

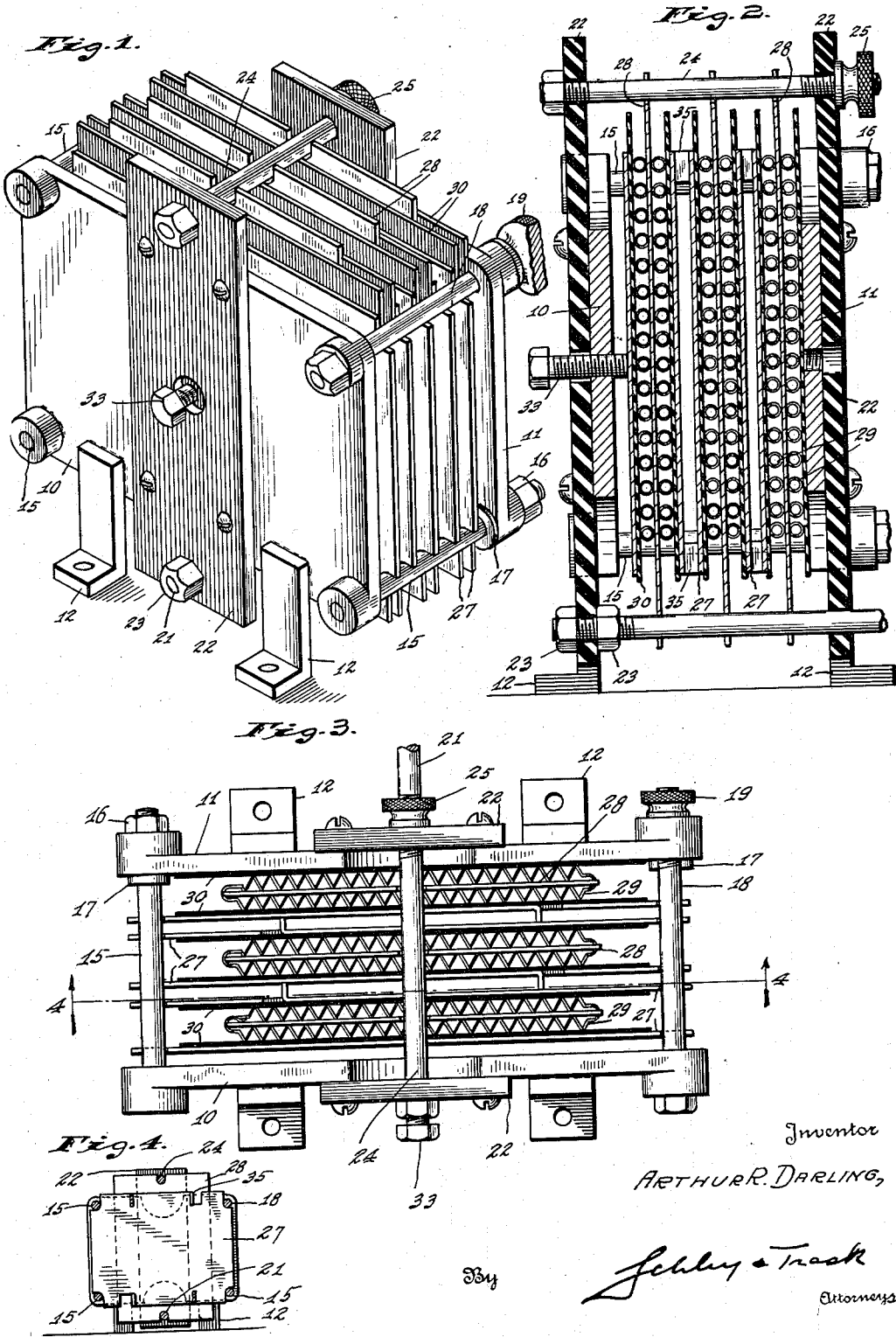
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OZONIZER

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OZONIZER

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It is the object of my invention to produce an ozonizer which will have several advantages over devices of this kind heretofore in use. More specifically, it is my object to produce an ozonizer of the type in which one set of electrodes is separated from the other by sheets of dielectric, one set of electrodes being so formed as to contact the dielectric at a multiplicity of points of relatively small area, and to so construct the device as to insure contact of the dielectric with the electrodes at all such points. A further object of my invention is to so construct the ozonizer that the electrodes and dielectric may readily be removed therefrom for purposes of cleaning, inspection, and repair. Another object of my invention is to provide for the cooling of the device to prevent overheating.

In carrying out my invention I employ two sets of alternately arranged plate electrodes, the electrodes of one set being separated from those of the other by sheets of dielectric material. To provide for the contact of one set of electrodes with the dielectric at spaced points rather than over an extended area, the effective area of each plate of such set is covered with a series of open-wound helical springs which extend parallel with the plate between it and the dielectric. The two sets of plates are arranged in a stack, and the device is provided with means for applying pressure to such stack to compress the springs transversely of themselves and to insure that each turn of each spring is firmly seated against the adjacent sheet of dielectric. The device is so constructed that upon relieving the stack of pressure the electrodes may be readily withdrawn, either singly or in groups. The plate-electrodes not covered with springs are double, each electrode comprising a pair of plates held in spaced relation to permit the passage between them of a portion of the air flowing through the ozonizer.

