(No Model.) 3 Sheets—Sheet 1.

G. E. SIMMONS.

WIRE AND PICKET FENCE MACHINE.

No. 520,544. Patented May 29, 1894.

Fig. 1.

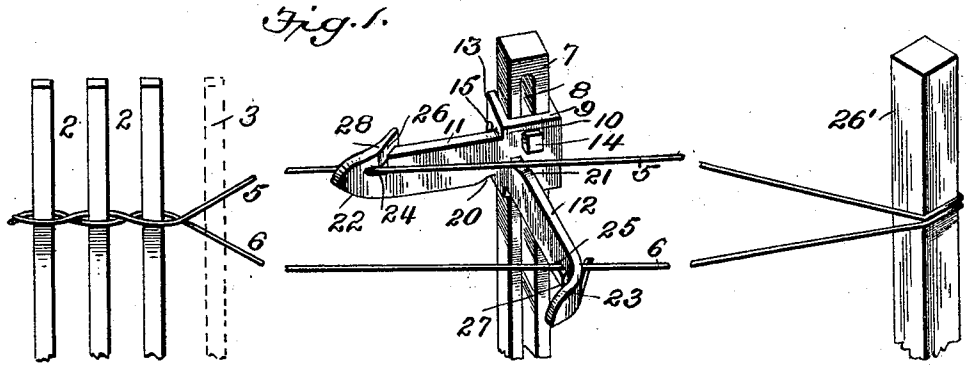


Fig. 2.

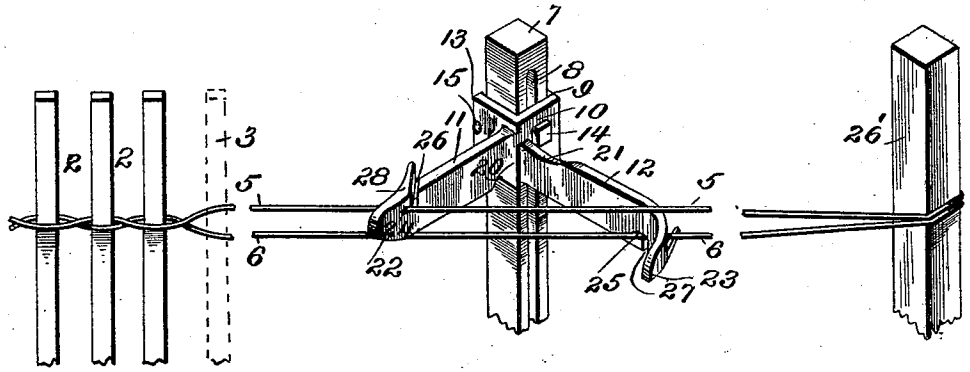
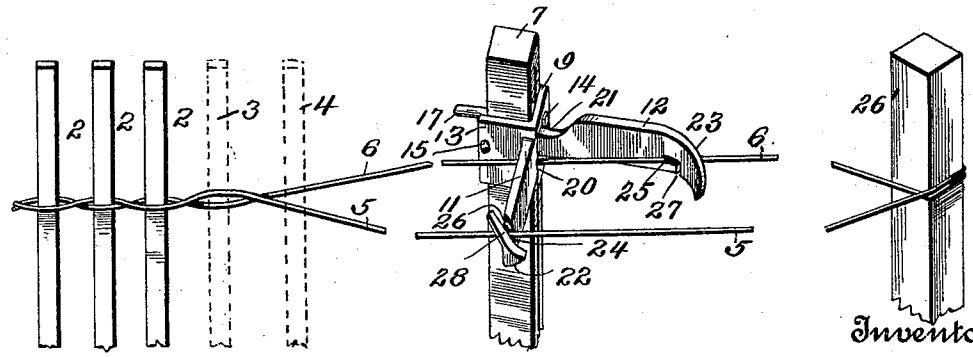


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

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No. 520,544. Patented May 29, 1894.

Fig. 4.

