

(No Model.)

C. S. BRADLEY.  
ELECTRIC CONDENSER.

No. 587,114.

Patented July 27, 1897.

Fig. 1.

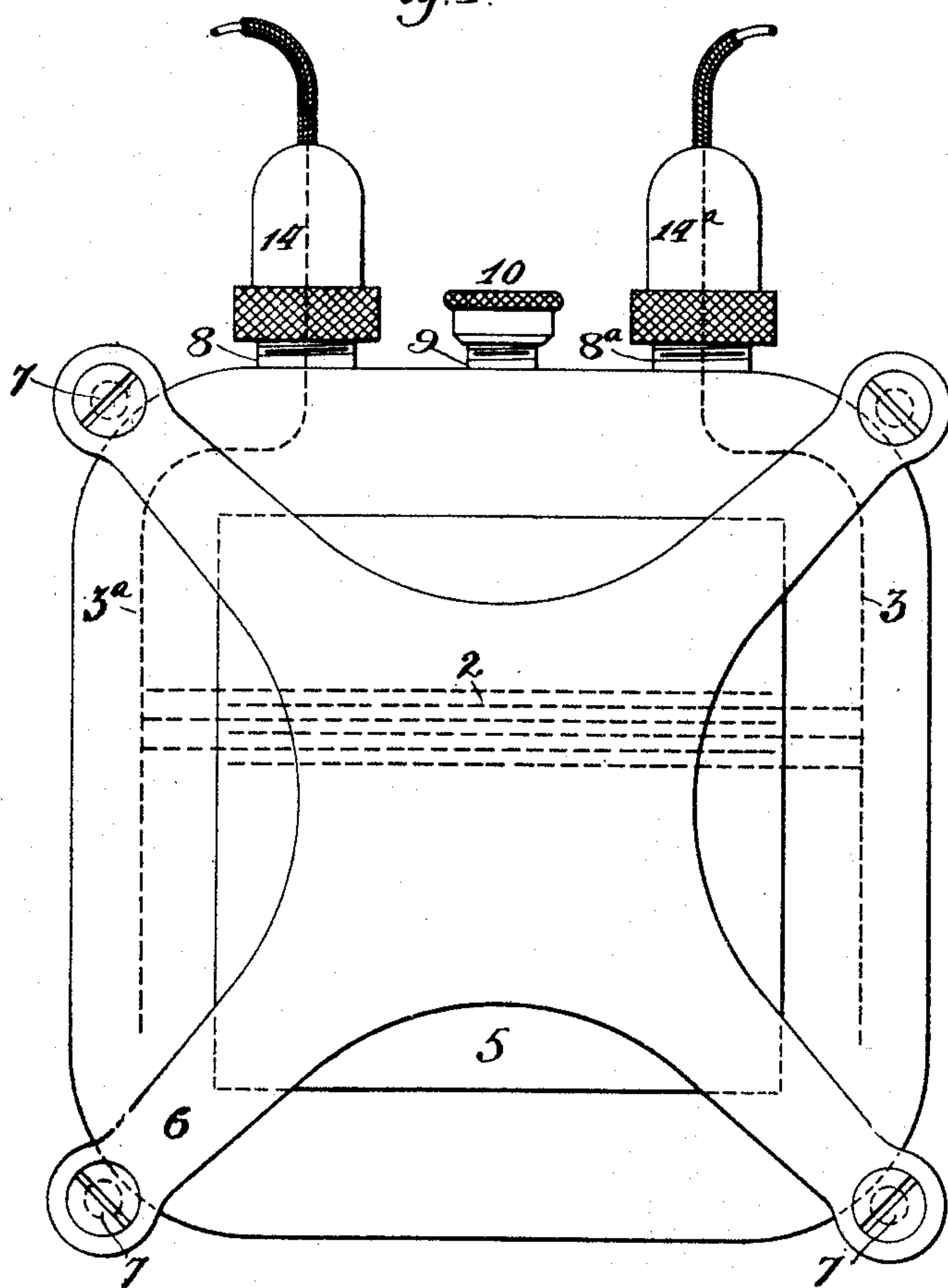
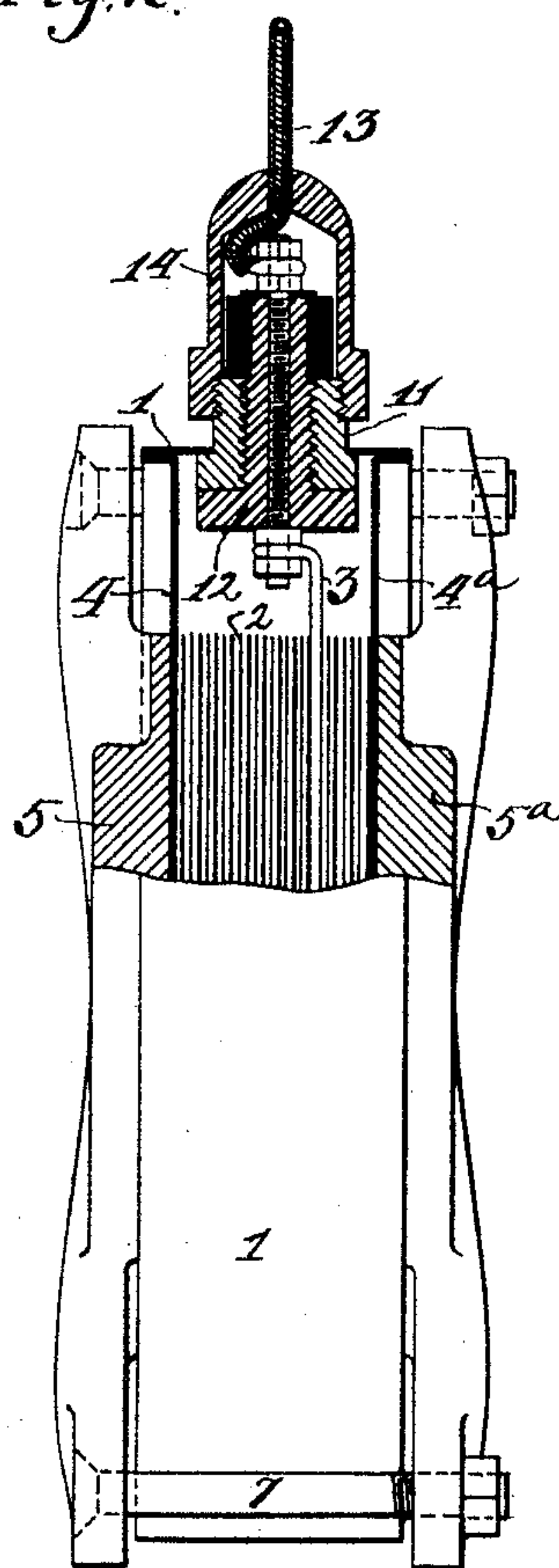


