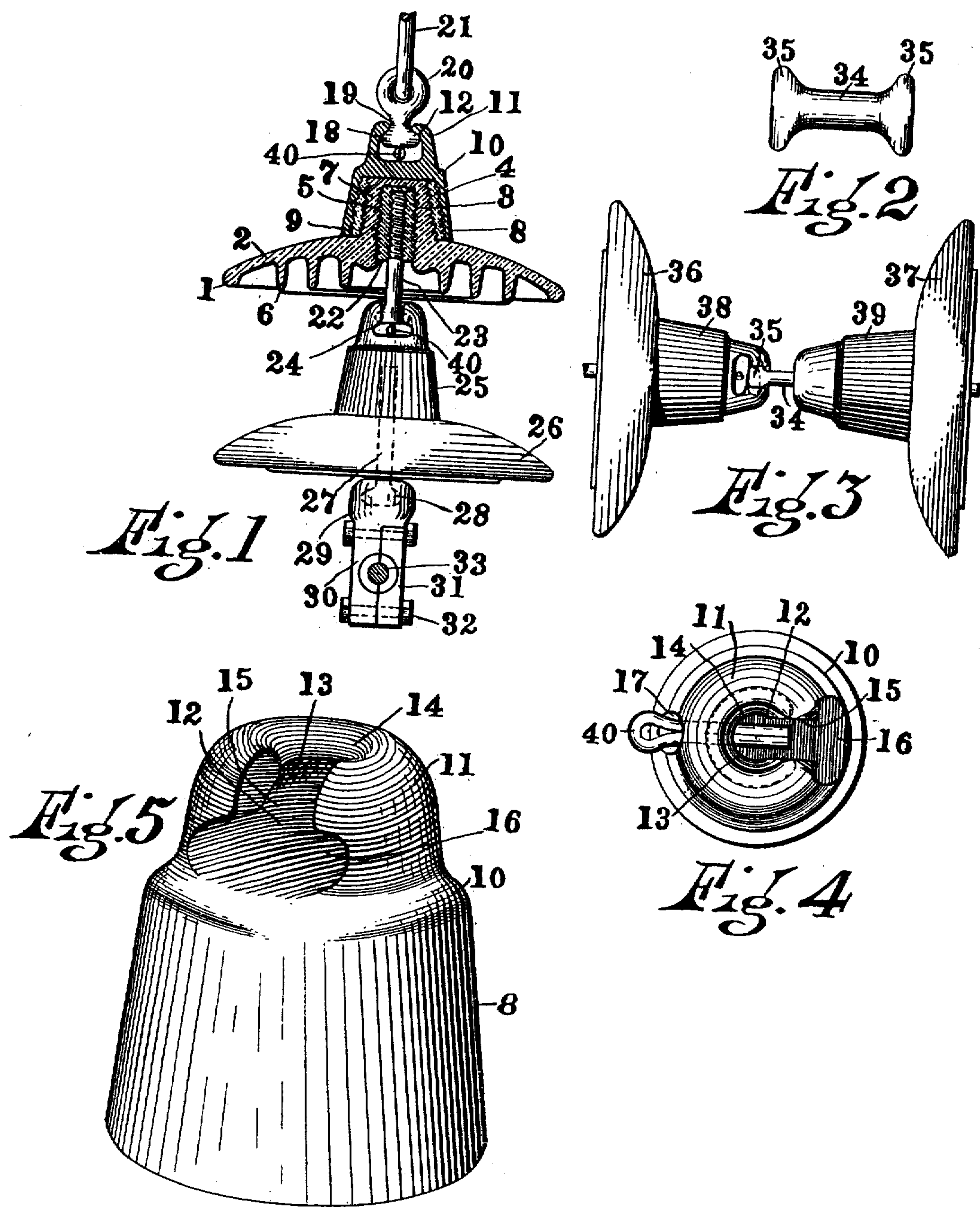


A. O. AUSTIN.
SUSPENSION DEVICE FOR INSULATORS.
APPLICATION FILED MAY 13, 1909.

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Witnesses:
Austin B. Hauscom
Glenara Fof

INVENTOR-
Arthur O. Austin,
By *C. E. Humphrey,*
ATTORNEY.

