Jan. 19, 1943. N. E. LINDENBLAD 2,308,884

HIGH VOLTAGE GENERATOR

Original Filed Aug. 9, 1933

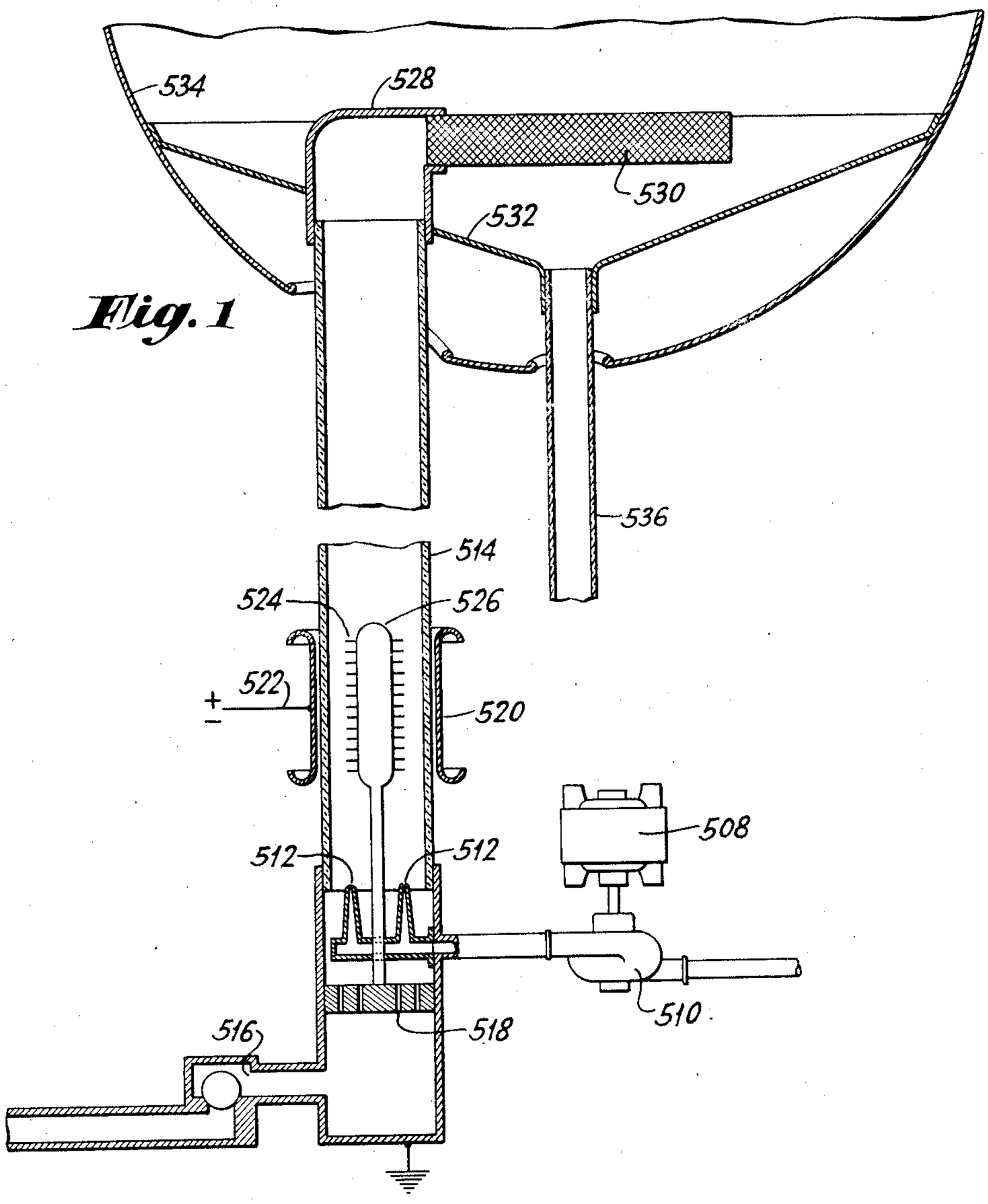

Fig. 1

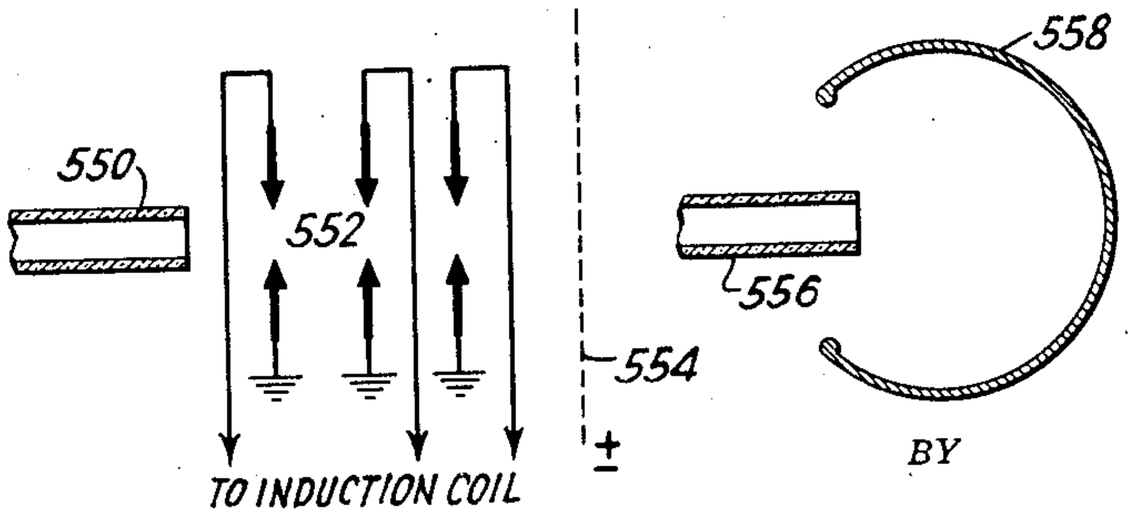

Fig. 2

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HIGH VOLTAGE GENERATOR

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Original application August 9, 1933, Serial No. 684,328. Divided and this application January 23, 1940, Serial No. 315,279

3 Claims. (Cl. 171—329)

My present invention has as its main object the provision of methods and means for generating very high potentials or voltages at high energy levels.

In one way of carrying out my invention for the generation of high direct current voltages, I charge metallic units, preferably particles of metal, by actual conductive contact with a direct current source. Then, by moving the particles away from the source, the voltages of the charges thereon are increased, in a manner which will be explained more fully hereinafter, and the charges are ultimately deposited upon a low voltage gradient-section of a charge-storing device or container.

This application is one of several divisions of my original patent application, Serial No. 684,328, filed August 9, 1933, which has now matured into Patent #2,210,492, dated August 6, 1940, which contains, but does not claim, the identical disclosure of the instant application. The parent patent application contains claims directed to the belt system and also the combined belt and disc system. A first divisional application, Serial No. 4,475, filed February 1, 1935, which has matured into Patent 2,070,972, dated February 16, 1937, contains claims directed to the rotor system wherein an inductive principle is combined with centrifugal force and utilized to increase the output voltage. A second