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CARBON MONOXIDE DETECTOR

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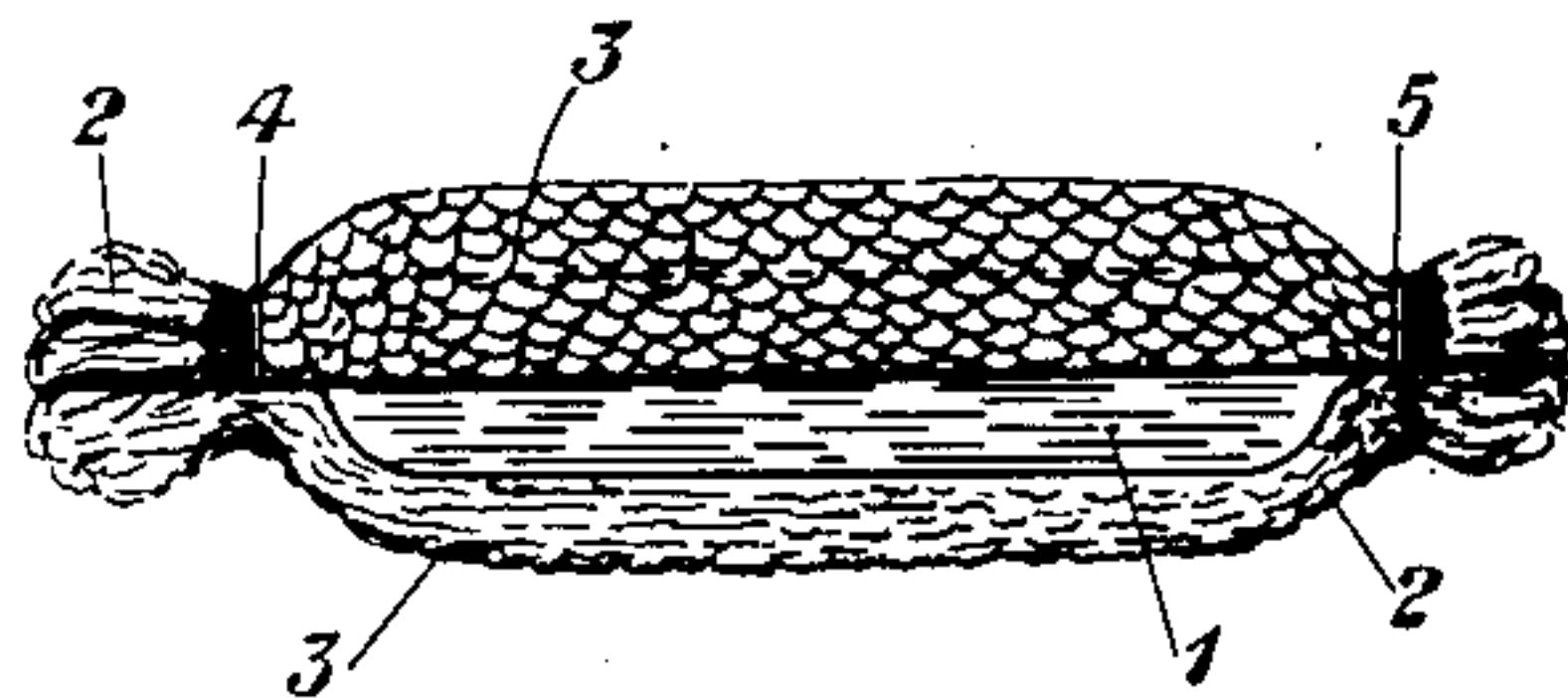


