R. B. BENJAMIN.

ELECTRIC LAMP SOCKET.

APPLICATION FILED JULY 18, 1910. RENEWED SEPT. 18, 1913.

1,088,867. Patented Mar. 3, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

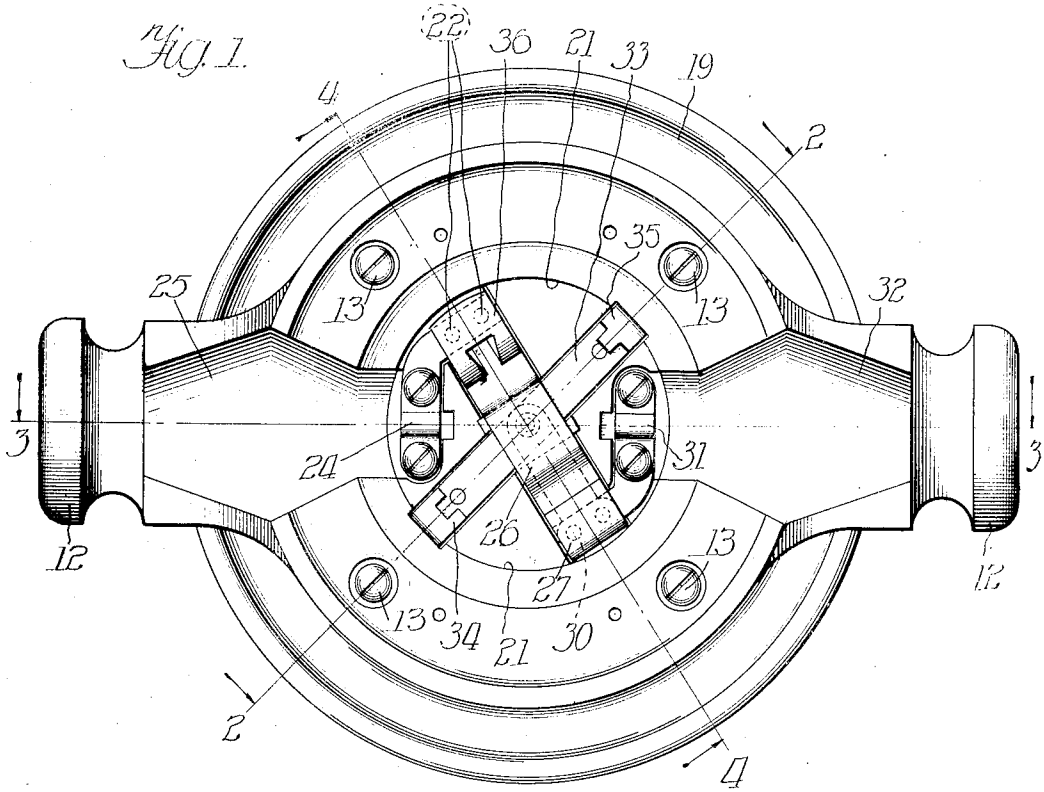
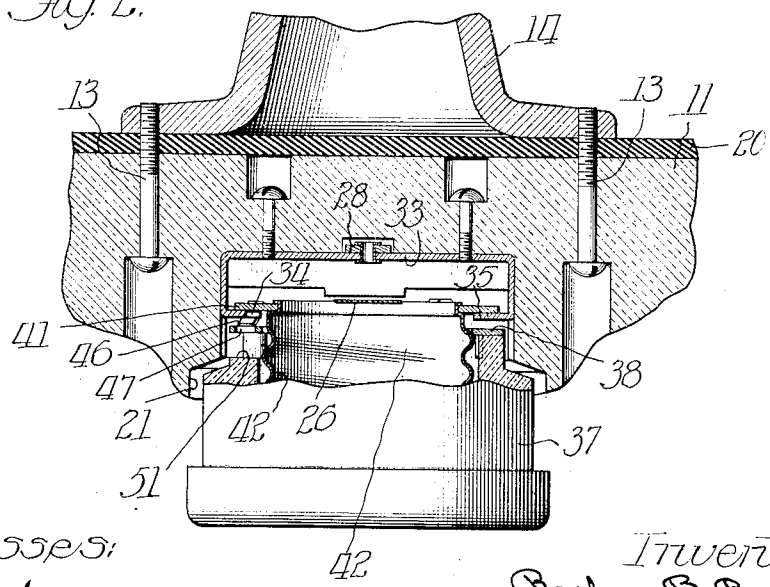


Fig. 2.