UNITED STATES PATENT OFFICE.

ARTHUR O. AUSTIN, OF BARBERTON, OHIO, ASSIGNOR TO THE AKRON HI-POTENTIAL PORCELAIN COMPANY, OF BARBERTON, OHIO, A CORPORATION OF OHIO.

SUSPENSION DEVICE FOR INSULATORS.

947,274.

Specification of Letters Patent.

Patented Jan. 25, 1910.

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To all whom it may concern:

Be it known that I, ARTHUR O. AUSTIN, a citizen of the United States, residing at Barberton, in the county of Summit and State of Ohio, have invented new and useful Improvements in Suspension Devices for Insulators, of which the following is a specification.

This invention relates to insulators, more particularly high tension insulators such as are required to carry current conductors of high voltage.

The primary object of this invention is to provide new and improved suspension or coupling devices or mechanism for use in connection with insulators of this class, embodying a member provided with a socket and a complementary member provided with an enlarged head adapted to be detachably interlocked in the socket of the first member.

A further object of the invention is to so construct the socket that the head of the complementary member may be easily seated therein and when so seated may be effectually locked against unintentional disengagement therefrom, while permitting a considerable amount of movement or play between the interlocking members.

A still further object of the invention is to provide a connecting or coupling mechanism for the purpose described, which is simple in construction, strong, durable, efficient in use, readily set up and one in which the various portions of the insulator connected thereby may be readily assembled or separated from each other without the use of special tools.

A still further object is to construct the connecting or coupling mechanism without employing any sharp projecting portions which might have a tendency to cause the arcing of the current past the insulator units, or cause or permit a strong localized discharge to the insulating skirt or shell.

One of the objects of the invention is to so proportion the coupling members that the insulating skirts of adjacent sections cannot come into contact with each other or be damaged by striking the cap or other object.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts constituting the invention to be hereinafter specifically described and illustrated

in the accompanying drawings which form a part hereof wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings, in which similar reference numerals indicate like parts in the different figures: Figure 1 is a view of a high tension insulator embodying two units, the upper shown in section and the other in side elevation, with my improved coupling mechanism employed in connection therewith. Fig. 2 is a view in side elevation of one form of coupling member. Fig. 3 is a view in side elevation of two insulator units united by the coupling member shown in Fig. 3. Fig. 4 is a plan view of a cap provided with a socket constituting one of the coupling members of this invention; and, Fig. 5 is a perspective view of the cap shown in Fig. 4, clearly illustrating the socket formed in the upper end thereof.

Referring to the drawings in detail, the reference numeral 1 denotes an insulator unit comprising a flange 2 from which extends a neck portion 3 provided with exterior serrations or threads 4 and also provided with an interiorly grooved or serrated recess 5. The under face of the flange 2 is also provided with a plurality of annular petticoats 6. Surrounding the neck portion 3 and united thereto through the medium of cement 7 is a recessed cap 8 the lower end of which is frusto-conically formed, with a recess therein provided with corrugations or serrations 9 to interlock with the cement 7 for fixedly holding the neck 3 of the insulator unit in place. The upper portion of the cap 8 is preferably provided with a shoulder 10 from which extends upwardly a preferably conoidally-shaped head 11. Within the head 11 is a recess 12 communicating with an opening 13 surrounded by a preferably rounded edge 14. The opening 13 communicated with a neck-shaped opening 15 extending radially therefrom. Below the radial opening 15 is an opening 16 extending to the recess 12 and constituting the mouth of this recess. Extending into the recess 12 from the side of the head 11 opposite the opening 16 is an aperture 17, for a purpose to be later described. The inner face of the recess 12 is preferably conoidally-formed

so that the upper portion thereof gradually converges on curvilinear lines. Adapted to be inserted in the recess 12 is a complementary coupling or suspension member provided with a head 18 having a contracted neck 19 from which extends a loop 20 to receive a supporting member which may be either a hook or loop 21 usually attached to the cross arm of a pole or tower used to sustain high tension conductors.

