

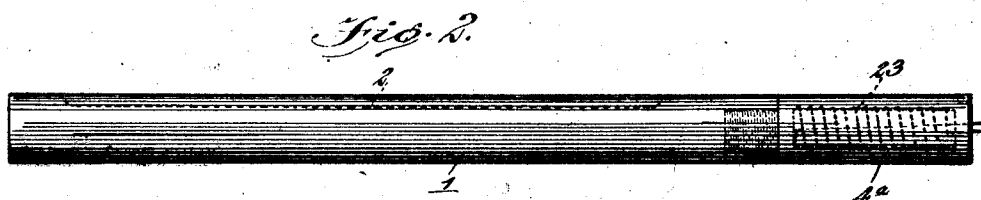
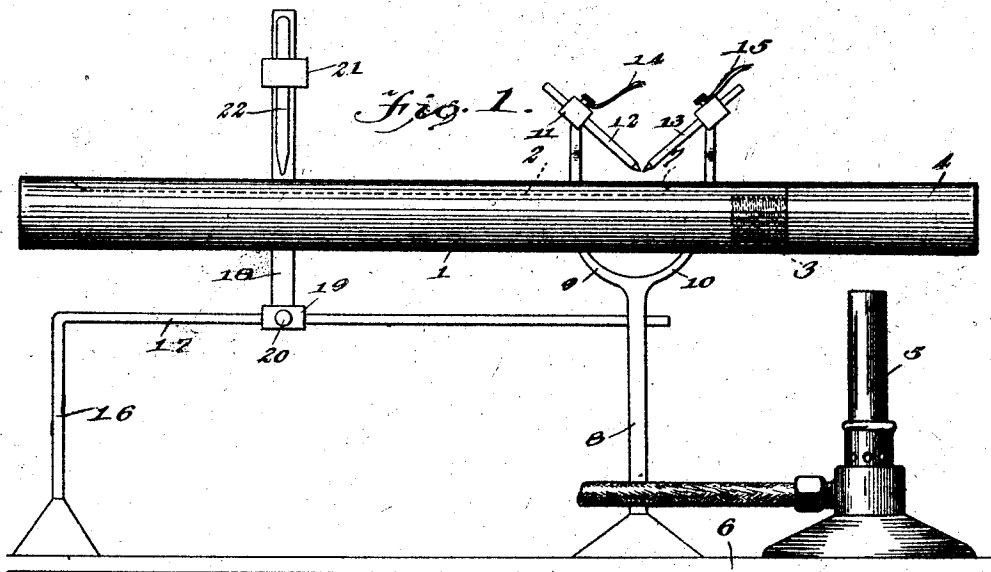
Sept. 29, 1925.

1,554,993

C. ETTELE

TESTER FOR PETROLEUM

Filed March 13, 1924



WITNESS

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TESTER FOR PETROLEUM.

Application filed March 13, 1924. Serial No. 699,028.

To all whom it may concern:

Be it known that I, CLAUDE ETTELE, a citizen of the United States, and a resident of Middletown, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Testers for Petroleum, of which the following is a specification.

This invention relates to a method and apparatus for determining the flashing and burning points of petroleum products.

An object of the invention is the provision of a method for determining the flashing points of petroleum products in which a minimum of the product is employed and in which the flashing and burning tests are made simultaneously in a minimum amount of time.

A further object of the invention is the provision of a device for testing the flashing and burning points of petroleum products and in which the products are progressively heated with decreasing temperature so that one end of the device will be maintained at a greater temperature than the remaining portion of the same, and a flame applied to the product having the greatest temperature will ignite the oil and cause it to burn, the oil burning continuously on the surface to a point along the device where the temperature is just below the burning point of a sample and where momentary flashes occur.

This invention will be best understood from a consideration of the following detailed description in view of the accompanying drawing forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a side view of my device for testing oil.

Figure 2 is a side view of a modified form of the oil testing device.

Referring more particularly to the drawings, 1 designates a solid cylindrical member which may be of any shape provided that the same has a uniform cross section throughout its length. The member 1 is provided with a shallow groove 2 extending longitudinally of the member. The cross

sectional area of such a groove is considerably less than the cross sectional area of the member. The member 1 may be formed of any kind of material, such as iron or any other metal which is adapted to radiate heat and thereby heat the petroleum products applied to the groove 2.

The inner end of the member 1 is provided with an axial internally threaded bore 3 adapted to receive the threads upon a reduced portion of a member 4 which is adapted to be heated. The members 1 and 4 are supported in a longitudinal position in any approved manner and elevated sufficiently above a Bunsen burner 5 which is mounted upon a base member 6. Located adjacent the inner end 7 of the groove 2 is a device for creating a spark which may be in the form of a spark plug or arc light, as shown in the drawings. The arc light comprises a stand 8 mounted on the base member 6 and having upstanding arms 9 and 10.

