Sept. 1, 1925. 1,552,342

H. A. PORTER

FOUR-SLOT FIRE EXTINGUISHING COUPLING

Filed April 16, 1925

*Fig. 1.*

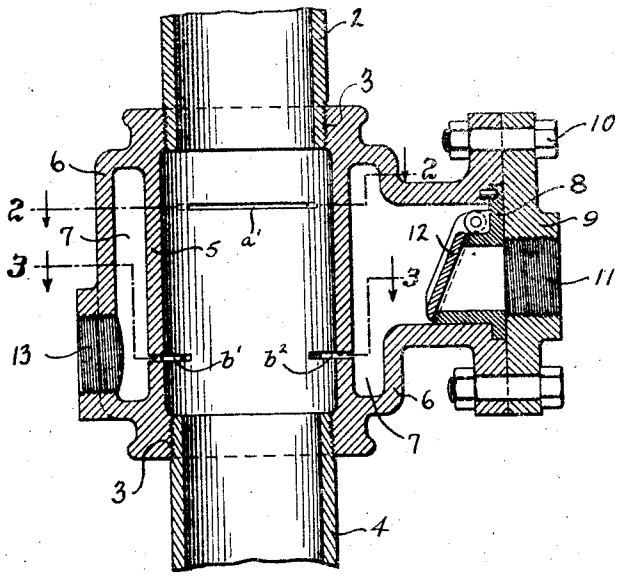



*Fig. 2.*

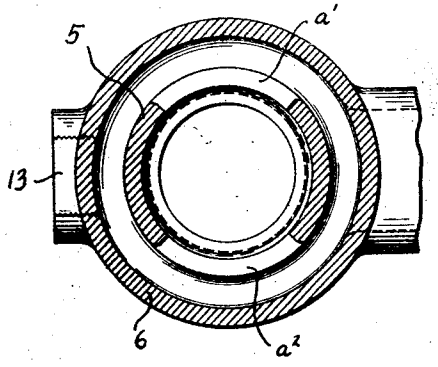
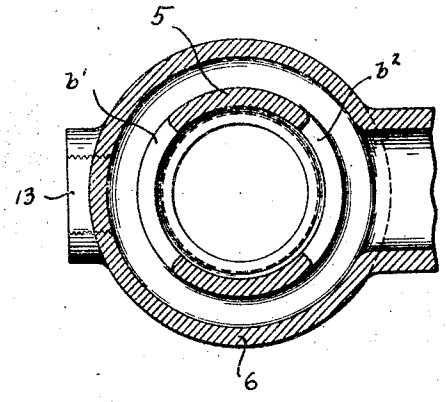



*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

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## FOUR-SLOT FIRE-EXTINGUISHING COUPLING.

Application filed April 16, 1925. Serial No. 23,638.

*To all whom it may concern:*

Be it known that I, HENRY A. PORTER, a subject of the King of Great Britain, and resident of Long Beach, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Four-Slot Fire-Extinguishing Couplings, of which the following is a specification.

My present invention relates to a snuffer or fire extingishing coupling for use in connection with oil or gas wells and the like, or for pipes for conducting any flowing combustible body which may be intercepted by a stream of non-combustible material, or which may have a non-combustible material admixed therewith in such proportions that the resulting mixture will not burn.

The principal object of my invention is the introduction of a non-combustible fluid, such as steam or water, or any other suitable fluid, in a plurality of streams of sufficient velocity to completely intercept the flow, or in case this is impossible, to introduce a non-combustible material into the combustible stream in sufficient quantity to render the latter non-combustible in its nature.

Another important object of the invention is the provision of means whereby back pressure will not be allowed to communicate itself into the steam or non-combustible fluid mains and yet which will allow ready passage of this non-combustible material in the direction desired, or to the coupling.

Still another object is the provision of certain drainage outlets in the fixture whereby the sediment naturally mixed with the oil or gas and flowing from the well may be flushed from the coupling so that the non-combustible fluid inlets will not become clogged.

To this end my invention includes a coupling adapted to receive at the top and bottom thereof an oil well casing section, being preferably screwed thereinto, although the invention is not limited to this means of attachment.

The casing sections above and below the coupling are preferably in alignment with each other and form a continuation of an axial passage way through the coupling itself.

The coupling proper consists of an outer jacket and an inner annular wall, the said wall constituting the axial passageway and being spaced from the jacket so that an annular chamber exists between the jacket and the inner wall.

An inlet for non-combustible fluid is provided having means in said inlet for preventing back pressure from reaching the non-combustible fluid mains, said inlet communicating with the annular passage in the coupling. The inner annular wall is provided with two pairs of slots therein, the opening of each slot in each pair being substantially one-quarter of the circumference of the inner wall, the slots constituting each pair being diametrically opposed to each other, the two pairs being at ninety degrees to each other.