Fig. 2.



WITNESSES:

*Roswell Kent Jr.*  
*C. L. Becher*

INVENTOR

*Charles S. Bradley*  
BY *Roswell Kent Jr.*  
his ATTORNEY.



# UNITED STATES PATENT OFFICE.

CHARLES S. BRADLEY, OF AVON, NEW YORK, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

## ELECTRIC CONDENSER.

SPECIFICATION forming part of Letters Patent No. 587,114, dated July 27, 1897.

Application filed October 7, 1895. Serial No. 564,887. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES S. BRADLEY, a citizen of the United States, and a resident of Avon, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Electric Condensers, of which the following is a specification.

This invention relates to electric condensers, the object being to increase the safety of the condenser under dielectric strain of abnormal voltage, to increase its life and preserve its capacity uniform, and to reduce the extent of its heating when in service. To accomplish these aims, I provide an air-tight case adapted to contain the plates constituting the condensing-surface with a nozzle by which it may be treated and filled with any suitable insulating material, such as paraffin, oil, or wax, and fit the nozzle with an air-tight cap, thus preventing the penetration of damp air or moisture. In close relation to the plates, but thoroughly insulated therefrom, I place metal surfaces or plates which afford a good heat-conductive path to the outside, where the radiating-surface is increased, thus permitting the withdrawal of heat and maintaining a safe temperature of the apparatus when in service. I preferably employ a solid dielectric, such as mica, and hold the plates in compact relation by an independent frame capable of being screwed up, so as to squeeze the plates firmly together. The points where the terminals are carried through the containing-case are carefully sealed, and the joints between the leading-in wires or conductors and the terminals are housed over by an insulating-cap to prevent accident to an attendant.

