Oct. 17, 1961 A. L. BUONACCORSI 3,004,777

OPERATING ROOM OVERHEAD GAS SERVICE SYSTEM AND FIXTURE THEREFOR

Filed Oct. 20, 1955 3 Sheets-Sheet 1

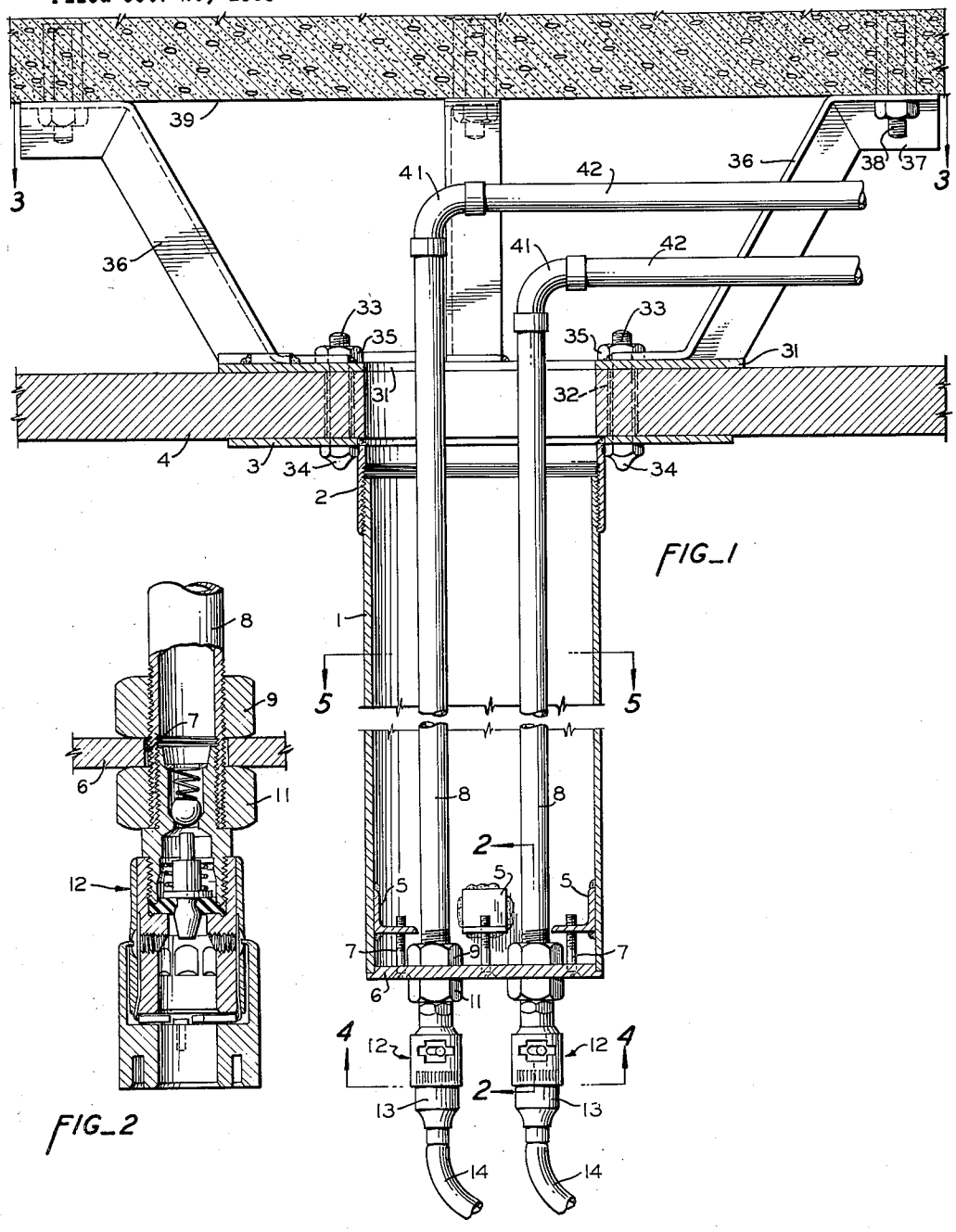


FIG_1

FIG_2

INVENTOR.
ALPHONSE L. BUONACCORSI

BY Mellin and Hanscom

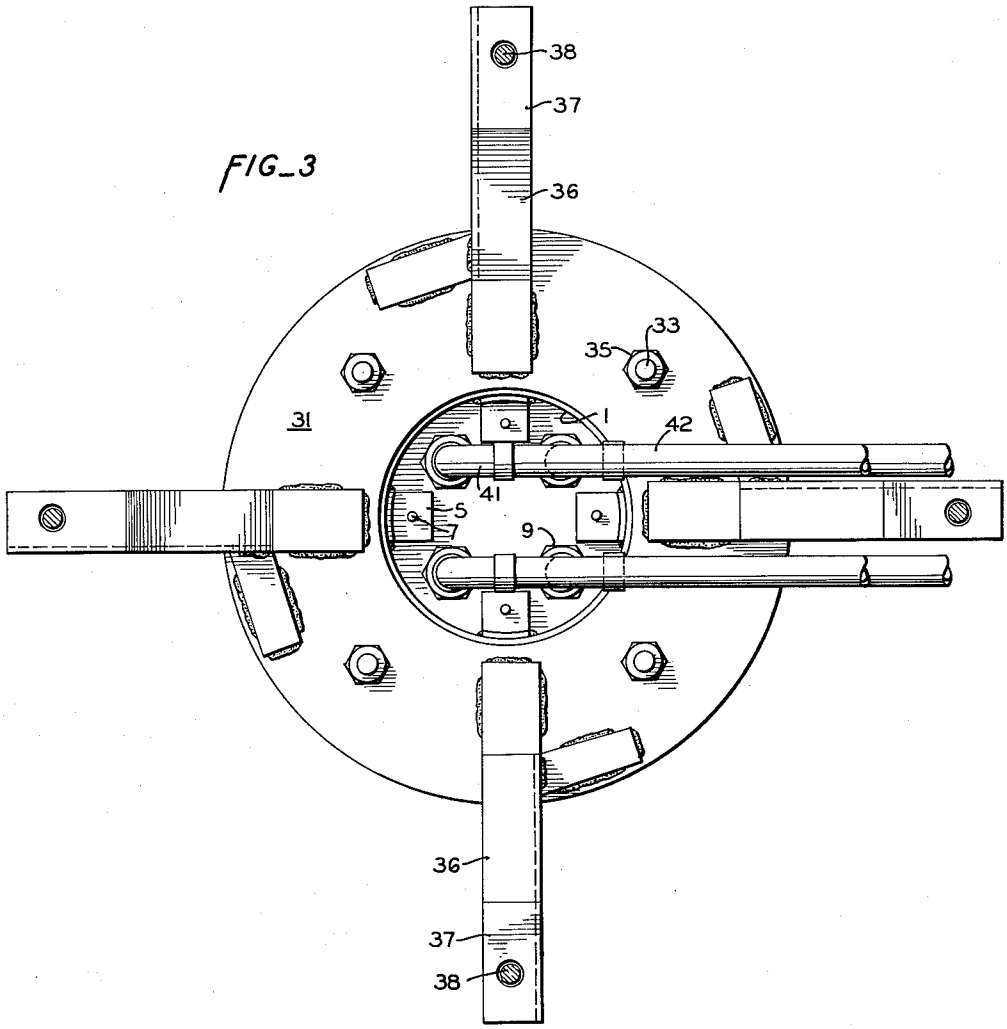
ATTORNEYS

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FIG_3



INVENTOR.
ALPHONSE L. BUONACCORSI
BY
Mellin and Hanscom
ATTORNEYS

