



(11) (A) No **1 2 13 671**

(45) ISSUED 861104

(52) CLASS 353-14  
C.R. CL. 355-1

(51) INT. CL. H01F 31/00,27/24<sup>4</sup>

(19) (CA) **CANADIAN PATENT** (12)

(54) Electrical Particle Generator

(72) Meyer, Stanley A.,  
U.S.A.

(21) APPLICATION No. 420,909

(22) FILED 830204

(30) PRIORITY DATE U.S.A. (367,051) 820409

No. OF CLAIMS 16

**Canada**

ELECTRICAL PARTICLE GENERATOR

1 ABSTRACT

2       An electrical particle generator comprising a non-magnetic  
3 pipe in a closed loop having a substantial amount of magnetized  
4 particles encapsulated therein. A magnetic accelerator assembly  
5 positioned on said pipe having an inductive primary winding and  
6 a low voltage input to said winding. A secondary winding  
7 positioned on said pipe opposite to said primary winding. Upon  
8 voltage being applied to said primary winding said magnetized  
9 particles are passed through said magnetic accelerator assembly  
10 with increased velocity. The velocity accelerated particles  
11 continuing through said pipe induce an electrical voltage/current  
12 potential as they pass through the secondary winding. The  
13 increased secondary voltage is utilized in an amplifier arrange-  
14 ment.

1213671

ELECTRICAL PARTICLE GENERATOR

1 BACKGROUND AND PRIOR ART

2 The prior art teachings expound the fundamental principle  
3 that a magnetic field passing through inductive windings will  
4 generate a voltage/current or enhance the voltage thereacross  
5 if the winding is a secondary winding.

6 It is also taught by the prior art that a magnetic element  
7 in a primary inductive field will be attracted at one end of the  
8 coil and repelled at the other. That is a moving magnetic  
9 element will be accelerated in motion by the attraction and  
10 repulsion of the magnetic field of the primary inductive winding.

11 In the conventional step-up transfer the voltage across

1213671

1 the secondary is a function of the number of turns of the  
2 secondary relative to the number of primary turns. Other  
3 factors are the size of the turns and whether the core is air  
4 or magnetic.

5 SUMMARY OF INVENTION

6 The present invention utilizes the basic principle of a  
7 particle accelerator and the principle of inducing a voltage in  
8 a secondary winding by passing a magnetic element therethrough.

9 The structure comprises a primary voltage inductive winding  
10 having a magnetic forming core and a low voltage input. A  
11 secondary winding comprises a greater number of turns than the  
12 primary and has an output for utilization of the voltage induced  
13 therein.

14 The primary inductive winding and core are positioned  
15 around a first position on an endless - closed loop, non-magnetic  
16 pipe. The secondary windings are positioned around an opposite  
17 position of said endless pipe.

18 The pipe is filled with discrete magnetic elements having  
19 a magnetic polarized charge placed thereon. The magnetic elements  
20 are particles and preferably gas.

21 The magnetic elements due to their polarization will sustain  
22 some motion. As the particles approach the accelerator assembly,  
23 the primary coil, the field therein attracts the particles and  
24 accelerate the particles to enter the gap in the coil. As the  
25 magnetic element proceeds, the repulsion end of the accelerator

# 1213671

1 will impart further magnetic force to the particles. This  
2 magnetic attraction and the repulsion considerably enhances  
3 the motion of the discrete particles within the pipe. The  
4 particles are ejected from the area of the accelerator with  
5 an increased velocity motion.

6 The magnetic elements proceed in the closed loop pipe at  
7 a speed considerably greater than their normal movement due  
8 to the accelerator action. As the magnetic elements pass through  
9 the core of the secondary winding there is induced a voltage  
10 therein. In this way a much greater voltage is induced in the  
11 secondary winding of the transformer.

## 12 OBJECTS

13 It is principal object of the present invention to provide  
14 an electrical generator capable of producing a voltage/current  
15 much greater in magnitude hereintofore possible.

16 Another object of the present invention is to provide such  
17 an electrical generator utilizing magnetized elements and a  
18 magnetic accelerator.

19 Another object of the present invention is to provide such  
20 an electrical generator that can control the amplitude of the  
21 output.

22 Another object of the present invention is to provide such  
23 an electrical generator that may be utilized with direct current,  
24 alternating current, pulsed, or other configurations of waveforms.

25 Another object of the present invention is to provide such

# 1213671

1 an electrical generator that may be utilized in a single phase  
2 or three phase electrical system.

3 Still another object of the present invention is to provide  
4 a generator for developing magnetized particles for use in an  
5 electrical particle accelerator.

6 A further object of the present invention is to provide  
7 such an electrical generator that utilizes components readily  
8 available are adaptable to a simplified embodiment.

9 Other objects and features of the present invention will  
10 become apparent from the following detailed description where  
11 taken in conjunction with the drawings in which:

## 12 BRIEF DESCRIPTION OF DRAWINGS

13 Figure 1 is a simplified illustration of the principles  
14 of the invention shown partly in crosssection and partly  
15 pictorially.

16 Figure 2 is an electrical schematic illustration of the  
17 embodiment of Figure 1.

18 Figure 3 is an illustration similar to Figure 2 but  
19 adaptable to 3 phase.

20 Figure 4 is a first alternative arrangement in a preferred  
21 illustration of the invention.

22 Figure 5 is another alternative arrangement in a preferred  
23 illustration of the invention.

24 Figure 6 is another alternative arrangement in a preferred  
25 illustration of the invention.

1           Figure 7 is another alternative arrangement in a preferred  
2 illustration of the invention.

3           Figure 8 is another alternative arrangement in a preferred  
4 illustration of the invention.

5           Figure 9 is an alternative arrangement for a magnetic drive  
6 accelerator assembly.

7           Figure 10 is a mechanical illustration of a magnetic particle  
8 generator for developing magnetic particles utilized in the  
9 present invention.

10 DETAILED DESCRIPTION OF INVENTION

11           With particular reference to Figures 1 and 2 there is  
12 illustrated the invention in its mostly simplified schematic  
13 embodiment.

14           The system of the invention comprises a primary winding  
15 coil magnetic accelerator assembly 10, a closed loop non-magnetic  
16 pipe 30, and a secondary winding 20.

17           The magnetic accelerator assembly comprises primary windings  
18 12 a magnetic core 14 and voltage taps 16. The primary windings  
19 are positioned around end 32 of closed loop pipe 30 or tubing  
20 of non-magnetic material.

21           At the opposite end 34 of the closed loop pipe 30 there is  
22 positioned thereon secondary windings 20. A voltage tap 22 on  
23 secondary winding 20 permits the utilization of the voltage  
24 induced therein.