Secured preferably by cement 22 in the recess 5 in the neck of the insulator unit is a pin 23 the upper end of which is preferably circumferentially grooved in order to more firmly engage the cement and provided on its lower end with a head 24, similar in all respects to the head 18 which is seated in the socket in the head 11 of the cap 8. Inclosing the head 24 is a cap 25 secured to a second insulator unit 26, both cap and unit being constructed similarly to the cap 8 and unit 1 just described and this latter insulator unit 26 is also provided with a depending pin having a head 28 on which is suspended a conductor clamp embodying a head 29 constructed similarly to the head 11 from which depends a body portion 30 suitably recessed to receive a complementary member 31 secured thereto by bolts 32 for clamping a conductor 33.

It will of course be obvious that instead of using two insulator units, such as are designated in the drawings by the reference numerals 1 and 26, any number may be employed, or the shape and configuration thereof may be varied, or other types of insulators may be employed, or other forms of conductor clamps used, without departing from the scope of this invention.

In Fig. 2 is shown a coupling member, designated by the reference numeral 34 having heads on both ends thereof to connect two insulator units in the manner shown in Fig. 3, where the units are designated by the reference numerals 36 and 37, provided with caps 38 and 39 having recessed heads to receive the member 34 in the same manner as has been described with reference to the recessed head of the cap 8.

It is immaterial in this invention whether the male member of the coupling be provided with a loop 20, as shown in Fig. 1, or with a threaded shank 23, or with two enlarged heads, as shown in Fig. 2, so long as the head portion is constructed so as to interlock in the recess in the heads of the caps carried by the insulator units; in fact, various constructions are necessarily employed in setting up the various types of insulators and hence various forms of coupling members are required; but in carrying out this invention the male member of the coupling must necessarily be provided at one end with an enlarged head from which extends a narrower neck or

shank. It will be noted that each of the caps constitutes a socket member, the recess in which is adapted to receive the enlarged head of the complementary or male member and in locking these two members together the head of the male member is passed laterally into the opening or mouth 16 of the recess 12 until approximately centrally positioned therein, during the positioning of which the reduced shank of the male member passes through the radial opening 15. After the head of the male member has been thus positioned, it is raised sufficiently to engage the upper, inwardly-converging inner surface of the recess 12 and when it is in this position it is prevented from lateral movement by reason of the fact of the head of the male member being in alinement with the radial opening 15 and being greater than the width thereof it consequently cannot be removed without being again lowered into alinement with the opening or mouth 16.

In order to prevent unintentional disconnection of the members, suitable means are employed for preventing the lowering of the head of the male member into alinement with the mouth or opening 16, and as a means for locking the head of the male member in its upper position, I preferably employ as one of the many devices for carrying this object into effect a spring cotter 40 of sufficient size inserted in the aperture 17 extending inwardly below the lower end of the male member constituting a stop for preventing unintentional descent of the head and consequently the disengagement of the coupling members, and as long as a suitable locking means is in operative position the head of the male member of the coupling is prevented from moving sufficiently to permit its lateral passage outwardly through the mouth 16. Of course it will be obvious that in order to disconnect the coupling the locking means is removed and the enlarged head of the male member lowered into alinement with the mouth 16 and is then passed outwardly therethrough.

In constructing the device the opening 13 is preferably slightly larger than the shank of the male member so as to permit considerable play of the latter therein, and as the upper inner surface of the recess 12 is approximately conoidally-formed and the head of the male member of the coupling is to a certain extent bulbous, the coupling constitutes in one sense a ball and socket joint, allowing considerable play of the members thereof with respect to each other, sufficient to prevent injury to the insulator by jars or movement of the different parts thereof under service conditions, thereby enabling the insulator to be used in a variety of ways and under a variety of conditions, which is

not possible with the connections now in common use, thus producing an efficient and satisfactory coupling, not only for the purpose of uniting the insulator units to each other, but for uniting them to a supporting medium and for uniting the units to a conductor supporting instrumentality.

From the foregoing description it will be apparent that this invention particularly resides in coupling mechanism embodying complementary members, one of which is recessed and the other having an element provided with a head arranged to be positioned in said recess and be interlocked therein by being moved to such a position on the same that it cannot be unintentionally disengaged, by reason of the fact that the portion of the recess which is adapted to contain the head of the complementary member in its locked position is so nearly surrounded by the material of the member that the complementary member cannot be withdrawn therefrom unless it is moved to the position which it necessarily assumes when being introduced therein; in other words, the recess in one of the members is provided with an enlarged lower portion from which extends a contracted upper portion terminating in a suitable opening to receive the shank of the complementary member, so that when the head of the complementary member is first passed laterally into the enlarged portion of the recess and then moved into the contracted upper portion thereof it cannot be withdrawn without first returning it to the enlarged portion.

