

APPLICATION FILED JUNE 29, 1909. RENEWED MAR. 18, 1910.

Patented May 17, 1910.

2 SHEETS--SHEET 1.



M. PANIAN.

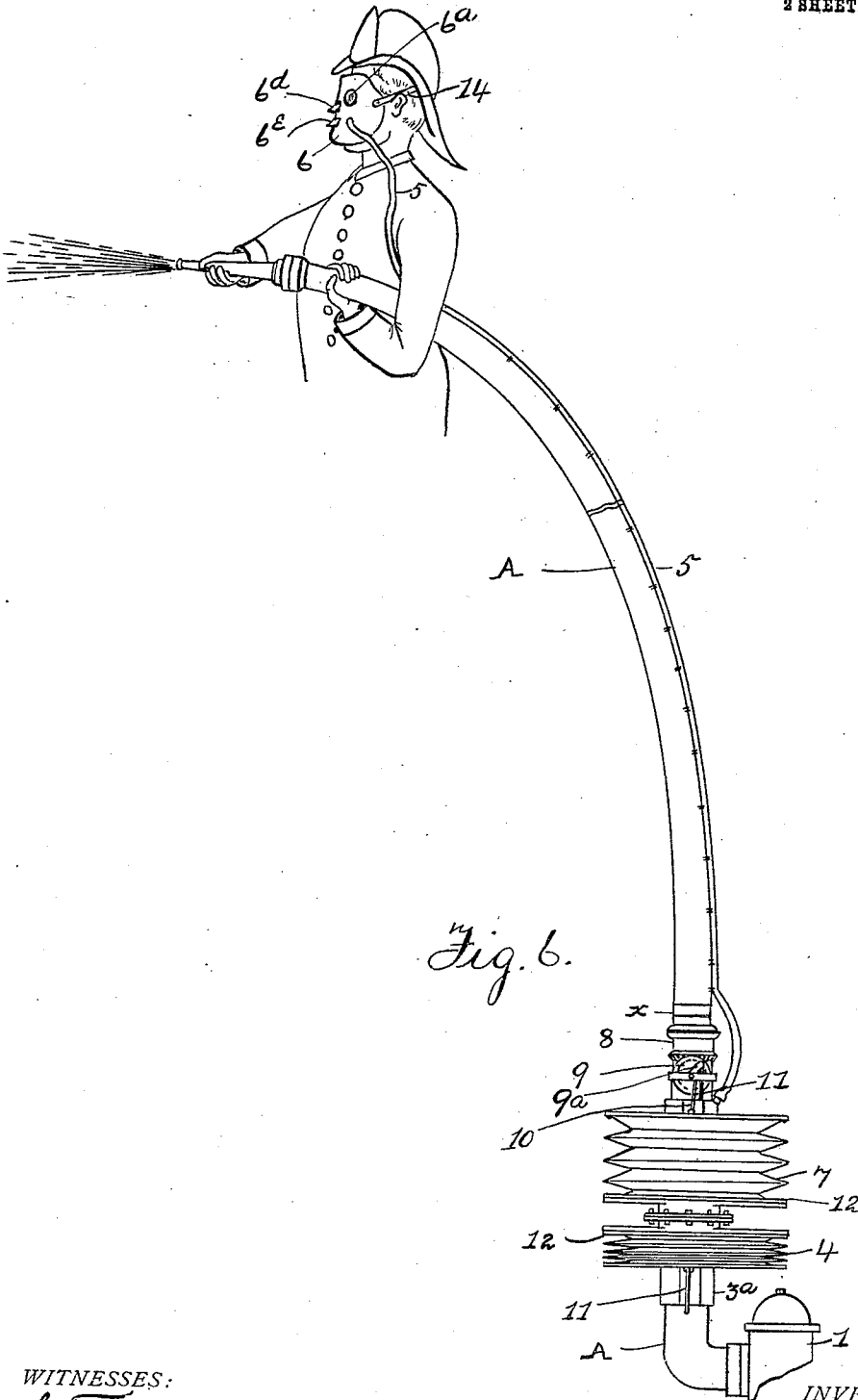
RESPIRATOR (SMOKE PROTECTOR).

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958,427.

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2 SHEETS—SHEET 2.



WITNESSES:

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RESPIRATOR, (SMOKE-PROTECTOR).

958,427.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MARTIN PANIAN, a subject of the Emperor of Austria-Hungary, residing at Eveleth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Respirators, (Smoke-Protectors;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to respirating apparatus, and has for its object the provision of a convenient apparatus for furnishing air to firemen engaged in fighting fire at locations where smoke is dense.

It consists of the constructions, combinations and arrangements of parts herein-after described and claimed.

