

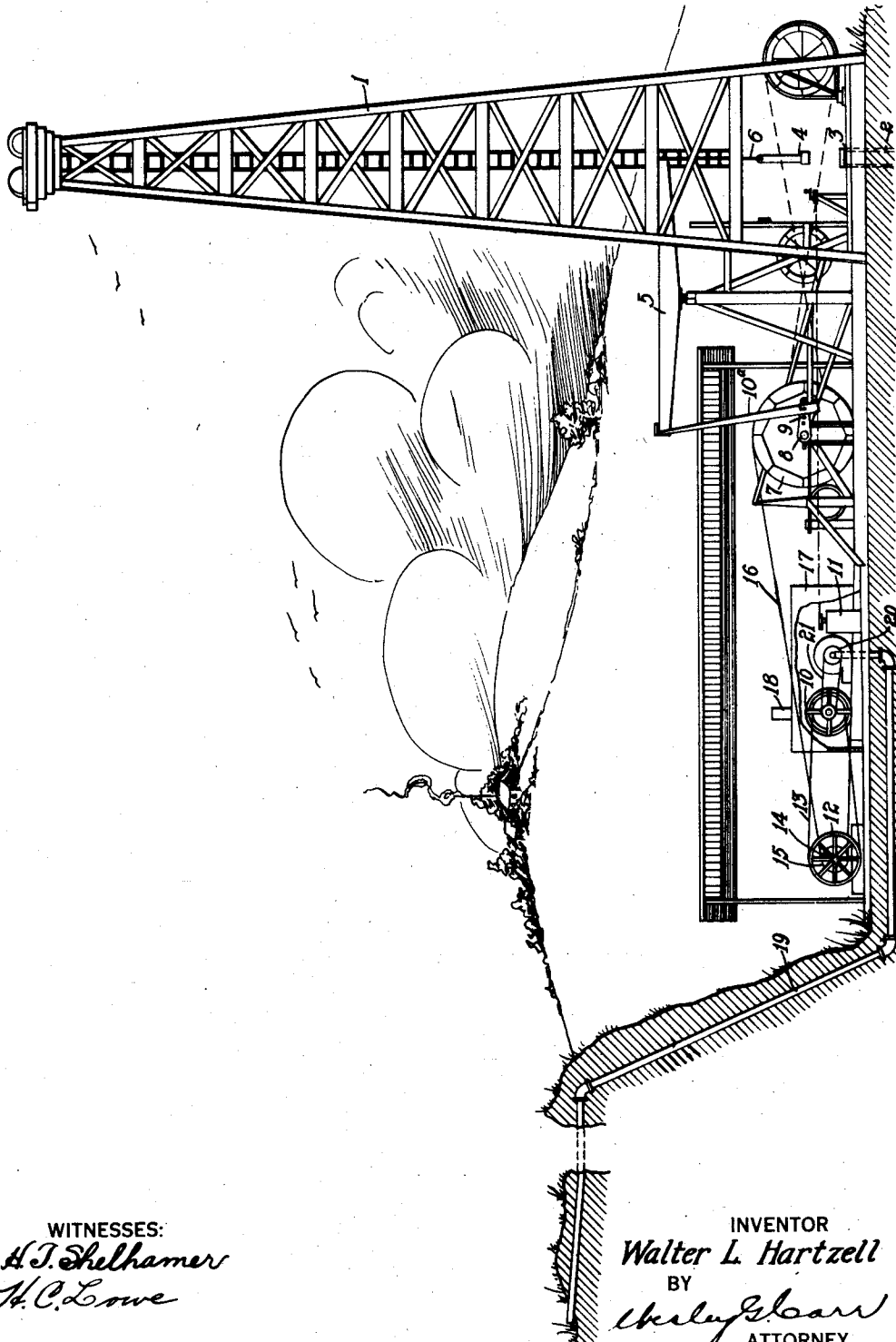
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EXPLOSION PREVENTING APPARATUS

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EXPLOSION-PREVENTING APPARATUS.

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My invention relates to explosion preventing apparatus and it has particular relation to apparatus employed for electric motors which operate in the vicinity of inflammable gas.

The object of my invention is to provide means for preventing sparks from a motor or the control system therefor from setting fire to gas which is present about an oil or gas well.

