

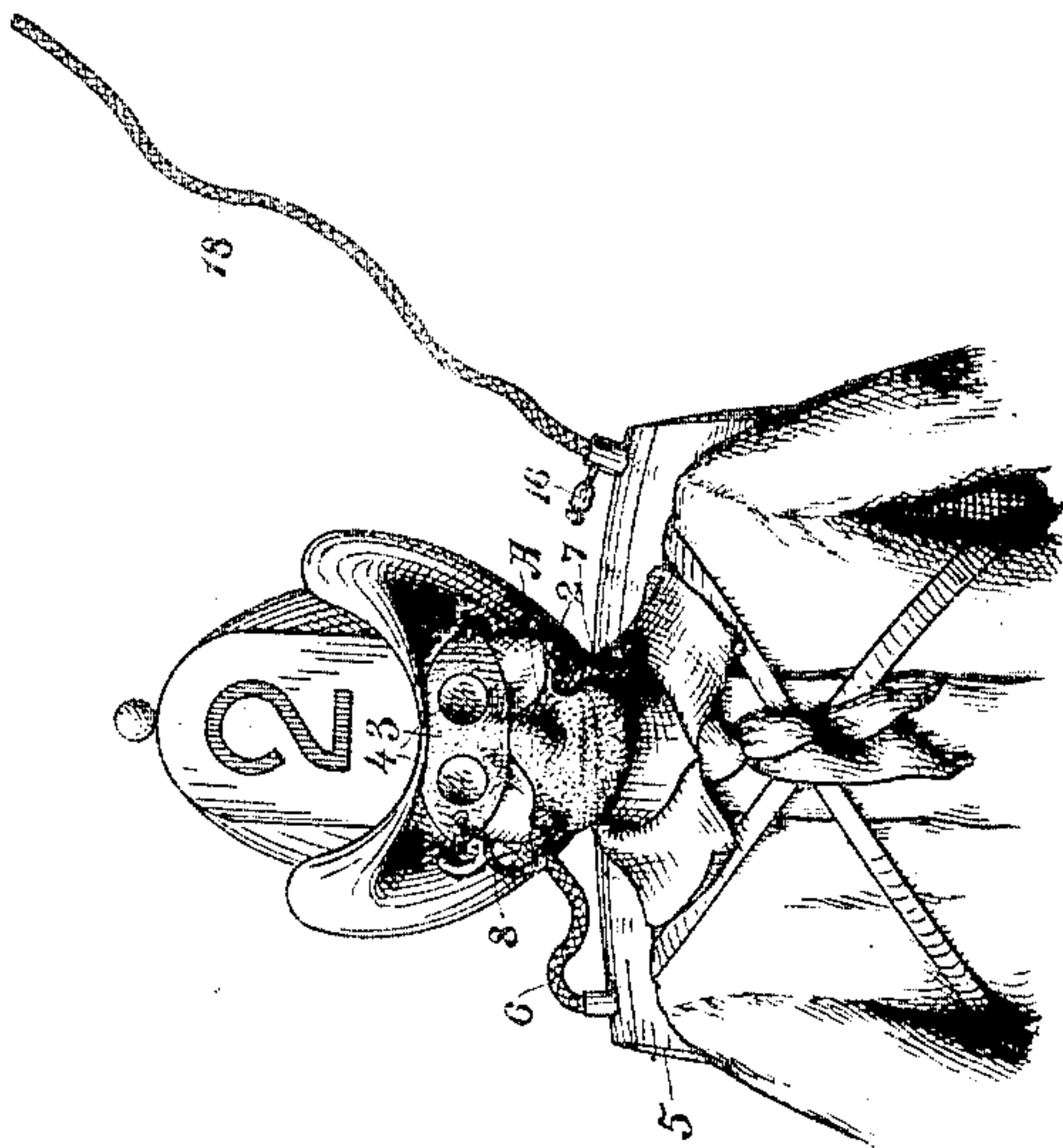