25           Within the pipe 30 there is encapsulated a substantial

1 quantity of magnetic elements 40 of Figure 2. The elements 40  
2 must be sufficiently light to be freely mobile. Therefore, the  
3 elements may be particles suspended in a fluid medium such as  
4 gas, liquid, or light-weight movable solid particles and more  
5 preferably gas. In the application of suspended solid magnetic  
6 particles it may be desirable to evacuate the tubing to reduce  
7 the resistance to its flow. The magnetized elements 40 are  
8 discrete elements, that is, each particle or a miniscule part  
9 thereof is separately magnetized. Further, the action as here-  
10 inafter described is an action upon each particle and not upon  
11 the mass.

12         The voltage applied to terminals 16 of the primary winding  
13 12 is a low voltage the magnitude of which may be utilized as an  
14 input signal control. By varying the input voltage the accelera-  
15 tor will vary the velocity of the speed of the particles; which,  
16 in turn vary the magnitude of the voltage/current output of the  
17 secondary winding 20.

18         The output 22 of the secondary transformer 20 is a high  
19 voltage/current output.

20         It can be appreciated that the system of Figures 1 and 2  
21 utilizing a single closed loop will provide a single phase output  
22 in the secondary winding. With particular reference to Figure 3  
23 there is illustrated a closed loop system having three parallel  
24 non-magnetic tubes 31, 33, and 35. On each tube or pipe there  
25 is a respective secondary winding 21, 23, and 25.

26         Each of the secondary windings 21, 23, and 25 are a single  
27 phase much as that shown in Figures 1 and 2. The three pipes,  
28 having a common junction at its input and at its output, with  
29 the respective three secondary pick-up windings provide a



1 balance three-phase (3) electrical system.

2       The electrical power generator illustrated in Figure 4 is in  
3 electrical operation identical to that in Figures 1 and 2. The  
4 physical configuration of the arrangement is adapted to be utiliz-  
5 ed in a high moisture environment. An insulating coating 45 com-  
6 pletely covers the pipe 30, as well as all electrical windings.

7       In Figure 4 there is illustrated that increasing the number  
8 of coils with a given size winding the voltage/current output is  
9 increased. The physical configuration illustrated is such that  
10 the vertical aspects as well as the horizontal aspect are utilized.  
11 In this way a large diameter pipe can be used with a substantial  
12 number of turns of heavy-gauge high-current wire.

13       With particular reference to Figure 5 there is illustrated  
14 a coil arrangement 49 that utilizes the entire magnetic flux in  
15 the closed loop tubing 47. The configuration is that of a  
16 coaxial arrangement with the primary winding 43 as a center core.

17       Figure 6 illustrates a concentric spiral configuration of  
18 the tubing 50 having the secondary windings 53 wound over it's  
19 entirety.

20       In Figure 7 the particle accelerator 10 is wound over the  
21 tubing 30 much in the same manner as the Figures 1 and 2.  
22 However, in this embodiment the tubing 30 is a continuous closed  
23 loop but in a series, parallel configuration. That is electri-  
24 cally there are three secondary windings with three outputs  
25 whereas the tubing 30 is in series through the three secondary

1 windings.

2 In Figure 8 the reverse of that configuration of Figure 7  
3 is shown. That is the several pick-up coils are wound in series;  
4 whereas the tubing 80 is not a continuous tubing as that of the  
5 other configuration. Principally, there is disclosed an input  
6 manifold 82 and an output manifold 84 with the several tubings  
7 60a xxx n interconnecting the two manifolds. Each one of the  
8 aforesaid secondary coils 70a xxx n are wound over its respective  
9 tubing.

10 The magnetic particle accelerator 10 may comprise configura-  
11 tions and structures distinctive from the electrical accelerator  
12 of Figure 1. With reference to Figure 9 there is illustrated a  
13 mechanical particle accelerator 100. In this embodiment the  
14 magnetic particles 102 are permanently magnetized prior to being  
15 encapsulated in non-magnetic pipe 110. The particles 102 are  
16 accelerated by fan blade or pump 104 rotated by mechanical drive  
17 assembly 106. The mechanical drive for the assembly 106 may  
18 comprise a pulley 112 attached by a belt or like to an electric  
19 motor. A sealing bearing 114 retains the particles 102 within  
20 the pipe 110.

21

22

23

24

25

1           It was stated above, the particles traversing the secondary  
2 coils a voltage/current is generated therein. It must be  
3 appreciated that the particles are not in actuality traversing  
4 the coils but are in fact traversing the magnetic field of the  
5 coils.

6           Again, the pipe 30 is described as a non-magnetic pipe.  
7 There are certain non-magnetic pipes that would not be operable  
8 in the present invention. That is, the pipe 30 must be capable  
9 of passing magnetic lines of force; and that it is these magnetic  
10 lines of force that traverse the inductive field of the secondary  
11 windings 20 to induce a voltage/current therein.

12           A significant feature of the invention illustrated in the  
13 various embodiments hereintofore described, as the generation  
14 of the magnetized particles encapsulated in the tubing. With  
15 reference to Figure 10, there is illustrated apparatus for  
16 carrying out the process of vaporizing material into vaporized  
17 particles and thereafter magnetizing the particles by subjecting  
18 them to a magnetic field.

19           The chamber 155 is a vacuated chamber having positioned in  
20 its lower half portion a pair of electrodes 160 and 162 of  
21 magnetizable material. A source of voltage 150 and 152 provides  
22 voltage and current of opposite polarity via terminals 154 and  
23 156 to the electrodes 160 and 162 via wire connections 164 and  
24 166. The area 161 between the end of the electrodes 160 and 162  
25 is the spark gap.

1           Upon the application of power to the magnetizable material  
2 electrodes 160 and 162 the tip of the electrodes in the spark  
3 gap will be vaporized into particles 180.

4           The particles 180 rise, use and enter into non-magnetic  
5 pipe 165. As the particles progress in movement they pass  
6 between the magnetic field generator 175. The particles each  
7 take on a magnetic charge as magnetized particles 185 and there-  
8 after are discharged via port 190 to the electrical particle  
9 generator above described.

10          In the simplified preferred embodiment of Figures 1 and 2,  
11 as well as the referred preferred embodiments it was indicated  
12 that a low voltage was applied to the particle accelerator 10.  
13 Upon acceleration a high voltage/current would be induced in the  
14 secondary pickup coil 20. A most significant advantage of the  
15 present invention is that the voltage amplification is irrespec-  
16 tive to the wave-shape of the input voltage. Specifically, if  
17 the input voltage is direct current a direct current voltage  
18 will be at the output; an alternating voltage will result in  
19 an alternating voltage at the output; a pulsed voltage will  
20 result in a pulsed voltage at the output; and a voltage of any  
21 other configuration will result in a similar configuration at  
22 the output.

