

**March 26, 1935.**

**R. L. CLARK**

**1,995,962**

GAS OUTLET FOR USE IN PRISONS AND OTHER PLACES

Filed Oct. 17, 1933

2 Sheets-Sheet 1

Fig. 1.

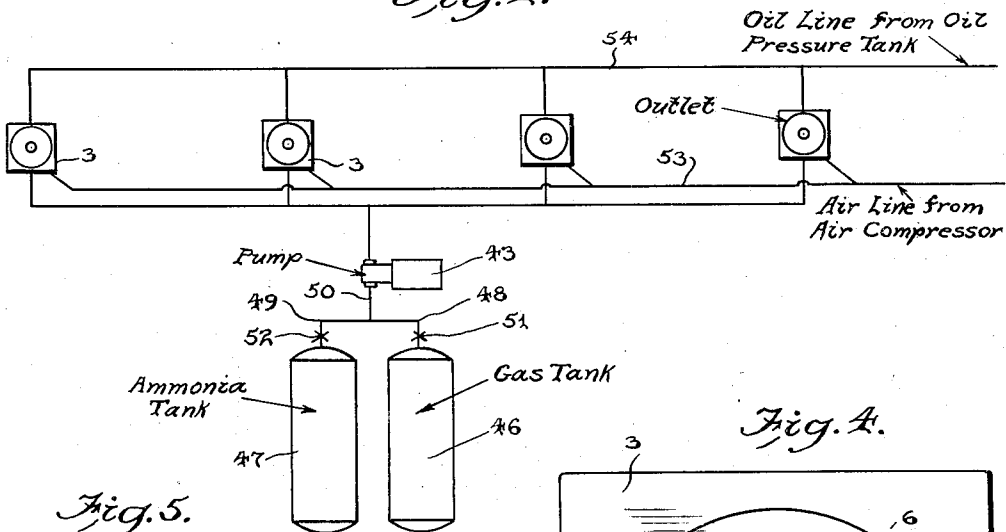


Fig. 4.

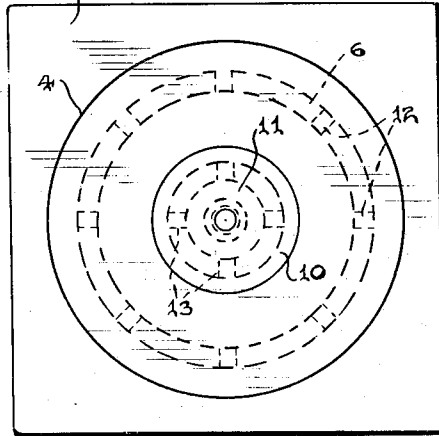


Fig. 5.

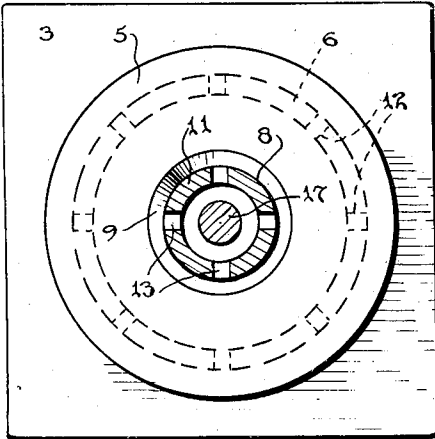


Fig. 6.

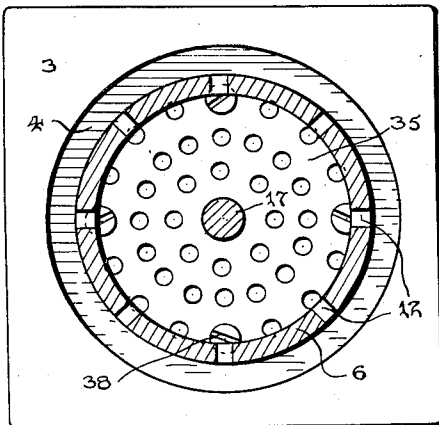
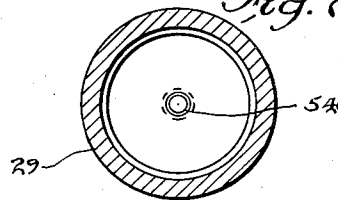



Fig. 7.