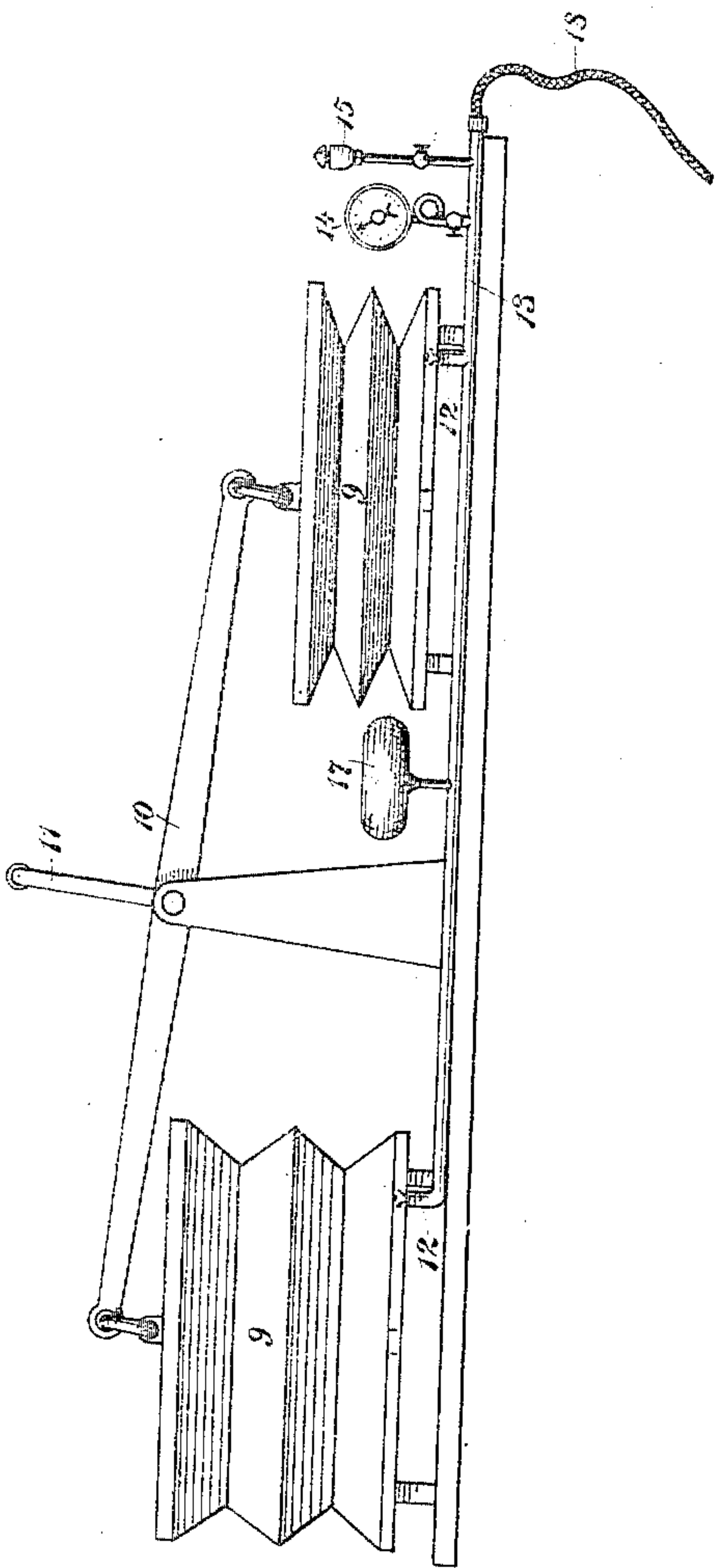
No. 667,840.

