

No. 714,455.

Patented Nov. 25, 1902.

J. E. CORDOVEZ.  
LIGHTNING ARRESTER.

Application filed Apr. 19, 1902.)

(No Model.)

Fig. 1,

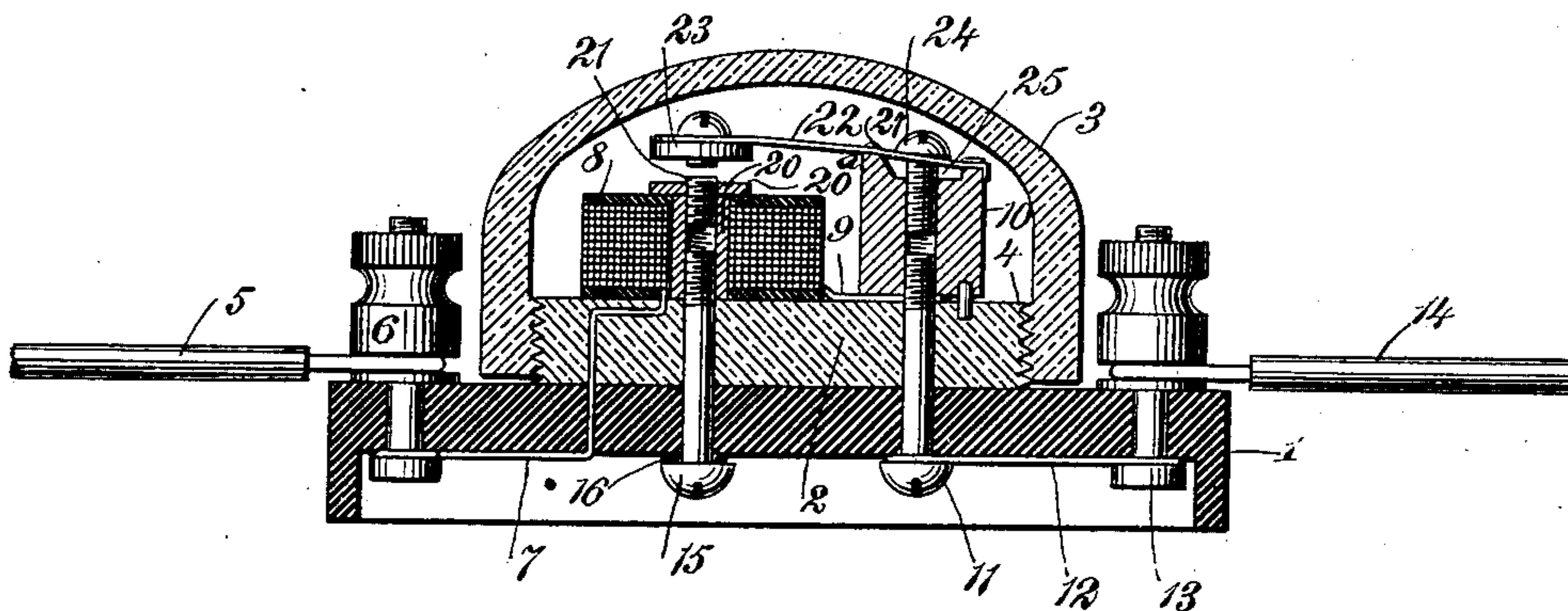
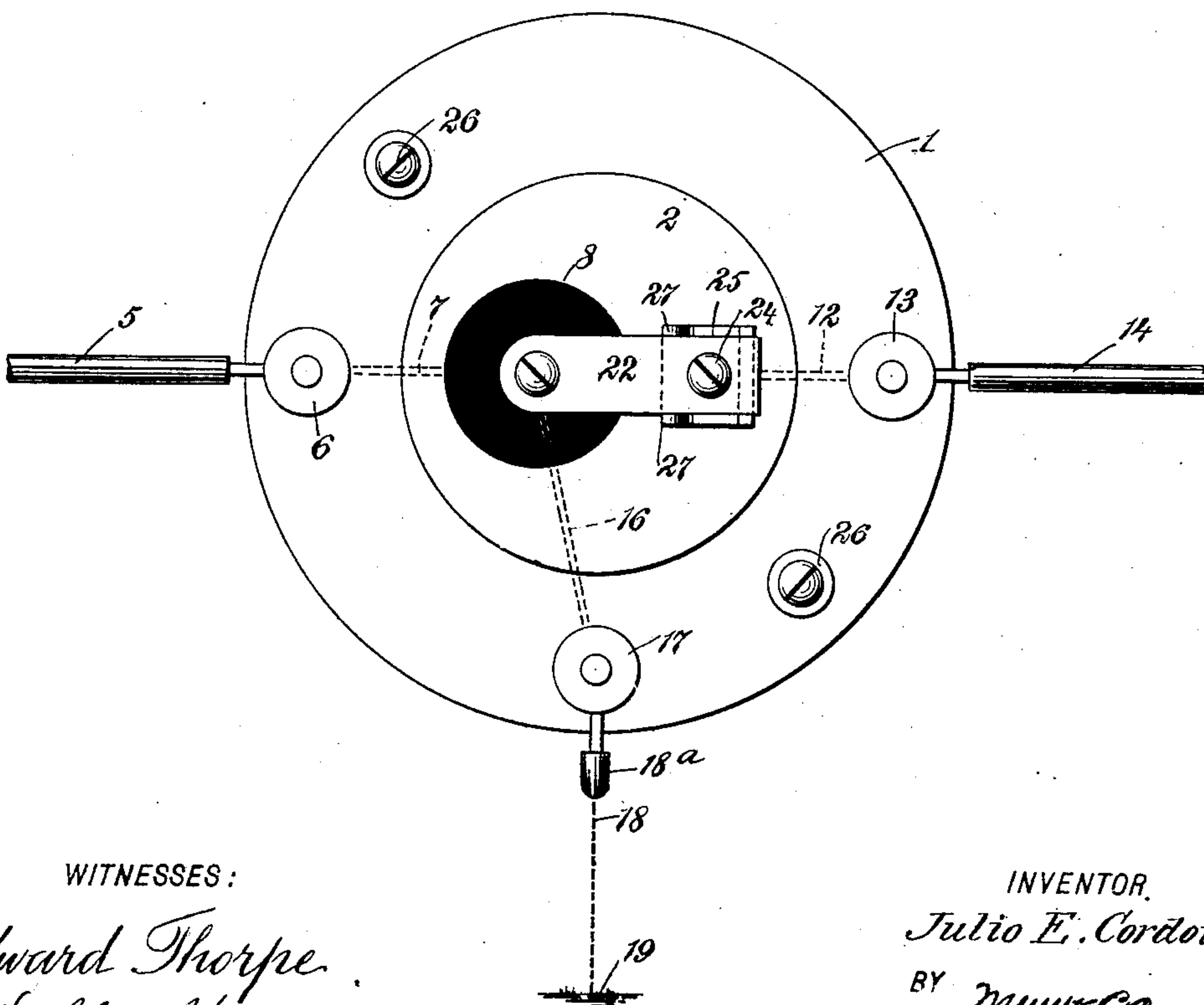


