July 9, 1940. P. D. NIELSEN 2,207,102

IGNITING DEVICE

Filed Oct. 7, 1939

FIG. 1.

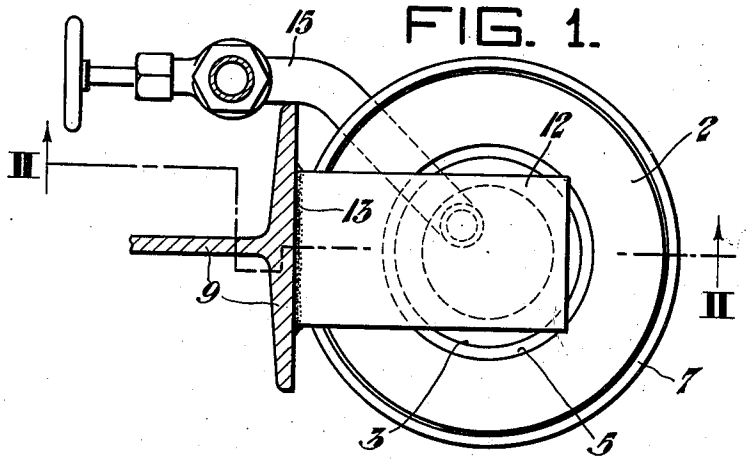
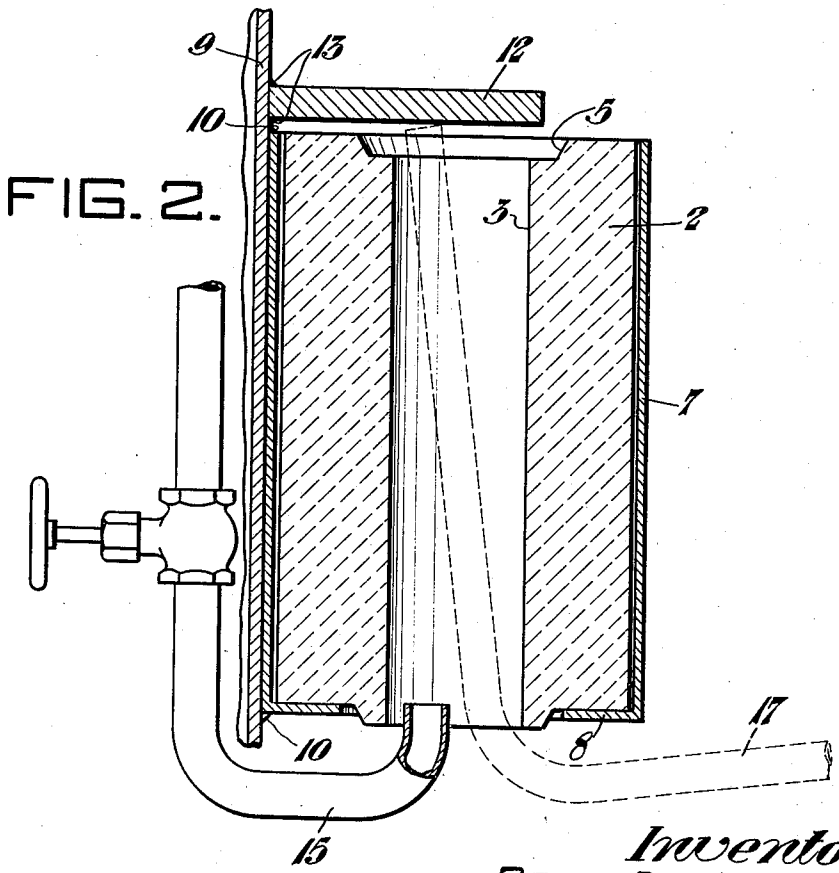


FIG. 2.



Inventor:
PEER D. NIELSEN,
by: John E. Jackson
his Attorney.

Patented July 9, 1940 2,207,102

UNITED STATES PATENT OFFICE

2,207,102

IGNITING DEVICE

Peer D. Nielsen, Lorain, Ohio, assignor to National Tube Company, a corporation of New Jersey

Application October 7, 1939, Serial No. 298,469

2 Claims. (Cl. 263—1)

This invention relates to igniting devices, and more particularly to those used for igniting oxygen torches or so called "oxygen lances."

