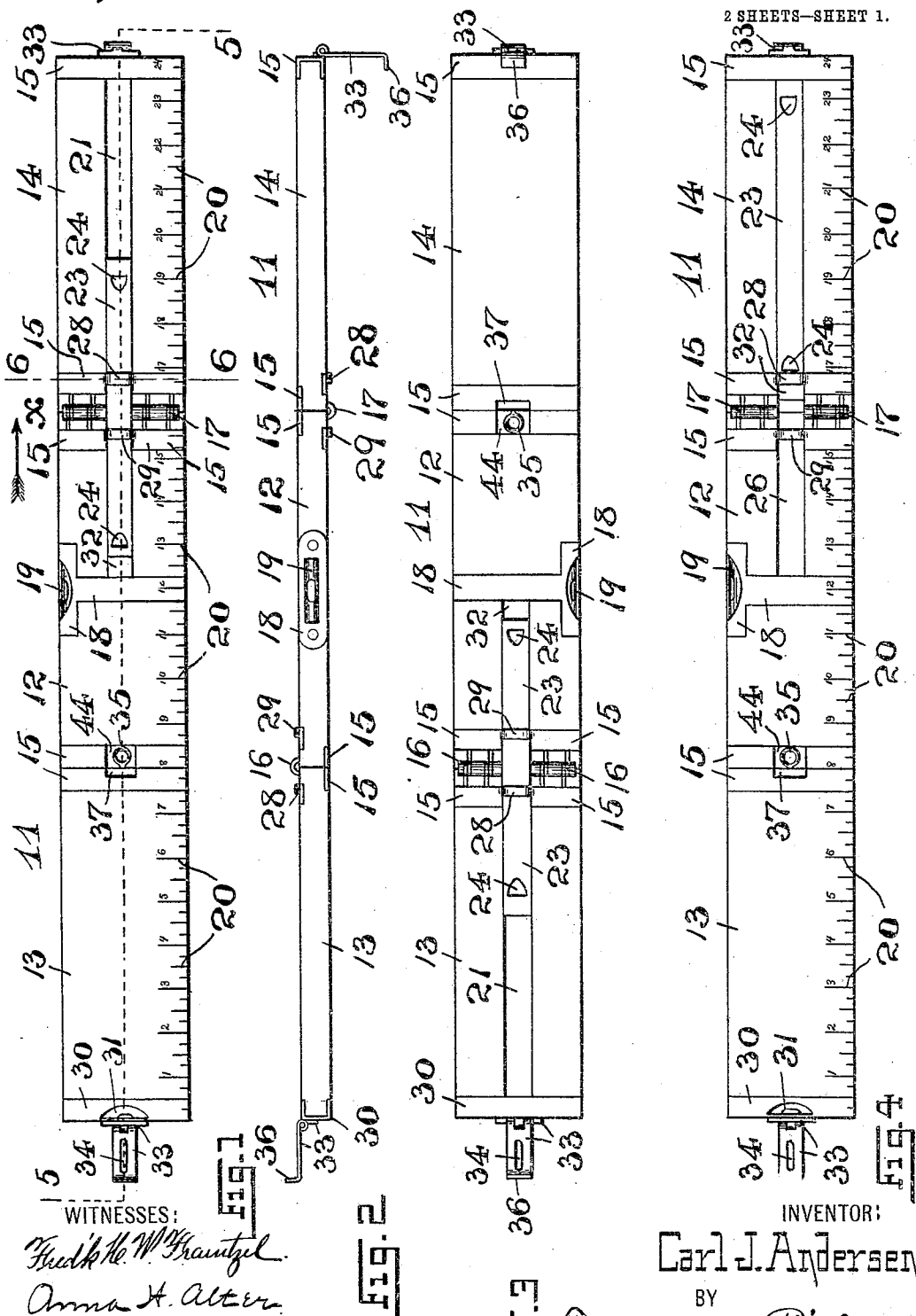


Patented May 17, 1910.

2 SHEETS—SHEET 1.

958,349.