Heretofore, when drilling or pumping a well where gas in relatively large quantities was present, operators removed the boiler therefor a relatively great distance from the well and constructed a long steam line to the engine.

In recent years, men engaged in the oil and gas industry have come to favor electric-motor-driven, instead of steam-driven, oil-well apparatus. A disadvantage of electric-motor-driven apparatus is the danger that gas from the well will be ignited by sparks from the motor or the control system. To immerse the contactors of the control system in oil is not sufficient protection, as static sparks from the motor windings and sparks about the brushes may occur.

Briefly speaking, my invention consists in covering a motor and its controller with an air-tight compartment and connecting the compartment, by a relatively long pipe, to a source of fresh air, a blower device, which may be located at a relatively great distance from an oil well, being employed for forcing the fresh air into the compartment.

For a better understanding of my invention, reference should be made to the accompanying drawing which comprises a single view, partly in side elevation and partly in section, of an oil-well-drilling equipment embodying my invention.

Referring to the figure, a derrick 1, of the usual well-known construction, is shown positioned over a well 2 having a casing 3. A drilling tool 4 is secured to a walking beam 5 by a cable 6. The walking beam 5 is mechanically connected to a band wheel 7 having a shaft 8. A crank 9 is secured to the shaft 8, and a connecting-rod 10 connects the crank 9 to the walking beam 5.

The band wheel 7 is actuated by an electric motor 10, which is supplied with power from

a suitable source of electrical energy (not shown). The operation of the motor 10 is governed by a suitable controller 11. The motor 10 is connected to a pulley 12 by means of a belt 13. The pulley 12 is mounted upon a shaft 14, on which another pulley 15 is mounted. The pulley 15 is connected with the band wheel 7 by a belt 16.

The operation of this kind of oil-well apparatus for pumping and drilling is well-known and will not be further described.

The controller 11 and the motor 10 are enclosed within an air-tight compartment 17 which may be constructed of any suitable material that will prevent gas from penetrating to the motor 10 and the controller 11. The compartment 17 may be of any shape that is suitable to cover the motor 10 and the controller 11.

A suitable opening 18 in the compartment 17 may or may not be provided for the escape of air. Air is supplied to the motor 17 and the controller 11 by a hollow conveyor or pipe 19 which extends for a relatively great distance from the well 2.

The conveyor 19 may be made any suitable length by adding additional sections of pipe. However, the length of pipe will be usually determined by the quantity of gas escaping from the well.

The air or other cooling fluid is drawn through the pipe 19 by a fluid-propelling device or blower 20 situated within the compartment 17. The device 20 is actuated by the motor 10 to which it is connected by a belt 21. The device 20 may be driven by a separate motor, if desired, and may be located a relatively great distance from the well but, for the sake of convenience, it is considered preferable to have it in the same compartment as the motor-control system. By means of the blower the air-pressure within the air-tight compartment may be regulated to exceed the atmospheric pressure and thereby exclude or prevent the entry of inflammable gas.

Although I have shown this ventilating apparatus in connection with a motor for operating an oil well, it is apparent that a similar construction may be successfully employed for ventilating motors which actuate machinery or other apparatus situated about gasoline-compression plants or other

manufacturing establishments in which an inflammable gas, or a gas which would impair the efficiency of the motor, is present.

While I have shown my invention in the preferred form, it is apparent that minor modifications may be made in the construction of apparatus and the location thereof without departing from the spirit of my invention. I desire, therefore, to be limited only by the scope of the appended claims.

I claim as my invention:

1. The combination with a motor operating near an inflammable gas, of a compartment for covering said motor, and means comprising a gas-propelling device for ventilating said compartment at a pressure sufficiently high to exclude the immediately surrounding gas therefrom.

2. The combination with a motor operating in the vicinity of a gas, of a covering member for said motor, a fluid-circulating device adjacent to said motor and driven thereby for obtaining super-atmospheric pressure within said covering member, a conveyor for said fluid to said motor and means for allowing said fluid to flow from said compartment.

3. The combination with a motor-control system having a plurality of spark-producing parts, of means for maintaining super-atmospheric pressure around the spark-producing parts to exclude inflammable gas.

In testimony whereof, I have hereunto subscribed my name this 11th day of January, 1921.

WALTER L. HARTZELL.