinder and to which cylinders can be quickly and more efficiently connected.

An additional object of this invention is to provide a manifold which can be quickly connected to a group of cylinders placed on uneven ground without the risk of breaking the connecting tubes. Still another object of this invention is to provide a manifold system wherein any backfire, often called "flashback", is arrested before it reaches any of the connecting tubes of the manifold.

According to this invention, a manifold system for draining gas from a closely-grouped plurality of cylinders into a common chamber, from which chamber the gas is discharged into a single service line, comprises a chambered coupler block provided with suitable sockets in a wall thereof for receiving ends of flexible tubes or leads whose

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opposite ends are severally connected by suitable attachments to the discharge valve fittings of a group of cylinders. The coupler block desirably is secured, in such a manner as to permit rotation, to a mounting assembly which serves the double purpose of rotatably but firmly supporting the coupler block on one of the cylinders to be drained, and of draining the supporting cylinder into the common gas chamber in the coupler block. Through suitable connections attached to at least one of the sockets, gas from the common gas chamber is discharged into a single service line. The lead from each cylinder to the coupler block includes a flashback arrester, thereby protecting every cylinder from flashbacks.

The invention will be more particularly described in conjunction with the accompanying drawings in which:

Fig. 1 is a perspective view of a preferred type of manifold embodying the principles of the present invention, to which cylinders, a regulator, and gages are attached;

Fig. 2 is a plan view of the improved manifold with the pressure regulator, cylinders and gages removed;

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a sectional view taken along line 4—4 of Fig. 3.

Referring more particularly to the drawing, Figs. 1 to 4 show a preferred form of a manifold system for interconnecting a plurality of cylinders C containing gas under pressure, such as a group of acetylene cylinders standing side by side and close together. The manifold of this invention, for use in manifolding five gas cylinders, comprises a hexagonally shaped coupler block 10 having a smooth axial bore 11 and a hexagonally-shaped annular gas receiving and discharging chamber 12 surrounding bore 11 and bounded by an inner wall 13 and an outer side wall 14. Each of five faces 15 of the outer side wall 14 is provided with a gas inlet socket 16 which opens radially into the gas receiving and discharging chamber 12, while the sixth face is provided with a gas outlet socket 17 which opens radially from the gas receiving and discharging chamber 12.

For securing the chambered coupler block 10 to one of the cylinders C in a position as low as possible so that the auxiliary attachments do not extend too high above the cylinder, there is provided a short, rigid mounting assembly 18 which comprises a hollow elongated sleeve or stem 19 having a reduced portion 20 of slightly smaller diameter than that of the axial bore 11.

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An elongated tubular post 21 of slightly smaller diameter than that of the central bore 22 of the sleeve 19 is provided with an axial gas passage 23 and a slightly enlarged, hemispherically-shaped lower end 24 which forms an annular shoulder 25. When the post 21 is fitted into the bore 22, the annular shoulder 25 of the former engages the lower end of the sleeve 19 while the upper end of the post extends above the sleeve 19.

To secure the coupler block 10 to the mounting assembly 18 so that the former is rotatable about its axis on the latter, the upper portion of the sleeve 19 is provided with an annular shoulder 26 which engages the top of the coupler block 10. The lower portion of the sleeve 19 is provided with an external annular groove 27 which cooperates with a retaining collar 28 provided with set screws 29 to engage the annular groove 27. The collar 28 engages the bottom of the block 10 to hold the latter against the shoulder 26 but enough clearance is provided to permit turning the block 10 about the vertical axis of the assembly.

When rigidly mounting the manifold on a cylinder valve fitting V the lower threaded portion of the stem 20 is screwed into the valve fitting V until the hemispherical lower portion 24 of the post 21 is firmly seated in a seat within the fitting so as to place passage 23 in communication with the cylinder outlet. As is clearly shown in Fig. 3, the overall height from the top of the valve fitting V to the top of an elbow 30 threaded over the upper portion of the post 21 is relatively small when compared with manifolds employed heretofore. Of course, when a regulator 31 is attached to the coupler block 10, the overall height may be increased somewhat, nevertheless the height of the improved arrangement is still much less than in the prior arrangements, thereby making it much easier for the operator to connect and disconnect the manifold. Moreover, this compact and flexible manifold arrangement reduces accidental breakages, requires less space for installation and is easier to handle and install than the cumbersome manifold assemblies heretofore employed.

