

W. H. SOMMER.
METHOD OF MAKING A METALLIC STRUCTURE.
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1,063,224.

Patented June 3, 1913.

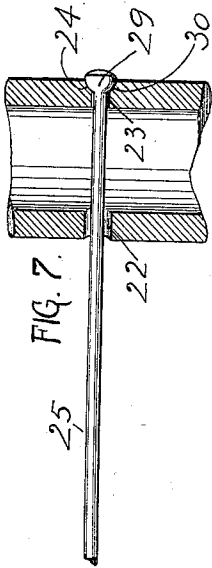


FIG. 7.

FIG. 1.

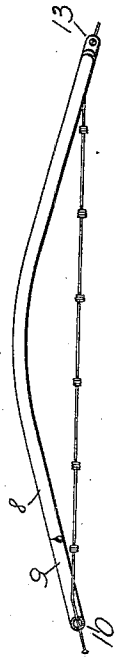


FIG. 4.



FIG. 2.

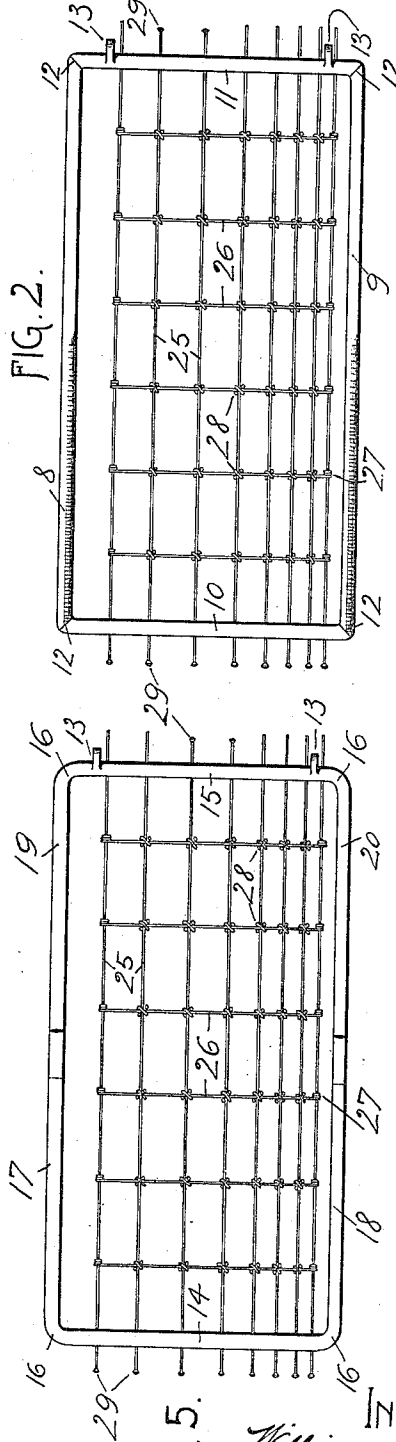


FIG. 5.

INVENTOR
William H. Sommer
Chas. A. Schlatter

FIG. 3.

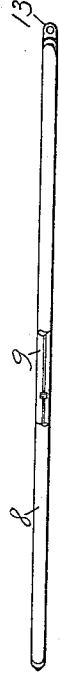


FIG. 6.



WITNESSES
Chas. A. Bailey
H. A. Schlatter.

UNITED STATES PATENT OFFICE.

WILLIAM H. SOMMER, OF PEORIA, ILLINOIS.

METHOD OF MAKING A METALLIC STRUCTURE.

1,063,224.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM H. SOMMER, a citizen of the United States, residing at Peoria, in the county of Peoria, State of Illinois, have invented a new and useful Improvement in the Method of Making a Metallic Structure, of which the following is a specification.

This invention has reference to improvements in metallic structures and preferably of that type comprising a frame which is adapted to sustain and have connected therewith, a filling, which together with the frame, constitutes the body thereof.

The object of the present invention is the improved method of securing the wire filling in the metal frame and if such invention is employed in a gate structure, the method is in the manner of securing the wires taut in the frame, and consists in forming a frame including end members provided with openings; inserting wires through the openings in the end members to be loosely held therein; providing the extremital portions of the wires with means for preventing the withdrawal of the wires from the frame; providing a connecting means for the end members, and moving the end members apart a predetermined distance to stretch and firmly secure the wires taut in the frame.