Witnesses:

Robert A. Weir

Charles G. Cope

Inventor:

Reuben B. Benjamin

By Jones, Addington, Ames & Seibold

Attys

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3 SHEETS—SHEET 2.

Fig. 3.

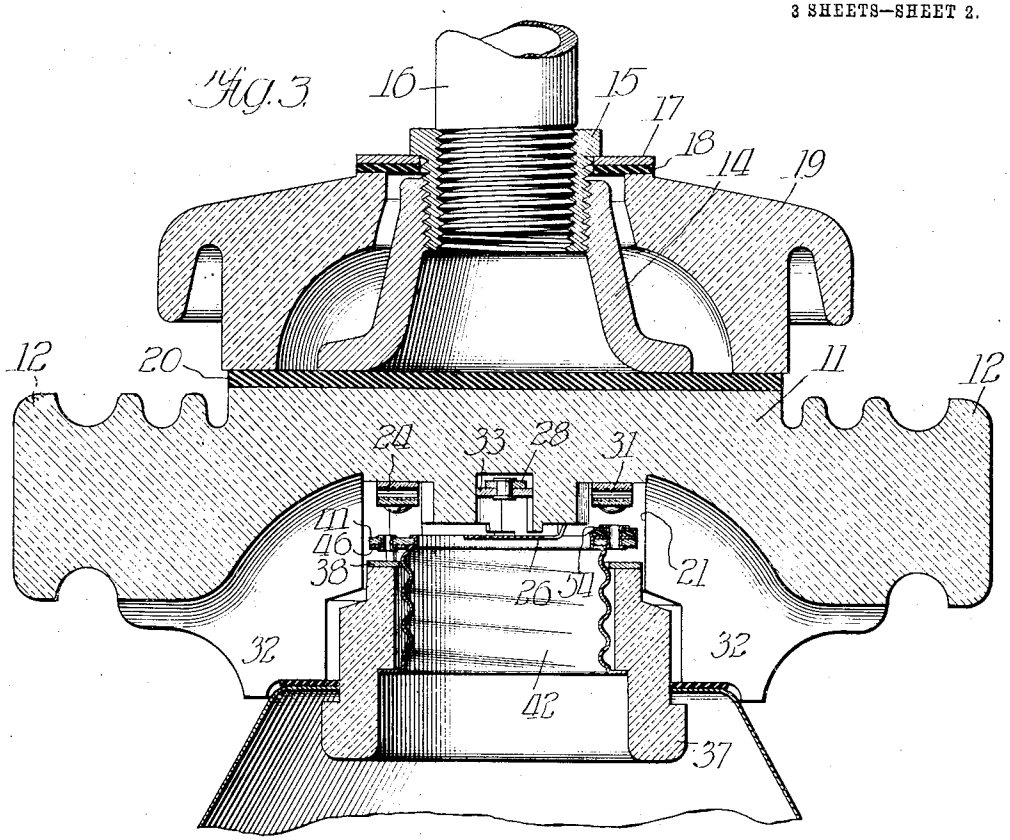
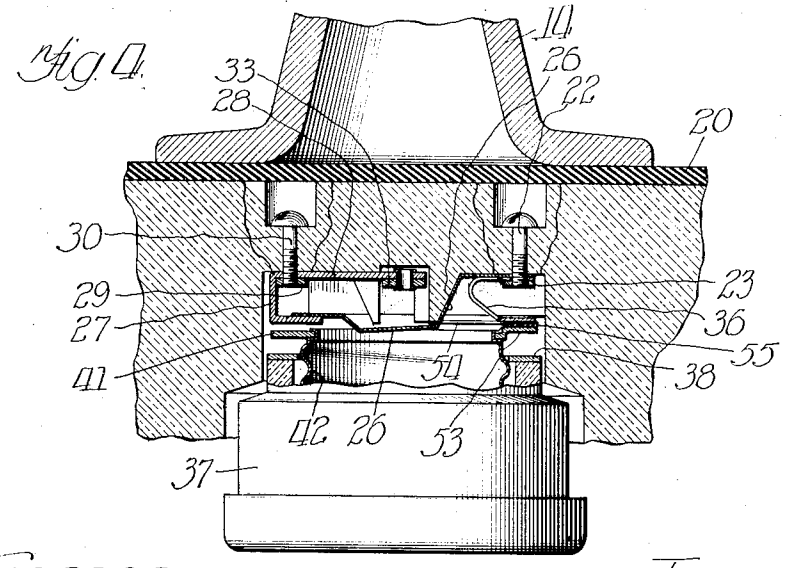