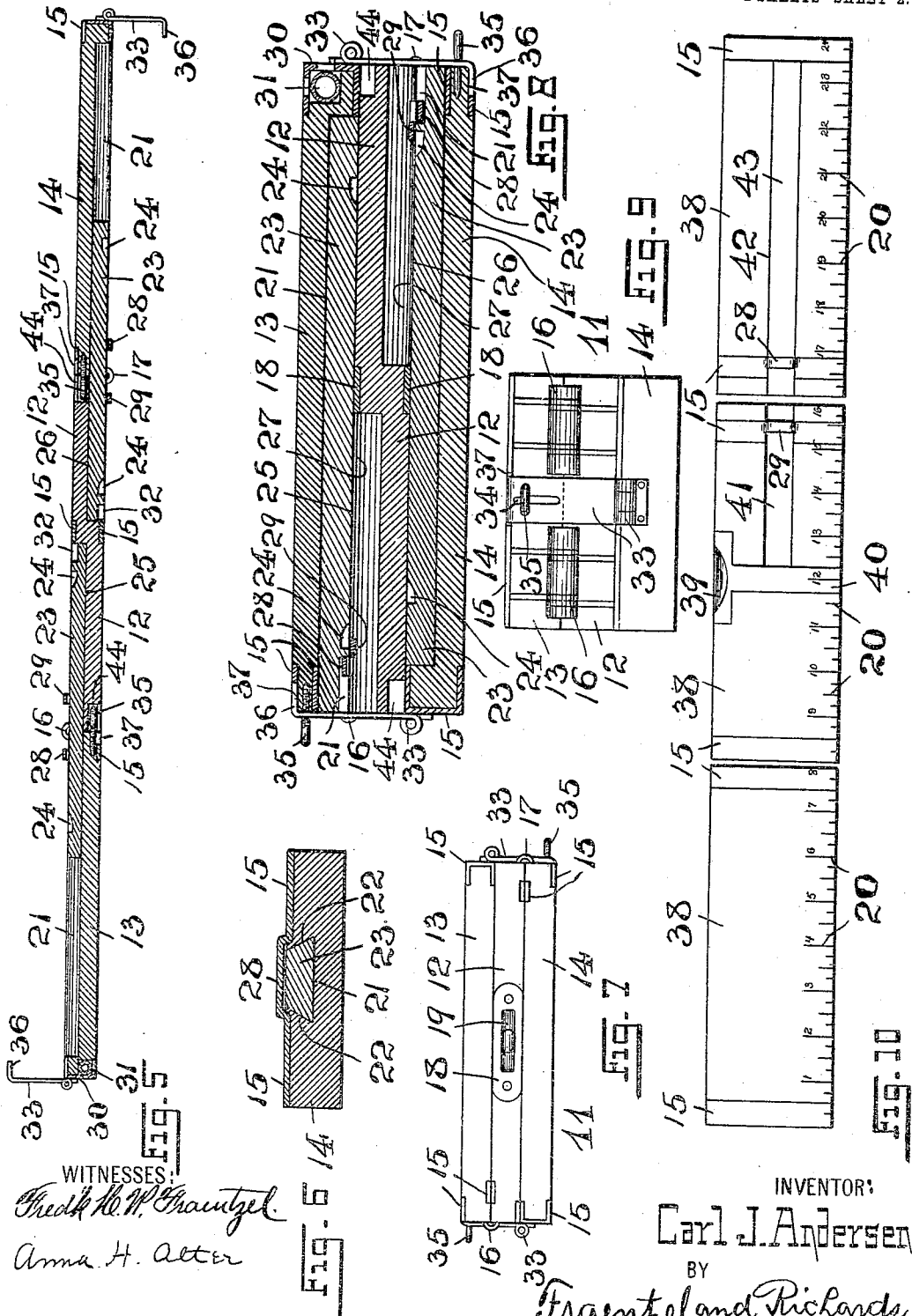
LEVEL.

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2 SHEETS—SHEET 2.



WITNESSES

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LEVEL.

958,349.

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To all whom it may concern:

Be it known that I, CARL J. ANDERSEN, 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 Levels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention has reference, generally, to improvements in that class of tools which are designed for use as spirit-levels, straight-edges and rules; and, this invention relates, more particularly, to a novel combined spirit-level, straight-edge and rule adapted particularly for use in ascertaining the proper level or surface-plane of bowling alleys, and similar constructions.

The invention has for its principal object to provide a novel and simply constructed combination-tool of the general character hereinafter more fully set forth, all with a view of carrying out the several purposes for which it is adapted; and, furthermore, to provide such a novel construction of the same that when the tool is not in use it may be compactly folded, so as to be easily packed within and carried in the ordinary tool-bag, or other similar receptacle, of the artisan making use of the same.

Other objects of the present invention not at this time more particularly enumerated will be clearly understood from the following detailed description of my present invention.