Fig. 1

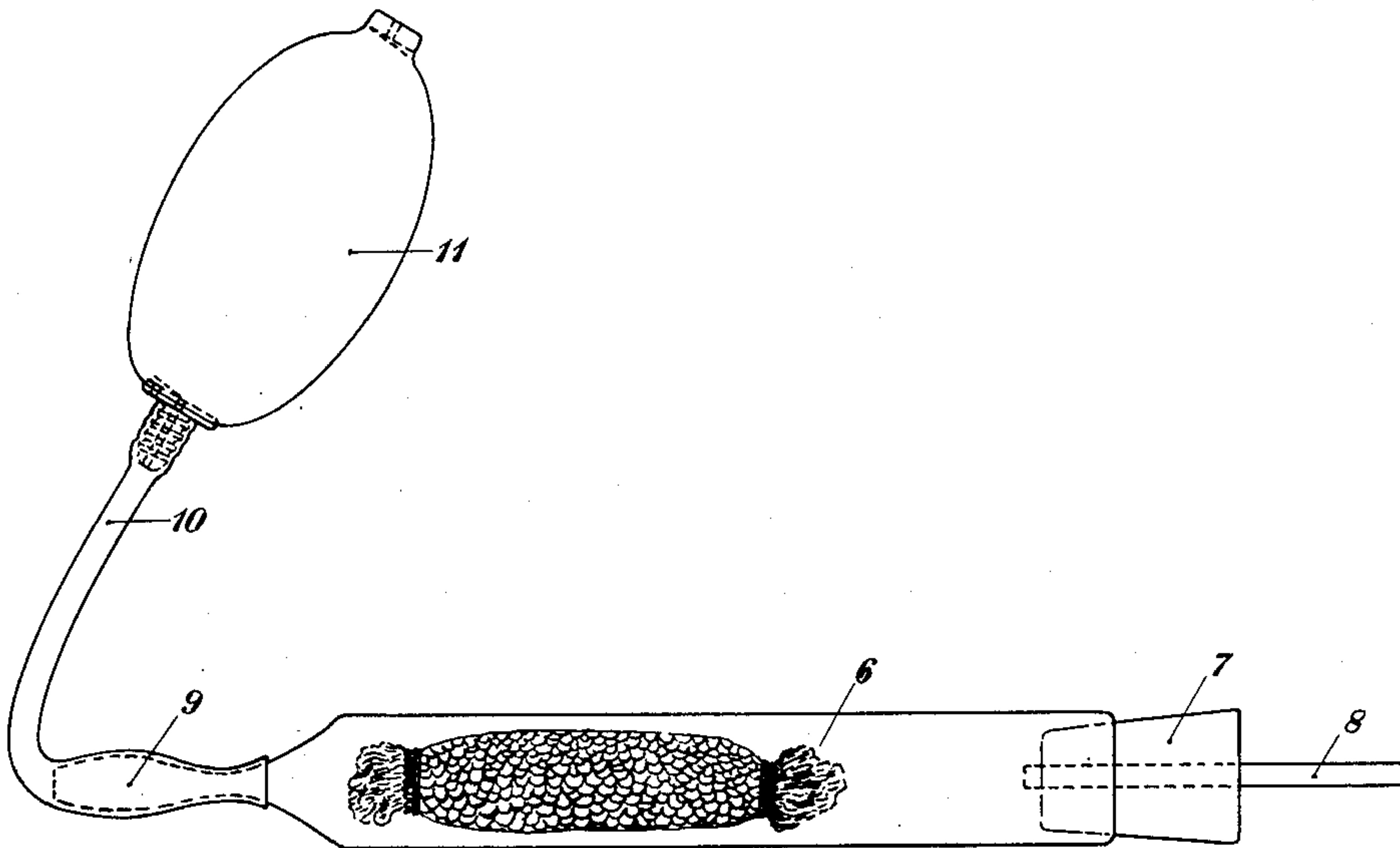


Fig. 2

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CARBON-MONOXIDE DETECTOR.

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This invention relates to detectors of odorless gas, and more particularly to commercially suitable means for detecting the presence of carbon monoxide gas in the air.

It is known that certain salts, notably palladium chloride, are reagents of carbon monoxide. The reaction of palladium chloride to carbon monoxide was made use of a number of years ago, and a means for detecting the presence of carbon monoxide in the air was devised, which was satisfactory for laboratory use or for use in fixed places such as factories and schools.

The problem then arose of furnishing commercial workers, such as cablemen, with means for promptly detecting the presence of carbon monoxide gas in confined spaces such as manholes. It has been proposed to supply such workers with strips of light colored absorbent paper impregnated with a solution of palladium chloride. While these strip detectors are of considerable use, there are certain disadvantages attached to them. As one example, in moistening the strips, the workers often make use of saliva unclean from tobacco, and the discoloration of the strip due to the tobacco, reduces the certainty of the test. There is also a likelihood of the reagent being removed by handling of the strips after they have been moistened for use. Furthermore, it has been found that when these strip detectors are carried about by the worker for a considerable period of time they become somewhat discolored and thus less satisfactory as means for promptly detecting the presence of the gas.