divisional application, Serial No. 8,236, filed February 26, 1935, which has now matured into Patent 2,119,588, dated June 7, 1938, contains claims directed to the high voltage generating system wherein charging units are arranged in parallel with means provided to discharge them in series. A third divisional application, Serial No. 81,360, filed May 23, 1936, which has matured into Patent 2,171,242, dated August 29, 1939, contains claims directed to a high voltage generator combined with a rectifier and a transformer system connected to elements of the rectifier. A fourth divisional application, Serial No. 201,528, filed April 12, 1930, which has matured into Patent #2,284,159, dated May 26, 1942, contains claims directed to a plurality of disc systems with rectifying means associated therewith, whereas this is a fifth divisional application and contains claims directed to the improved induction system for generating high voltages which may be applied to gases.

In another arrangement for producing high voltages according to my present invention, an induction electrode, either grounded or preferably maintained at a high voltage, is insulatingly separated from a chargeable medium which may be a solid, a liquid, or a gas, and, by the use of a point discharge electrode system connected to a direct current source or preferably to ground, ionization or corona is caused to take place through and/or about the chargeable medium. The charged medium is then moved or carried to a low potential area on a chargeable element, the high voltage surface of which is brought up to an exceedingly high voltage by the continued deposits from the charged medium. In a further modification of my present invention, both my "contact" and "induction" principles, about which more will be said later, are utilized.

