

908,005.

Fig. 3.

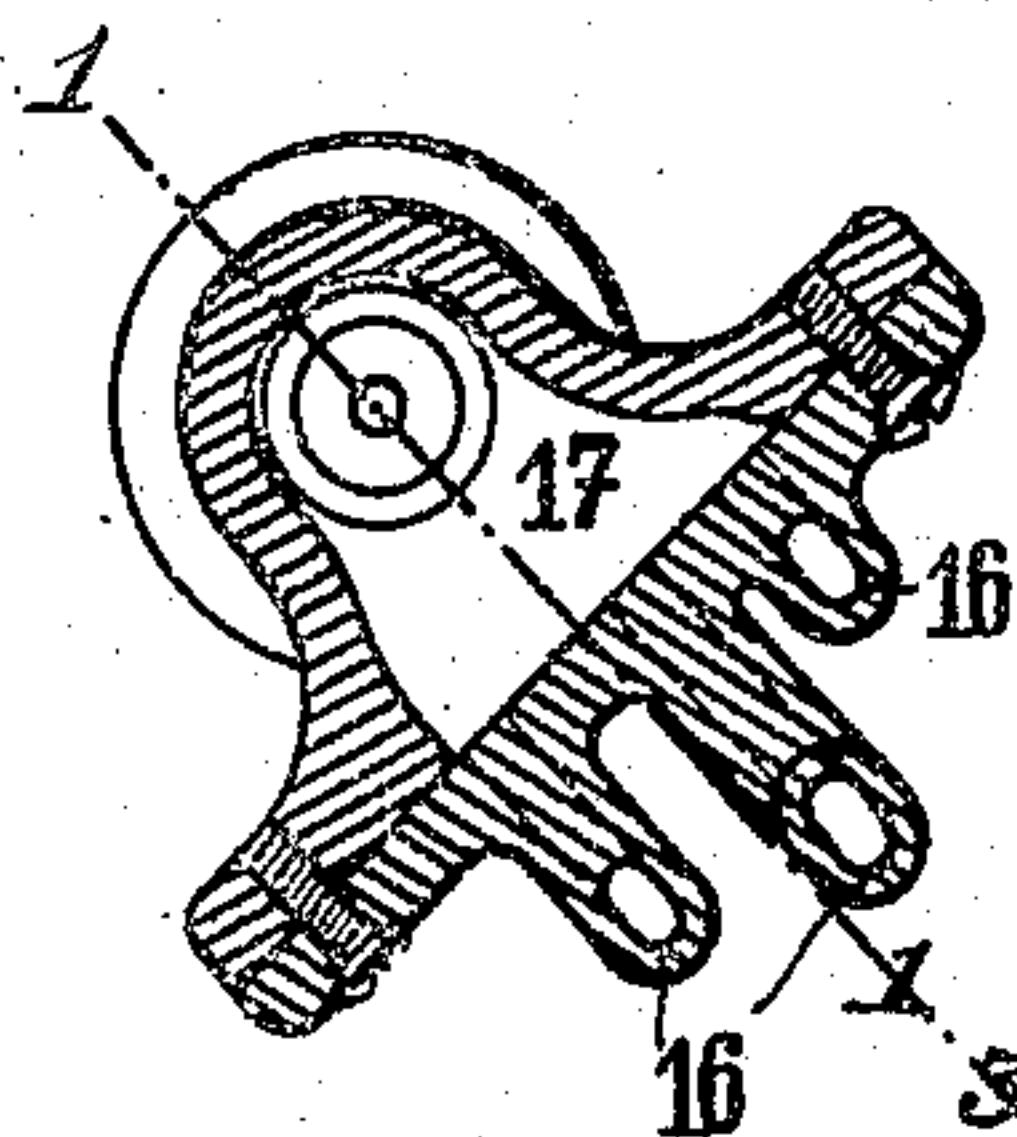


