

W. H. SOMMER.
METHOD OF MAKING A METALLIC STRUCTURE.
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1,143,655.

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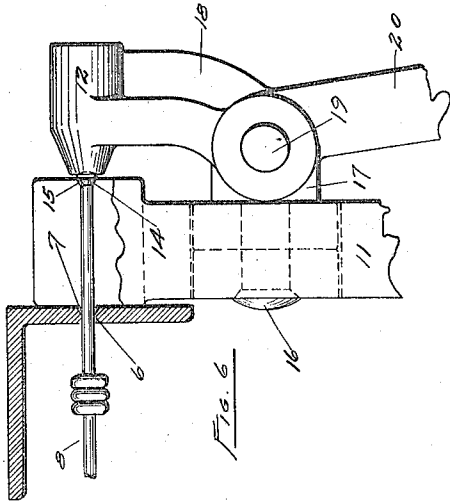


Fig. 6

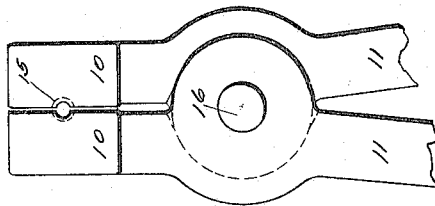


Fig. 7

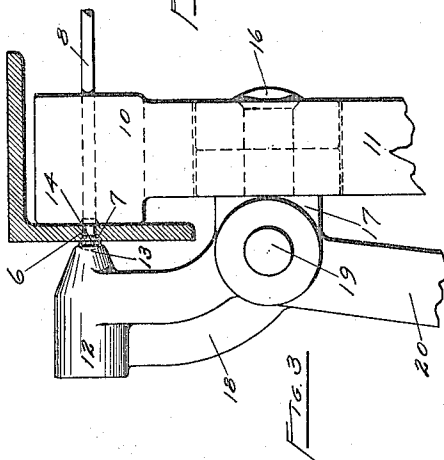


Fig. 3

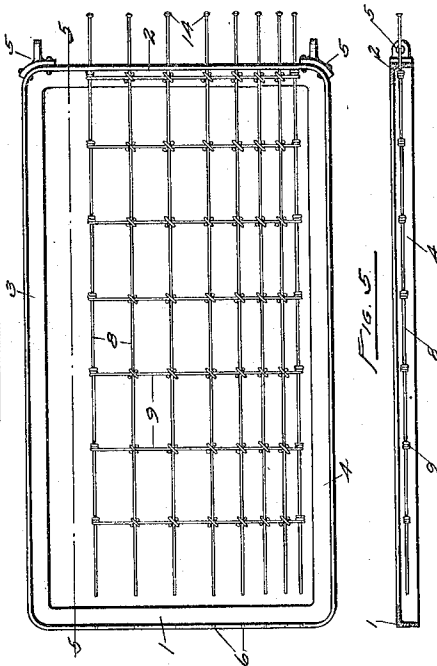


Fig. 4

Fig. 5

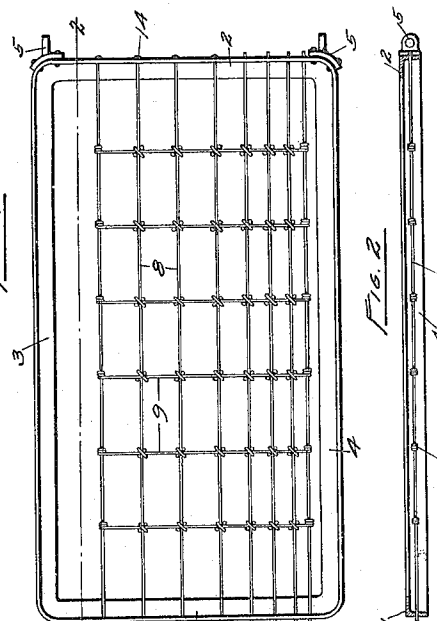


Fig. 1

Fig. 2

WITNESSES—

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METHOD OF MAKING A METALLIC STRUCTURE.

1,143,655.

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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 wire filling, which together with the frame, constitutes the body thereof.

The object of the present invention is the improved method of stretching and firmly securing the wires taut in the frame, and consists in forming a frame including end members provided with wire receiving openings; inserting wires through the openings in the end members to be loosely held therein, and providing the extremities of such wires with enlargements, heads or other means, whereby the wires may not be withdrawn through the openings in said end members, but may be firmly held within the confines of the frame.