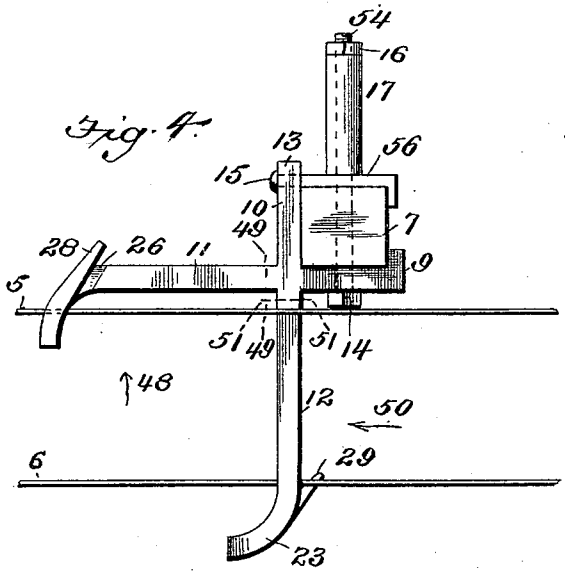


Fig. 7.

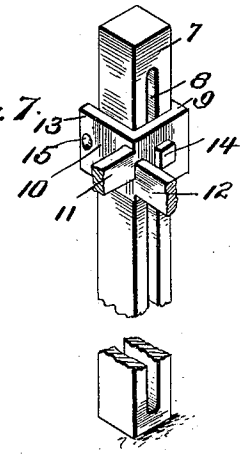


Fig. 8.

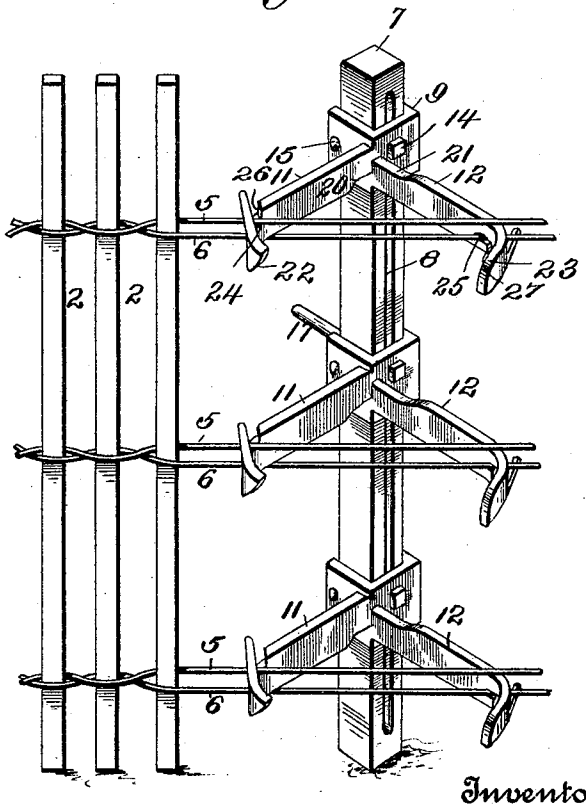


Fig. 5.

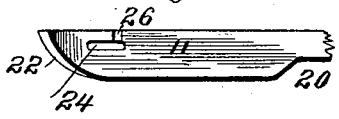
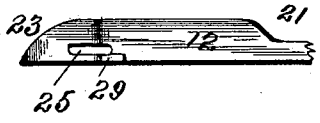


Fig. 6.