In carrying out my improved method of firmly securing the section of fence fabric to the gate frame, said frame is constructed in a way whereby the length of the gate may be shortened or the end bars moved toward each other to a point less than the normal distance between the end bars of the gate frame when the gate is complete; the fabric or wires from which it is designed to produce a section to form a part of the gate body is stretched so that all of the longitudinal wires will be of uniform length and a section of required length is cut therefrom and the ends of the longitudinal wires passed through the openings in the end bars of the gate to be loosely held therein and the protruding ends of said wires preferably headed or riveted after which, the gate frame is caused to reassume its required shape and the end bars brought to their normal position from each other which will cause said end bars to engage with the heads or rivets on the ends of the longitudinal wires and stretch such wires so that they will become taut and firmly hold the fence section or

longitudinal wires in firm position within the confines of the gate frame.

Figure 1 is a top plan view of a gate and one mode of carrying out my invention. In this view the gate is partly broken away and the longitudinal bars of the gate have been bowed or bent to adapt the securing of the wires to the gate, by heading or riveting the ends of the wires and then bending the frame of the gate back into its normal position for firmly connecting the wires to the frame of the gate; Fig. 2 is an elevation of Fig. 1; Fig. 3 is a plan view, partly in section of the gate shown in Figs. 1 and 2, after the frame of the gate has been bent back into its normal position and the wires secured to the frame of such gate; Fig. 4 is a top plan view of a gate showing a further mode of carrying out my invention. In this view the gate is shown comprising two ends where the top and bottom bars are formed in sections and adapted to be butt-welded or otherwise adapted to be connected to each other. The meeting ends of the top and bottom bars are caused to overlap which shortens the distance between the end bars of the gate. The longitudinal wires forming the body portion of the gate are passed through the end bars of the gate and their ends headed or riveted, when the opposite end sections of the gate body are separated and the meeting ends of the top and bottom bars butt-welded or otherwise suitably connected. Fig. 5 is an elevation of Fig. 4; Fig. 6 is a plan view, partly in section of the gate shown in Figs. 4 and 5 after the meeting ends of the top and bottom bars have been welded or connected together to firmly attach the section of fence or wires to the gate frame, and Fig. 7 is an enlarged sectional detail of a portion of one of the end bars or parts of the gate, showing openings therein to receive a wire and a wire headed or riveted in the manner intended for securing the same to the gate frame.

Like characters of reference indicate corresponding parts throughout the figures.

In carrying out my invention and as pointed out in Figs. 1 and 4, there are several ways by which the same may be practised. That is to say, it is immaterial how the ends of the gate frame are brought to a position to enable the insertion of the wires through the end bars of the gate and the

heading or riveting of such wires or how the end bars of the gate are moved or separated from each other, whereby to engage the heads or rivets on the wires for stretching the wires taut and firmly securing the section of fence fabric within the confines of the gate.

In Figs. 1, 2 and 3, the frame of the gate comprises the top and bottom bars 8 and 9 and the end bars 10 and 11, and said end bars are connected at 12 to the top and bottom bars in any suitable manner. The end bars 11 are preferably provided with the ears or hinge plates 13.

In Figs. 4, 5 and 6 the frame of the gate comprises the end bars 14 and 15 which are preferably bent at 16. Such bent portions on the end bars 14 produce the top and bottom portions or extensions 17 and 18, whereas such bent portions on the end bars 15 produce the top and bottom portions or extensions 19 and 20. When this gate is complete, the top portions 17 and 19 and the bottom portions 18 and 20 are brought together and butt-welded as at 21, see Fig. 6, or otherwise suitably united.

Fig. 7 represents a portion of either of the end bars 10 or 11 of the gate shown in Figs. 1 and 2 or either one of the end bars 14 or 15 shown in Figs. 4 and 5. Such end bars are preferably provided with a plurality of pairs or sets of perforations or openings 22 and 23. These perforations or openings may be spaced throughout the length of the end bars of the gate in any suitable manner, either equi-distant from each other or at graduated distances apart. If they are equi-distant from each other they will receive the wires which are spaced at uniform distances apart, but if said pairs or sets of perforations or openings are spaced at graduated distances apart, they will receive the wires which are similarly spaced. The perforations or openings 22 are much larger in size than the perforations or openings 23, for purposes which will be explained, and said perforations or openings 22 are preferably upon what may be termed the inside faces of the end bars and diametrically opposite the perforations or openings 23 which are upon the outside of such bars.