With the various objects of my present invention in view, the said invention consists, primarily, in the novel combination folding tool hereinafter more fully set forth; and, furthermore, this invention consists in the various arrangements and combinations of devices and parts, as well as in the details of the construction of the same, all of which will be hereinafter more fully described and then finally embodied in the clauses of the claims which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a front face view of said com-

bination folding-tool embodying the principles of my present invention, the same being shown unfolded or extended ready for its proper use; Fig. 2 is a top edge view of the same; and Fig. 3 is a back or rear face view of the same. Fig. 4 is a front face view, similar to that shown in Fig. 1, but certain parts of the construction thereof being shown in their arrangement preparatory to closing or folding of the said tool. Fig. 5 is a horizontal section taken on line 5—5 in said Fig. 1; Fig. 6 is a vertical cross section of the same, taken on line 6—6 in said Fig. 1, looking in the direction of the arrow α , the same being drawn on an enlarged scale. Fig. 7 is a top edge view of said tool, shown in its closed or folded position. Fig. 8 is a horizontal section of said tool in its closed or folded position, the same being shown on an enlarged scale. Fig. 9 is an end view of said tool in its closed or folded position, also shown on an enlarged scale. Fig. 10 is a front face view of a slightly modified form of tool, embodying the principles of my present invention, the same being formed of separable sections.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to the several figures of the said drawings, the reference-character 11 indicates the complete tool embodying the principles of my present invention, the same comprising a central section 12, made of wood, or any other desirable material, a left end-section 13, and a right-end section 14, said end-sections also being made of wood, or any other desirable material. Each of said sections 12, 13 and 14 may be provided with suitable metallic end-bindings 15 to protect the said ends from being marred or worn, and also to assure the proper alinement of the adjoining or abutting ends of said sections, when the same are opened or otherwise brought into their extended relation, one with another. The said left-end section 13 is movably secured to the left-end of said central section 12, by means of suitable hinges 16, which are arranged so as to permit said left-end section 13 to be folded back along the rear face of said central section 12. In a like manner, said right-end section 14 is movably secured to the right end of said central section 12, by means of suitable hinges 17, which are arranged so as to permit said right-end sec-

tion 14 to be folded back along the front face of said central section 12. Secured, by means of a suitable metallic holding-frame 18, to the top edge of said central section 12 is a spirit-level 19, the same being counter-sunk in said central-section 12, so as to maintain the straight periphery of the edges of said central-section 12. Each of said sections 12, 13 and 14 is provided upon the front face, adjacent to the lower edge of the same, with suitable graduations 20, arranged in such a manner, so that when the said sections 12, 13 and 14 are opened, or are in their extended relations, one with the other, said graduations 20 will mark off a continuous and correct scale in inches, or any other desirable unit of measurement, from end to end of said extended or unfolded sections 12, 13 and 14. The means for retaining said sections 12, 13 and 14 in their extended or unfolded relation one with the other, so as to provide an operative tool, comprise the following devices. The rear face of said left end-section 13 and the front face of said right-end section 14 are each provided with a centrally disposed and longitudinally extending channel or groove 21, the side walls 22 of which are undercut, substantially as shown in Fig. 6, and slidably arranged within each channel or groove 21, thus formed, is a slide-bar 23, the sides of which are chamfered so as to conform with the angle of the undercut side-walls 22 of said channel or groove 21, so that said slide-bar 23 dovetails within said channel or groove 21, and while free to slide longitudinally back and forth therein, is incapable of any lateral movement or side-play. Said slide-bars 23 are provided with suitably located depressions 24 which serve to permit the application of the fingers to said slide-bars 23, for the purpose of moving the same longitudinally in either direction. The said central section 12 is also provided on its rear face with a receiving channel or groove 25 extending from its left end toward the center of said section, and in a like manner, the front face of said central section 12 is provided with a receiving channel or groove 26 extending from its right end toward the center of said section. These channels or grooves 25 and 26 are also provided with undercut side-walls 27, and are furthermore adapted to be brought in alinement with the said channels or grooves of said end-sections 13 and 14, when the same are unfolded or brought into their extended relations with said central section 12. When said sections are unfolded, the said slide-bars 23 are moved into said receiving channels or grooves 25 and 26, so that a portion thereof penetrates into the same and a portion still remains in the respective channels or grooves 21 of said end sections, thus firmly retaining said end-sections 13 and 14 in their

extended relations with said central section 12 and preventing the same from being turned on their respective hinges 16 and 17. For the purpose of further preventing any lateral movement or side-play of said slide-bars 23, particularly when in their operative interlocking relation with their respective sections, the metal strips 15 of each end-section 13 and 14 are provided, adjacent to its hinged end, with a retaining bridge-piece 28 adapted to straddle the channels or grooves of each of said sections; and, in like manner, the central-section 12 is provided at each end in its metal strip 15, with similar retaining bridge-pieces 29 adapted to straddle its respective receiving channels or grooves. Arranged within a suitable metallic frame-work 30, secured to the free end of said left end section 13 is a spirit-level 31, which allows the use of the tool as a plumb-level.