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OPERATING ROOM OVERHEAD GAS SERVICE SYSTEM AND FIXTURE THEREFOR

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FIG_6

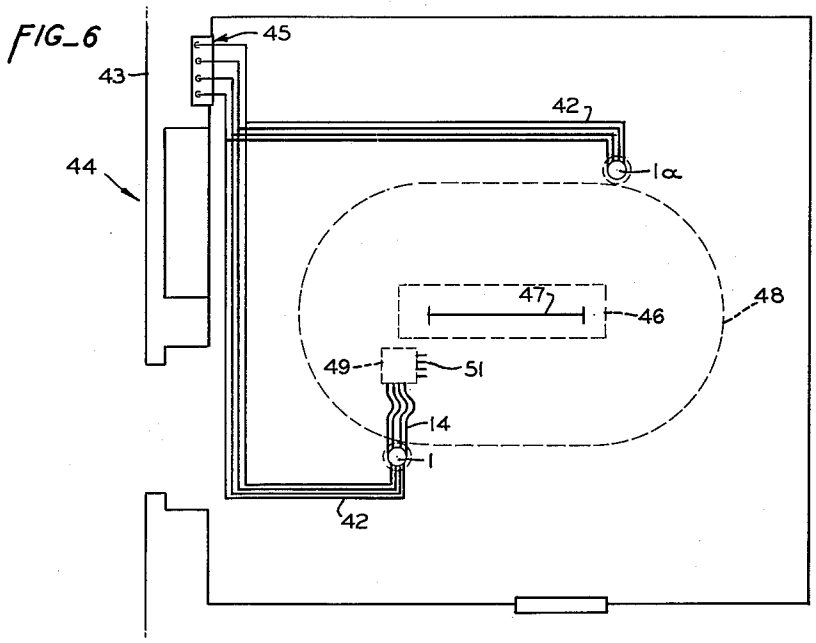


FIG_4

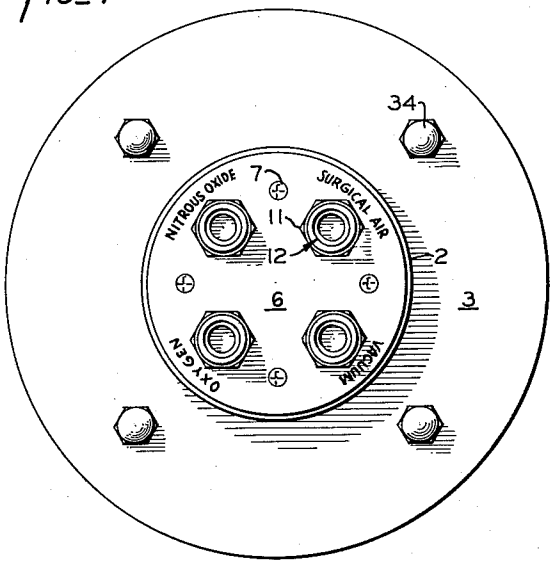
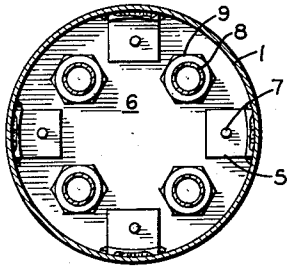


FIG_5



INVENTOR.
ALPHONSE L. BUONACCORSI
BY
Mellin and Hanscom
ATTORNEYS

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3,004,777

OPERATING ROOM OVERHEAD GAS SERVICE SYSTEM AND FIXTURE THEREFOR

Alphonse L. Buonaccorsi, San Leandro, Calif., assignor to Logan Hospital Equipment Co., Glendale, Calif., a corporation of California

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1 Claim. (Cl. 285—64)

This invention relates to and in general has for its object the provision of an operating room overhead gas service fixture and system.

As is well known, various operations require the use of vacuum, surgical air, nitrous oxide, and oxygen, all of which for the sake of convenience will hereinafter be referred to as gas.