Raymond L. Clark, <sup>Inventor</sup>

Sy  Attorney

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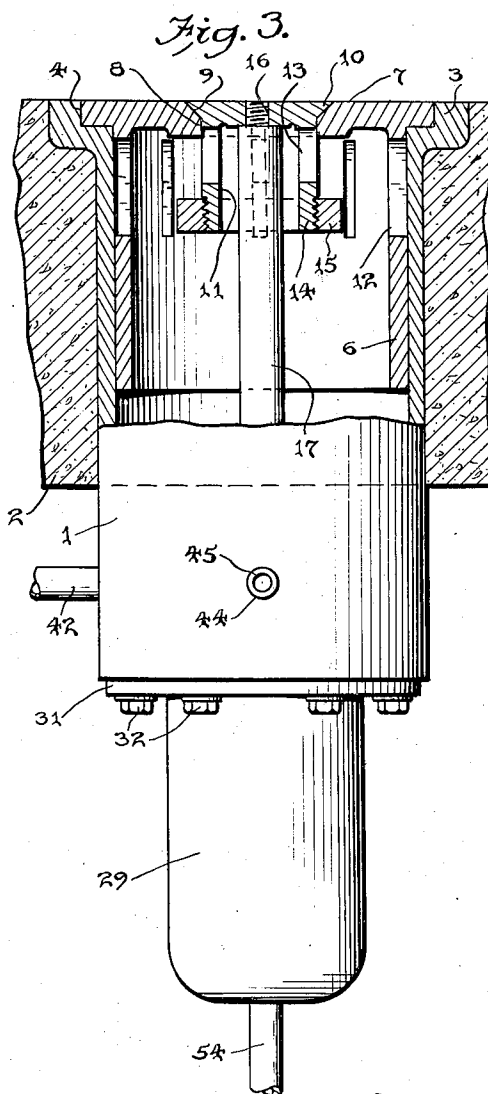
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2 Sheets-Sheet 2



Inventor

Raymond L. Clark,

विष्णु

Attorney

## UNITED STATES PATENT OFFICE

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GAS OUTLET FOR USE IN PRISONS AND  
OTHER PLACES

Raymond L. Clark, Rochester, N. Y., assignor to  
Armorite Equipment Incorporated, Rochester,  
N. Y., a corporation of New York

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4 Claims. (Cl. 299-144)

The invention relates to a gas outlet for use in prisons and other places liable to riot.

The object of the present invention is to provide a simple, practical and comparatively inexpensive gas outlet of sturdy construction designed for use in prisons and other places where riots are likely to occur, and adapted to be securely anchored in a floor and normally presenting a closed exterior so as to be completely inaccessible to unauthorized persons and capable of remote operation to expose successively an auxiliary and a main gas outlet for discharging and diffusing gas or ammonia and capable of rendering helpless persons surrounding the outlet so that a riot or similar unauthorized disturbance may be easily and quickly quelled without serious injury to the participants or any injury to attendants.

A further object of the invention is to provide a gas outlet of this character which when operated to expose the auxiliary and main gas outlets will effectually prevent prisoners or other persons in the vicinity of the gas outlet from interfering with its operation.

A further object of the invention is to enable the atmosphere of the room or other place in which the gas outlet is installed to be readily cleared of the gas after a riot or disturbance has been subdued and it is desired to restore the room to a condition in which attendants or other persons in charge may safely enter the room for removing and restoring persons overcome by the gas and other purposes.

A further object of the invention is to provide a gas outlet device equipped with an interiorly arranged mixing chamber and provided with means for introducing both air and gas into the same and for producing a thorough mixture thereof prior to the discharge of the gas from the outlet so that a sufficient amount of air may be supplied to carry the gas and to insure an as extensive diffusion of the gas as desired.