It will be obvious that a great variety of means or devices may be employed for preventing the unintentional movement of the head of the complementary member from its locked position in the upper portion of the recess to the lower portion thereof, too numerous to set out fully in detail and it is not believed to be required, for the reason that the invention primarily resides in the broad construction already fully described. It will be further apparent that while I have shown and described as the preferred manner of employing this invention providing the cap which carries the insulator units with a recess capable of interlocking with a headed complementary member, it will be entirely within the scope of this invention to provide the complementary member with a recess and the caps with an end having a head capable of interlocking therewith. This is peculiarly well shown in Fig. 3 of the drawings, where if one of the caps were provided with an enlarged head and the other with a recess, the two units might be united together without the employment of the connecting member shown in Fig. 2. It will be further pointed out that in the construction shown and described, each of the units are severally capable of rotation with re-

spect to each other, but if desired or necessity requires it, they may severally be prevented from rotation by making the recesses with an angular conformation and the heads of the complementary members similarly shaped so that when in interlocking engagement with each other, rotation of the units is entirely prevented and at the same time a reasonable amount of play sufficient to enable the same to yield under service conditions is permitted and yet having sufficient rigidity to prevent the material of the insulator being injured by coming into contact with any object or adjacent units striking each other.

What I claim and desire to secure by Letters Patent, is:—

1. A suspension device for insulators comprising a recessed body adapted to inclose and be secured to an insulator unit, a head integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with means adapted to interlock in said recess whereby the insulator unit can be suspended from a suitable support.

2. A suspension device for insulators comprising a recessed body adapted to inclose and be secured to an insulator unit, a head integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with means adapted to interlock in said recess whereby the insulator unit can be suspended from a suitable support, the area of said recess with respect to the size of said means permitting movement of the body upon said suspension member.

3. A suspension device for insulators comprising a recessed body adapted to inclose and be secured to an insulator unit, a head integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with means adapted to interlock in said recess whereby the insulator unit can be suspended from a suitable support, the walls of said T-shaped recess being rounded and said means being rounded.

4. A suspension device for insulators comprising a recessed body adapted to inclose and be secured to an insulator unit, a head integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with means adapted to interlock in said recess whereby the insulator unit can be suspended from a suitable support, the area of said recess with respect to the size of said means permitting movement of the body upon said suspension member, the walls of said T-shaped recess being rounded and said means being rounded.

5. A suspension device for insulators comprising a truncated cone-shaped body pro-

vided with a tapering recess, said body adapted to inclose and be secured to an insulator unit, a head of less diameter than the diameter of said body, said head formed
5 integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with a head adapted to interlock in said recess whereby the insulator can be suspended
10 from a suitable support.

6. A suspension device for insulators comprising a truncated cone-shaped body provided with a tapering recess, said body adapted to inclose and be secured to an insulator unit, a head of less diameter than the diameter of said body, said head formed
15 integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with a head adapted to interlock in said recess whereby the insulator can be suspended from
20 a suitable support, the walls of said T-shaped recess being rounded and said suspension member and the head thereof being
25 rounded.

7. A suspension device for insulators comprising a truncated cone-shaped body provided with a tapering recess, said body adapted to inclose and be secured to an insulator unit, a head of less diameter than
30 the diameter of said body, said head formed integral with the closed end of said body and provided with an inverted T-shaped recess, and a suspension member provided with a head adapted to interlock in said recess
35 whereby the insulator can be suspended from a suitable support, the walls of said T-shaped recess being rounded and said suspension member and the head thereof being rounded, the area of said T-shaped recess
40 with respect to the size of said head and suspension member permitting movement of the body upon the said suspension member.

In testimony whereof I have hereunto set my hand in presence of two subscribing
45 witnesses.

ARTHUR O. AUSTIN.

Witnesses:

C. E. HUMPHREY,
GLENARA FOX.