Fig. 4.



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Robert A. Weir

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Attys.

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3 SHEETS—SHEET 3.

Fig. 5.

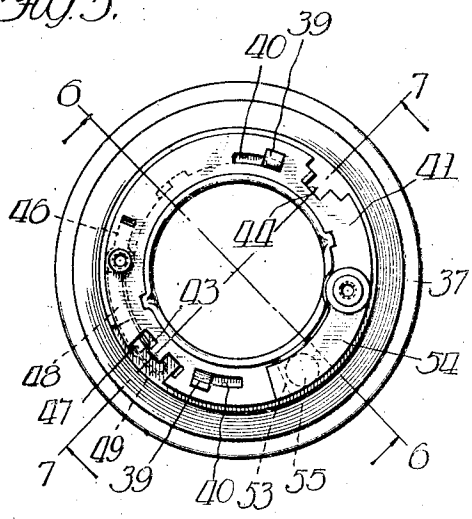
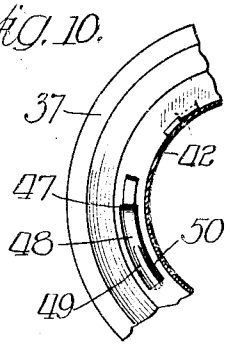


Fig. 10.



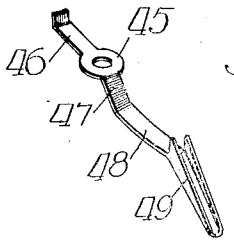


Fig. 9.

Fig. 6.

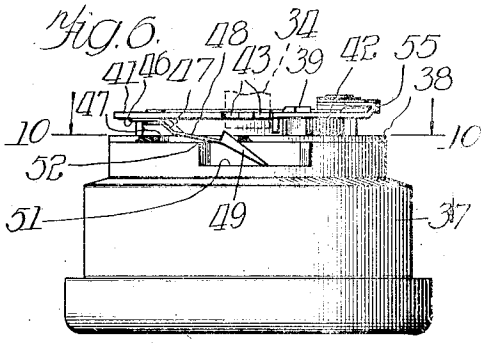


Fig. 7.

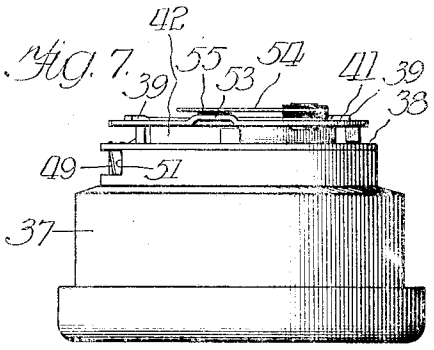
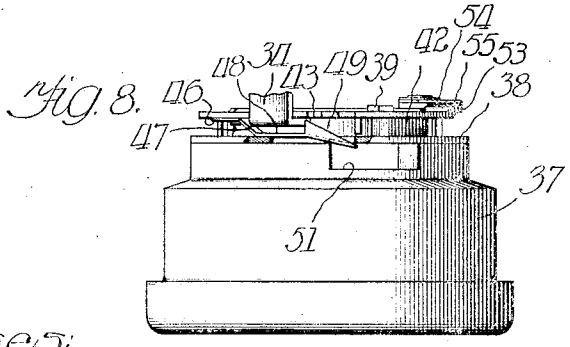


Fig. 8.