In the drawings, Figure 1, is a side elevation partly in central vertical longitudinal section, and partly broken away, of a fire hose and hydrant showing my invention in combination therewith. Fig. 2, is a front elevation of a mask forming part of my invention, Fig. 3, is a top plan view of the primary power wheel forming part of said invention. Fig. 4, is a reduced transverse section on the line C—D of said invention, omitting the horizontal portion of said hose and omitting said hydrant. Fig. 5, is central vertical section of said mask from front to rear. Fig. 6, is a reduced front elevation of said invention.

In the drawings, 1 is a hydrant; A is a section of hose, of any suitable construction, form or material, preferably non-flexible between hydrant and the point X. Mounted on said section, are two air chambers, 2 and 3. Said air chamber 2 communicates with the free atmosphere through any suitable constantly open port as 3^a, which, in the form shown comprises a sleeve-pipe surrounding said section of hose. Said air chamber 3 does not communicate with the free atmosphere directly through said port. Secured to the under side of said chambers is a bellows 4, a port 2^b in the chamber 2, exhausts into said bellows which port is governed by a check valve 2^c. Said bellows is provided with an exhaust port 4^a which discharges into the chamber 3 and is governed by a check valve 3^a mounted upon the floor of said chamber 3. Said chamber 3, is provided with an exhaust port 3^b which

communicates through a flexible tube 5 with a face mask 6. Said mask is of any suitable construction, and is provided with closed windows 6^a of any suitable material, as mica, and with exhaust ports 6^b and 6^c respectively positioned in front of the wearer's nose and mouth and adapted to exhaust into the free atmosphere, said ports 6^b and 6^c are respectively governed by check valves 6^d and 6^e. Mounted upon said chambers is a bellows 7 communicating with said chamber 2 through a port 2^a governed by a check valve 2^e, through which port the exhaust may pass from the chamber 2 to said bellows 7. Said bellows 7 also communicates with said chamber 3 through a port 7^a through which said bellows 7 may discharge into said chamber 3. Said port 7^a is governed by a check valve 7^b. It will thus be observed that there is no communication between the chambers 2 and 3 except by way of one bellows or the other, and that the chamber 2 receives air from the free atmosphere and discharges it into the bellows, while the chamber 3 receives air from the bellows and discharges it into the mask. Inserted in said hose at any suitable point is a rotary section or primary power wheel of any suitable structure, as 8, adapted to be operated by the flow of water through the hose. In the form shown, said wheel is provided with fins 8^a and 8^b formed on its inner wall, whereby said wheel is operated. The wheel 8 is adapted at its periphery to engage an intermediate or secondary power wheel 9 exterior to said hose and adapted to rotate in a plane at right angles to said primary wheel, said intermediate wheel is provided with a crank shaft 9^a or equivalent, upon which are journaled at one end the connecting rods 10 and 11. Said rod 10 is connected at its opposite end to the upper end of the bellows 7, and said rod 11 is connected at its opposite end to the lower end of the bellows 4; said rod 11 preferably passing through a passage 11^a partitioned from said chambers by the partition wall 11^b. 12, 12, are rings for clamping the bellows to the chambers 2 and 3 and to horizontally extending flanges formed on said chambers and connecting said chambers together.

In operation, the mask being adjusted to the wearer's face, and the water being turned on at the hydrant, the stream rushes through the hose and in passing turns the wheel 8, which actuates the wheel 9, which by said

connecting rods extends one bellows and simultaneously collapses the other bellows, then extends the bellows which was first collapsed and simultaneously collapses the bellows which was first extended. Air from the free atmosphere passes into the chamber 2 through the port 3^a and thence into the expanding bellows, while at the same time air passes from the collapsing bellows into the chamber 3 and thence through said tube 5 to the mask. After being inhaled in whole or in part by the wearer of the mask, the air passes out of the exhaust ports in the mask to the atmosphere. Said mask may be secured in position by a head strap 14 of any suitable construction.

Having now described my invention, what I claim is:

1. The combination with a hose, of a bellows mounted thereon and provided with an inlet port to the free atmosphere, said port being governed by a check valve, a face mask provided with an exhaust port to the free atmosphere, an exhaust conduit extending from said bellows to said mask and adapted to exhaust into said mask, said conduit being governed by a check valve, a water wheel inserted in said hose and adapted

to be operated by the stream of water passing through said hose, means connected to said bellows for expanding and collapsing the same, said means being engaged by said water wheel and being adapted to be actuated by the same.

2. The combination with a hose, of two chambers mounted thereon one of said chambers being provided with a port communicating with the free atmosphere, a face mask communicating with the other of said chambers; a bellows mounted on said chambers above the same and adapted to receive air from the first said chamber and to exhaust such air into the second said chamber; a bellows secured to said chambers below the same and adapted to receive air from the first said chamber and to exhaust said air into the second said chamber; and means, including a water wheel inserted in said hose, for collapsing and expanding said bellows alternately with respect to each other.

In testimony whereof I hereunto affix my signature, in presence of two witnesses.

MARTIN PANIAN.

Witnesses:

JOHN W. PETERSON,
MARJA PANIAN.