With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts herein after fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—

Figure 1 is a diagrammatic view of a plurality of gas outlets and means for supplying fluid pressure for opening the outlets and for discharging gas and air through the outlets and for also discharging ammonia to neutralize the gas.

Fig. 2 is a longitudinal sectional view of one of the gas outlets, showing the same open.

Fig. 3 is a similar view partly in elevation, the gas outlet being closed.

Fig. 4 is a plan view of the gas outlet, the parts being arranged as illustrated in Fig. 3.

Fig. 5 is a horizontal sectional view on the line 5-5 of Fig. 2.

Fig. 6 is a horizontal sectional view on the line 6-6 of Fig. 2.

Fig. 7 is a horizontal sectional view on the line 7-7 of Fig. 2.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention the gas outlet device comprises in its construction a vertical cylindrical housing 1 of heavy cast metal designed to be securely anchored in a concrete floor 2 of a prison or other place where riots or other unauthorized disturbances are liable to occur. While the gas outlet is particularly advantageous for use in prisons for controlling convicts, it will be found advantageous for various other places where unauthorized gatherings of persons are likely to occur and where it may become necessary to disperse such gatherings. The cylindrical housing which is open at the top and closed at the lower end 2<sup>a</sup> is provided at its upper end with an annular enlargement 3 provided in its upper face with an annular recess 4 forming a seat for a marginal horizontally disposed gas diffusing flange 5 of a main gas outlet member 6 telescoping within the cylindrical housing and conforming to the configuration of the same and guided by the outer portion of the housing 1 which forms a closed guide for the main telescoping gas outlet member 6. The upper edge of the vertical housing 1 is flush with the floor 2 and when the main telescoping outlet member 6 is in its lowered position, as illustrated in Fig. 3 of the drawings, the upper end thereof is flush with the floor, the marginal horizontal flange 5 which forms an extension of a top wall 7 of the said member 6 being received in the annular recess 4.

The cylindrical main gas outlet member is open at the lower end and is closed at the upper end by the said end wall 7 which is provided with a central opening 8 beveled at the upper portion at 9 and receiving a beveled marginal flange 10 of an auxiliary gas outlet member 11 which tele-

scopes into the main gas outlet member. The gas outlet members constitute telescoping nozzles which are adapted to be projected successively beyond the upper end of the housing by the means hereinafter described. The main gas outlet member is provided in its sides adjacent its outer end with apertures 12 for the discharge of gas and the said apertures 12 are preferably in the form of narrow vertical slots, as clearly illustrated in Figs. 2 and 3 of the drawings, but any other form of outlet aperture may, of course, be employed, as will be readily understood. The auxiliary gas outlet member which is cylindrical is provided in its sides with spaced apertures 13 preferably consisting of vertical slots, but any other form of outlet aperture may be employed for the discharge of gas from the device.

The cylindrical telescoping auxiliary gas outlet member is exteriorly threaded at its inner end 14 to receive a threaded stop collar or nut 15 which is adapted to abut against the lower face of the end wall 7 of the main gas outlet member, as clearly illustrated in Fig. 2 of the drawings. This limits the outward movement of the auxiliary outlet member 11 and enables the mechanism for projecting the gas outlet members to first open the auxiliary gas outlet member and then pick up the main gas outlet member and open the same.

The beveled flange 10 of the auxiliary outlet member presents an inclined lower edge or face which is adapted to diffuse gas issuing from the outlet apertures 13 for affecting persons immediately surrounding the gas outlet device and thereby prevent any attempt of such persons from interfering with the operation of the device. The gas outlet members form a closure for the upper end of the housing and the gas outlet device presents a closed upper exterior surface and the weight of the parts is such as to effectually prevent any attempt of unauthorized persons obtaining access to the interior of the gas outlet device and injuring the same.

