

(No Model.)

I. L. ROBERTS.  
ELECTROLYTIC DECOMPOSITION TANK.

No. 522,619.

Patented July 10, 1894.

Fig. 1

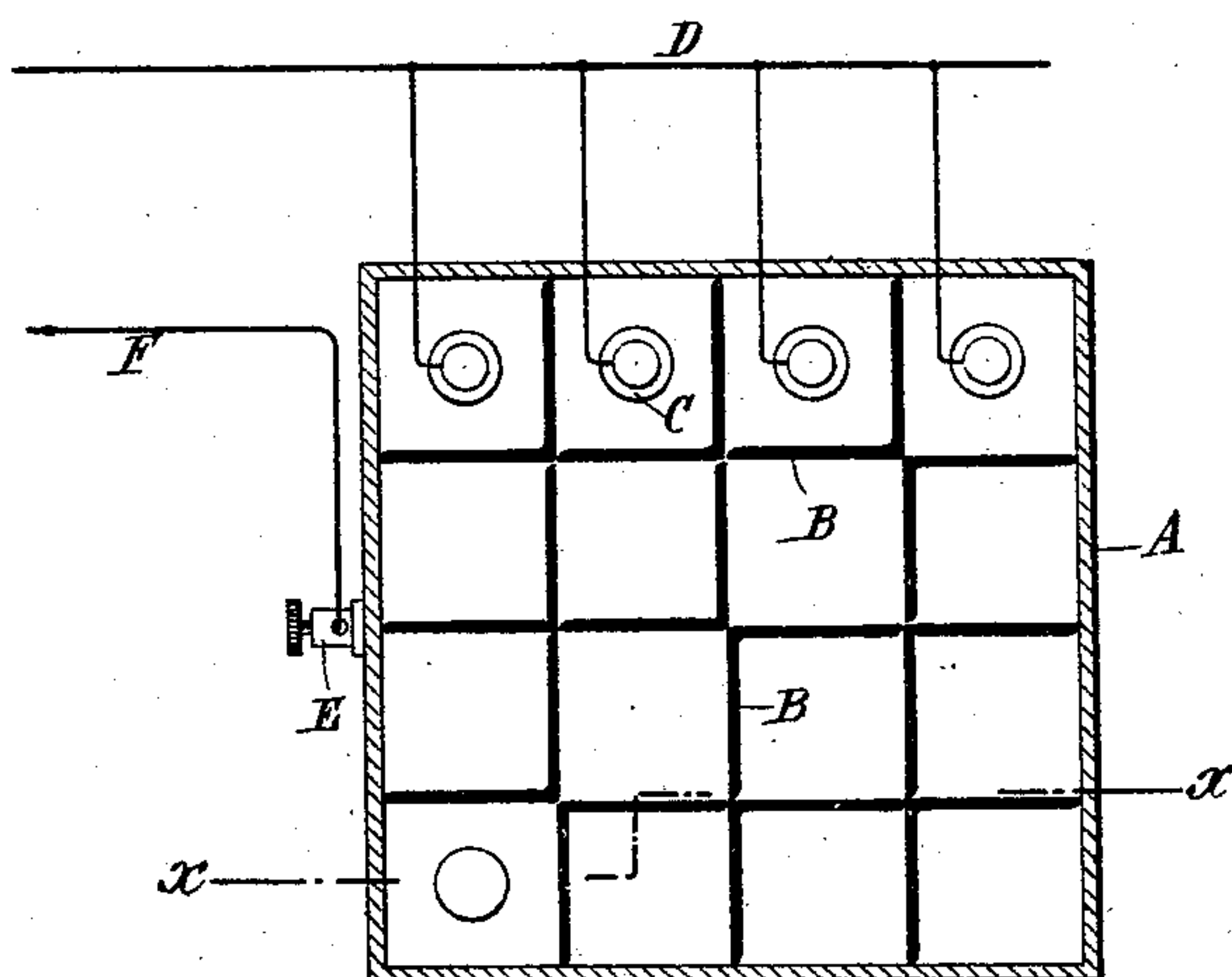
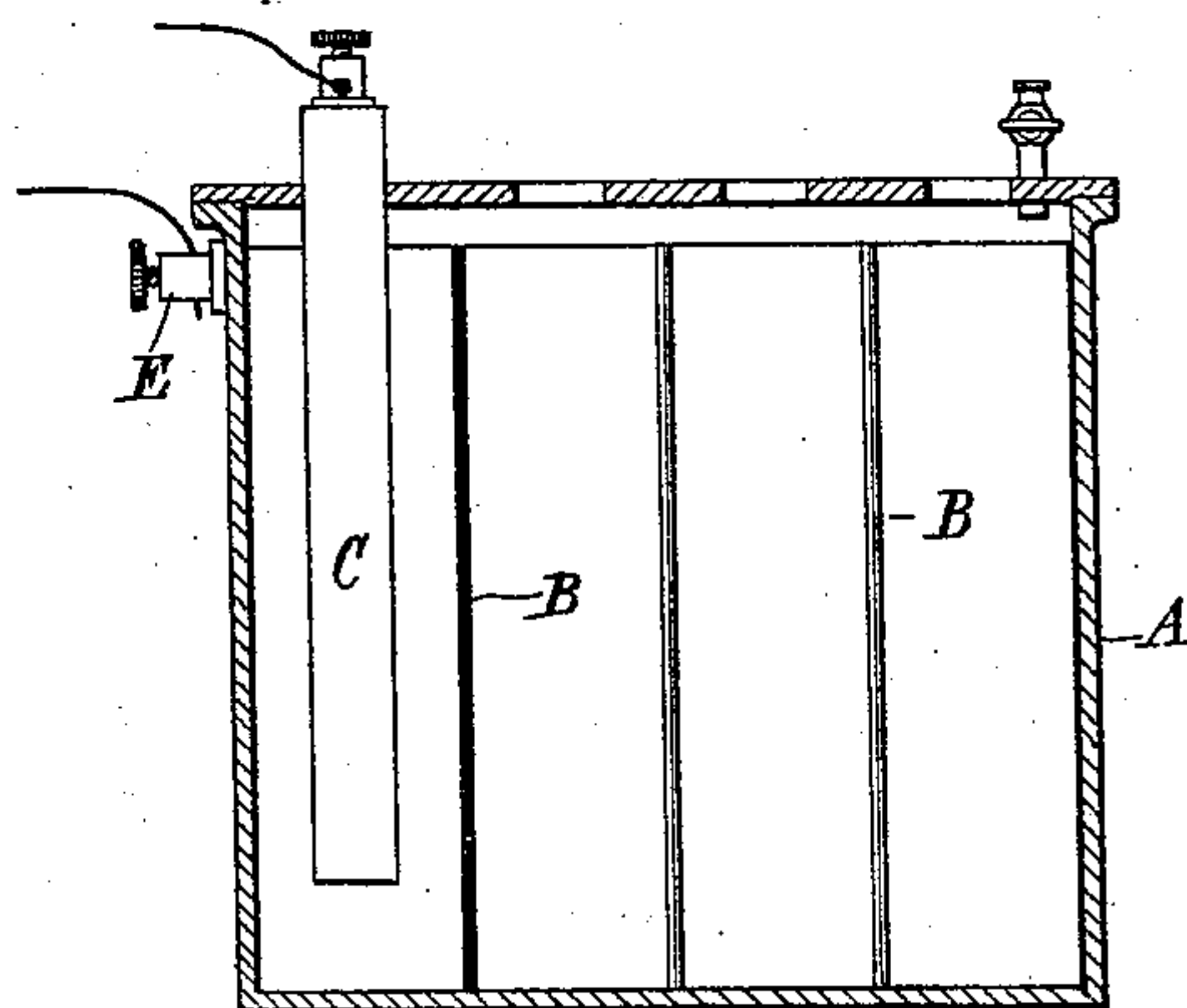


