

(No Model.)

E. DE LA SAUCE.

U-SHAPED METAL PLATE FOR METAL STRUCTURES.

No. 376,979.

Patented Jan. 24, 1888.

Fig. 1.

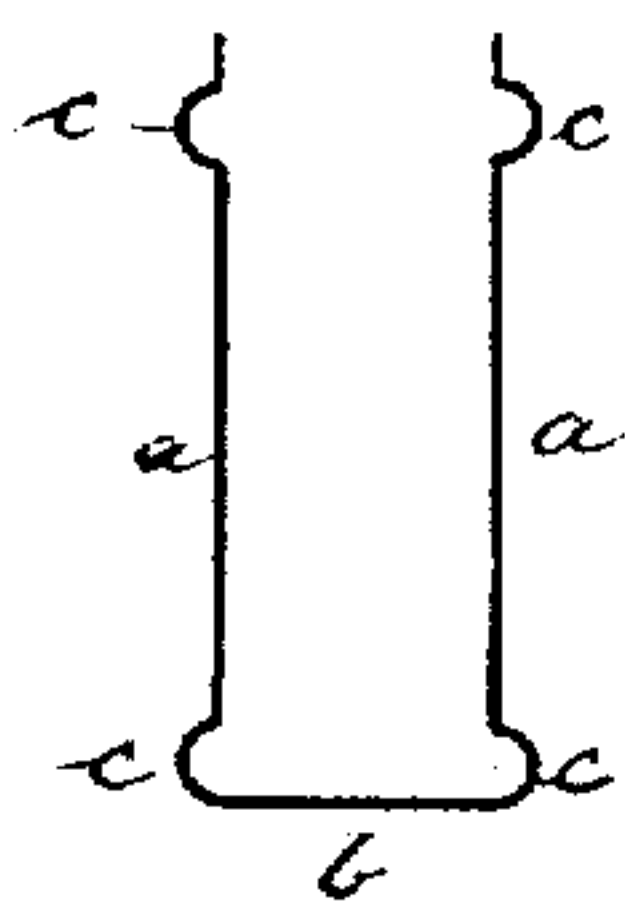


Fig. 2.

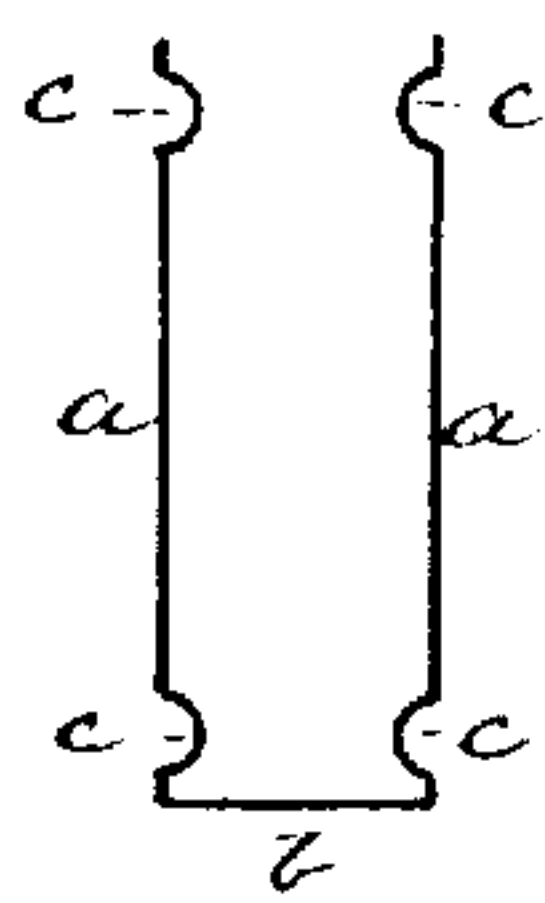


Fig. 3.

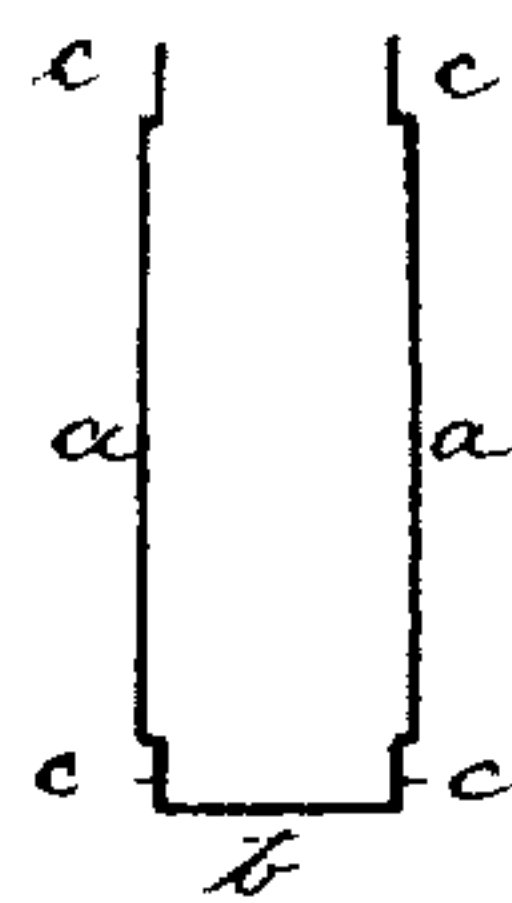


Fig. 4.