My improved method of making a metallic structure may be used in various arts of manufacture, but I prefer to employ the same in connection with metallic gate structures and practice the invention in the manner of securing the longitudinal wires of the filler, to the end bars of the gate frame.

In carrying out my method of stretching and securing the wires taut in the gate frame, said frame is constructed preferably with end members or bars and top and bottom members or bars, either formed integrally with said end members or bars or separately therefrom and suitably attached thereto. The end members or bars are provided with wire receiving openings and the ends of the longitudinal wires are passed through such openings, the wires being loosely held therein with their extremities protruding through and extending a suitable distance beyond said end members or bars. The extremities of the wires are then formed with suitable enlargements or are headed, whereby to firmly secure the wires in the frame. In practice the wires may protrude only sufficiently to leave enough of the wires to form the heads, when a wire is gripped with a suitable tool, adjacent the inner face of the end members or bars, to

firmly hold the wires while a head is formed on the end of the wire or wires; the end members or bars serving as a die-member against which the head is formed; or the tool for gripping the wires is held against the outside face of the end members or bars, when such tool serves as the die-member against which the head is formed. Employing the tool in the manner last mentioned the extremities of the wires, at one end, are first passed through the end members or bars a sufficient distance so as to be gripped by the tool and the heading process carried out, when the wire or wires are released so as to pass the opposite ends through the openings in the opposite end member or bar, drawing the formed head on the opposite ends of the wires against the end member or bar, when the heads on the opposite ends of the wires may be formed in the manner first stated, to-wit, using the end member or bar as one of the die-members.

That the invention may be more fully understood reference is had to the accompanying drawings, in which:—

Figure 1 shows in side elevation a gate, including the frame and wire filling therefor; the longitudinal wires thereof shown passed through the opposite end members or bars, certain of which have been headed and certain others of which protrude and are loosely held just prior to being headed; Fig. 2 is a cross-section, in plan, as the same would appear if taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged detail, partly in section, showing the method of heading the wires when the wires are arranged in the frame, as shown in Fig. 1; Fig. 4 shows in side elevation a gate, including the frame and wire filling therefor; one end of each of the longitudinal wires having been passed through an end member or bar of the frame and headed, in manner shown in Fig. 6, whereas the opposite end portions of said wires are in a position to be passed through the opposite end member or bar to draw the formed heads against the end member or bar, when the plain ends of the wires may be headed in the manner shown in Fig. 3; Fig. 5 is a cross-section, in plan, as the same would appear if taken on the line 5—5 of Fig. 4; Fig. 6 is an enlarged detail, partly in section, showing the method of heading one end portion of the wires, when such wires are arranged in the frame as shown in Fig. 4, and Fig. 7 is a face view of the tool,

seen in Figs. 3 and 6, looking at the right side of Fig. 3 or the left side of Fig. 6.

Like characters of reference denote corresponding parts throughout the figures.

5 In the figures, 1 and 2 designate the opposite end members or bars, and 3 and 4 the top and bottom members or bars. In the present construction, the top and bottom members or bars are made integral with the
10 end members or bars, but for the purposes of this invention, the top and bottom members or bars may be separate from such end members or bars and connected thereto in any suitable manner to complete the frame
15 structure. 5 designates hinge members or plates suitably secured or attached to the end members 2. The end members or bars are each provided with wire receiving openings 6, and each of such openings is provided with the concave or beveled seats 7
20 to receive the heads or enlargements to be formed on the ends of the wires, as will be more fully explained.

In Figs. 1 and 4 I have shown a wire filler
25 for the gates including the longitudinal or strand wires 8 and the stay or picket wires 9. It is obvious that the filler may be of any suitable construction and may or may not include the stay or picket wires, as desired.
30 said.

The frame of the structure is made preferably from angle-iron, and for the purposes of this invention is more desirable than a hollow structure, all of which will
35 more fully appear.

To attach the wires 8 to the frame so that they are firmly secured in a taut manner in said frame, reference being had to Figs. 1 and 3, the ends of the wires 8 are passed
40 through the openings 6 in the end members or bars 1 and 2 from the inside, with the extremities of such wires protruding through each of the end members or bars 1 and 2 just a sufficient distance to leave
45 enough stock extending through to allow for the formation of an enlargement or head on said wires. An examination of Fig. 1 will disclose that heads have been formed on the opposite ends of the upper four
50 wires, whereas the ends of the lower four wires have not as yet been formed with such enlargements. That all the wires 8 may be uniform in length, before using same as a filler, for the structure, it is desirable to
55 stretch the same, when the required lengths may be cut and thus insure a structure neat in appearance and substantial as a body for the frame.