23          Although certain embodiments have been shown it is to be  
24 understood modifications may be had without departing from the  
25 spirit and scope of the invention.

C L A I M S

1213671

1        1. An electrical particle generator comprising;  
2            a non-magnetic closed-loop tubing, passing magnetic  
3 lines of force,  
4            a particle accelerator positioned adjacent to one end  
5 of said tubing,  
6            a secondary inductive winding positioned adjacent to  
7 said tubing opposite to the position of said accelerator,  
8            a substantial volume of magnetized elements encapsulated  
9 in said tubing;  
10           said accelerator having means to provide a low input  
11 voltage; and  
12           said secondary winding having means for tapping a high  
13 voltage/current for utilization.

1        2. The electrical particle generator of Claim 1 wherein  
2 said magnetized elements are particles suspended in a fluid medium.

1        3. The electrical particle generator of Claim 2 wherein  
2 said magnetized elements is a gas.

1        4. The electrical particle generator of Claim 2 wherein  
2 said magnetized elements is a liquid.

1        5. The electrical particle generator of Claim 2 wherein  
2 said magnetized elements is a solid.

1        6. The electrical particle accelerator of Claim 1 wherein  
2 said particle accelerator is an electrical magnetic particle  
3 accelerator.

//

1           7. The electrical particle generator of Claim 1 wherein  
2 said particle accelerator further comprises a primary inductive  
3 winding, and a low voltage input to said winding.

1           8. The electrical particle generator of Claim 4 wherein  
2 said low voltage input is a variable voltage input for controlling  
3 the magnitude of the voltage/current induced in said secondary  
4 winding.

1           9. The electrical particle generator of Claim 4 wherein  
2 said input voltage to said primary winding is direct current,  
3 and wherein said output voltage is a direct current/voltage.

1           10. The electrical particle generator of Claim 4 wherein  
2 said input voltage to said primary winding is alternating current  
3 and wherein said output current/voltage is an alternating current/  
4 voltage.

1           11. The electrical particle generator of Claim 4 wherein  
2 said input voltage to said primary winding is pulsed, and wherein  
3 said output current/voltage is a pulsed current/voltage.

1           12. The electrical particle generator of Claim 4 wherein  
2 said input voltage to said primary winding has variable waveform,  
3 and wherein said output current/voltage will have a similar  
4 waveform as said input voltage waveform.

1           13. The electrical particle generator of Claim 4 wherein  
2 said particle accelerator further comprises a magnetic forming  
3 core, and wherein said core has an opening slightly greater than  
4 the outside diameter of said tubing and adapted to receive the  
5 same.

1        14. The electrical particle generator of Claim 1 said tubing  
2 has at said opposite end three parallel discrete branches and  
3 wherein said secondary coil is three discrete coils with three  
4 discrete outputs one of each positioned over one of each of said  
5 tubing branches thereby providing a three phase output.

1        15. The electrical generator of Claim 1 wherein said particle  
2 accelerator comprises mechanical pump means, and wherein said  
3 magnetized elements are permanently magnetized elements.

1        16. An assembly for providing a magnetized particle for  
2 utilization in an electrical particle generator comprising a  
3 chamber and a pair of magnetizable material electrodes positioned  
4 therein,  
5            a source of voltage/current of opposite polarity applied  
6 to said electrodes,  
7            said magnetizable material becoming vaporized upon the  
8 application of said voltage/current in said electrodes,  
9            a pipe connected to said chamber, and means directing  
10 said vaporized particles to said pipe,  
11            a magnetic field generator having the other end of said  
12 pipe positioned within its magnetic field,  
13            and wherein said vaporized particles entering and being  
14 expelled through said pipe become magnetized by passing through  
15 said magnetic field generator.