There are numerous instances wherein oxygen torches or so called "oxygen lances" are used; and in some cases the torch is ignited by the heat of the device to which it is applied. As a typical instance of such use, attention is called to blast furnaces, open hearth furnaces and other types of metal furnaces used in steel mills wherein the temperature is extremely high. Even more commonly these torches are used in steel mills for freeing the stopper head in hot-metal pouring ladles. These hot-metal pouring ladles are lined with refractory brick and constructed with a small opening in the bottom through which the hot metal is teemed into ingot molds or the like. In most instances this small opening in the bottom of the ladle is closed by means of a stopper rod which is made up of suitably shaped superposed refractory sections which are fitted over a steel rod, the latter being provided with means for controlling its position outside of the ladle.

The lowermost end of this stopper rod, and therefore that which is adapted to close the small opening in the bottom of the ladle, is called the "stopper head" and it is this part of the stopper rod which frequently sticks to the small opening or nozzle of the ladle. Whenever such sticking occurs it is necessary to use an oxygen torch or so called "oxygen lance" to free these two parts. In order to operate the torch it is necessary to ignite the same by raising the steel in the tip thereof to melting temperature, thereby supporting combustion in the presence of the oxygen passing therethrough. However, there are times during which the temperature of the nozzle or small opening in the bottom of the ladle is not sufficiently high to raise the steel in the tip of the torch to melting temperature to thereby ignite the torch.

It is among the objects of the present invention to provide an igniting device for oxygen torches or so called "oxygen lances" whereby the same may be readily ignited at all times.

Another object is the provision of a device of the class described which is easy and inexpensive to manufacture and use.

The foregoing and other objects will be apparent after referring to the drawing, in which:

Figure 1 is a plan of the device of the invention; and

Figure 2 is a sectional elevation on the line II—II of Figure 1.

Referring more particularly to the drawing, the numeral 2 designates a refractory brick having a central aperture 3 extending therethrough. Referring more particularly to Figure 2 this aperture 3 terminates at the top of the brick 2 in an enlarged recess, indicated at 5, the purpose of which will be later described.

This refractory brick 2 is disposed with its aperture extending vertically in a metallic container 7, the bottom of which is provided with an annular inwardly extending portion 8 which terminates short of the aperture 3 in the said brick.

The container 7 is secured in vertical position to a suitable support 9, as by means of top and bottom welds, indicated at 10.

Immediately above the container 7 and the contained refractory brick 2 there is disposed an ignition plate 12 which is secured to the support 9 as by welds 13. Referring to Figure 2 it will be noted that the ignition plate 12, while not in contact with the refractory brick 2, extends across the aperture 3 therein and in adjacent relationship with respect thereto.

A gas line 15 is extended into the bottom of the aperture 3 in the refractory brick 2 and to one side thereof in such manner as to permit of the extension of the oxygen torch or "oxygen lance" into and through the said aperture.

In operation:

When it is desired to ignite the oxygen torch or "oxygen lance", designated hereinafter at 17, gas is supplied through the gas line 15 and ignited in any suitable manner. The oxygen torch or lance 17 is connected to a source of oxygen supply and disposed to extend through the aperture 3 in the refractory brick 2 in the manner illustrated in dotted lines in Figure 2. The tip of the torch 17 is thus in contact with the ignition plate 12 which is composed of steel or other suitable material, and this ignition plate 12 is quickly heated by the gas from the gas line 15 and oxygen flame resulting from the ignition of the oxygen passing out of the lance 17. Due to the rapid heating of the ignition plate 12 by the gas and oxygen flame, the said ignition plate rapidly heats the tip of the torch to its melting point which, in turn, starts the combustion of the steel tip on the torch. The torch is then ready for its intended use, such as freeing the stopper head of the ladle stopper rod from the nozzle or small opening in the bottom of the ladle.

While I have shown and described one specific embodiment of the present invention, it will be

seen that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of the invention, as defined by the following claims.

I claim:

1. An igniting device for oxygen torches and the like comprising, in combination, a refractory element having a vertical aperture, means for supplying a combustible gas through said aperture, and a metallic plate disposed above and over the aperture in said refractory element.

2. An igniting device for oxygen torches and the like comprising, in combination, a support, a refractory element carried by said support, said refractory element having a vertical aperture extending therethrough, means for supplying a combustible gas through said aperture, and a metallic plate disposed above and over the aperture in said refractory element.

PEER D. NIELSEN.