It will be readily understood, both from the above description as well as from an inspection of the several figures of the drawings, that when the slide-bars 23 are disengaged from said receiving channels or grooves 25 and 26 of said central-section 12, the end-sections 13 and 14 may be folded over, by means of their respective hinges 16 and 17, respectively, upon the rear and front faces of said central section 12, thus reducing the length of said tool formed by said sections and rendering it possible to carry the same in a tool-bag or even the pocket of a garment. When the said end-sections are thus folded over, the projecting surfaces of the bridge-pieces 29 enter into and are received by suitably formed cutaway portions or depressions, as 32, which are suitably located in the ends of the said slide-bars 23, and the projecting surfaces of the bridge-pieces 28 are received by the receiving channels or grooves 25 and 26 respectively, all of which is clearly shown more particularly in Fig. 8 of the drawings. The free ends of said end-sections 13 and 14 are provided with hinged hasps or retaining devices, each device being provided with a suitable slot 34 which is caused to be placed over an eyelet-screw 35, or other suitable device, suitably secured to and extending from the hinged ends of said respective end-sections 13 and 14, and under normal conditions being disposed in depressions 44 in the rear faces of the end-bindings 15; and, by turning said eyelet-screws, the said hasps 33 may thus be made to bind or lock said sections 12, 13 and 14 in their folded relations, one with the other. Each hasp 33 may be further provided with an inwardly projecting tongue or lug 36 which, when in its operative locking position, engages a suitable cut-away portion 37 in the hinged end of the respective end-sections 13 and 14. When the said sections are in their opened

or extended relation, the projecting end of each respective eyelet-screw 35 is received by a suitable cutaway portion 37 properly located for that purpose in each end of said central-section 12, as will clearly appear from an inspection, more particularly of Fig. 5 of the drawings.

Referring now more particularly to Fig. 10 of the drawings, there is illustrated therein a slightly modified construction of device embodying the principles of my invention, the same consisting of a plurality of separable sections 38, one of which is provided with a spirit-level 39, arranged in a metal holding frame 40, said sections 38 being provided with suitable graduations 20, which, when said sections are operatively secured together, form a continuous and complete scale or measure. One of said sections is provided with receiving grooves or channels 41 and the other sections are provided with grooves or channels 42 in which are slidably arranged the slide-bars 43. When said sections are placed together the respective slide-bars 43 are slid or moved into the receiving channels 41, and thus the respective sections are operatively joined together to provide a level or straight-edge similar to that herein-above described.

I am aware that some changes may be made in the several arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of my present invention, as described in the foregoing specification, and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of said devices and parts as herein shown and described, nor do I confine myself to the exact details of the construction thereof.

I claim:—

1. The herein described tool comprising a central section and end-sections, said sections being hinged together, and said central section being provided with grooves in its opposite faces, said grooves extending from an end of said section and terminating approximately at the middle thereof, said end-sections being also provided with grooves extending from end to end in each section, each groove in an end-section being adapted to be brought in alinement with one of the grooves in said central section, a spirit-level secured upon an edge of one of said sections, a spirit-level secured upon an edge of the free end of one of said end-sections, and a locking means slidably arranged in the grooves of said sections for maintaining the sections in their opened or extended relation one with another.

2. The herein described tool comprising a central section and end-sections, said sections

being hinged together, and said central section being provided with grooves in its opposite faces, each groove extending from an end of said section and terminating approximately at the middle thereof, said end-sections being also provided with grooves extending from end to end in each section, each groove in an end-section being adapted to be brought in alinement with one of the grooves in said central section, a spirit-level secured upon an edge of said central section, a spirit-level secured upon the free end of one of said end-sections, and a locking means slidably arranged in the grooves of said sections for maintaining the sections in their opened or extended relation one with another, and each section being provided with a scale.

3. The herein described tool comprising a central-section, end-sections pivotally connected with the ends of said central section, all of said sections being provided with grooves, said central section being provided with a spirit-level upon one of its edges, said sections being provided with graduations upon the faces thereof, adapted to form a complete and continuous scale when said sections are in their opened or extended relation, and a locking means slidably arranged in the grooves of said sections for maintaining the sections in their opened or extended relation one with another, substantially as and for the purposes set forth.