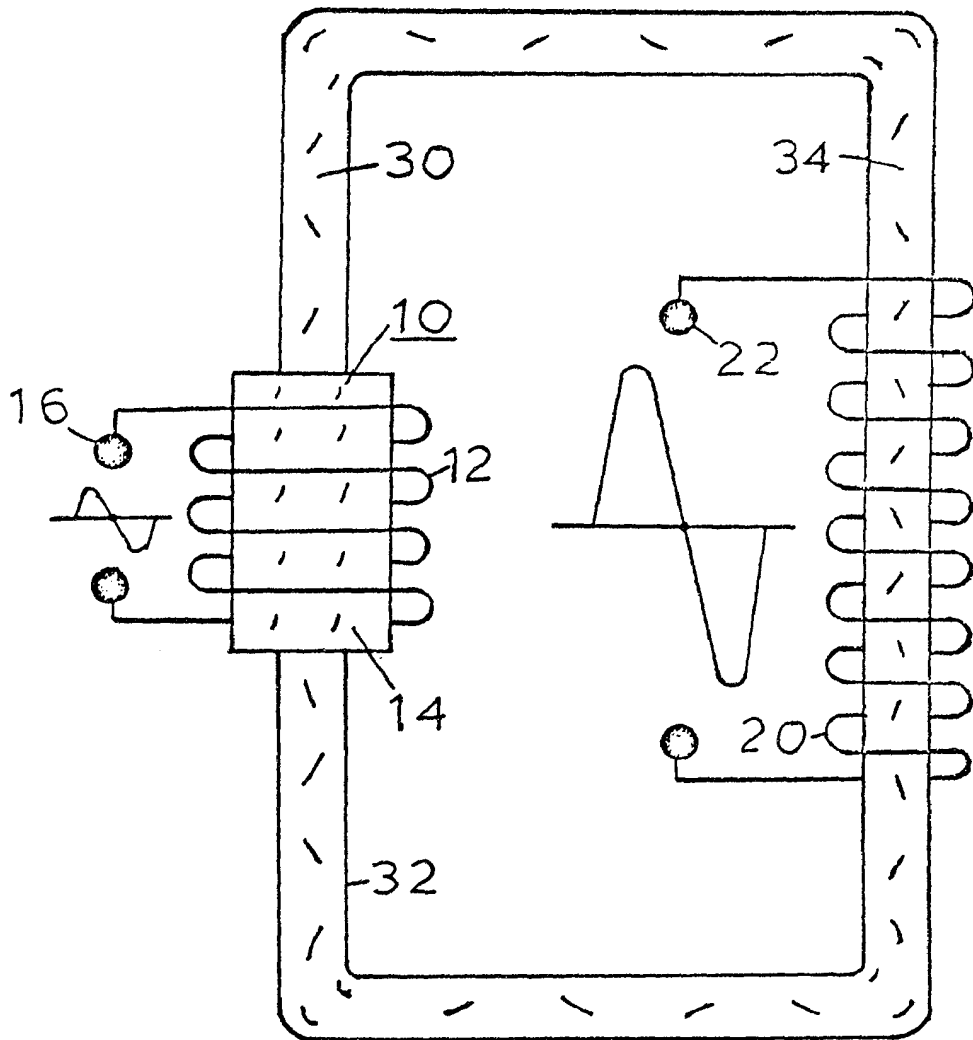


FIG. 1

*Johnson + Hicks*  
PATENT AGENTS



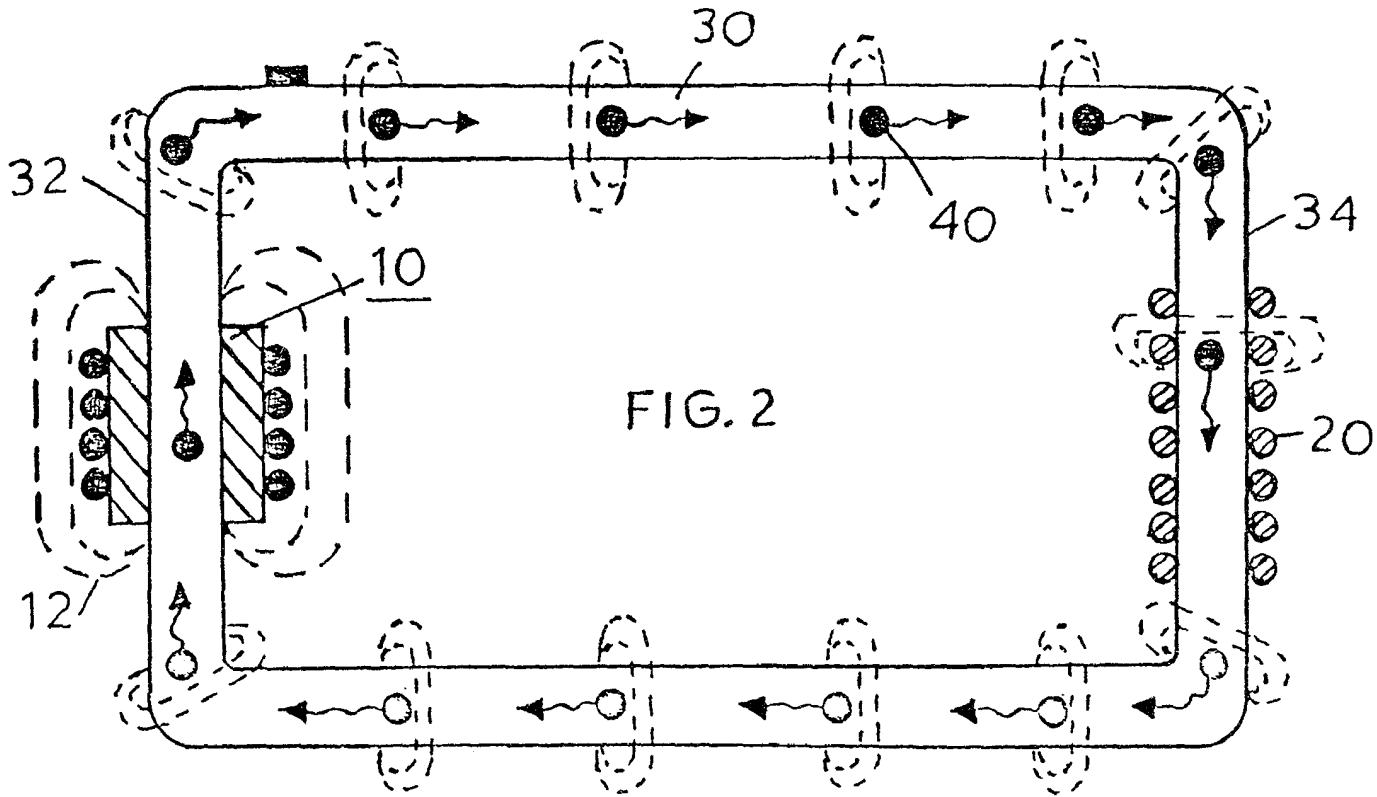


FIG. 2

*Johnson & Siebel*  