Witnesses:

Robert N. Weir

Charles G. Cope

Inventor:

Reuben B. Benjamin

By Jones, Addington, Ames & Seibold

Attys.

UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL ELECTRIC COMPANY, OF SCHENECTADY, NEW YORK, A CORPORATION OF NEW YORK.

ELECTRIC-LAMP SOCKET.

1,088,867. Specification of Letters Patent. Patented Mar. 3, 1914.

Application filed July 18, 1910, Serial No. 572,503. Renewed September 18, 1913. Serial No. 790,565.

To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Electric-Lamp Sockets, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention pertains to high tension series lamp sockets and particularly to sockets which are provided with means whereby the lamp contacts are short-circuited in case of the destruction of the lamp.

It is one of the objects of my invention to improve upon sockets of this character.

In order that my invention may be clearly understood, I have described one embodiment thereof in the following specification, reference being had to the accompanying drawings, in which:

Figure 1 is an inverted plan of the body of the socket, the separable lamp receiver being removed; Fig. 2 is a fragmentary section taken on the line 2—2 of Fig. 1, the lamp receiver being shown connected to the body; Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1, the lamp receiver being shown connected to the body; Fig. 4 is a vertical section taken on the line 4—4 of Fig. 1; Fig. 5 is a plan of the lamp receiver alone; Figs. 6 and 7 are side elevations of the lamp receiver looking in the direction of the arrows 6—6 and 7—7, respectively on Fig. 5; Fig. 8 is a view similar to Fig. 6 but showing the parts of the lamp receiver in a different position; Fig. 9 is a detail view of the locking catch for securing the lamp receiver against accidental separation from the body; and Fig. 10 is a fragmentary section taken on the line 10—10 of Fig. 6.

The socket is made in two separable portions, one of which (herein termed the "body") is adapted to be attached to a suitable supporting device, such as a conduit or the like. The body carries the binding terminals and the center lamp engaging contact. The other portion (herein called the "lamp receiver") carries the threaded lamp receiving shell, which, when the portions are connected together, is brought into electrical connection with one of the binding terminals. One of these portions carries a pair of contacts which, when connected, short-circuit the lamp engaging contacts, and between which may be placed a film of mica, or other insulating material, of such thickness that it can be broken down by the current when the latter can find no shunt path through the lamp. By this means the socket is short-circuited in case of the destruction of the lamp carried thereby and the extinguishing of the other lamps connected in the circuit is avoided.

Referring now to the drawings by reference characters, the body consists of a base 11 which is formed with two lateral extensions or knobs 12 around which the conductors may be passed in order to lead them to the binding terminals. Secured to the base 11 by means of screws 13 is a supporting member 14, the upper end of which is threaded to receive a bushing 15 which is internally screw threaded to receive a conduit or other support 16. Surrounding the supporting member 14, and secured in place, through the agency of washers 17 and 18, by the bushing 15, is an insulating hood 19, the lower edge of which closely approaches the top surface of the base 11. The washer 18 is of rubber in order to prevent the admission of water into the space beneath the hood and for the same reason a rubber disk 20 is inserted beneath the supporting member 14, the thickness of the disk 20, and the depth of the insulating hood 19, being such that the lower edge of the hood presses firmly upon the rubber disk, whereby a watertight connection is formed.

The base 11 is hollowed out at its lower side to form a chamber 21 in which the various conducting parts of the socket are mounted. In a recess in the bottom of this chamber is secured, by means of screws 22, a strip 23 which carries at one end a binding terminal 24, the strip being so arranged that the binding terminal 24 is located ad-

jacent one end of a groove 25 formed in the lower face of the base directly beneath one of the knobs 12. This groove provides a passage way for the lead conductor which is to be connected to the binding terminal 24. Clamped beneath the plate 23 is an arched resilient member which forms the center contact 26 of the socket. The contact 26 extends beneath a yoke-shaped lug 27 carried by a plate 28 and makes contact therewith except when forced back by the end of a lamp. The plate 28 is clamped beneath a conducting strip 29, which is secured in place by means of screws 30. The strip 29 is provided with a binding terminal 31 disposed opposite to the binding terminal 24 and adjacent the end of a groove 32 similar to the groove 25. As has been stated, the resilient contact 26 is so arranged that, when a lamp is not in position in the socket, it will make connection with the lower side of the lug 27, electrical connection thereby being established between the binding terminals 24 and 31. The result is that the socket is short-circuited when a lamp is not in position in the socket. The socket is intended to be connected in series with other sockets and, were this provision not made, the removal of one lamp would extinguish all the other lamps in the circuit.