The perforations 23 where they open out of the end bars are cup-shaped or are formed with a concave or beveled seat 24, for a purpose which will be further explained.

A section of a fence fabric is shown which forms a part of the body of the gate, comprising the longitudinal strand or running wires 25 and the transverse stays or picket wires 26. In the particular fence fabric shown, the stay or picket wires have their ends wrapped around the outside selvage or marginal wires of the fabric, as shown

at 27, and at the intersection of each of the stay or picket wires with the longitudinal strand or running wires, the same are connected or united by means of a tie-wire 28. While I have selected a fence fabric comprising longitudinal strand or running wires and transverse stays or picket wires connected by a suitable form of tie-wire, as a preferred form of structure, to embody as a part of the gate, it is to be understood that any other suitable or desirable form of fence may be substituted for that shown, or just the plain longitudinal running wires may be used to complete the body of the gate, without the necessity of having stays or picket wires connected therewith.

Inasmuch as the invention consists mainly in the manner and means of securing the wires of the fence section to the gate frame, particularly the longitudinal or running wires 25 with the end bars or parts 10 and 11 of the gate shown in Fig. 2 or the end bars or parts 14 and 15 of the gate shown in Fig. 5, it makes very little difference whether or not such longitudinal wires are connected with each other, although it is preferable. The ends of the longitudinal or running wires 25 are passed through the perforations or openings 22 and 23 in the end bars of the gate frame to be loosely held therein and the protruding or extremital portions of said longitudinal or running wires 25 are subsequently provided with means for preventing the withdrawal of the wires from the frame, preferably by heading or riveting the same, as shown at 29, for the purpose of firmly securing such wires taut in the frame in a manner to be described. Reference is had to Fig. 7 which shows considerably enlarged, the preferred form of the head or rivet on the ends of the wires 25 and the seat for the same in the openings 23 in such end bars. It will be observed upon examination of Fig. 7 that the head 29 on the end of the wire 25 is substantially spherical in shape, having the convex surface 30 where the same merges into a wire length. After the head or rivet 29 is formed, it will seat itself in the cup or concave seat 24 of the opening 23. In other words, the head 29 and the seat therefor in the opening 23 will act as a ball and socket, one capable of movement in the other, in the manner and for a purpose which will be further explained.

To secure the fence section and particularly the wires 25 thereof in the frame shown in Figs. 1, 2, and 3, a piece of fence fabric or longitudinal wires, if only such are used, are preferably first stretched so that the wires 25 will all be of uniform length; a section of a suitable length is then cut out of a fence fabric or from such longitudinal wires preparatory to attaching or securing the same to become a part of the gate struc-

ture. The gate frame and preferably the top and bottom bars 8 and 9 are then bowed or bent in the manner shown in Figs. 1 and 2, which shortens the distance between the end bars or parts 10 and 11. The fence section or longitudinal wires which are to form a part of the gate structure are then passed through the pairs or sets of perforations or openings 22 and 23 in the end bars or parts 10 and 11, to be loosely held therein as shown in Figs. 1 and 2, then before bending or causing the top and bottom bars 8 and 9 to reassume their normal position, the ends of the wires 25 are preferably headed or riveted, as at 29, by any suitable means. Such heading of the wires will prevent the wires from being displaced when the top and bottom bars 8 and 9 are bent back into their normal position, being that position shown in Fig. 3; and as said bars are bent back into position, which will lengthen the distance between the bars or parts 10 and 11, such bars or parts 10 and 11 will engage with the heads or riveted ends 29 of the wires 25, the heads seating themselves in the seats 24 of the openings 23 and stretch such wires so that they will become taut and firmly hold the fence section or longitudinal wires in position within the confines of the gate.