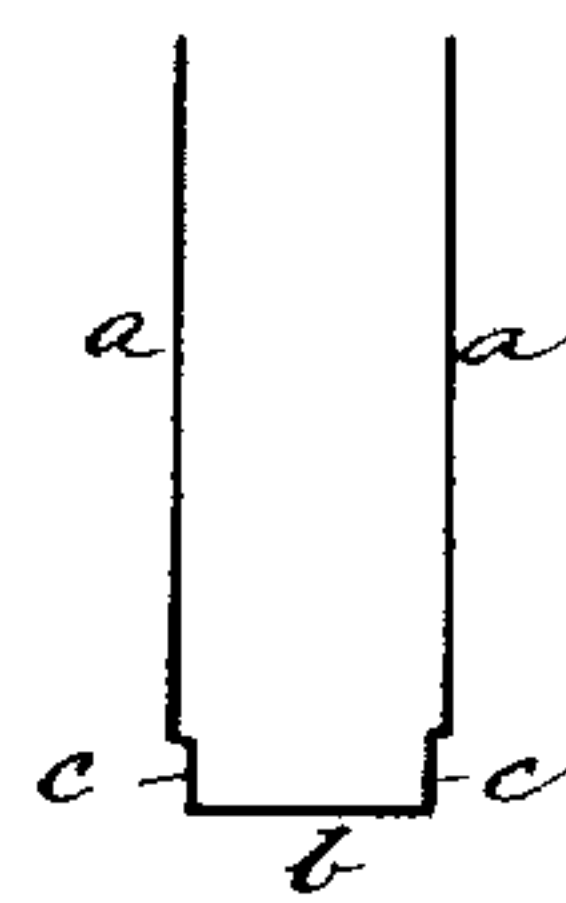


Fig. 5.

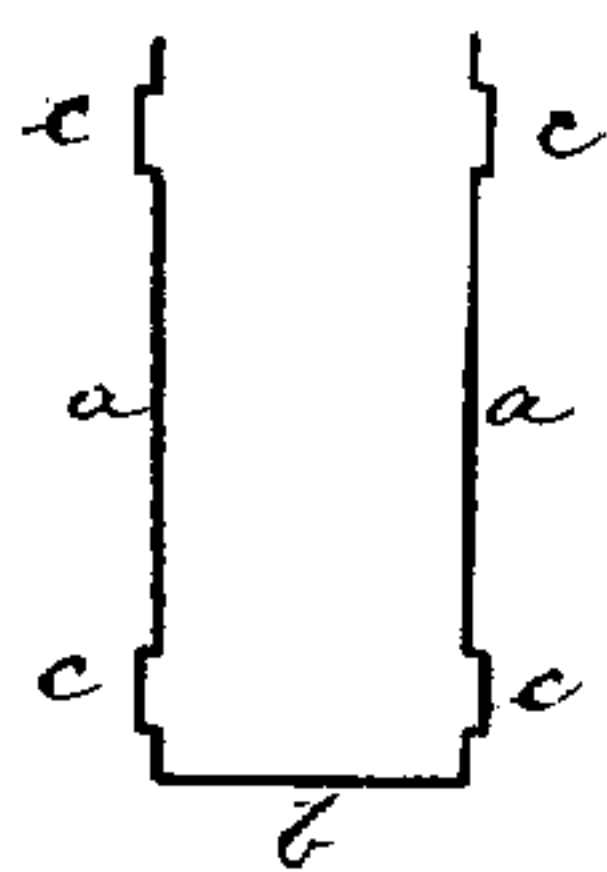


Fig. 6.