Currently, a patient is supplied with such gases from a castored service cabinet or anaesthetizing machine having detachable hose connections with a valved cabinet recessed in one of the walls of the operating room. Connected to the service cabinet through suitable valves mounted therein are hose sections provided at their free ends with suitable attachments by which any selected gas can be administered to the patient by the surgeon or or an attendant.

Preliminary to performing an operation the surgeon designates the location of the service cabinet desired by him relative to the operating table, the latter being normally positioned centrally of the operating room.

Regardless of the location of the service cabinet which in all cases has to be adjacent the operating table, the hoses extending between the service cabinet and the wall cabinet obstruct the free passage around the operating table and therefore create an inconvenient and hazardous condition.

More specifically, the objects of this invention include the provision of a gas service system and ceiling fixture therefor wherein the required gases (including vacuum) from a valved wall cabinet are piped through the walls and ceiling of an operating room to each of a pair of spaced ceiling fixtures located above and to one side or the other of the operating table station or zone, and wherein selectively communication between either of said fixtures and a castored service cabinet located adjacent said operating table station can be established by suitable hose sections prior to the performance of an operation and as designated by the attending surgeon.

A further object of this invention is the provision of a ceiling fixture for the purpose above described substantially free of dust catching ledges and surfaces and which can be easily installed.

This invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description where those forms of the invention which have been selected for illustration in the drawings accompanying and forming a part of the present specification, are outlined in full. In said drawings, one form of the invention is shown, but it is to be understood that it is not limited to such form, since the invention as set forth in the claim may be embodied in other forms.

Referring to the drawings:

FIG. 1 is a vertical mid-section of a fixture embodying the objects of my invention and installed in the ceiling of an operating room.

FIG. 2 is a section taken on the section line 2—2 of FIG. 1.

FIG. 3 is a horizontal section taken on the section line 3—3 of FIG. 1 showing the structure used within the ceiling for supporting my fixture.

FIG. 4 is a section taken on the section line 4—4 of FIG. 1.

FIG. 5 is a horizontal section taken on the section line 5—5 of FIG. 1, and

FIG. 6 is a diagrammatic view of an installation of my system in an operating room.

The fixture illustrated in these various figures comprises a cylindrical metal can 1 externally threaded at its upper end for the reception of a coupling collar 2. Welded to the upper end of the collar 2 is a radially extending, annular flange 3 arranged to lie flush with the lower face of a furred sub-ceiling 4.

Welded to the interior of the can 1, adjacent its lower end, are a plurality of lugs 5, and receivable over the lower end of the can is a peripherally grooved circular coverplate 6. Extending through the plate 6 and having threaded engagement with the lugs 5 are machine screws 7. Extending through the coverplate 6 are four sections of tubing 8, each threaded at its lower end for the reception of lock nuts 9 and 11, one on either side of the coverplate.

Threaded into the lower end of each of the four tubing sections 8 is a conventional valved hose coupling member 12 to which a complementary hose coupling 13, connected to a hose section 14, can be quickly and detachably secured and keyed. Each of the four pairs of mating couplings 12 and 13 should be differently keyed so that the hose sections cannot be interchanged accidentally. As is standard in coupling units of this character, the attachment of one of the couplings 12 to its mating coupling 13 opens the valve incorporated in the coupling 12 thereto to establish communication between the corresponding tubing and hose sections 8 and 14. Although the coupling 12 has been shown in some detail in FIG. 2, this is unessential, for couplings of this character are purchasable on the open market and consequently are not now per se subject to patent protection.

Overlying the sub-ceiling 4 in substantial vertical registration with the can flange 3 is an annular ring 31, and extending through holes formed in the ceiling are a plurality of spacer nipples 32 of a length substantially equal to the thickness of the ceiling. Extending through each of the spacer nipples 32 is a bolt 33 preferably provided at its lower end with an acorn type of head 34 and having a nut 35 threaded on its upper free end. As a result of this construction, the can 1 is firmly clamped to the sub-ceiling 4.