The auxiliary outlet member is provided with a central threaded opening 16 which receives a reduced threaded end 14 of a vertical piston rod 17 and the latter extends downwardly through a central opening 18 in the lower end wall 2<sup>a</sup> of the housing. The lower end wall 2<sup>a</sup> of the housing is preferably provided with an annular flange or enlargement 19 surrounding the central opening 18 and forming a bearing or guide for the vertically movable piston rod 17. The lower end of the piston rod 17 is equipped with a piston head comprising upper and lower metal plates 20 and 21 and a plurality of intermediate plates 22 and 23 of leather and metal respectively.

The plates 20, 21, 22 and 23 consist of disks and plates 22 and 23 are alternately arranged so that the leather disks are supported at each face by a metal disk. Any other suitable construction of piston head may be employed and the piston rod is provided above the piston head with a stop collar 24 secured to the piston rod by a pin 25. Any other form of stop collar or shoulder may be provided for the piston rod and the piston head is held against the stop collar 24 by a nut 26 arranged on the lower threaded end 27 of the piston rod and locked against retrograde rotation by a cotter pin 28 or other suitable means.

The piston head of the piston formed by the said head and the rod 17 operates within a cylinder 29 disposed vertically below and depending from the lower end of the casing 1 and having an open upper end and a closed lower end or end

wall 30. The upper end of the cylinder 29 which is closed by the end wall 2<sup>a</sup> of the casing when the parts are assembled is provided at the upper end with an outwardly extending horizontal annular attaching flange 31 which is bolted to the lower end of the casing. The bolts 32 pierce the attaching flange 31 and are threaded into suitable sockets 33 in the lower end of the housing 1, as clearly illustrated in Fig. 2 of the drawings.

The housing 1 is provided at an intermediate point between its upper and lower ends with an interior annular shoulder 34 forming a seat for a gas diffusing plate 35 which constitutes a partition and forms a mixing chamber 36 of the lower portion of the housing.

The housing is provided adjacent the seat with a plurality of inwardly projecting lugs 37 to which the plate 35 is secured by screws 38 or other suitable fastening means. The plate 35 is provided with relatively small perforations 39 and the housing is provided at one side of the mixing chamber 36 with an inlet opening 40 in which is secured a threaded end 41 of a pipe 42 connected with a pump 43 for forcing a special gas or ammonia into the mixing chamber which is also provided with an inlet opening 44 to which an air pipe 45 is connected for supplying a certain amount of air to the gas for insuring a diffusion of the gas discharged from the gas outlet device so that gas will spread over the desired area to the desired height to insure a full effect of the gas discharged from the device. In practice, a special gas consisting of tear gas and an anæsthetic will preferably be employed so that when the gas is discharged it will affect the eyes of any person surrounding a gas outlet and render them helpless and will then anæsthetize the persons. After such persons have been completely overcome by the gas the room or other place in which the gas outlet device is installed may be cleared by discharging ammonia through the gas outlet device to neutralize the special gas which is an acid gas.

In Fig. 1 of the drawings the pump 43 and gas and ammonia tanks 46 and 47 are diagrammatically shown. Pipe connections 48 and 49 leading from the tanks 46 and 47 to the inlet pipe 50 of the pump 43 are designed to be provided with valves 51 and 52 which in practice will have remote control so that when the pump which is also designed to have a remote control is operated, either the special gas or ammonia may be delivered to the mixing chamber 36 under the desired pressure.

An air line 53 which is diagrammatically illustrated in Fig. 1 of the drawings is designed to be connected with an air compressor or other suitable source of compressed air for supplying the desired proportion of air to the mixing chamber 36 so that mixed air and gas will be discharged from the gas outlet device.

An oil line 54 from an oil pressure tank (not shown) or other means for supplying oil under pressure, is connected with the lower end of the cylinder 29 for introducing oil under pressure into the cylinder for forcing the piston upwardly to successively open the gas outlet members, but while oil is preferable for operating the piston, any other suitable fluid pressure medium may, of course, be employed.