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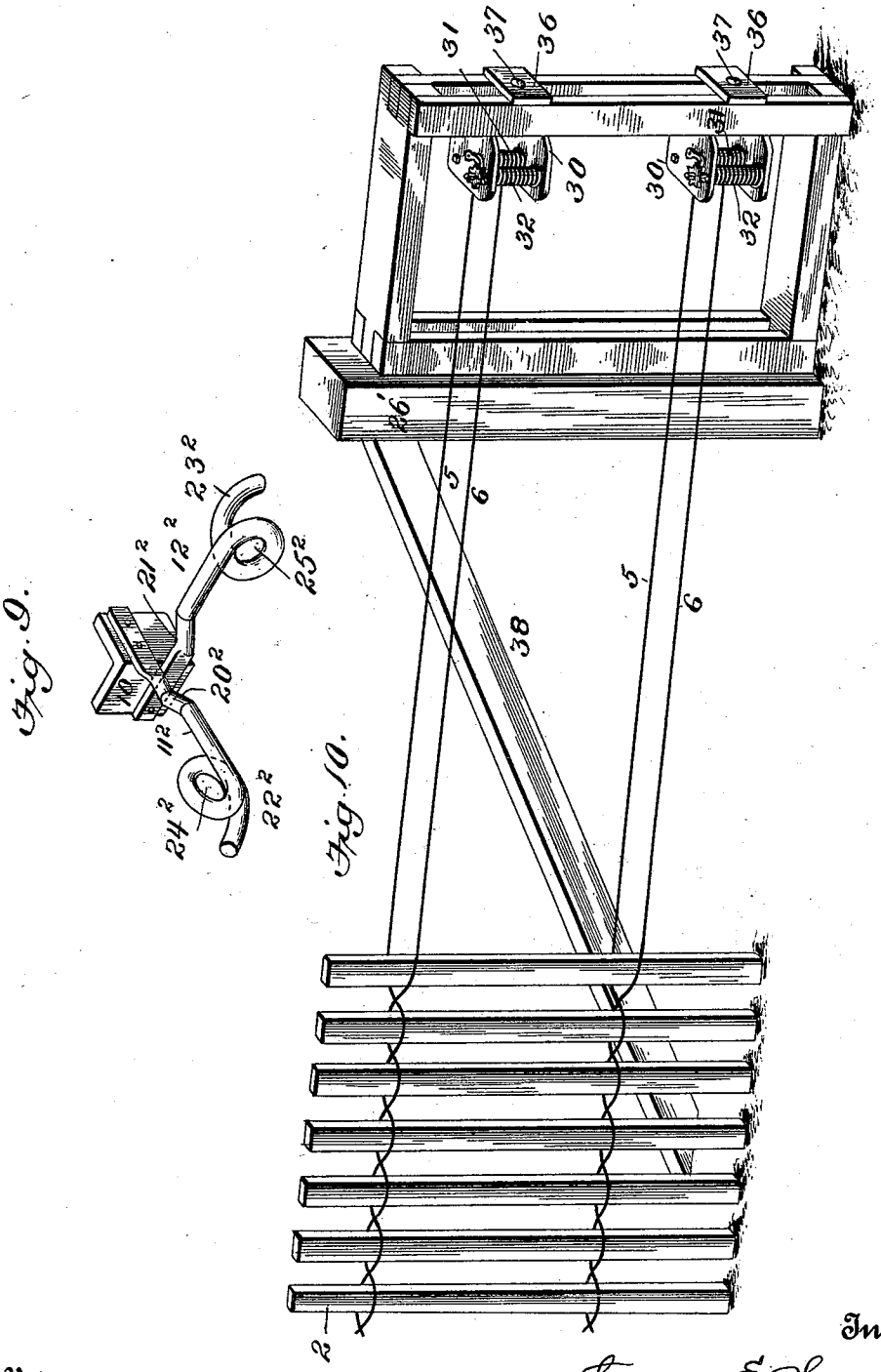

Fig. 9.

Fig. 10.

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UNITED STATES PATENT OFFICE.

GEORGE E. SIMMONS, OF EAST MONROE, OHIO.

WIRE-AND-PICKET-FENCE MACHINE.

SPECIFICATION forming part of Letters Patent No. 520,544, dated May 29, 1894.

Application filed November 7, 1892. Serial No. 451,191. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. SIMMONS, a citizen of the United States, residing at East Monroe, in the county of Highland and State of Ohio, have invented certain new and useful Improvements in Wire-and-Picket-Fence Machines, of which the following is a specification.

My invention relates to improvements in apparatus for weaving and constructing that class of picket fences in which the pickets are held in position by means of wires. Heretofore some difficulty has been experienced in weaving or alternately crossing the wires in constructing picket fences, with the apparatus already in use, in regard to the matter of keeping the wires in the same horizontal plane. In other words, with said previous apparatus one wire frequently rises some distance above the other, and the wires being on opposite sides of the picket and stretched to a high tension, there is a tendency to bend or break the picket and the appearance is not pleasing to the eye. This difficulty arises principally, as far as I am aware from the fact that in the apparatus already in use the pivoted arm or support which carries the wires is rotated in a vertical plane through one half a revolution, or an arc of one hundred and eighty degrees, and the wires are carried with said arm or support, being threaded through eyes therein. When one fourth of a revolution or an arc of ninety degrees is completed one wire is brought directly above the other, and as the wires are at all times held the same distance apart by the apparatus there is a tendency for the upper wire to rise unduly above the lower one at the point where the last picket is inserted, with the undesirable results stated above.