Extending across the bottom of the chamber 21 and connected at its center to the end of the plate 28 is a contact piece 33 the ends of which are bent up and over to form ears 34 and 35 by means of which the lamp receiver is secured to the base 11 and which serve to establish connection between the lamp receiving shell and the binding terminal 31 through the intermediary of the plate 28 and strip 29. A resilient tongue 36 is clamped between the strip 23 and the resilient contact 26, and is arranged to make connection with a corresponding contact on the lamp receiver for a purpose which will be hereinafter set forth.

The lamp receiver comprises an insulating bushing 37 preferably formed of porcelain or the like and having secured to the upper edge thereof a metallic ring 38. The ring 38 is formed with upwardly extending projections 39 which enter corresponding slots 40 in the outwardly extending flange 41 of a threaded lamp receiving shell 42, the slots 40 being elongated in order to allow a slight rotative movement of the shell 42 relatively to the bushing 37. The flange 41 is provided with notches 43 and 44 of a shape corresponding to that of the ears 34 and 35 of the contact piece 33 described above. When the lamp receiver is connected to the body, the ears 34 and 35 enter the notches 43 and 44 and can be made to engage beneath the flange 41 by imparting a rotative movement to the lamp receiver in a clockwise direction, whereby a bayonet connection is established between the lamp receiver and the body with the lamp receiving shell in electrical connection, through the ears 34 and 35, contact piece 33, plate 28 and conducting strip 29 with the binding terminal 31, and its center contact is in electrical connection, through the resilient contact 26 and strip 23, with the binding terminal 24.

It is desirable that the connection between the lamp receiver and body be a secure one and, to that end, I provide a catch 45 which is secured to the lower side of the flange 41 at a point somewhat to the left of the notch 43. The catch is secured by an eyelet and, in order to prevent lateral movement, is formed with a rearwardly extending tongue 46 which is bent up at its end to enter a corresponding slot formed in the flange 41. The catch is bent downward and outward to form a shoulder 47 and a circumferentially extending portion 48 having at its end a downwardly inclined hook 49 which passes through an elongated slot 50 formed in the ring 38. The hook 49 enters a recess 51 cut out of the upper edge of the insulating bushing 37. When the lamp receiving shell is in the position, relatively to the bushing 37, in which the projections 39 of the ring 38 are located in the ends of the slots 40 adjacent the notches 43 and 44 the catch 45 is in the position shown in Fig. 6, in which the hook 49 extends downwardly into the recess 51. When the parts are in this position the ear 34 can enter the notch 43, upon the lamp receiver being brought into the proper position relatively to the body. Upon a rotative movement in a clockwise direction being imparted to the lamp receiver, the ears 34 and 35 enter beneath the flange 41 and the ear 34 comes into engagement with the shoulder 47 of the catch 45. A further rotative movement imparted to the lamp receiver has the effect that the bushing 37 moves relatively to the lamp receiving shell, the latter being held stationary by reason of the engagement of the ear 34 to the shoulder 47 of the catch. The effect of such rotation of the bushing relatively to the lamp receiving shell is that the shoulder 52 formed by the right hand corner of the recess 51 engages the underside of the catch 45 and forces it into the position shown in Fig. 8, in which the hook 49 closes the space between the flange 41 and the ring 38 and thereby prevents backward rotation of the bushing 37 except by the application of force.

When it is desired to separate the parts, this may be done by turning the bushing 37 in a contra-clockwise direction, the effect of which is that the ear 34 engages the hook 49 thereby preventing movement of the lamp

receiving shell, and, the bushing 37 being forced to move relatively to the lamp receiving shell, the catch 45 is enabled to return to the position shown in Fig. 6. A further rotative movement of the bushing effects the turning of the lamp receiving shell also, so that the notch 43 comes into position above the ear 34 and the notch 44 comes into position above the ear 35. The lamp receiver may then be withdrawn by a straight pull.