PATENT AGENTS

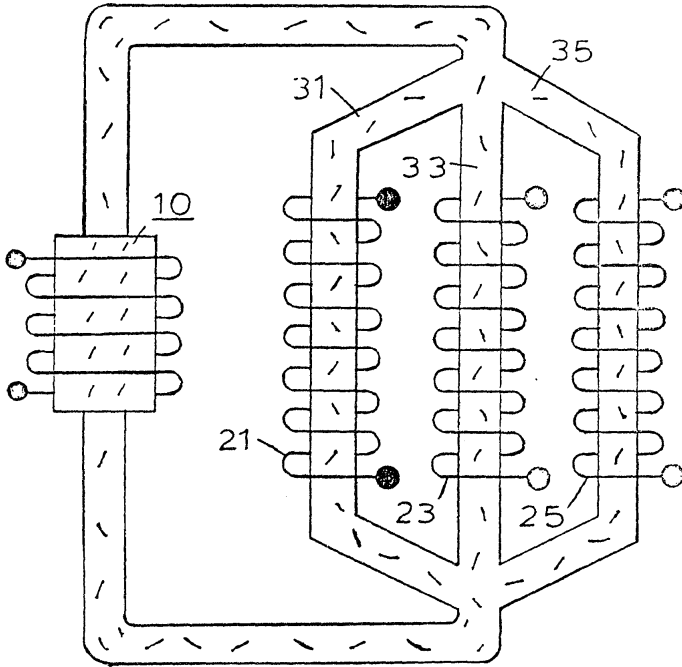


FIG. 3

*Johnson + Hecker*  
PATENT AGENTS

*Johnson & Hucks*  
PATENT AGENTS

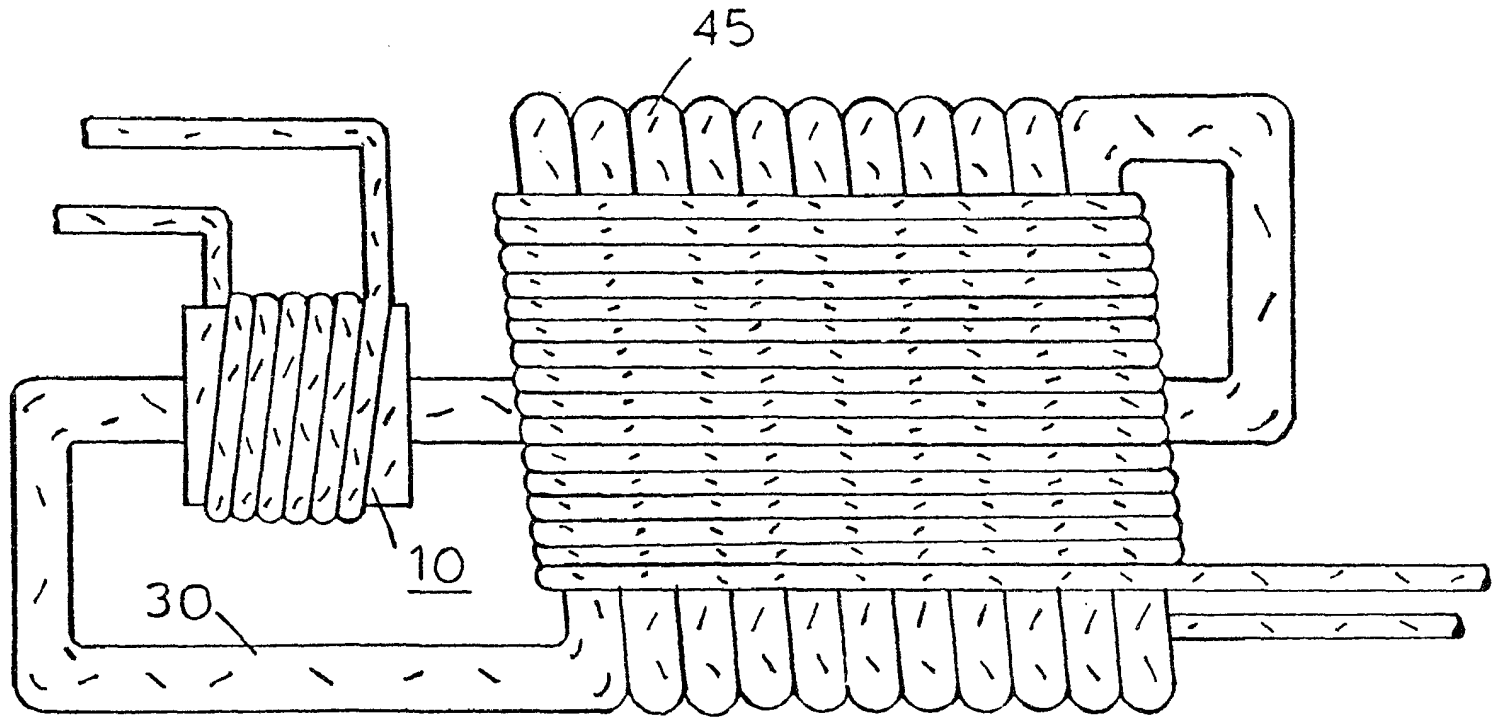