The object of the present invention is, primarily, to furnish apparatus which will be operated or rotated, not in a vertical, but in a horizontal plane. With this apparatus the wires, in being woven or alternately crossed, are not rotated around each other, or around a common center, but they are moved laterally, and kept in or near the same horizontal plane. Hence one wire can not rise unduly above the other, and the wires press against the pickets at diametrically opposite points, thus securing a pleasing appearance and at the same time obviating any tendency to bend or break the pickets.

In the accompanying drawings, Figures 1, 2 and 3 are perspective views, partly in section, representing the fence pickets or palings, the wires, and the device for weaving or alternately crossing the wires, and showing by diagram the manner in which the wires are woven around the pickets by the use of my improved wire-weaving device. In these views the wires are represented as broken, in order to make the drawings to as large a scale as possible, but it will be understood by those skilled in the art that the wire-weaving device when in operation is placed at a suitable distance from the nearest pickets, and consequently the wires when crossed form only a small angle and are not moved very far from being parallel one with the other, as represented more clearly in the drawings by those portions of the wires which are in contact with the wire-weaving device. In actual operation those portions of the wires which extend from the contact points of the wire-weaving device to the nearest picket lie respectively in straight and unbroken lines, as will be readily understood. Fig. 4 is a top or plan view of the wire-weaving device, the upright staff or bar to which said device is attached, and the fence wires. Fig. 5 is a view of one arm of the wire-weaving device, looking in the direction of the arrow 48 of Fig. 4, said arm being cut off on the line 49 49 of Fig. 4. Fig. 6 is a similar view of the other arm, looking in the direction of the arrow 50 of Fig. 4, said arm being cut off on the line 51—51 of Fig. 4. Fig. 7 is a perspective view of the upright staff or bar, partly in section, and the wire-weaving device, partly in section, attached thereto. Fig. 8 is a perspective view showing the pickets, the wires, the upright staff, and three wire-weaving devices attached to said staff. Fig. 9 is a perspective view showing a modified form of the wire-weaving device. Fig. 10 is a perspective view illustrating the pickets, the wires, the end post of the fence, and a tension frame of a construction which I preferably employ in practicing my invention.

Similar numerals of reference indicate similar parts throughout the several views.

The numerals 2 2 designate the pickets or

palings, around which the wires 5 and 6 are woven. The upright staff or bar 7, which is preferably made of wood, is slotted as shown at 8. The wire-weaving device, which is preferably made of malleable iron, has a body-portion 10, and two arms 11 and 12. The body-portion 10 is shaped and adapted to fit upon the upright staff 7, and in order to be adjustable in height it is preferably tapped and provided with the bolt 14 which extends through slot 8 of staff 7 and receives the nut 16. One end or wing 9 of the body-portion 10 is angular, as shown most clearly in Fig. 4, to fit snugly around the edge of staff 7. The other end or wing 13 of body-portion 10 extends somewhat beyond the edge of the staff, as shown, and is tapped to receive the link 56. The link 56 has a head 15 and is tapped at the center to receive the bolt 14, and terminates in an angular portion which fits snugly around the edge of staff 7. The slot 8 in staff 7 admits of the weaving device, or devices, being raised or lowered and adjusted at any desired height. The bolt 14 projects some distance through or beyond the staff 7, and the extended or end portion 54, being incased in a wooden cylinder or covering 17, forms a convenient operating handle. The staff 7 should be provided with as many wire-weaving devices as there are companion-strands of wire, as shown in Fig. 8. Only one bolt 14, however, need be projected to receive the wooden cylinder or covering 17, since one operating handle is sufficient.