Assuming the wires 8 to be held in the
60 frame with their opposite ends passing loosely through the openings 6 in the opposite end members or bars 1 and 2, to secure them taut in the frame, a tool, see Figs. 3 and 7, is used, which said tool has jaws 10
65 with which to grip a wire 8, in the manner

seen in Fig. 3, with one face of the tool held firmly against the inside face of the end part of the angle bar 1 or 2. The tool has levers 11 by means of which the operator may firmly hold the wire 8 in the manner
70 seen in Fig. 3. The tool is further provided with a punch 12 or similar member which has the concave seat 13 to receive and bear against the end of the wires 8. I prefer the punch 12 to be a part of the complete
75 tool and pivoted thereto in manner shown, so that the wire 8 may be gripped and the punch bear against the end of the wire, at one and the same time. With the parts of the tool engaging the wire 8 in the manner
80 shown and bearing or held firmly against the bars 1 or 2, to produce an enlargement or form a head on the end of a wire, a pneumatic hammer or other suitable device may be used to hammer on the punch 12 and
85 through such operation, using the bar 1 or 2 as the die member, backed up by the jaws 10, a head 14 is formed on the wire; said head being beveled or tapered and conforming to and being seated in the seat 7 at the
90 outside of the opening 6. This operation is carried out by forming a head on each wire at one side or end of the frame, when the same operation is performed on each wire at the opposite side or end of the frame.
95

In Figs. 4 and 6, I show how the heads 14 may be produced on the wires in a slightly modified form. In this instance the wires at one end are passed first, through one of the
100 end bars to be loosely held therein and projected therethrough a sufficient distance to allow for the jaws 10 of the tool to grip a wire 8 on the outside of an end member or bar and with the tool or jaws thereof bearing or held firmly against the outside face
105 of such end bar or member, in manner seen in Fig. 6. There is a recess 15 formed in the wire openings in the jaws corresponding to the recess 7 in the openings 6, and the wire 8 is so held by the jaws 10, that a small
110 amount projects beyond the jaws to be engaged by the punch 12, and when in such relation the parts are operated upon in manner previously described for heading the wire, as at 14. The only difference being
115 in this operation, from that previously described that the jaws 10 act as the die member, whereas in the first operation, see Fig. 3, the end member or bar serves as the die member. After the one series of heads have
120 been formed, as shown in Fig. 6, the opposite ends of the wires are inserted through the openings in the opposite end member or bar, which will draw the heads on the opposite ends of the wires against the end
125 member and into the recesses of the openings 6, when the heads on the opposite ends of such wires may be formed in the manner shown in Fig. 3.

While I do not lay any particular stress 130

on the character of tool to be used, I desire to point out that the pivot member or stem 16 of the jaws 10 has a boss or head 17 to which an arm 18 carrying the punch 12 has a pivotal connection at 19 and said arm 18 is an extension of a lever 20, by means of which an operator may position and hold the punch 12.

In practising my method of making a metallic structure or gate, I find that the best results may be obtained by making the frame of angle-iron or other form which presents a substantially solid wall, and which may be used as a die member against which the head or heads on the wires may be formed. The use of tubing for the frame is not desirable, for the reason that, the jaws of the tool would bear against the opposite side of the tube from where the head is formed and having no backing for the wall used as the die member, during the operation of forming the heads on the wires, the tube would become dented and pushed out of shape and destroy the contour of the frame. During the formation of the heads on the wire, such wires must be held against

longitudinal movement. This is accomplished with the use of a tool such as I show, although some other means may be employed which will do the work equally as well.

What I claim is:—

The method of making a metallic structure, which consists in forming a frame including horizontal top and bottom members and vertically disposed end members, said end members provided with oppositely placed wire receiving openings; inserting previously stretched wires through said openings; successively gripping each wire adjacent an end member of the frame, and successively forming an enlargement or head on the end of each wire, using the end member as a die-member against which the enlargement or head is formed.

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

WILLIAM H. SOMMER.

Witnesses:

CHAS. W. LA PORTE,

JEANNETTE M. ANDERSON.

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