With the use of oxy-fuel mixtures for various metal-working operations, it is not unusual for flashbacks to occur. It is essential to arrest the rearward progress of such flashbacks before any permanent damage to the equipment occurs. Therefore, each gas inlet socket 16 is provided with a suitable adaptor 32 for connecting a flash arrester 33 to the coupler block 10. The flash arrester 33 in this instance is similar to the one disclosed in United States Patent No. 2,391,592 issued in my name.

For conducting gas from the axial gas passage 23 to the gas receiving and discharging chamber 12 there is provided a short, high-pressure flexible hose or conduit 34 having coupling nuts 35 at both ends which are threaded into the elbows 30 and 36. The elbow 36 is threaded into a flash arrester cap 37 to establish communication between the cylinder C and the gas chamber 12.

For establishing communication between the remaining flash arresters 33 and the additional cylinders, suitable flexible hoses 38 are provided which are identical to the hose 34. One end of each of the hoses 38 is attached directly to the flash arrester cap 37 provided with the flash arresters 33 while the opposite end of each of the hoses 38 is threaded into a suitable attachment 39, as shown in Fig. 6, adapted to be coupled to the

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valve fitting of a cylinder to drain compressed gas therefrom.

Gas in the receiving and discharging chamber 12 is discharged through the single outlet socket 17 into the inlet of a pressure regulator 31; from the outlet of the regulator 31 the gas is delivered to a suitable service conduit S.

The improved manifold preferably is connected to a group of cylinders by first mounting the coupler block and its supporting assembly on the central valve fitting of a centrally located cylinder of the group, as shown in Fig. 1; then the several flexible conduits 38 are connected to the central valve fittings of the adjoining cylinders. When so mounted upon its supporting cylinder, the rotatable coupler block with the flexible conduits 38 connected thereto have important practical advantages; a substantial amount of adjustment is afforded by the freedom of the coupler block to turn relatively to its mounting post assembly both while the other cylinders are being manifolded to it and after the cylinders are connected together, and the flexibility of the connecting conduits 38 further facilitates the installation and use of the manifold, especially when the cylinders stand on an uneven surface or are unequal distances from the cylinder that supports the coupler block. Although the manifold disclosed in Figs. 1 to 4 inclusive is provided with attachments to withdraw gas simultaneously from five cylinders, suitable plugs 40 are provided which are attachable to the cylinder valve attachments 39 to close one or more of the latter when fewer than five cylinders are to be drained.

What is claimed is:

1. The combination with a manifold for gas pressure cylinders having a coupler block to which substantially horizontally diverging inlet lines are connected for attachment to a plurality of cylinders, a backfire arrester in each line between said block and the cylinders to be connected thereto, said block being provided with a chamber to which the inlet lines lead, provided with an outlet passage also diverging from said chamber and block for connection to a pressure regulator, and provided with a threaded stem for attachment to and support on another gas pressure cylinder, said stem being hollow and forming a passage through which gas from said supporting cylinder may pass, of the improvement for facilitating the connection of said inlet lines to their respective cylinders and for enabling the height of said block above the cylinder on which it is supported to be reduced by eliminating the need for a part of polygonal cross-section to which a wrench is applied having to be placed out of sight between said block and cylinder, said improvement comprising said block being rotatable on said stem above the threaded portion thereof, shouldered means fixed with respect to said stem for supporting said rotatable block and limiting the same against movement longitudinally of said stem, a portion of said stem above said block being of polygonal cross-section to which a wrench may be applied in tightening said stem, said chamber lying radially outside an inner wall of said block and extending around said stem, said block having an outer wall spaced radially from its inner wall and a flexible tube between one of said generally horizontal inlet line connections to said block and said stem passage above said block.

2. A manifold for gas pressure cylinders according to claim 1 in which said outer wall of said

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block is hexagonal and the inner wall is circular.

3. A manifold according to claim 1 in which backfire arresters are supported by said block and located in each inlet passage contiguous said block.

4. A manifold according to claim 1 in which said stem contains a tubular post the upper end of which is above said stem and attached to said flexible tube.

5. A manifold according to claim 4 in which said post is longer than said stem and projects beyond the stem at each end, the lower end of said post being hemispherical in shape and shouldered to extend beyond the end of said stem whereby said post end is adapted to be clamped between the lower end of said stem and a seat in said fitting.

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