Welded to the ring 31, preferably in symmetrical arrangement, are a plurality of suspensions or straps 36, each provided at its upper end with an outwardly extending flange 37 arranged to be secured as by bolts 38 to a concrete ceiling slab 39 or to ceiling joists, depending upon the particular type building construction involved. It will therefore be seen that although the can 1 is attached to the furred sub-ceiling 4, its load is preferably carried by the ceiling proper through the suspension or hanger straps 36.

As illustrated in FIG. 1, and diagrammatically indicated in FIG. 6, each of the four tubing sections 8 communicates through a suitable elbow 41 and piping 42 located between the sub-ceiling 4 and ceiling slab 39 and within the walls 43 of an operating room generally designated by the reference numeral 44, with one of four manually operated valves (not shown) located with a cabinet 45 recessed within one of the walls 43. The four valves respectively communicate with a suitable source of nitrous oxide, surgical air, vacuum, and oxygen.

Illustrated in FIG. 6 is a typical layout of an operating room incorporating the objects of my invention, wherein an operating table 46 is located substantially centrally of the room so as to be accessible from all sides thereof. Suspended from the ceiling above the table 46 is a lighting fixture 47 laterally movable over the closed path 48. Conveniently located adjacent the table 46 is a service

cabinet or anaesthetizing machine 49. Provided in the machine 49 in accordance with current practice are four valves arranged to be detachably connected to the lower ends of the hose sections 14 by keyed couplers.

Mounted in the ceiling 4 above and to one side of the closed path 48 is one of the fixtures or cans 1 above referred to, and similarly mounted in the ceiling at a diametrically opposed point is another identical fixture 1a, both fixtures being piped as above described to the wall cabinet 45.

Upon the designation of the desired location of the anaesthetizing machine 49 by the attending surgeon prior to an operation, communication between the valves of the machine 49 and the nearest fixture 1 is established by the depending hose sections 14.

Connected to the outer side of each of the four valves of the machine 49 are gas administering hose sections 51 of sufficient length to reach the patient being operated upon, and provided on their free ends with suitable attachments for this purpose.

The installation above described is preferably made during the construction of the operating room so that all piping can be concealed and so that the operating room will be as free as possible of all surfaces and ledges on which dust can accumulate. For the same reason, the design of the can 1 and all exposed associated parts thereof should be such as to avoid dust-gathering surfaces, ledges, and shoulders.

As a result of this system, it will be seen that vacuum or gases can be made available at anaesthetizing machine 49 through the medium of the depending hose sections 14, the tubing sections 8 of either of the cans 1, the piping connecting the tubing sections 8 with the recessed wall cabinet 45 and the valves of the wall cabinet, and that consequently a clear passageway around the operating table can be maintained.

After the valves of the anaesthetizing table have been connected with the selected ceiling fixture or can 1, all of the valves in the wall cabinet 45 are opened, thereby making vacuum, nitrous oxide, oxygen, and surgical air available at the valves of the anaesthetizing machine 49. Here it should be noted that the normally closed, spring biased valves incorporated in the couplings 12, are automatically opened when the coupling 13, mating with the coupling 12, is coupled thereto, this being a feature inherent in couplings of this character.

Although each of the couplings is labeled with the name of the gas which passes through, this is not necessary, for all couplings used are selectively keyed so as to make it impossible to cross-connect the valves of the anaesthetizing machine with the couplings 12.

I claim:

An operating room overhead service fixture arranged to be secured to a ceiling and comprising: a hollow cylinder externally threaded at its upper end; an internally threaded coupling collar threaded to the upper end of said cylinder, the upper end of said collar being provided with a laterally extending annular flange arranged to lie flush with the lower face of said ceiling; a plurality of lugs secured to and within said cylinder adjacent the lower end thereof; a plurality of conduits extending longitudinally through said cylinder; a plate arranged to close the lower end of said cylinder; means for securing the lower ends of said conduits to said plate; means for securing said plate to said lugs in sealing engagement with the lower end of said cylinder; and hose adapters mounted on the lower ends of said conduits beneath said plate.

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