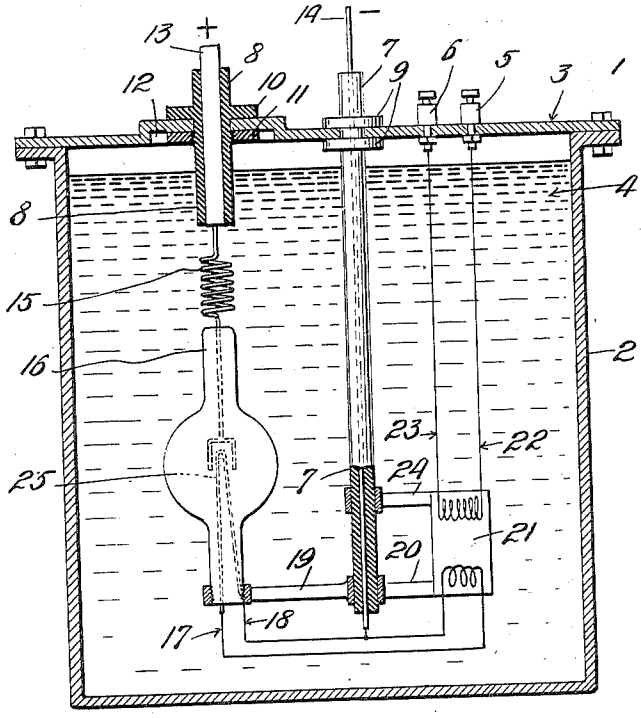
Aug. 28, 1928. 1,682,730

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HIGH TENSION ELECTRIC VALVE

Filed June 4, 1927



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UNITED STATES PATENT OFFICE.

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HIGH-TENSION ELECTRIC VALVE.

Application filed June 4, 1927. Serial No. 196,459.

The object of my invention is to provide a valve of this character which will always be free from dust and dirt and contamination due to atmospheric causes, which will not overheat, which may be made small and compact and safe. This and other objects are accomplished by my invention, one embodiment of which is hereinafter more particularly set forth.

In the drawing, the figure is a sectional view of an embodiment of my invention.

My improved valve 1 is provided with a casing 2, a cover 3 and a suitable oil 4 which is in the casing and protected by the cover with a liquid tight joint. The active parts of my apparatus which are herein described are suspended from the cover 3 in the oil 4.

This cover 3 carries the low tension terminals 5 and 6 which are carefully insulated from the cover and adapted to receive a low tension alternating current of say 110 volts. The cover also carries the high tension insulators 7 and 8. The insulator 7 extends to near the bottom of the tank 2 and well beneath the surface of the oil 4. It is held in proper position in the cover 3 by means of suitable washers or nuts 9, in the conventional manner. This insulator is always fixedly mounted with regard to the cover 3 and has no relative movement with regard thereto, except when it is inserted or removed from the cover. The center of this insulator 7 carries a conductor which may be called the negative pole of the valve 1.

The insulator 8 does not extend into the oil as far as the insulator 7, but it extends sufficiently to have its lower end well immersed and it is held firmly in place by means of a collar 10 and a nut 11 set in a suitable recess 12 in the cover 3, as indicated. The center of this insulator 8 carries a conductor which may be called the positive pole of the valve 1. For convenience, the positive pole is designated 13 and the negative pole 14.

The lower end of the conductor 13 is provided with a spring 15 which is connected to the positive pole of a valve tube 16 which is immersed in oil and so free from all dust and all danger of being disturbed when in use. Furthermore, the oil about this tube will keep it cool, as is obvious. The lower end of this tube 16 has two terminals 17 and 18 suitable for a cathode glow. One wire 18, for example, is connected to the conductor 14 so as to provide for the high tension current which flows through the tube 16. The lower end of this tube 16 is fixedly held by a screw connection, in the conventional manner, in a suitable bracket 19 which is fixed to the insulator 7 and is also provided with an arm 20 which supports a smaller step down transformer 21 which is connected by conductors 22 and 23 with the binding posts 5 and 6, respectively. The upper end of the transformer 21 is held by a bracket arm 24 in rigid relation with the lower end of the insulator 7, as indicated.

In view of the foregoing, the operation of my improved valve will be readily understood. A cathode heating alternating current is admitted through the posts 5 and 6 and this current passes through the conductors 22 and 23 and primary of the step down transformer 21. The secondary of this transformer is connected to the wires 17 and 18 so as to cause the cathode 25 of the tube 16 to have a proper glow so that current can flow from the cathode to the anode, but not from the anode to the cathode so that one wave of alternating current may be utilized while the other is suppressed. If it is desired to utilize both waves it will be necessary to use two valves, as is obvious. The high tension current entering the conductor 13 can flow in one direction only through the valve 16, as above indicated, and passes out through this valve 16, in the conventional manner.

From the foregoing, it is apparent that the valve above described will function free from all dirt and contamination from atmospheric influences and as the valve 16 is contained in oil it may be greatly reduced in size without overheating, whereby an efficient and desirable apparatus is produced. It is also apparent that the parts are not liable to get out of order and there is no unnecessary exposure of high tension terminals or parts.

While I have shown and described one embodiment of my invention, it is obvious that it is not restricted thereto, but that it is broad enough to cover all structures that come within the scope of the annexed claim.

Having thus described my invention, what I claim is:

In a high tension system, a tank containing insulating oil, a cover to which is attached suitable high tension insulators, a hot cathode valve connected to both of said insulators and supported by one of

them, a step down filament transformer supported by one of said insulators and connected to the hot cathode valve and connections through the cover for supplying said transformer with power, whereby the said elements, except the oil tank and cover, are connected to the cover and supported thereby and may be inserted or removed as a unit by positioning or removing the cover.

In testimony whereof, I have hereunto set my hand and seal May, 1927.

HARRY F. WAITE.