A drainage outlet is provided at the lowermost point of the annular chamber and below the level of the lowermost slot in the inner wall, for the purpose above defined.

I have illustrated in the accompanying drawing, one form of the invention, although obviously I do not wish to be limited thereto, as this illustration is shown to merely indicate the principle involved.

In the drawings:—

Figure 1 is a sectional elevation of one form of the invention.

Fig. 2 is a sectional plan view along the line 2—2 of Fig. 1.

Fig. 3 is a sectional plan view along the line 3—3 of Fig. 1.

Referring with particularity to the form illustrated, I have shown the coupling at 1 provided with screw threaded openings 3 at the top and bottom thereof, adapted to receive the threaded ends of the casing sections 2 and 4

An inner annular wall 5 is provided which is separated from the jacket 6 of the coupling so that an annular chamber 7 is provided therein.

The jacket 6 is provided with a flanged extension in which is secured a flap valve 8 by means of a cap 9 secured to the flange as by bolts 10. An aperture in the cap 9, as indicated at 11, allows communication from a non-combustible fluid main through the valve 8 to the chamber 7. A flap 12 effectually closes the inlet in case of back pressure. Inasmuch as the construction of the back pressure valve, per se, forms no part of this invention, I have merely illustrated the same diagrammatically.

The inner annular wall 5 is provided with two pairs of slots as indicated at $a'$ and $a^2$, and $b'$ and $b^2$. It will be noted that

each of the slots consists of a slot through the wall 5, the opening being of one-quarter of the circumference of said wall. It is to be noted that slots $a'$ and $a^2$ are diametrically opposed to each other, and likewise slots $b'$ and $b^2$, while at the same time the slots $a'$, $a^2$ and $b'$, $b^2$ are arranged ninety degrees from each other. In this way the non-combustible fluid entering through the inlet, passes through the chamber 7 and is shot into the axial passageway of the coupling through the slots $a'$, $a^2$ and $b'$, $b^2$, which form impinging streams at right angles to each other. Such a construction allows any desired quantity of non-combustible fluid to be mixed with, or introduced into the flowing combustible stream so that a fire existing at the mouth of the well may be extinguished.

A drainage outlet indicated at 13, normally closed by a plug not shown, is located at a point on the coupling lower than the lowest slot in the inner wall. This is for the purpose of allowing any rotary mud or other sediment contained in the flowing oil or gas, which finds its way through the slots $a'$, $a^2$ and $b'$, $b^2$, to be expelled from the coupling by cracking the valve on the non-combustible fluid main.

It is essential that the slots $a'$, $a^2$ and $b'$, $b^2$ be kept clear at all times in order that when the valve controlling the non-combustible fluid is open said fluid shall have immediate access to the interior of the passageway through which the combustible material is flowing. At the same time, it is also essential that the back pressure valve be provided so that in case the pressure of the combustible fluid is in excess of that of the non-combustible fluid, the former will not find its way into the main holding the latter so as to produce disastrous results.

It will be obvious from an inspection of the structure disclosed herein that each pair of slots does a work which is not accomplished by the other. In other words, the slots $a'$ and $a^2$ introduce the non-combustible fluid into a portion of the well casing not covered by the fluid introduced through the slots $b'$ and $b^2$.

While I have specified in the claims that each slot is approximately one-fourth of the circumference of the inner wall, obviously the extent of these slots may be varied somewhat above and below that dimension.

Having thus described my invention, what I claim is:—

1. A fire extinguishing coupling comprising an outer jacket, an inner annular wall spaced from said jacket to form a chamber, means for conducting a non-combustible fluid to said chamber, a back pressure valve contained in said non-combustible fluid introducing means, two pairs of transversely extending slots through said inner wall, the two slots of each pair being diametrically opposed to each other, each pair of slots being at ninety degrees to the other pair, one pair being above the other, each slot being approximately one-fourth of the circumference of said inner wall.

2. A fire extinguishing coupling comprising an outer jacket, an inner annular wall spaced from said jacket to form a chamber, means for conducting a non-combustible fluid to said chamber, a back pressure valve contained in said non-combustible fluid introducing means, two pairs of transversely extending slots through said inner wall, a drainage opening in said jacket below the lowermost slot, the two slots of each pair being diametrically opposed to each other, each pair of slots being at ninety degrees to the other pair, one pair being above the other, each slot being approximately one-fourth of the circumference of said inner wall.

In testimony whereof, I affix my signature.

HENRY ALFRED PORTER.