The flange 41 of the lamp receiving shell is bent upward, at a point which will be opposite the spring tongue 36 when the lamp receiver is connected to the body, to form a table 53. Secured to the flange 41, is a spring contact finger 54, between which and the table 53 may be placed an insulating film consisting of a thin disk 55 of mica or the like. The film 55 is sufficient to insulate the finger 54 from the table 53 when, owing to the presence of a lamp in the socket, the difference of potential between these parts is not very great. In case of the destruction of the lamp however, the difference of potential between the finger 54 and the table 53 increases greatly with the result that the film 55 is punctured and the current finds its way from the finger 54 to the table 53, the socket being thereby short-circuited and the extinguishing of the other lamps in the socket being avoided. When the lamp is replaced the punctured film is replaced by a fresh one.

In use, the socket is connected in a high tension circuit in series with a number of other sockets or translating devices. When there is no lamp in the socket, current can pass through the same by way of the binding terminal 24, contact 26, plate 28, strip 29 and binding terminal 31. When, however, a lamp is inserted into the socket, the contact 26 is pressed inward until its end breaks contact with the lug 27 of the plate 28, the current then passing through the lamp and back to the binding terminal 31 by way of the contact piece 33, plate 28 and strip 29. In case the lamp should burn out, or be accidentally broken, the insulating film 55 will become perforated and current will then flow from the binding terminal 24 through the spring tongue 36, spring finger 54, flange 41, contact piece 33, plate 28 and strip 29, back to the binding terminal 31. It will thus be seen that the binding terminals 24 and 31 will be in electrical connection regardless of whether the lamp be destroyed or no lamp be present in the socket, connection between the binding terminals is only made through the lamp. When the lamp contained in the socket has been destroyed, and the resistance film has consequently become perforated, it is only necessary to impart a slight turning movement to the bushing 37 whereupon the lamp receiver may be removed from the body. The film is then easily accessible and may be quickly replaced by a fresh one. The construction of the device so that the film is readily accessible for replacing is one of the important features of my invention since lamp sockets of this character are usually placed in positions which are difficult to reach.

While I have described one embodiment of my invention, I do not limit myself to that construction since changes may be made without exceeding the scope of my invention as expressed in the appended claims. Moreover, some of the details of construction may be utilized in devices different from that described.

What I claim as new, and desire to secure by Letters Patent, is;

1. An electrical device comprising a member formed with a bayonet slot, a second-member provided with a bayonet projection adapted to enter said slot upon one of the members being turned relatively to the other, whereby a bayonet connection is established, an abutment adapted to be moved into the path of said bayonet projection to prevent withdrawal of the latter from the bayonet slot, and means, actuated on a further turning movement of one of the members relatively to the other, for effecting the movement of said abutment.

2. An electrical device comprising a member provided with a bayonet projection, a second member including two portions movable rotarily with respect to each other, said second-named member having a bayonet slot, an abutment carried by one of said members and movable into and out of closing position with respect to said slot, and means, associated with the other portion, for operating said abutment when one of said portions is rotated with respect to the other.

3. An electric lamp socket comprising a base carrying a center contact and a connector having a bayonet projection and a lamp receiver including an insulating member, a threaded contact member rotarily mounted on said insulating member and forming a bayonet slot between itself and said insulating member, an abutment carried by one of said members and movable into and out of closing position with respect to said slot, and means, associated with the other member, for operating said abutment when one of said portions is rotated with respect to the other.

4. An electric lamp socket comprising a base carrying a center contact and a connector having a bayonet projection, and a lamp receiver including an insulating member, a threaded contact member rotarily mounted on said insulating member and forming a bayonet slot between itself and said insulating member, a resilient abutment carried by

one of said members and normally located without said slot, the other member being provided with a cam portion for engaging said resilient abutment and moving it into said slot when one of said members is rotated with respect to the other.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

REUBEN B. BENJAMIN.

Witnesses:
CHARLES G. COPE,
MABEL REYNOLDS.