FIG. 4

1213671

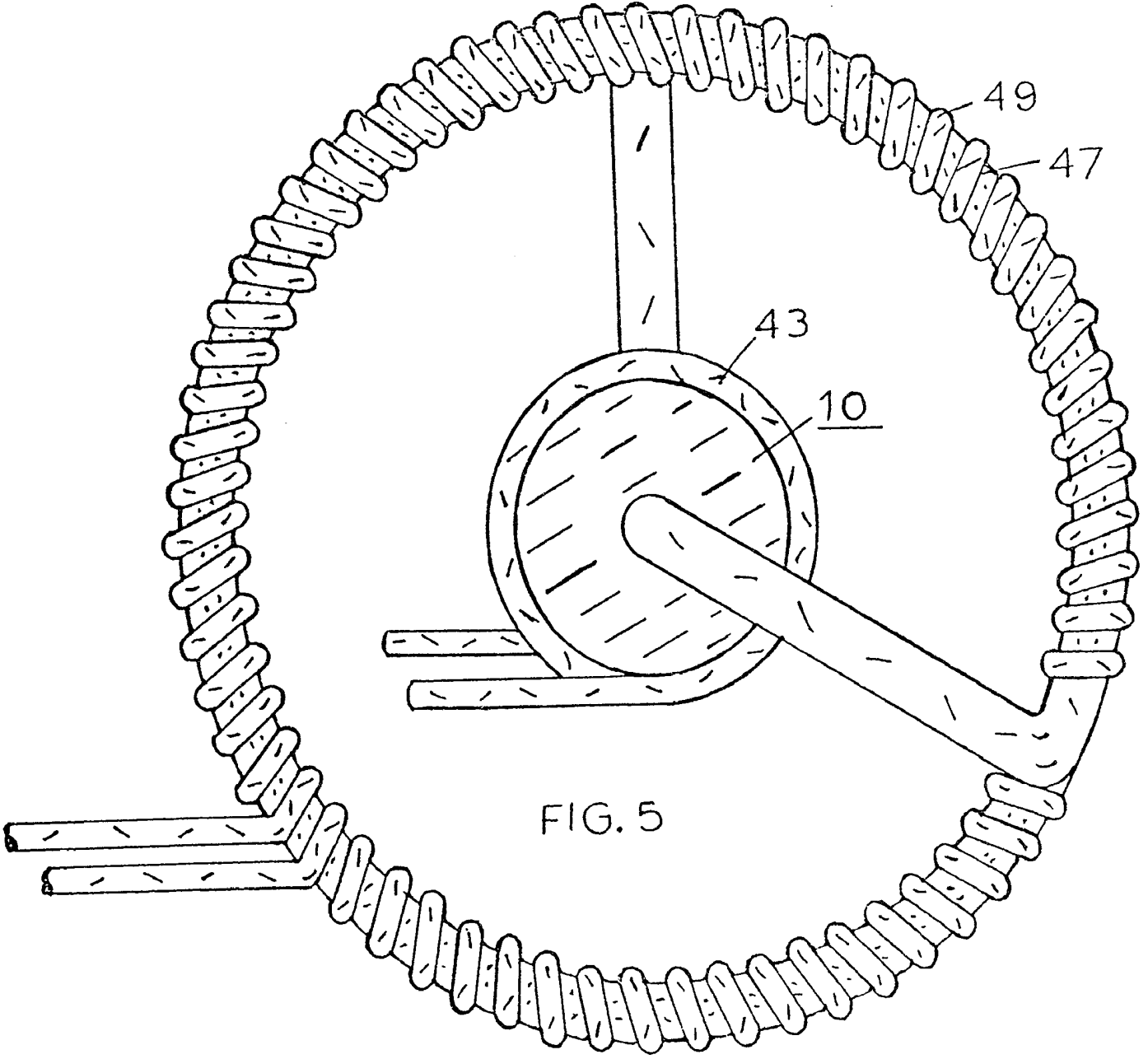
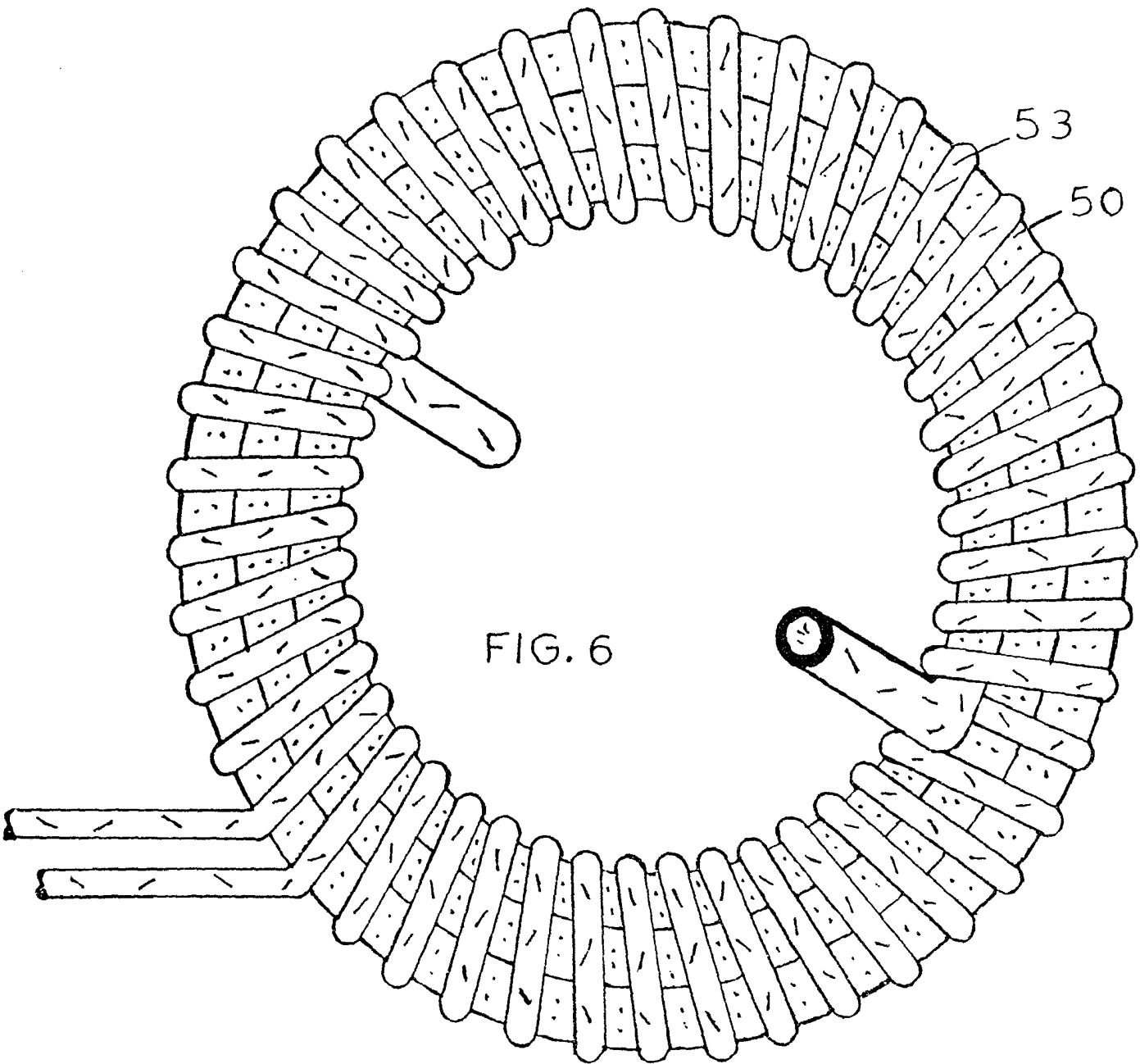
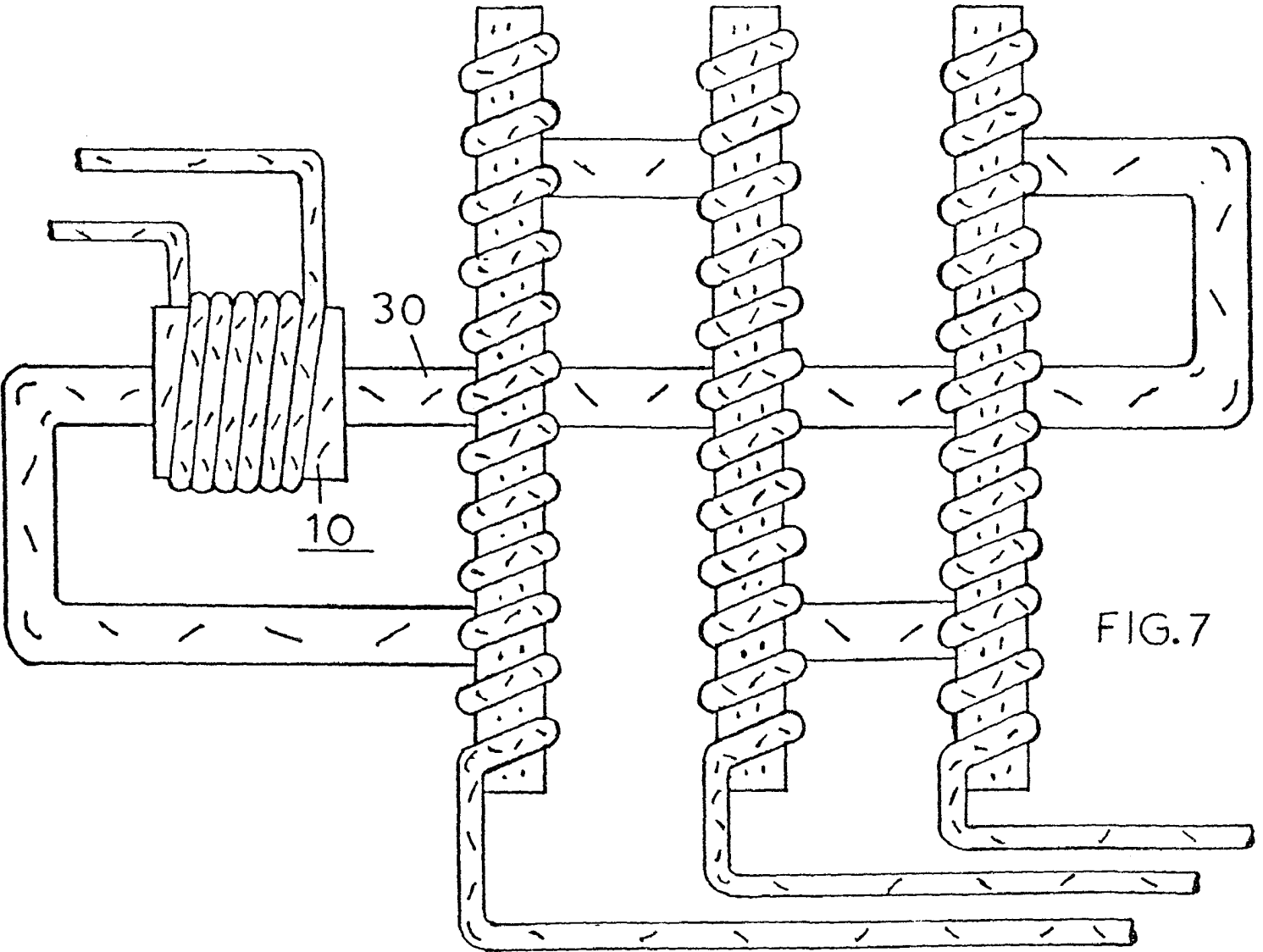