The arms 11 and 12 project from the body-portion 10 in or nearly in the same horizontal plane, and each arm has its upper or under side preferably straight or flat, while the line of its opposite side is irregular, forming a notch or depression as shown at 20 or 21 near the body-portion 10, an enlarged central portion, and a tapering or wedge-shaped end or outer portion. The arms are identical in form and shape, except that one has its irregular side upward while the other has its irregular side downward. The form of the arms is most clearly shown in Figs. 5 and 6. The arms are provided with eyes or openings 24 and 25 near their outer ends, respectively designed to receive the wires. These eyes or openings are preferably oval or oblong, as shown.

The manner of operating the weaver or wire-weaving device will now be explained.

Referring more particularly to Fig. 1, in which 26′ designates the end post of the fence and 2 2 the pickets or palings, it will be observed that wire 5 passes through the eye or opening 24 of arm 11, and wire 6 passes through the eye or opening 25 of arm 12. Arm 12 forms an angle of almost ninety degrees with the line of the fence, while arm 11 is almost parallel with said line. 5 is the upper wire in this instance, and after passing through eye 24 it also passes through or rests in the notch or depression 21 of arm 12. The wires are now separated by the weaver, as shown, and a new picket 3, shown in dotted lines, is placed in position. The operator then grasps handle 17 and turns or rotates the upright staff or bar 7, with the weaving device attached thereto, to the position shown in Fig. 2. The wires approach each other horizontally, and the arms now form equal angles of about forty-five degrees with the wires. It will be observed that wire 5 has left the notch or depression 21, passed over the enlarged central portion of arm 12, and now rests upon the curved or inclined end portion 23. At the same time the curved or inclined end portion 22 of arm 11 has reached and now impinges upon wire 6. The wires are now almost parallel, and moving in opposite directions, wire 5 passing above arm 12 and wire 6 passing below arm 11. The upright staff 7 and the weaving device are now turned or rotated to the position shown in Fig. 3. It will be observed that arm 11 now forms an angle of almost ninety degrees with the line of the fence, while the arm 12 is almost parallel with said line. Wire 6 has passed under the enlarged central portion of arm 11, and now rests in the notch or depression 20, while wire 5 has slipped off from the curved or inclined end portion 23 and moved away from arm 12. Arm 11 and wire 5 now occupy the same position, relatively, that arm 12 and wire 6 occupied in Fig. 1; while arm 12 and wire 6 occupy relatively the position of arm 11 and wire 5 in Fig. 1, except that arm 12 is on the opposite side of staff 7. Picket 3 has now been inclosed or interwoven between the wires, as shown, and a new picket 4, shown in dotted lines, is placed in position. The operator now turns or rotates staff 7 and the weaving device in the direction opposite to that last described, whereupon the arms 11 and 12 and wires 5 and 6 will be brought to the position shown in Fig. 2, and picket 4 will occupy the position of picket 3 in Fig. 2. The staff and weaving device are then brought to the first position, as shown in Fig. 1, and picket 4 will occupy the position of picket 3 in Fig. 3—that is, it will be interwoven by the wires. A new picket is then placed in position, and by continuing this operation any desired number of pickets may be interwoven with wires 5 and 6.

With the foregoing description of the method of operation it will be apparent, from Fig. 1, that the eye 24 should be in the same horizontal plane with the notch or depression 21 of arm 12, in order that the wire passing through said eye may pass normally and in a straight line through said notch or depression; and from Fig. 3, that the eye 25 should be in the same horizontal plane with the notch or depression 20 of arm 11. It is also apparent that the curved or inclined surfaces 22 and 23 at the outer ends of the arms should

form angles of less than forty-five degrees with the plane of the arms, or with a horizontal plane, in order that the wires may easily pass over the slightly enlarged central portions of the arms, while the curved or inclined surfaces at the outer ends of the notches or depressions 20 and 21 should be rather steep or abrupt, as shown, in order to prevent the wires from slipping over said surfaces of their own accord before the new picket is placed in position. I do not wish, however, to limit myself to the exact constructions here described.

The arms 11 and 12 are preferably bent or curved near their outer ends, (see Fig. 4) and inclined toward each other. The object in this arrangement is to permit the wires to pass more readily through eyes 24 and 25. It will be observed that when the weaver has reached its extreme limit of motion, as shown in Fig. 4, the wire 5 passes through eye 24 without being bent or kinked. The same will be true of wire 6, with reference to eye 25, when the weaver has reached its opposite limit of motion. This form will also assist arm 11 in passing over wire 6 when the weaver is rotated.

