

No. 868,376.

PATENTED OCT. 15, 1907.

D. ULKE.  
RAIL BOND.

APPLICATION FILED JULY 28, 1906.

FIG. 1.

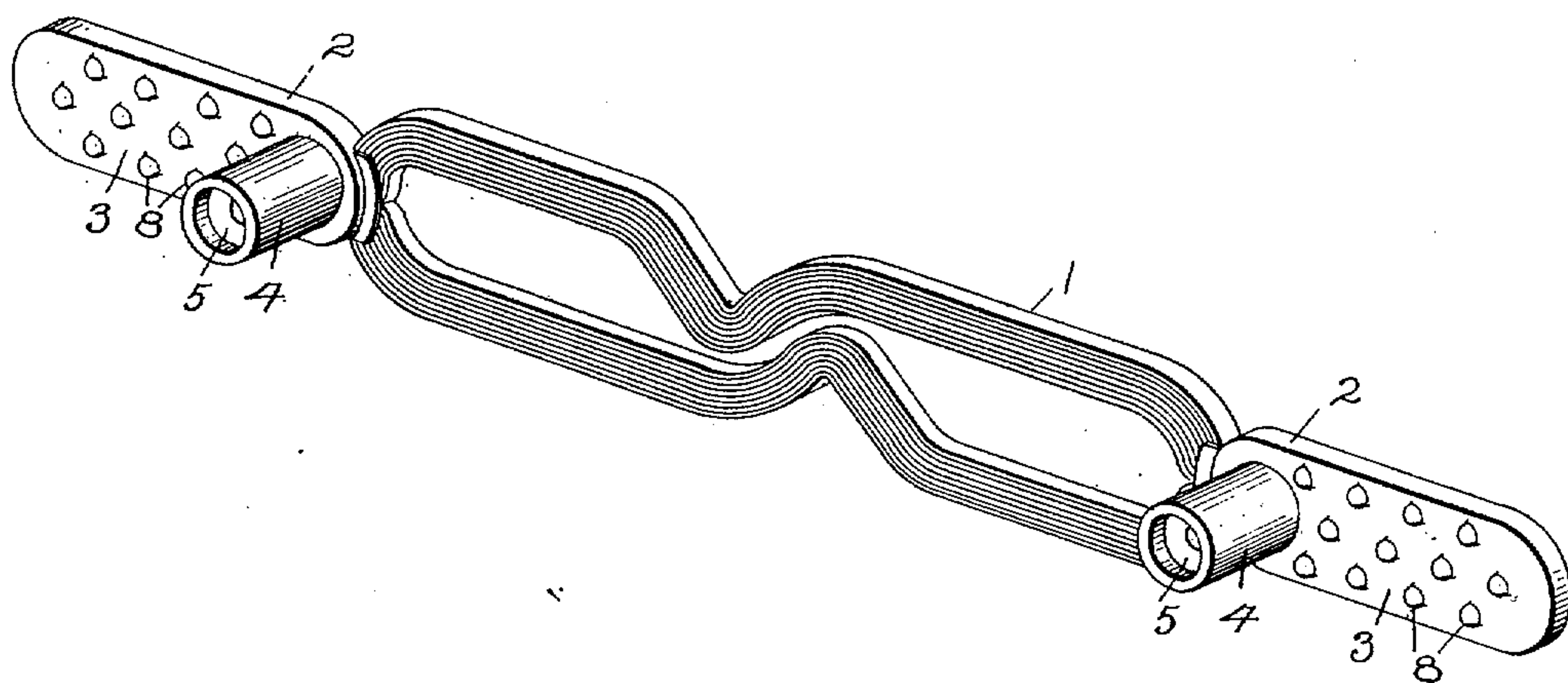
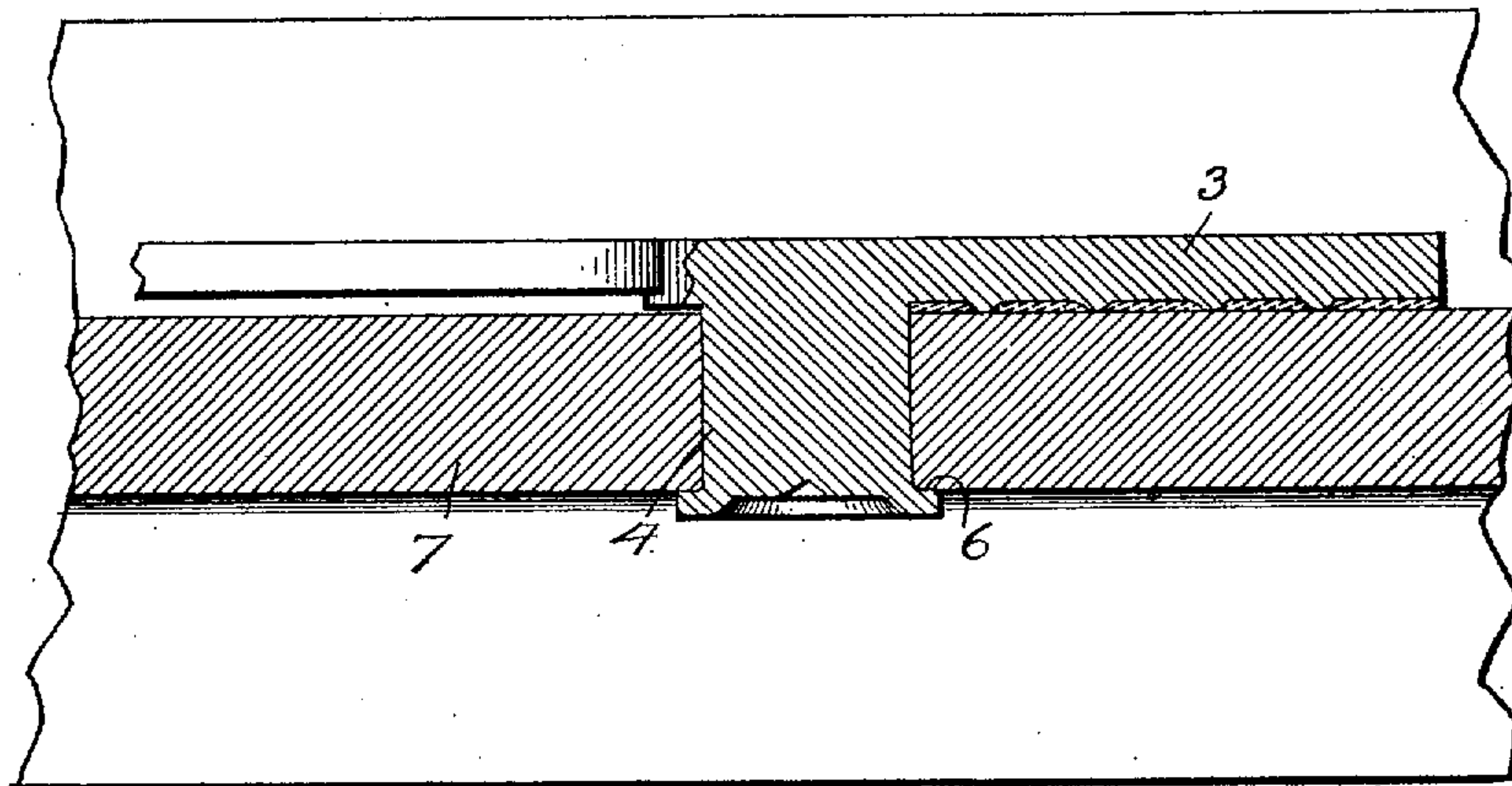