Fig. 1

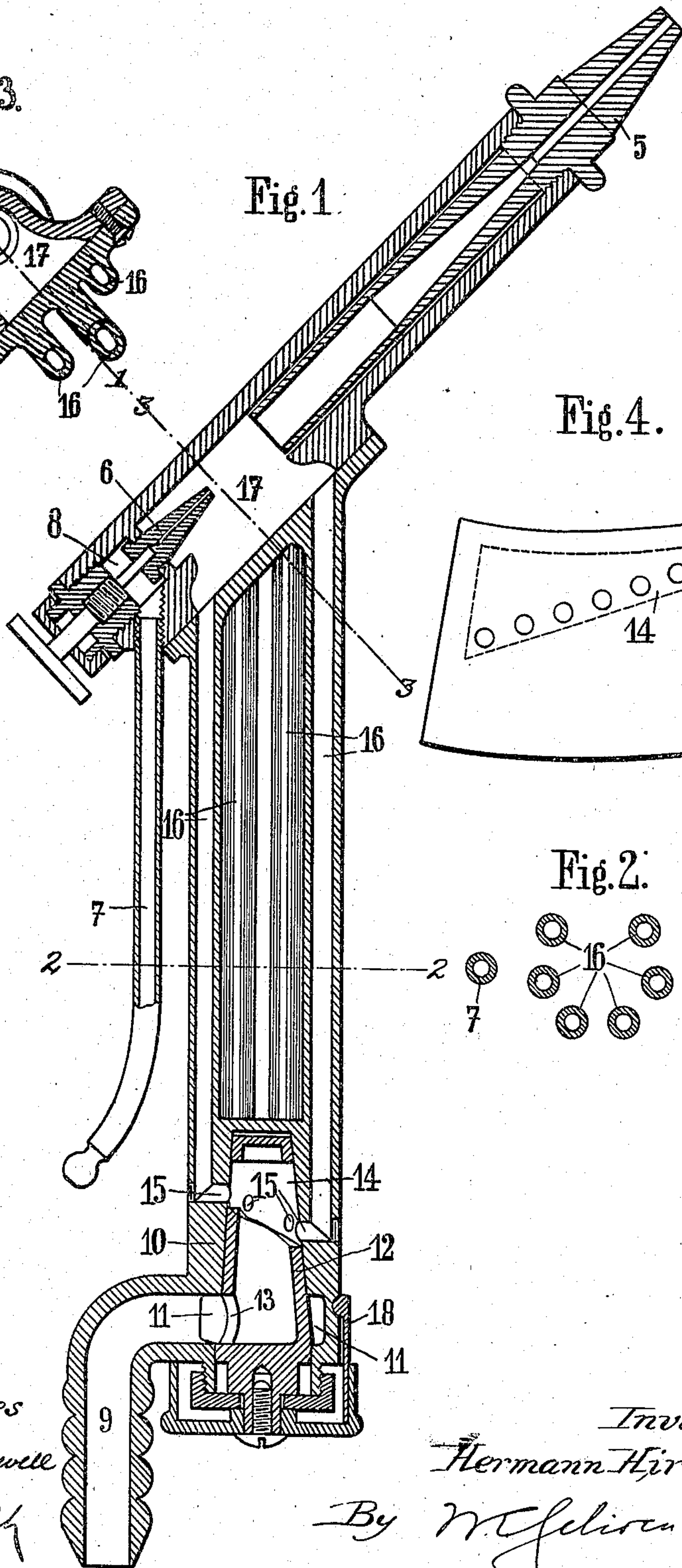


Fig. 4.