Slots 26 and 27 are cut angularly across the straight or flat sides of arms 11 and 12. These slots communicate with eyes 24 and 25, respectively and are used in threading or inserting the wires into the eyes. They are preferably cut angularly in order that the wires may not work out during the operation of the apparatus. The flat or straight sides of the arms may also have ears or lateral projections 28 and 29 (see Fig. 4) following the line of the slots, respectively, and calculated to hold the wires more securely in the eyes.

In Fig. 9 the arms of the wire-weaving device are made of wires or rods 11^2 and 12^2. These wires or rods are flattened at their inner ends in order to admit of being riveted to the body-portion 10, and they are bent or curved in such a manner as to form the notches or depressions 20^2 and 21^2, the eyes 24^2 and 25^2, and the curved or inclined outer portions 22^2 and 23^2, as shown. This form may be used in some instances in view of cheapness of manufacture.

The tension-frame, a preferred form of which is shown in Fig. 10, may be made in the ordinary form and placed against the end post 26′ in the usual manner, and is provided with the usual housings 30 and tension-rollers 31 and 32. The axles of these rollers are provided with square heads in order that a crank may be applied for the purpose of rotating the rollers and thus stretching or tightening the wires 5 and 6. The rollers are provided with the usual ratchets and are held by ordinary locking-dogs. The housings 30 have shanks which are secured in the tension-frame, and held by heads 37, which are in contact with plates or washers 36. A brace 38, consisting of a piece of timber, is placed against the end post 26′ and usually extends from the top of post 26′ to the bottom of the next or adjacent post of the fence. This brace 38 interferes with the operation of the wire-weaving apparatus. Hence in constructing the last panel of the fence I usually dispense with the wire-weaving apparatus. By turning or rotating each housing 30, which is loosely secured in the tension-frame and free to rotate about the axial line of its shank, alternately or in opposite directions, by hand, through one-half of a revolution or an arc of one hundred and eighty degrees, the wires 5 and 6 are woven or alternately crossed, and the last pickets are readily placed in position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A wire weaving device consisting of the body portion 10, and the arms 11 and 12, said arms forming an angle, and each formed with an eye near its outer end and a slot communicating with said eye, substantially as described.

2. A wire-weaving device with arms 11 and 12, each of said arms having respectively a curved or inclined surface 22 or 23 near its outer end, and a notch or depression 20 or 21 near its inner end, as and for the purposes set forth.

3. A wire-weaving device with arms 11 and 12, said arms having respectively eyes or openings near their outer ends, curved or inclined surfaces 22 and 23, and notches or depressions 20 and 21, as and for the purposes set forth.

4. A wire-weaving device consisting of the portion 10 with the arms 11 and 12, said arms forming an angle and having eyes or openings near their outer ends, the surfaces 22 and 23 at their outer ends curved or inclined with reference to the plane of the arms, and the notches or depressions 20 and 21 near their inner ends, and the upright staff 7 with handle 17, as and for the purposes set forth.

5. A wire-weaving device with arms 11 and 12, said arms having eyes or openings near their outer ends, slots 26 and 27 communicating with said eyes or openings, and ears or projections 28 and 29 designed to prevent the wires from slipping out from said eyes or openings, as and for the purposes set forth.

6. A wire-weaving device with arms 11 and 12, said arms having eyes or openings 24 and 25, tapering or wedge-shaped outer ends, enlarged central portions, and notches or depressions 20 and 21 at their inner ends, as and for the purposes set forth.

7. A wire-weaving device with arms 11 and 12, said arm 11 having an eye or opening 24 near its outer end, and a notch or depression 20 on its under side and near its inner end, and said arm 12 having an eye or opening 25 near its outer end and a notch or depression

21 on its upper side and near its inner end, said eye or opening 24 being in the same horizontal plane with the notch or depression 21, and said eye or opening 25 being in the same horizontal plane with the notch or depression 20, as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE E. SIMMONS.

Witnesses:
WILLIAM H. PENN,
CHARLES E. PENN.