Fig. 2,



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JULIO E. CORDOVEZ, OF PANAMA, COLOMBIA.

## LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 714,455, dated November 25, 1902.

Application filed April 19, 1902. Serial No. 103,734. (No model.)

*To all whom it may concern:*

Be it known that I, JULIO E. CORDOVEZ, a citizen of the Republic of Colombia, residing at Panama, Colombia, South America, have  
5 invented certain new and useful Improvements in Lightning-Arresters, of which the following is a full, clear, and exact description.

My invention relates to lightning-arresters,  
10 more particularly of the type in which a magnet by attracting an armature produces a ground connection, so as to direct the flow of lightning or of any undesirable charge of electricity to the earth.

15 Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both figures.

Figure 1 is a central section showing my  
20 device in operation. Fig. 2 is a plan view of the same, a part being removed.

Upon a suitable base 1, preferably of hard rubber or ebonite, is mounted a plate 2 of any preferred insulating material, and upon  
25 this plate is secured a dome 3, of porcelain or wood, as desired, the same being screwed into position by means of the threads 4. For office use a wooden dome is preferable; but for outdoor service the porcelain dome gives  
30 better results. The line 5 is connected with the binding-screw 6, from which a wire 7 leads to the magnet 8. From this magnet a wire 9 connects with the metallic post 10, which is secured in position by means of the screw 11.  
35 From this screw a wire 12 is connected with the binding-screw 13. To the binding-screw is connected the line-wire 14. By means of the screw 15, which serves to hold the magnet in position, a wire 16 is connected with  
40 the binding-post 17, and from this binding-post a wire or lightning-rod 18 runs to the ground 19, as indicated more particularly in Fig. 2. The core 20 of the magnet is of tubular form, as shown, and is engaged by the  
45 headless screw 21, which is locked in position by means of the locking-disk 20<sup>a</sup>. Upon the end of the spring 22, made preferably of brass, is the armature 23 of the magnet. A screw 24 passes directly through the spring 22 into the post 10, so that by turning the screw 24 the parts of the spring immediately adjacent thereto are pressed slightly into the channel

25, thus causing the armature 23 to be raised. The screws 26 are for the purpose of securing the lightning-arrester upon some object, 55 such as a table, a wall, or a telegraph-post. Beads 27 on the post 10 straddle the spring 22.

The operation of my device is as follows: The line connections and ground connections being arranged as indicated in Fig. 2, the  
60 dome 3 is removed and a current of maximum intensity is sent through the instrument by means of the line connections 5 and 14. If desired, the maximum current may be increased by a couple of amperes. The  
65 screw 24 is next adjusted so that the spring 22 will support the armature 23 just at the proper tension to prevent the armature 23 from being drawn down upon the screw 21. The idea is to have the armature adjusted  
70 to that degree of sensitiveness where the line-currents are normally insufficient to close the ground connection. If now a lightning charge strikes either of the line-wires, or any atmospheric electrical disturbance causes  
75 an increase of potential in the line, the tension of the spring 22 enables the armature to descend and thereby close the ground-circuit, allowing the superfluous current to escape. Any desired degree of sensitiveness may be  
80 given to the instrument. The screw 21 is preferably made of platinum, so as not to be easily fused.

By means of the headless screw 21 and the plate 20<sup>a</sup> for locking the same in position the  
85 adjustment can be made without disturbing the screw 24. These two adjustments—to wit, the adjustment made by moving the screw 24 and that made by moving the screw 21—have a certain coaction each with the  
90 other, so that one adjustment affects the other.

The ground-wire is covered with asbestos 18<sup>a</sup>, as this substance is but little affected by  
95 heat, so that the lightning charge is safely conducted to the ground without destroying the insulation and damaging the machine and also without endangering the lives of persons who happen to be near the instrument.

I do not confine myself to the precise de- 100 tails above described nor to the materials mentioned. The core 20 and the screw 21 are of course made of conducting material, the core being preferably of soft iron. If made



of any other material, the magnet 8 simply acts as a solenoid.

Having thus described my invention, I claim as new and desire to secure by Letters

5 Patent—

1. A lightning-arrester, comprising a magnetic member provided with a core of conducting material, a ground connection for said core, line connections for said magnetic  
10 member, a post of conducting material arranged in electrical communication with said line connections, and provided with a channel, a spring mounted upon said post and lying across said channel, an armature mounted  
15 upon said spring, and means controllable at will for straining said spring slightly into said channel, thus regulating the sensitiveness of said armature.

2. A lightning-arrester, comprising electric

connections, a magnetic member provided with a core of conducting material, a conductor connecting said core with the ground, a leaf-spring provided with an armature and disposed adjacent to said magnetic member, said armature being free to approach said core, a post engaging said leaf-spring and a screw connected with said post for adjusting the tension of said leaf-spring, thereby simultaneously governing the sensitiveness of said leaf-spring and the distance between said armature and said core.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JULIO E. CORDOVEZ.

Witnesses:

D. H. BRANDON,  
M. A. CORDOVEZ.