S. GUTHRIE.  
RESPIRATOR.

Patented Feb. 12, 1901.

(No Model.)

(Application filed May 24, 1900.)



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# UNITED STATES PATENT OFFICE.

SAMUEL GUTHRIE, OF SAN FRANCISCO, CALIFORNIA.

## RESPIRATOR.

SPECIFICATION forming part of Letters Patent No. 667,840, dated February 12, 1901.

Application filed May 24, 1900. Serial No. 17,789. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL GUTHRIE, a citizen of the United States, residing in the city and county of San Francisco, in the State of California, have invented an Improvement in Respirators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is especially designed for the protection of operatives working in places where they are subject to foul gases, to smoke in case of fires, and generally for protection against asphyxiation from any cause.

It consists of a mask or protector for the nose, mouth, and eyes, means for supplying air thereto, and a mechanism by which the air-supply can be brought from a distant point.

My invention also comprises details of construction which will be more fully explained by reference to the accompanying drawing, in which the figure is a general view of the whole apparatus.

An approved form of apparatus to be used for this purpose consists of a mask or covering A, which is fitted over the mouth and nose and secured by straps or equivalent holding devices, as at 2. The edges of this covering are drawn against the face so as to form an approximately close fit all around, and above the upper part is fitted the covering 3 for the eyes, having glasses 4, of any convenient form, through which the user can readily see. The eyepiece 3 as well as the mask A is fitted closely, so as to prevent the entrance of smoke or noxious gases.

For convenience the user carries about his person a flexible bag 5, which may be strapped upon the back or otherwise connected. From this bag an air-pipe 6 enters one side of the mask A and an escape-pipe 7 passes out from the other side.

8 is a small branch pipe connecting with the pipe 6 and leading into the eyepiece 3, so as to supply a current of fresh air about the eyes and exclude smoke or gas therefrom.

The flexible bag 5 is supplied through a pipe 18 from any distant point. As at present shown, it is connected with bellows or air-forcing mechanism, as shown at 9. I have

found that two pairs of bellows suitably mounted and having a fulcrumed reciprocating bar 10 connected with them and provided with a handle 11, by which it may be oscillated, serves the desired purpose. Pipes 12 connect with each of the bellows and are provided with suitable check-valves, and from these pipes the air is forced into a common main 13, which connects with the hose 8, and thus conducts the air to the user of the mask.

14 is a pressure-gage which shows the amount of pressure of air within the pipe.

This apparatus is useful for firemen who are obliged to enter buildings filled with dense smoke, and the hose can be a sufficient length to allow them to go as far as is necessary or safe. It is also very useful for employees about gas-works and in trenches where leaky gas-pipes are being exposed and in which the workmen are liable to become asphyxiated.

For purposes of communication between those at the air-forcing apparatus and the wearer of the mask I have shown whistles or equivalent sounding devices 15 and 16, the former being connected with the conducting-pipe 13 and the latter with the air-receiver 5 or at some convenient point in proximity therewith.

When the wearer of the mask is desirous to communicate with those at the air-forcing station, he does so by compressing the air-supply tube 8, which produces an excess of pressure within the pipe 13, and this will be sufficient to open the whistle-valve at 15 and allow the latter to be sounded. A signal-code being established, either one, two, or three signals may be given by as many compressions of the tube with an interval between.

If it is desired to communicate with the wearer of the mask, it is effected by means of a compressible bag 17, which is connected with the conducting-pipe 13 and is kept full of air by pressure from this pipe. By suddenly compressing this bag a wave of air is forced through the pipe 13, which will be sufficient to open the valve of the whistle at 16, and thus communicate with the mask-wearer.



It will be understood that the whistle-valves may be controlled by springs sufficiently light to be overcome by the sudden excess of pressure, but which will normally retain the valves closed under such air-pressure as is necessary to supply the operator with sufficient air for his needs.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a respirator of a mask or receptacle fitting over the mouth and nose of the wearer, an air supply and exhaust pipe connecting therewith, a glazed covering for the eyes forming a chamber interior thereto, and a supplemental air-tube connecting the main air-supply with said eye-covering.

2. In a respirator, a mask or covering fitting over the mouth and nose, a second covering for the eyes having glazed inspection-openings therethrough, an expansible bag carried upon the person of the wearer, a pipe by which air under pressure is supplied to said bag from a distant point, a pipe leading from the bag into the mouth and nose covering, a supplemental pipe leading from said supply-pipe to the eyepiece, and an escape-

pipe connecting with the opposite side of the mask.

3. The combination in a respirator, of a two-part mask fitting the mouth, nose, and eyes of the wearer, an expansible bag carried upon the person, a pipe connecting the bag with the mouth and nose section, and a second pipe connecting with the eye-section, and means for charging the bag from a distant point.

4. The combination in a respiratory apparatus of the face-mask, air-supply pipe and pressure apparatus, a whistle or sounder connecting with the pipe and located contiguous to the mask-wearer, an expansible bag connecting with the air-supply pipe contiguous to the air-forcing apparatus whereby a sudden increase of pressure in the pipe in addition to that supplied by the apparatus is effected by the compression of the bag.

In witness whereof I have hereunto set my hand.

SAMUEL GUTHRIE.

Witnesses:

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