4. The herein described tool comprising a central section, said section being provided in its opposite faces with centrally disposed and longitudinally extending grooves, each groove extending from an end of said section and terminating approximately in the middle of the section, a spirit-level connected with one of the edges of said central section, a left end-section, hinges connecting said left end-section with said central section, said left end-section being adapted to fold back upon the rear face of said central section, a right end-section, hinges connecting said right end-section with said central section, said right end-section being adapted to fold back upon the front face of said central-section, said two end-sections being provided with grooves extending from end to end of each section and adapted to be brought in alinement with said grooves in said central section, and slide-bars slidably arranged in the grooves of said central section and said end-sections for maintaining said sections in their fixed opened or extended relations with each other, substantially as and for the purposes set forth.

5. The herein described tool comprising a central section, said section being provided in its opposite faces with centrally disposed and longitudinally extending grooves, each groove extending from an end of said section and terminating approximately in the middle of the section, a spirit-level connected

with one of the edges of said central-section, a left end-section, hinges connecting said left end-section with said central section, said left end-section being adapted to fold back upon the rear face of said central section, a right-end section, hinges connecting said right end-section with said central section, said right-end section being adapted to fold back upon the front face of said central-section, said two end-sections being provided with grooves extending from end to end of each section and adapted to be brought in alinement with said grooves in said central section, and said central section and said end-sections being provided with graduations upon their respective faces adapted to form a complete and continuous scale when said sections are in their opened or extended relation, and slide-bars slidably arranged in the grooves of said central section and said end-sections for maintaining said sections in their fixed opened or extended relations with each other, substantially as and for the purposes set forth.

6. The herein described tool comprising a central section, said section being provided in its opposite faces with centrally disposed and longitudinally extending grooves, each groove extending from an end of said section and terminating approximately in the middle of the section, a spirit-level connected with one of the edges of said central-section, a left end-section, hinges connecting said left end-section with said central section, said left-end section being adapted to fold back upon the rear face of said central-section, a right-end section, hinges connecting said right end-section with said central section, said right end-section being adapted to fold back upon the front face of said central-section, said two end-sections being provided with grooves extending from end to end of each section and adapted to be brought in alinement with said grooves in said central section, and said central section and said end-sections being provided with graduations upon their respective faces to form a complete and continuous scale when said sections are in their opened or extended relation, a spirit-level secured upon the free end of one of said end-sections, and slide-bars slidably arranged in the grooves of said central section and said end-sections for maintaining said sections in their fixed opened or extended relations with each other, substantially as and for the purposes set forth.

7. A level comprising a central section and a pair of end-sections, connecting hinges between said sections, said central section being provided in its opposite faces with centrally disposed and longitudinally extending grooves, each groove extending

from an end of said section and terminating approximately at the middle of the section, and said two end-sections being provided with correspondingly disposed grooves extending from end to end of each end-section and adapted to be brought in alinement with said grooves in said central section, slide-bars movably arranged in said grooves for retaining said central section and said end-sections in their fixed opened relations to each other, and means at the ends of some of said sections for retaining said sections in their folded relations.

8. A level comprising a central section and a pair of end-sections, connecting hinges between said sections, said central section being provided in its opposite faces with centrally disposed and longitudinally extending grooves, each groove extending from an end of said section and terminating approximately at the middle of the section, and said two end-sections being provided with correspondingly disposed grooves extending from end to end of each end-section and adapted to be brought in alinement with said grooves in said central section, slide-bars movably arranged in said grooves for retaining said central section and said end-sections in their fixed opened relation to each other, retaining hasps hinged upon the ends of some of said sections, and an engaging lug upon the end of each hasp.

9. A level comprising a central section and a pair of end-sections, connecting hinges between said sections, said central section being provided in its opposite faces with centrally disposed and longitudinally extending grooves, each groove extending from an end of said section and terminating approximately at the middle of the section, and said two end-sections being provided with correspondingly disposed grooves extending from end to end of each end-section and adapted to be brought in alinement with said grooves in said central section, slide-bars movably arranged in said grooves for retaining said central section and said end-sections in their fixed opened relation to each other, retaining hasps hinged upon the ends of some of said sections, an engaging lug upon the end of each hasp, each hasp being provided with a slot, and screw-eyes extending from some of said sections adapted to enter said slots and be turned into holding engagement with said hasps.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 2nd day of April 1909.

CARL J. ANDERSEN.

Witnesses:

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