The accompanying drawing illustrates my invention: Fig. 1 is an isometric view of the complete device; Fig. 2 is a longitudinal vertical section through the device illustrated in Fig. 1; Fig. 3 is a plan view of the ozonizer; and Fig. 4 is a section on a reduced scale on the line 4—4 of Fig. 3.

The ozonizer illustrated in the drawing comprises a frame having a pair of opposed heads 10 and 11. These heads are conveniently of a general rectangular shape and may be formed as castings of some light metal, such as aluminum. The heads are provided with feet 12 by which the ozonizer can be secured to any desired support. The two heads 10 and 11 are held in spaced

position as by means of rods 15 which are screw-threadedly mounted in the head 10 and which extend through the head 11 where their screw-threaded ends receive nuts 16 by means of which the head 11 may be firmly clamped against collars or flanges 17 on the rods. As shown, the device embodies three of the rods 15, two being located at the lower corners of the heads and the other at one of the upper corners of the heads. At the other upper corner of the head there is located a simple bolt 18 which extends through aligned holes in the two heads and is provided beyond the head 11 with a thumb nut 19 which may readily be removed to permit withdrawal of the bolt.

Supported below the heads 10 and 11 and insulated therefrom is a longitudinally extending rod 21. Conveniently, each of the heads has secured to its outer face a vertically extending strip of insulating material 22 which projects downwardly below the heads and is provided with aligned holes for the passage of the rod 21. The rod 21 may be secured in place by means of nuts 23 located on opposite sides of one of the strips of insulating material 22.

Preferably, the strips of insulating material project upwardly beyond the upper edges of the heads 10 and 11 and are there provided with holes for the reception of a bolt 24 having a thumb nut 25 which may be readily removed to permit withdrawal of the bolt.

The two sets of electrodes which the ozonizer embodies are supported between the heads 10 and 11, the grounded electrodes being supported from the rods 15 and the charged electrodes from the rod 21 and bolt 24. As shown in the drawing, the grounded electrodes are in the form of plane plates 27 having their corners notched for the reception of the three rods 15 and the bolt 18. The vertical extent of the electrodes 27 is materially less than the distance between the rod 21 and bolt 24. The electrodes 28 of the charged set are supported from the rod 21 and bolt 24, their upper and lower edges being notched at intermediate points for the reception of the rod and bolt which serve to interconnect the electrodes of the charged set and one of which, preferably the rod 21, also serves as a terminal or conductor extending to the transformer or other source of high-potential.

Each of the plates of one set, here shown as the charged plates, has each of its working faces covered with a plurality of open-wound helical springs 29 extending parallel with the plate. As shown, each spring is disposed horizontally, but

that is incidental. Conveniently, a single length of spring is associated with each plate, the spring being bent back upon itself at the vertical plate-edges, which are conveniently notched to maintain the stretches of the spring in parallel relationship. Sheets of dielectric 30 separate the springs on each face of each plate 26 from the adjacent plate 27.

One of the frame-heads, here shown as the head 10, is provided with a centrally disposed clamp-screw 33 which is screw-threadedly mounted in the head and which extends there-through into operative engagement with the adjacent grounded electrode 27. By rotating the screw 33, pressure can be applied to the series of plates between the heads whereby to force all the turns of the springs 29 into firm engagement with the dielectric. Each individual turn of each spring 29 acts as a resilient member electrically connected to its associated plate 28.

Preferably, the grounded plates 27 in the interior of the stack are arranged in pairs, as shown in the drawing, the two plates of each pair being spaced apart. The spacing of the two plates 27 of each pair is conveniently maintained by ears 35 struck up from the body of each plate along the top and bottom edges thereof. As is clear from Figs. 3 and 4, the two plates 27 of each pair may be identical, each plate being provided with two ears projecting in the same direction from the plate and so disposed that when the plates are placed in opposed relationship the two ears on each plate will abut against the other plate, thus making a total of four ears acting to maintain each pair of plates 27 in spaced relationship. As shown, the two ears on each

plate are diagonally opposite each other, but various arrangements are possible.

If it is desired to remove any of the electrodes or any of the sheets of dielectric for the purpose of cleaning, inspection, or repair, the clamp screw 33 is retracted to relieve the pressure on the stack and the bolts 18 and 24 are removed. Thereupon the electrodes can be removed from the frame, either singly or as a group.

I claim as my invention:

1. In an ozonizer, two series of alternately arranged plates, dielectric material disposed between adjacent plates; and a plurality of helical springs disposed on opposite faces of each plate of one set and engaging the adjacent dielectric material.

2. The invention set forth in claim 1 with the addition of means for applying pressure to the two series of plates in a direction to compress said springs laterally of themselves.

3. In an ozonizer, two oppositely charged plates of conducting material, dielectric material disposed between said plates and in contact with one of them, and a plurality of helical springs disposed between the other plate and the dielectric material.

4. An electrode for use in an ozonizer, comprising a flat plate of conducting material and a series of helical springs parallel to and in contact with each face of said plate.

5. An electrode for use in an ozonizer, comprising a flat plate of conducting material and a series of helical springs parallel to and in contact with one face of said plate.

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