The object of applicants' invention is the provision of a detecting means which is small and readily portable, thus being suitable for commercial use, and which, in addition, is free of the disadvantages attached to the strip form of detector.

In general, applicants' device consists of a small glass vessel containing the reagent in solution, and a light colored absorbent covering for the vessel. When a test is to be made, the vessel is crushed and the covering moistened by the solution.

The invention will be more clearly understood when the following detailed description is read with reference to the accompanying drawing.

Figure 1 of the drawing shows a side view of applicants' vessel and covering, enlarged,

the lower half of the device being represented in cross section; Fig. 2 shows the covered vessel, after crushing, in association with suitable means for bringing in contact with the moistened cover a definite quantity of the air to be tested.

With reference to the details of Fig. 1, the glass ampoule 1 is easily frangible and contains a solution of the reagent. A suitable composition of the contents of this ampoule is as follows: one per cent palladium chloride, one per cent sodium chloride, forty per cent acetone and the balance distilled water. The purpose of an ingredient such as acetone is to lower the freezing point of the solution and also to increase the solubility of the salts. About the ampoule 1 there is placed a covering 2 of light colored cotton or other absorbent. The covering 2 is held in place about the ampoule by any suitable means, such as the thread network 3, and the ends of this network may be held in place by retaining threads 4 and 5.

When a test is to be made, the ampoule 1 is crushed, and the cotton covering 2 becomes moistened with the solution. Upon exposure to air containing carbon monoxide, this moistened covering turns dark, the degree of the discoloration indicating the degree of concentration of the carbon monoxide.

Fig. 2 shows an arrangement for bringing into contact with the covering, which has been moistened by the crushing of the ampoule, a definite quantity of the air to be tested. The ampoule and its covering are placed in a transparent container 6. One end of this container is closed by a rubber stopper 7, through which passes a small glass tube 8. The other end of the container, 9, is formed to receive a rubber tube 10, with which is formed a bulb 11 having a suitable double valve construction for one way passage of the air. By this arrangement, or by any other suitable means, a given quantity of the air is drawn into intimate contact with the moistened covering.

While the arrangement shown in Fig. 2 is desirable, it is obvious that the carbon monoxide gas can be detected by the simple operation of crushing the ampoule, covered as shown in Fig. 1, and exposing the device to the air which is to be tested.

It is to be understood that, while appli-

cants' invention has been described in a certain specific embodiment which is deemed desirable, it is capable of embodiment in other and different forms without a departure from the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A gas detector, comprising an easily frangible vessel containing a solution of salts including palladium chloride, and a covering for said vessel of a light colored absorbent material.

2. A gas detector, comprising an easily frangible vessel containing a solution of palladium chloride, and a covering for said vessel of a light colored absorbent material.

3. A gas detector, comprising a vessel containing a solution of salts including palladium chloride, and a covering therefor of a light colored absorbent material, the vessel being designed to be crushed when the detector is to be used, permitting the solution to moisten the covering.

4. A gas detector, comprising a vessel containing a solution of palladium chloride and a covering therefor of a light colored absorbent material, the vessel being designed to be crushed when the detector is to be used, permitting the solution to moisten the covering.

5. As a means, in combination, for de-

tecting the presence of carbon monoxide gas in the air, a vessel containing a solution of salts including palladium chloride, a covering therefor of a light colored absorbent material, said vessel being designed to be crushed when the detector is to be used, permitting the covering to be moistened by the solution, a transparent container into which the vessel after crushing and the covering may be inserted, and means for drawing through said container a definite quantity of the air to be tested.

6. As a means, in combination, for detecting the presence of carbon monoxide gas in the air, a vessel containing a solution of palladium chloride, a covering therefor of a light colored absorbent material, said vessel being designed to be crushed when the detector is to be used, permitting the covering to be moistened by the solution, a transparent container into which the vessel after crushing and the covering may be inserted, and means for drawing through said container a definite quantity of the air to be tested.

In testimony whereof, we have signed our names to this specification this 30th day of November, 1925.

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