The upper free ends of the arms are provided with sockets 11 which are adapted to receive the carbon electrodes 12 and 13. An electric wire 14 leads to the socket carrying the electrode 12 while a wire 15 leads to the socket carrying the electrode 13 whereby current is supplied for creating an arc between the electrodes. When the electrodes are sufficiently separated the arc is destroyed or when spaced a proper distance apart a spark is created for igniting the heated oils in the groove 2.

As is well known a resistance or rheostat of any form is employed for controlling the current passing through the electrodes 12 and 13.

A thermometer of any well known type, such as a mercury, resistance or thermoelectric thermometer is mounted for slidable movement along the groove 2 for determining the temperatures of the oil.

Suitable means is employed for supporting the thermometer which is subjected to the heat of the oil and may comprise a standard 16 having a horizontal arm 17 upon which is slidably mounted an arm 18. A collar 19, which receives the horizontal arm 17 of the standard 16 is provided with a set screw 20 adapted to lock the collar 19 and likewise the arm 18 in a plurality of different positions.

The upper end of the arm 18 is provided with a clamp 21 adapted to receive the thermometer 22. The inner or effective end

of the thermometer is adapted to be positioned adjacent the groove 2 where the same will be effected by the heat in order to determine the burning and flashing points of the oil.

As shown more particularly in Figure 2, the resistance coil 23 may be imbedded within the plug 4^a and may be employed for heating the member 4^a which in turn causes heating of the member 1.

When the sample of the petroleum product is placed in the groove and heat is applied to the member 4^a either through the Bunsen burner 4 or through the resistance coil 23 the oil in the groove will assume the temperature of the bar along its length and since the heat is radiated from the member 4 to the bar 1 the hottest portions of the bar 1 will be adjacent the inner end 7 of the groove 2 and the temperature of the different points along the bar toward its outer end will be necessarily diminished. When sufficient heat is applied to bring the hotter end of the groove to the burning point of the oil and the vapors are ignited through the electrodes 12 and 13 a flame will burn continuously on the surface of the oil from the inner end 7 of the groove down to some point along the groove where the temperature is just below the burning point of the sample. From here, momentary flashes will occur towards the outer end of the groove to some point where the temperature is just under the flashing point of the oil. The arm 18 is moved along the rod 17 and subjected to the heat at these times of burning and flashing and the temperatures of the oil at these points are then determined.

It will be seen that by my device a very small quantity of the sample is required for making the test in a minimum of time. It will also be seen that the flashing test and burning test are made simultaneously.

The testing member 1 shown in Figure 2 is identical in construction with the member in Figure 1, the heating plug 4^a showing a variation in form but nevertheless capable of producing similar results.

A shield is attached near the part of the thermometer immersed in the oil to keep back the flame while the temperature of the oil is being measured. A number of thermometers should be employed at intervals in the metal near the groove and the temperatures at any point may be determined from the readings of the two thermometers between which the point is located.

What I claim is:

1. The method of testing petroleum products which comprises heating one end of an elongated member of uniform cross section having a groove filled with oil, the

cross sectional area of the member being considerably greater than the cross sectional area of the groove, igniting the oil adjacent the heated end of said member, then taking the temperatures of the oil at points along the groove where the oil is burning and flashing for determining the burning and flashing points of the oil.

2. The method of testing petroleum products which comprises heating with diminishing temperatures an elongated member of uniform cross section having a groove filled with oil whereby the oil is heated with gradually diminishing temperatures, igniting the oil adjacent the heated end of said member, then taking the temperature of the oil at points along the groove where the oil is burning for determining the burning and flashing points of the oil.

3. The method of testing petroleum products which comprises heating with diminishing temperatures an elongated member of uniform cross section having a groove filled with oil whereby the oil is heated with gradually diminishing temperatures, igniting the oil in the groove where the greatest temperature exists, then taking the temperature of the oil at points along the groove where the oil is burning and flashing for determining the burning and flashing points of the oil.

4. A device for testing petroleum products comprising a solid elongated member provided with a longitudinally disposed groove, the cross sectional area of the member being considerably greater than the cross sectional area of the groove, said groove extending for a portion of the length of the member so that a solid grooveless portion will be had at one end.

5. A device for testing petroleum products comprising a solid elongated member provided with a longitudinally disposed groove, the cross sectional area of the member being considerably greater than the cross sectional area of the groove, and means for heating the elongated member with constantly diminishing temperatures at points remote from one end of said elongated member.

6. A device for testing petroleum products comprising a solid elongated member provided with a longitudinally disposed groove, the cross sectional area of the member being considerably greater than the cross sectional area of the groove, said groove extending for a portion of the length of the member so that a solid grooveless portion will be had at one end, and means for heating the portion of the elongated member which is devoid of the groove.

CLAUDE ETTELE.