I have previously called attention to the fact that the perforations or openings 22 are much larger than the perforations or openings 23, and I mean by that, that the perforations or openings 23 are substantially large enough to receive the wires 25 intended to be secured to the gate frame, so that when the wires are headed, they cannot be drawn through such openings when the frame is rebent or caused to assume its original form or position; but the perforations or openings 22 are much larger than the perforations or openings 23 and are so provided to give sufficient play to the wires if such wires are moved up and down or from side to side so that there will be no tendency to break the wires at this point, which otherwise might be the case if the openings 22 were only the approximate size of the wires.

The movement of the wires 25, such as that above referred to, is made possible by reason of the heading or riveting of the ends of the wires 25, and forming a seat for such heads in the openings 23 of the end parts of the structure, whereby a substantially ball and socket joint is produced. It will thus be seen that if there is any movement of the wires, it is made possible by the openings 22, and the heads of the wires will rock in the seat provided therefor, in the opening 23.

The method employed in Figs. 4, 5 and 6 for attaching the fence section or the wires 25 to the frame of the gate differs from the

method shown in Figs. 1, 2 and 3 only in the structure of the frame of the gate and the manner or means of shortening and lengthening the distance between the end bars. In this instance instead of constructing the frame of the gate so that it may be bent in the manner explained, the frame of the gate may be made in two sections, as shown, and provide for the attaching or connecting of the meeting ends of the top and bottom bars for uniting the frame in a unitary structure. In Fig. 4 there is illustrated the manner of arranging the sections of the gate frame with the meeting ends of the top and bottom bars, overlapping, whereby to shorten the normal distance between the end bars of the gate and when so shortened to pass the ends of the longitudinal wires 25 through the openings 22 and 23 in the end bars 14 and 15, after which, the ends of the wires protruding through such end bars 14 and 15 are headed or riveted as at 29. The gate sections are then separated or moved apart so as to bring the meeting ends of the top and bottom bars of the end sections into axial alinement with each other, when said meeting ends may be butt-welded or otherwise suitably connected, as at 21. This connection of the end sections of the gate will cause the end bars 14 and 15 to engage the heads or rivets 29 on the wires 25 and stretch such wires and firmly secure the wires or fence section of which they may form a part, permanently within the confines of the gate frame.

What I claim is:—

1. The method of making a metallic structure, which consists in forming a frame including end members provided with openings; inserting wires through the openings in the end members to be loosely held therein; providing the extremital portions of the wires with means for preventing the withdrawal of the wires from the frame; providing a connecting means for the end members, and moving the end members apart a predetermined distance to stretch and firmly secure the wires taut in the frame.

2. The method of making a metallic structure, which consists in forming a frame including end members provided with openings; inserting wires previously stretched to uniform length, through the openings in the end members to be loosely held therein; providing the extremital portions of the wires with means for preventing the withdrawal of the wires from the frame; providing a connecting means for the end members, and moving the end members apart a predetermined distance to stretch and firmly secure the wires taut in the frame.

3. The method of making a metallic structure, which consists in forming a frame including end members provided with openings, and longitudinal members connecting

said end members; suitably shaping said longitudinal members to shorten the distance between said end members; inserting wires through the openings in the end members to be loosely held therein; the ends of said wires being subsequently provided with means to prevent withdrawal of the wires from the end members; then re-shaping the longitudinal members to space the end members apart a predetermined distance and thereby stretch and firmly secure the wires taut in the frame.

4. The method of making a metallic structure, which consists in forming a frame including end members provided with openings, and longitudinal members connecting said end members; bending said longitudinal members to shorten the distance between said end members; inserting wires through the openings in the end members to be loosely held therein; the ends of said wires being subsequently provided with means to prevent withdrawal of the wires from the end members; then re-bending the longitudinal members to space the end members apart a predetermined distance and

thereby stretch and firmly secure the wires taut in the frame.

5. The method of making a metallic structure, which consists in forming a frame including end members provided with openings, and longitudinal members connecting said end members; bending said longitudinal members to shorten the distance between said end members; inserting wires previously stretched to uniform length, through the openings in the end members to be loosely held therein; the ends of said wires being subsequently provided with means to prevent withdrawal of the wires from the end members; then re-bending the longitudinal members to space the end members apart a predetermined distance and thereby stretch and firmly secure the wires taut in the frame.

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

WILLIAM H. SOMMER.

Witnesses:

CHAS. N. LA PORTE,
EDWIN G. SCHAEFFER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."