FIG. 5

*Johnson & Huchel*  
PATENT AGENTS



*Johnson & Hirsch*  
PATENT AGENTS



*Johnson & Nickles*  
PATENT AGENTS

1213671

*Johnson & Hicks*  
PATENT AGENTS

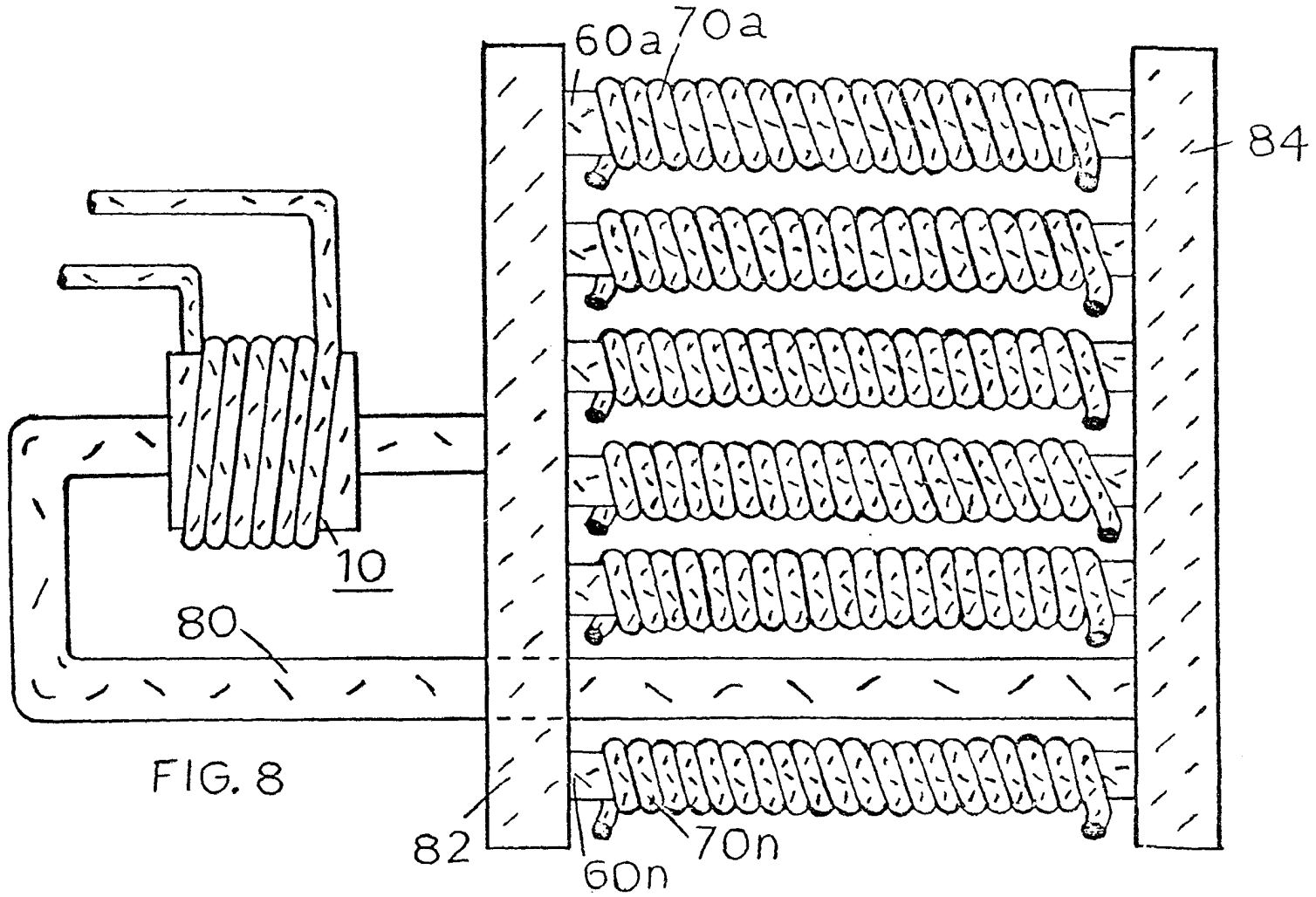