Fig. 2



Witnesses:

Raphael Netter  
Ernest Hopkinson

Isaiah L. Roberts Inventor

by  
Duncan & Page,  
Attorneys

# UNITED STATES PATENT OFFICE.

ISAIAH L. ROBERTS, OF BROOKLYN, NEW YORK.

## ELECTROLYTIC-DECOMPOSITION TANK.

SPECIFICATION forming part of Letters Patent No. 522,619, dated July 10, 1894.

Application filed November 25, 1891. Renewed January 29, 1894. Serial No. 498,399. (No model.)

*To all whom it may concern:*

Be it known that I, ISAIAH L. ROBERTS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electrolytic-Decomposition Tanks, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

This invention is an improvement in tanks for the electrolytic decomposition of metallic salts, but more particularly for use in connection with a particular apparatus designed by me for this purpose, the character of which may be thus generally described. The vat or receptacle for containing the solution to be decomposed is made of iron or like metal, in order that it may serve also as the cathode of the couple. Within this vat is suspended a carbon anode separated from the cathode by a mass of pulverized anthracite coal contained in a bag or other receptacle and packed in around the anode, the purpose of the coal being to form an electrolytic diaphragm or partition between the two electrodes. Various other electrodes and many forms of electrolytic partitions may be used and different appliances and constructions adopted for carrying off the gases generated at the anode or acids resulting from impurities and chemical combinations in the coal dust, but the essential feature, so far as this invention is concerned, is the use in an apparatus of this kind of an anode in an iron cathode tank.

In practice it has been found convenient to employ a number of anodes in one large cathode tank, as the construction of a separate iron tank for each anode involves great expense and waste of material, but when a number of anodes are suspended or supported in one tank, the distance between some of them and the walls of the tank increases the internal resistance of these couples to such an extent as to impair their efficiency. This I avoid by dividing up the interior space in the main tank into a number of vertical compartments by means of angle iron plates set on end. Each of such compartments contains an anode, and communication for the circulation of

solution is maintained between all of them through the joints or spaces left between the several plates.

This improvement is shown in detail in the accompanying drawings.

Figure 1 is a plan view of the apparatus. Fig. 2 is a vertical section on line  $x-x$ , of Fig. 1.

A is the usual cathode tank or vat of iron or suitable material.

B, B, are angle plates of the same material placed on end in any desired manner to divide the main tank or vat up into small compartments or cells. These plates are independent and preferably placed in the tank without connections—at least no permanent connections. For the outer compartments the main vat A forms, in part, the walls, while the walls of the inner compartments are composed entirely of the angle plates.

C, C, are the anodes or bags containing the same. These are connected to one of the main wires D, while a binding post E, on the tank A, serves to connect all the cathode surfaces to the other wire F. This arrangement effects a great saving in material and cost, and makes available large rectangular tanks which are the easiest and cheapest to make and most economical to use.

What I claim is—

1. In an electrolytic apparatus, the combination with a cathode or conducting vat or tank, of sheets or plates of conducting material placed therein in electrical connection with the tank and dividing said tank into vertical communicating compartments, and an anode supported in each cathode compartment, as set forth.

2. The combination, with a cathode or iron vat or tank, of iron angle plates set on end therein in electrical connection with the tank, and dividing said tank into a number of small communicating anode compartments, and an anode contained in each of said compartments, as set forth.

ISAIAH L. ROBERTS.

Witnesses:

ROBT. F. GAYLORD,  
PARKER W. PAGE.