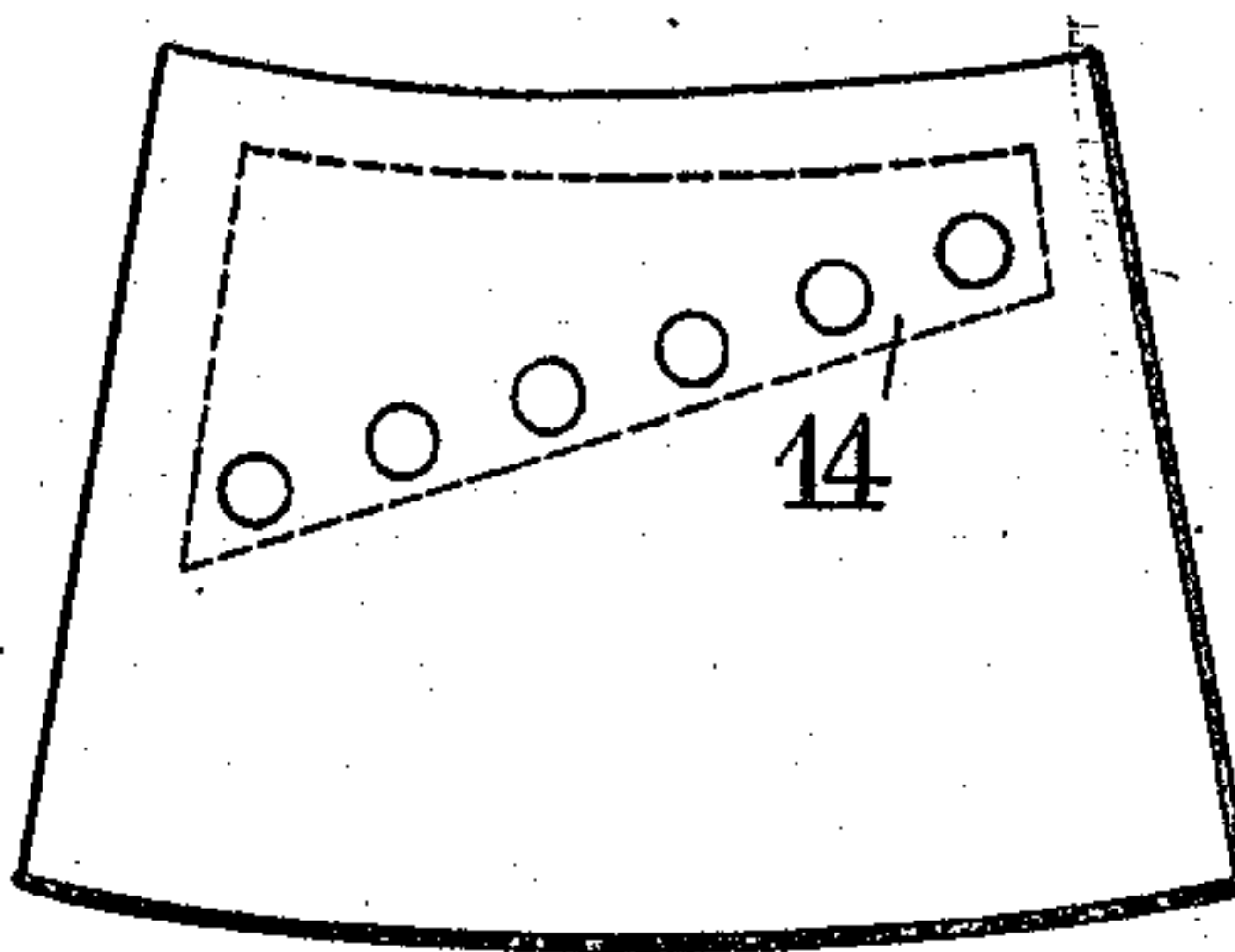
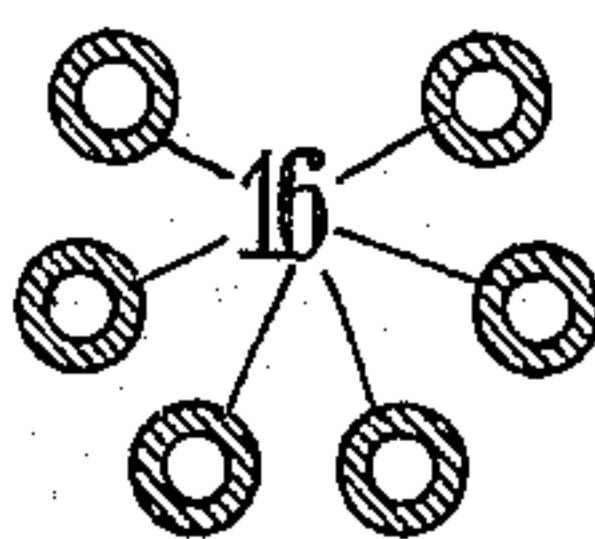


Fig. 2.



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# UNITED STATES PATENT OFFICE.

HERMANN HIRSCHWEH, OF BERLIN, GERMANY.

## BURNER FOR EXPLOSIVE GAS MIXTURES.

No. 908,005.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed January 21, 1908. Serial No. 411,934.

*To all whom it may concern:*

Be it known that I, HERMANN HIRSCHWEH, a subject of the King of Prussia, and a citizen of the German Empire, residing at Berlin, in the Kingdom of Prussia and German Empire, have invented new and useful Improvements in Burners for Explosive Gas Mixtures, of which the following is a specification.