FIG. 8

1213671

100

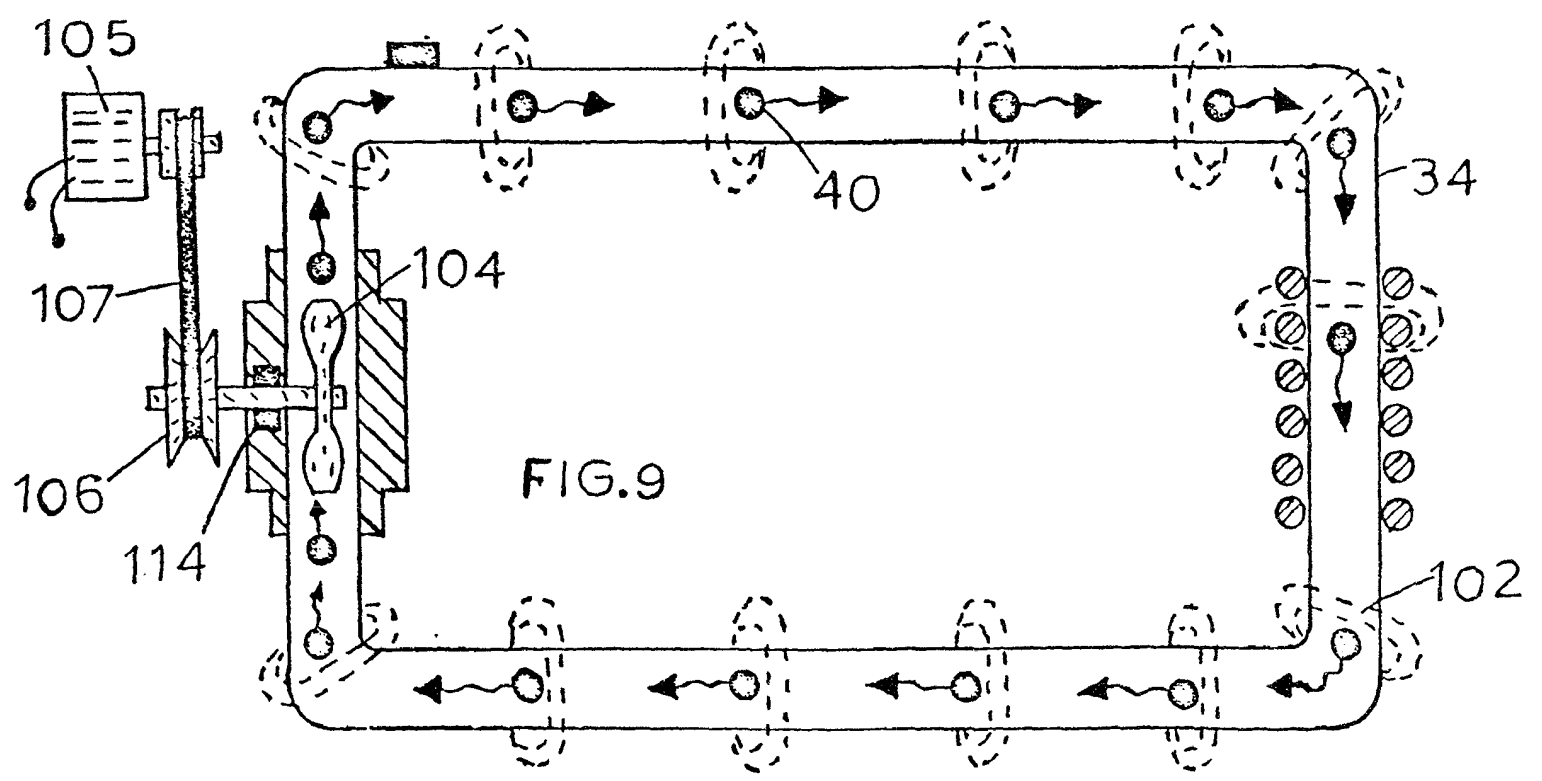


FIG.9

*Johnson & Hucker*  
PATENT AGENTS



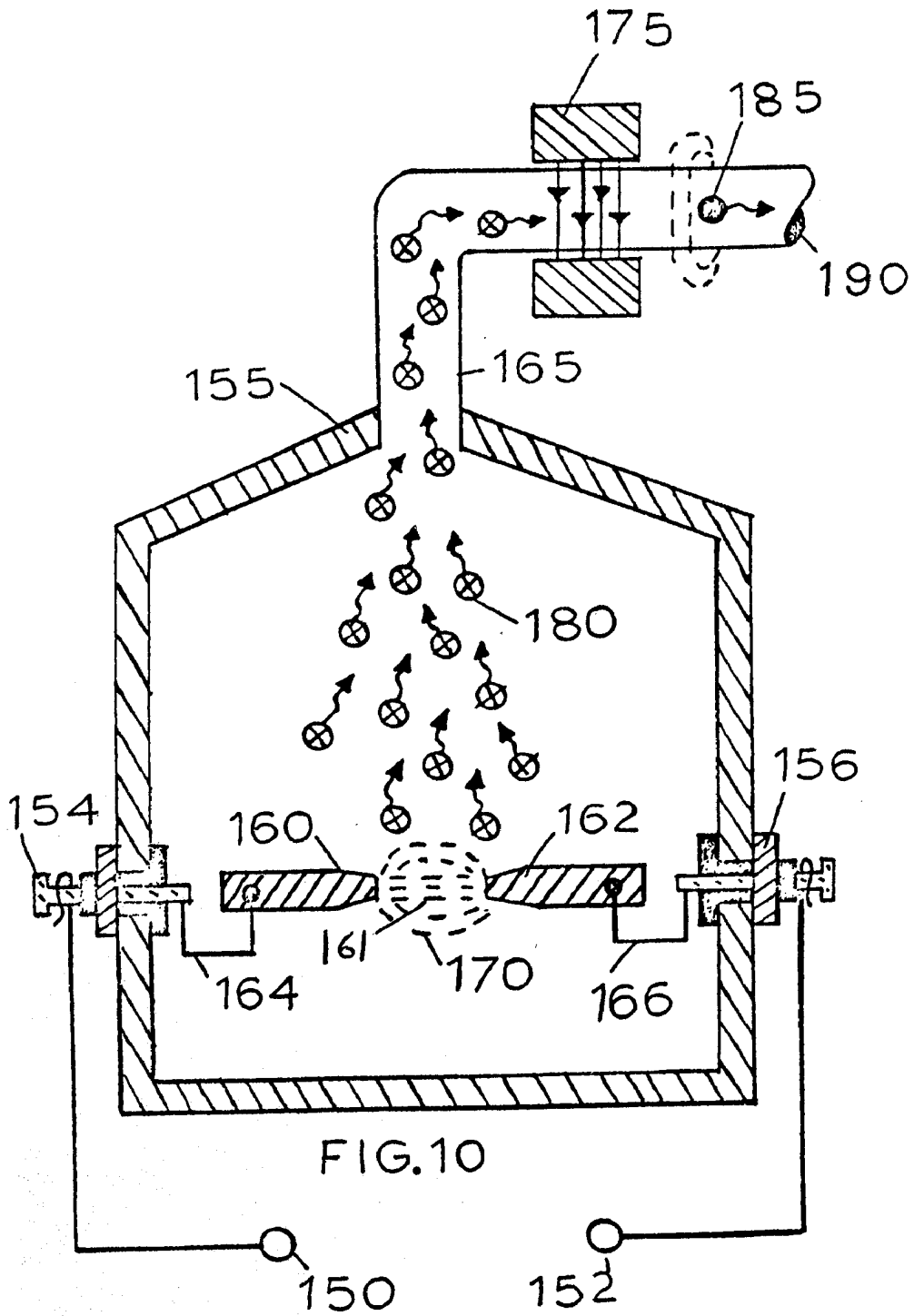


FIG. 10

*Johnson & Hicks*  
PATENT AGENTS