The gas outlet device while particularly adapted for use in prisons may, of course, be advantageously employed in various other places at any location where unauthorized gatherings apt to lead to violence is liable to occur. When the

gas outlet device is closed it presents a solid imperforate upper exterior surface which will prevent access to the interior of the device. Also the auxiliary gas outlet member is relatively small and the fluid actuated piston for operating the gas outlet members has sufficient force to effectually prevent a person or persons standing on the auxiliary gas outlet member from interfering with the operation of the device.

When the auxiliary outlet member is projected upwardly to its open position sufficient gas will be discharged to render helpless any persons in the immediate vicinity of the gas outlet device and the main gas outlet may then be opened to effect a maximum discharge of the gas. The fluid pressure means for projecting the gas outlet members controls the discharge of the gas and the gas outlet members may be opened as slowly or as quickly as desired. When the oil pressure is released and the piston relieved thereof the weight of the gas outlet members and the piston will return the parts to their normal closed position and the cylinder 29 is provided at the upper end adjacent the marginal flange 31 with a vent opening 55 to permit the air in the cylinder above the piston head to escape when the piston head is raised and to permit air to enter the upper portion of the cylinder when the piston head descends by gravity to its normal position.

The cylinder is provided near its lower end with an interiorly arranged shoulder 56 forming a seat for the piston head when the latter is at the limit of its downward movement.

What is claimed is:

1. A gas outlet device including a housing open at the outer end and closed at the inner end and provided at a point intermediate its ends with a gas diffusion partition forming with the inner portion of the housing a mixing chamber for mixing air and a gas containing an anæsthetic, separate means for introducing air and the said gas under pressure into the mixing chamber, means normally forming a closure for the open end of the housing for controlling the discharge of the mixed air and gas from the housing, and means for operating the closure means.

2. A gas outlet device including a housing open at the outer end and closed at the inner end and provided at a point intermediate its ends with a gas diffusion partition forming with the inner portion of the housing a mixing chamber for mixing air and a gas containing an anæsthetic, separate means for introducing air and the said gas under pressure into the mixing chamber, means for cutting off the flow of the said gas and means

for introducing a neutralizing gas into the mixing chamber for restoring the atmosphere surrounding the outer end of the housing to normal condition, means normally forming a closure for the open end of the housing for controlling the discharge of the mixed air and gas from the housing, and means for operating the closure means.

3. A gas outlet device including a housing open at the outer end and closed at the inner end and provided at a point intermediate its ends with a gas diffusion partition forming with the inner portion of the housing a mixing chamber for mixing air and a gas containing an anæsthetic, separate means for introducing air and the said gas under pressure into the mixing chamber, means for cutting off the flow of the said gas and means for introducing a neutralizing gas into the mixing chamber for restoring the atmosphere surrounding the outer end of the housing to normal condition, a main gas outlet member telescoping into the outer end of the housing and having spaced outlets at the outer portion, an auxiliary gas outlet member telescoping into the outer end of the main gas outlet member, said members when at the limit of their inward movement forming a closure for the outer end of the housing, a removable collar threaded on the inner end of the auxiliary gas outlet member and arranged to engage the main gas outlet member for actuating the same when the auxiliary outlet member has moved outward a predetermined distance, a cylinder detachably secured to the inner end of the housing, and a fluid pressure actuated piston operating in the cylinder and having a piston rod extending through the inner end of the housing and through the mixing chamber and the gas diffusing partition and connected with the auxiliary gas outlet member for actuating the said members to permit the discharge of the mixed air and gas.

4. A gas outlet device including a housing open at the outer end and closed at the inner end and provided at a point intermediate its ends with an interior shoulder, a perforated diffusion plate secured to the housing at the said shoulder and forming with the inner portion of the housing a mixing chamber for mixing air and a gas containing an anæsthetic, separate means for introducing air and the said gas under pressure into the mixing chamber, means normally forming a closure for the outer end of the housing for controlling the discharge of the mixed air and gas from the housing, and means for operating the closure means.

RAYMOND L. CLARK.