A further and more specific object of my present invention is to provide systems which utilize my improved contact and induction principles.

This description will be given in greater detail with the aid of the accompanying drawing which, however, is not to be considered in any way limitative of my present invention but is to be considered only illustrative. Referring now in detail to the drawing:

Fig. 1 is a sectional view wherein the high potential voltages are applied to gases;

Fig. 2 is another method of charging a metallic container to a high voltage by the use of gases.

As an example of the manner in which my improved induction system for generating high voltages may be applied to gases, particular reference is made to Fig. 1. By virtue of a motor **508** driving a pump **510**, oil is sprayed through nozzle **512** vertically through glass pipe or insulating cylindrical chamber **514**. Air sucked in or pumped in through ball valve **516** and orifices **518** forms bubbles with the oil. Instead of air, other gases such as helium, nitrogen or mixtures thereof may be used. By applying a high voltage to the electrode **520** through conductor **522** from a suitable source (not shown) corona discharge will take place at the metallic points **524** mounted on a metallic grounded electrode **526**. As a consequence, the air in the oil bubbles becomes ionized, passes upwardly into the metallic elbow **528** and through metallic wire screen **530**. Consequently, the charges are fed on to the metallic false bottom **532** to the interior zero gradient surface of the sphere **534**, whose outer surface rapidly becomes charged to an exceedingly high potential. Excess oil may be carried off through glass pipe **536** to be repumped through pump **510**.

The system shown in Fig. 1 may be applied to advantage in internal combustion engines. In that case, the air supply would be completely shut

off but the gasoline sprayed past the corona points **524** would charge up the particles of gasoline. The gasoline could then be fed into the combustion portion of the engine with air and the resultant explosions should give relatively greater power and more complete combustion than that now available in the ordinary type of gasoline engine, due to the beneficial action of the ionization.

Another way of charging a metallic container to a high voltage by the use of gas is illustrated in Fig. 2. Air is blown through a pipe **550** past a plurality of discharge points **552** whose terminals, as illustrated, are connected to ground and to the high voltage side, of for example, an induction coil. The ionized air is then blown through a metallic screen **554** which may be maintained at a positive or negative potential, depending upon the character of ions desired. The screen **554** will remove ions of opposite polarity as a result of which ions blown through glass tube **556** impinge upon the shell **558** and lose their charge to charge up condenser or storage device **558** to a plurality opposite that of screen **554**.

The ions emanating from glass tube **556** need not, however, be used for charging purposes but may be inhaled for medical treatment, that is to say, used therapeutically. If desired, a series of screens **554** may be arranged at the same polarity but of different values or at the same values of potential so as to insure obtaining ions of merely one polarity. For medical purposes, ions of either polarity may be used to the exclusion of others depending upon which type is found more helpful.

Various changes will readily suggest themselves in carrying out the principles of my present invention. Accordingly, my present invention is not to be considered limited by the various illustrations given but on the other hand is to be given the full scope indicated in the appended claims.

What is claimed is:

1. A high voltage generating system comprising an insulating cylinder, a fluid inlet at one end of said cylinder and a fluid outlet at the other end thereof, a first electrode maintained at ground potential and located within said cylinder, a second electrode maintained at high voltage and located outside said cylinder and in the same zone as said first electrode, a metallic member located at the fluid outlet of said cylinder, and means for passing fluid through said insulating cylinder whereby the charge carried by said fluid increases in voltage as it reaches said metallic member.

2. A high voltage generating system comprising an insulating cylinder, a fluid inlet at one end of said cylinder and a fluid outlet at the other end thereof, a first electrode maintained at ground potential and located within said cylinder, a second electrode maintained at high voltage and located outside said cylinder and in the same zone as said first electrode, a metallic member located at the fluid outlet of said cylinder, and means including a pump for passing fluid through said insulating cylinder whereby the charge carried by said fluid increases in voltage as it reaches said metallic member.

3. A high voltage generating system comprising an insulating cylinder, a fluid inlet at one end of said cylinder and a fluid outlet at the other end thereof, a first electrode maintained at ground potential and located within said cylinder, a second electrode maintained at high voltage and located outside said cylinder and in the same zone as said first electrode, a metallic member located at the fluid outlet of said cylinder, and means including a nozzle and a pump for passing fluid through said insulating cylinder whereby the charge carried by said fluid increases in voltages as it reaches said metallic member.

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