This invention relates to a burner which is worked with a mixture of oxygen, air or the like and a combustible gas, and in which the oxygen or the air flows under pressure through a nozzle. The nozzle can be adjusted or changed so that in the same burner various quantities of oxygen or air can be passed through the nozzle. In this burner the oxygen or the air, which flows through the nozzle, draws in the combustible gas. The inlet for the combustible gas is, in this burner, usually connected with the stationary gas pipe or with the gas generating apparatus by a flexible tube. In many burners the pipe leading from the inlet for the combustible gas to the suction chamber of the nozzle is divided into several tubes arranged side by side; and the present invention consists in arrangements whereby, in such burners, the said several tubes can be separately closed. For this purpose all the said tubes may be opened or closed by one and the same cock, which is so arranged that it can close all the tubes simultaneously or leave any number of them open.

The above arrangement in combination with the adjustable or changeable injector-nozzle renders it possible to work the burner for all required sizes of flame with the best proportion of mixture of oxygen or air and combustible gas, so that the employment of a number of burners for various purposes becomes unnecessary.

The drawing shows a preferable way of constructing the burner.

The burner has the usual mouth-piece 5 and the known adjustable and changeable injector-nozzle 6 working with oxygen, compressed air or the like. The mouth-piece 5 can be changed if required for the various gas pressures employed and the adjustments of the nozzle. The oxygen flows through the pipe 7 to the pressure chamber 8.

The combustible material is led to the burner through the pipe 9, for the greatest effect from any available source. The pipe 9 opens into a channel 11 running round the body 10 of the cock, which channel likewise

affords a passage for the quantity of combustible gas which corresponds to the highest effect. The cock plug 12 is hollow and has a hole 13 corresponding to the channel 11. It has also a trapezium shaped opening 14 which is shown by dotted lines in the development of the cock, Fig. 4. The cock-body 10 contains a number, in the case illustrated six, of through openings 15 which are arranged in a spiral line. The total cross section of the openings 15 affords the necessary passage for the highest effect. The openings 15 can be closed altogether and opened separately one after the other by turning the cock plug 12. In the intermediate positions of the cock plug 12 these openings give passage step by step for the quantities of combustible required for smaller and medium effects of the burner, without throttling the gas. The spring 18 retains the cock in its various positions. The through openings 15 communicate with the pipes 16 which lead to the mixing chamber 17 of the injector.

The whole burner can be made of magnesium or other light strong material.

A special advantage of the construction shown is facility for cleaning the passages through which the combustible flows.

The burner is suitable, among other purposes, for soldering and brazing, and can be worked with the greatest variety of gaseous combustibles; for example hydrogen, acetylene, illuminating gas, or vaporized gasoline.

I claim:

1. A burner for explosive gas-mixtures comprising a mixing chamber, a nozzle leading into said mixing chamber, means for changing the passage through said nozzle from the said mixing chamber to the atmosphere, a combustible gas inlet, a plurality of pipes leading from the said inlet of the combustible gas to the mixing chamber, and means for separately closing said pipes and preserving the original gas pressure in the open pipes.

2. A burner for explosive gas-mixtures comprising a mixing chamber, an adjustable nozzle leading into said mixing chamber, a combustible gas inlet, a plurality of pipes leading from the inlet of the combustible gas to the mixing chamber, and means for separately closing said pipes and preserving the original gas pressure in the open pipes.

3. A burner for explosive gas-mixtures comprising a mixing chamber, a nozzle leading into said mixing chamber, means for



changing the passage through said nozzle, a  
combustible gas inlet, a plurality of pipes  
leading from the inlet of the combustible gas  
to the mixing chamber, and a cock, arranged  
5 for separately closing said pipes and preserv-  
ing the original pressure of gas in the open  
pipes.

4. A burner for explosive gas-mixtures  
comprising a mixing chamber, a nozzle lead-  
10 ing into said mixing chamber, means for  
changing the passage through said nozzle, a  
combustible gas inlet, a plurality of pipes  
leading from the inlet of the combustible gas

to the mixing chamber, a cock, having a cock  
body with openings communicating with said 15  
pipes and arranged in spiral line, and a hol-  
low cock plug with a trapezium shaped open-  
ing, whereby the original gas pressure is pre-  
served in any of the open pipes when any one  
of the pipes is closed. 20

In witness whereof I have hereunto set my  
hand in presence of two witnesses.

HERMANN HIRSCHWEH.

Witnesses:

WILLY LIMPert,  
ADOLF MORGENSTERN.