FIG. 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

DARWIN ULKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## RAIL-BOND.

No. 868,376.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed July 28, 1906. Serial No. 328,153.

*To all whom it may concern:*

Be it known that I, DARWIN ULKE, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful  
5 Improvements in Rail-Bonds, of which the following is a specification.

The present invention relates to electric connectors and more especially to rail-bonds or conducting devices by means of which the ends of the rails of a rail-  
10 road are electrically connected at the joints thereof so that the several rails of a track will form a continuous conductor for the current of electricity.

Rail-bonds as ordinarily constructed are made of copper or other metal of good conductivity and com-  
15 prise a central section of a plurality of strands whereby it is rendered flexible to enable its ends to move relatively to each other upon vibration of the rails without producing appreciable strains in the joints of attachment, and terminals welded or otherwise connected to  
20 the ends of the central section and having provisions for direct attachment to the rails. The two types of terminals in general use are known as soldered terminals and stud terminals. Terminals of the former type are provided with an extended surface for connection  
25 by means of solder to the surface of the rail, and terminals of the latter type are each provided with a stud which is inserted in a hole drilled in the web or flange of the rail and upset or riveted therein. The soldered terminals while affording efficient contact with the  
30 rails are liable to become dislodged by jarring, impact or unequal coefficients of expansion in the rail and terminals, and the stud terminals while secure against dislodgment are liable to become defective in their contact with the rail due to oxidation of the surfaces  
35 in contact.

The object of my invention is to provide a rail-bond of simple construction, which shall be highly efficient in use and not subject to the disadvantages of the bonds heretofore on the market.

40 In carrying my invention into effect, I make a bond similar to the soldered terminal bonds heretofore in use, but instead of a mere soldering surface a portion is extended outwardly therefrom at right angles to form a stud, so that when applied to the rail there is obtained  
45 the efficient contact of the ordinary soldered terminal and the security against dislodgment characteristic of the stud terminal and also a double assurance against imperfect jointure between terminal and rail.

In the accompanying drawing forming a part of this  
50 specification, I have shown in Figure 1 a perspective view of a complete rail-bond embodying one form of my invention; and in Fig. 2 a longitudinal section of a terminal applied to an iron rail.

55 The central section 1 of the bond is made up of a plurality of superposed ribbons of copper bent into desired

shape and their ends welded to terminals 2. The terminals 2 each comprise an extended body portion 3 in the shape of a flattened bar with rounded ends, and a cylindrical stud 4 projecting at right angles from the attaching surface of the body portion 3. The outer  
60 ends of the studs are countersunk at 5 to facilitate the formation of a retaining shoulder 6 when the stud is compressed in the aperture formed in the rail 7.

The contact surface of the body portion 3 is provided with slight elevations or knobs 8 which serve to prevent  
65 the intimate contact of the surface of the body portion 3 with the surface of the rail so that upon heating the rail and bond terminal, solder will flow freely into the space thus formed and perfect union will be obtained with the rail throughout the area of the contact surface  
70 of the terminal.

The stud 4 is formed integral with the terminal or bond plate 2 and projects from the same right at the inner end thereof, so that the strain upon the bond due to vibrations of the end of the rail or to the creeping of  
75 the rail, is sustained by the stud and by no portion of the soldered bond plate. In this manner the peeling off of the bond plate is effectually prevented. If the stud were not integral with the bond plate or projected from the same either at the outer end or between the  
80 two ends, the object of my invention would be defeated, since in that case that portion of the bond plate which extends between the stranded or laminated conductor 1 and the stud 4, would tend to peel away from the rail to which it is soldered. The making of the stud inte-  
85 gral with the terminal has also the advantage that the liability of formation of bad contact between the terminal and the rail, by oxidation caused by infiltration of moisture between the stud and the terminal, is  
90 avoided.

I do not desire to restrict myself to the particular arrangement or construction of parts herein described and shown, since it is apparent that they may be changed and modified without departing from my in-  
95 vention.

What I claim as new, and desire to secure by Letters Patent of the United States, is,—

1. An electric rail bond having a terminal with an extended contact surface and an attaching stud integral with the terminal and projecting from the inner end of  
100 the contact surface.

2. An electric rail bond consisting of two terminal plates each having an extended contact surface fitted for soldering to a rail, a flexible conductor connecting the terminals, and a rivet stud, projecting from each terminal  
105 at its junction with the flexible conductor and integral with the terminal.

In witness whereof, I have hereunto set my hand this 25th day of July, 1906.

DARWIN ULKE.

Witnesses:

JOSEPH LYONS,  
F. T. CHAPMAN.