The several features of novelty of the invention will be more particularly hereinafter described, and will be definitely pointed out in the claims appended to this specification.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side elevation of a condenser embodying my improvements, the condenser-plates being indicated diagrammatically. Fig. 2 is a vertical section on a plane passing through one of the terminals.

1 represents a rim or outer wall of the containing-case. This is made of metal and of

a sufficient size to inclose the pile of plates of mica and tin-foil, of which the condenser proper is preferably composed. These plates are indicated at 2. Sufficient room is left between the edges of the plates and the rim 1 to permit a good body of insulating material to be filled in. At opposite sides of the pile alternate plates of foil are connected in parallel and soldered or otherwise fastened in good conductive relation to the terminal conductors 3 3<sup>a</sup>. The sides of the pile are embraced by metallic plates 4 4<sup>a</sup>, preferably of tin, against which bear the metal stiffening-plates 5 5<sup>a</sup>, of cast-iron, from which extend arms, as 6, the ends of which are perforated to receive clamping-bolts 7. After assembling the pile and connecting alternate plates of foil with the respective terminals they are placed within the rim and the side plates 4 4<sup>a</sup> are brought against them, a layer of mica being interposed at the two sides. The frame is then applied and the nuts firmly screwed up on the bolts. The joints between the edges of the rim and the plates 4 4<sup>a</sup> are then soldered.

One side of the rim is perforated at three points 8 8<sup>a</sup> 9. A nozzle is soldered in the latter and threaded to receive a screw-cap 10. In the holes 8 8<sup>a</sup> are soldered bushings 11, through which screws a plug 12, of insulating material, within which is a threaded bolt for making connections with the terminal conductors and with the leading-in conductors, as 13, at its respective ends. A cap of insulating material 14 is screwed over the terminal connections to prevent contact of the hand of an attendant with any live spot of the apparatus. The flanges on plates 4 4<sup>a</sup> (shown in Fig. 2) permit the frame to be adjusted to varying thicknesses of the pile of plates. When the capacity of the condenser is adjusted, plates may be inserted or withdrawn until the desired capacity is attained, when the bolts are tightened and the joint soldered.

By the construction herein described moisture from the atmosphere outside the condenser is effectually kept from access to the plates and they are preserved in the same condition as when first assembled. By being kept under firm pressure the noise com-



monly made by vibration of the plates is reduced. The heat generated is conducted away by the metallic face-plates and radiated into the atmosphere by the larger surface of the casing and frame. The casing is protected from damage due to shock by the stout compressing and radiating frame. By soldering the joints leakage is effectually prevented if the heat generated by the condenser rises sufficiently high to melt the insulating material.

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

1. An electric condenser having its pile of plates inclosed in a fluid and air tight metallic casing hermetically sealed at all joints, whereby the access of moisture in the outside air is prevented and the capacity is kept unaltered.

2. A condenser comprising a pile of plates separated from one another by insulating material, a compressing-frame to squeeze the plates together, and a rim united to side plates to form a fluid-tight casing for the pile of plates.

3. A condenser comprising a pile of plates separated from one another by insulating

material, stiffening-plates of rigid material, side plates and a rim united to the side plates to form a fluid-tight inclosing box.

4. An electric condenser provided with a metallic casing composed of side plates, 4, 4<sup>a</sup> flanged at the edges, an outer rim 1, and stiffening and compressing plates 5, 5<sup>a</sup>, for the purpose specified.

5. An electric condenser provided with heat-radiating sides forced firmly into engagement with its pile of plates, and a clamping-frame holding said sides under compression and projecting beyond the casing to protect it from damage by shock.

6. An electric condenser having its pile of plates inclosed in an air-tight casing and provided with a filling-orifice fitted with an air-tight cap.

7. An electric condenser having its pile of plates inclosed in a casing, and its terminals housed within a removable insulating-cap.

In testimony whereof I have hereunto subscribed my name this 26th day of August, A. D. 1895.

CHARLES S. BRADLEY.

Witnesses:

WM. V. HEAPHY,

ROBERT J. McNALLY.