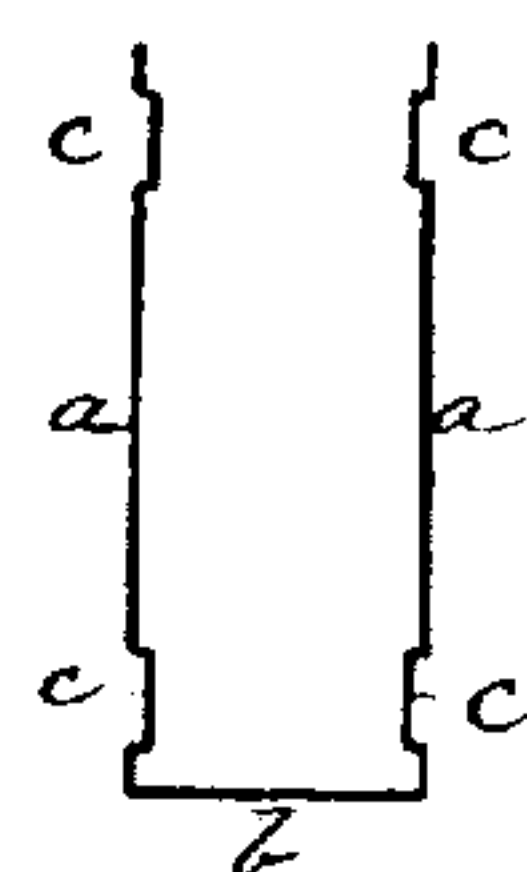


Fig. 7.

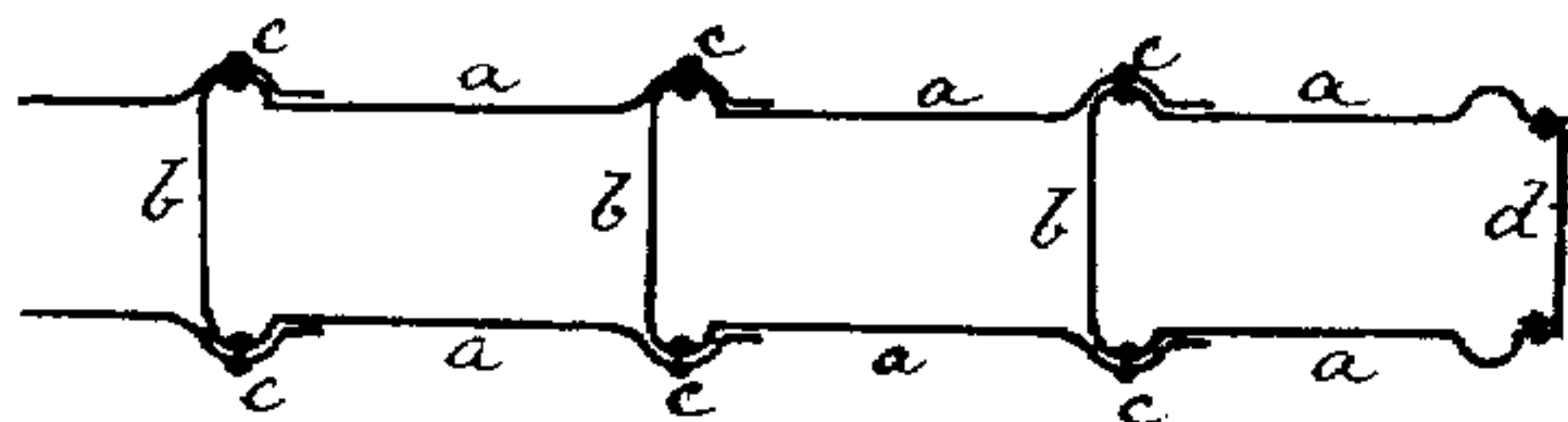


Fig. 8.

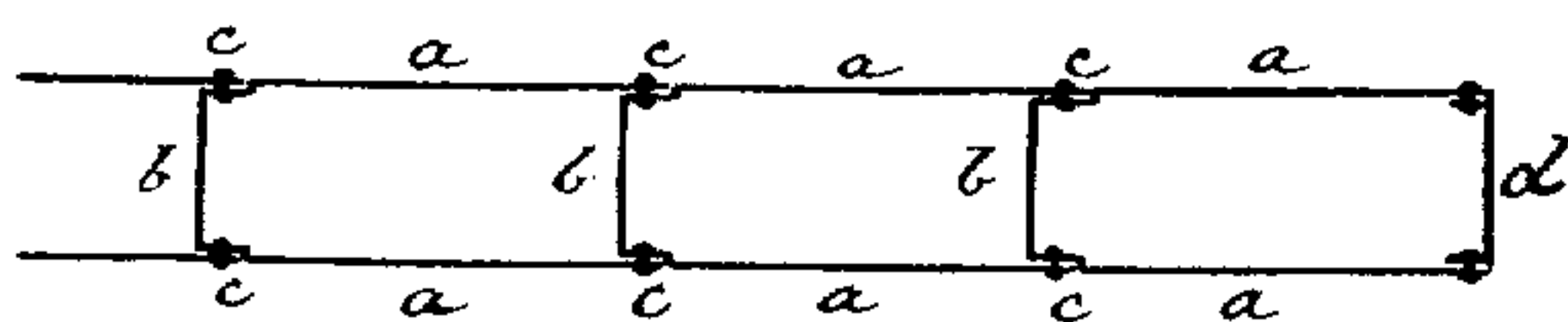


Fig. 9.

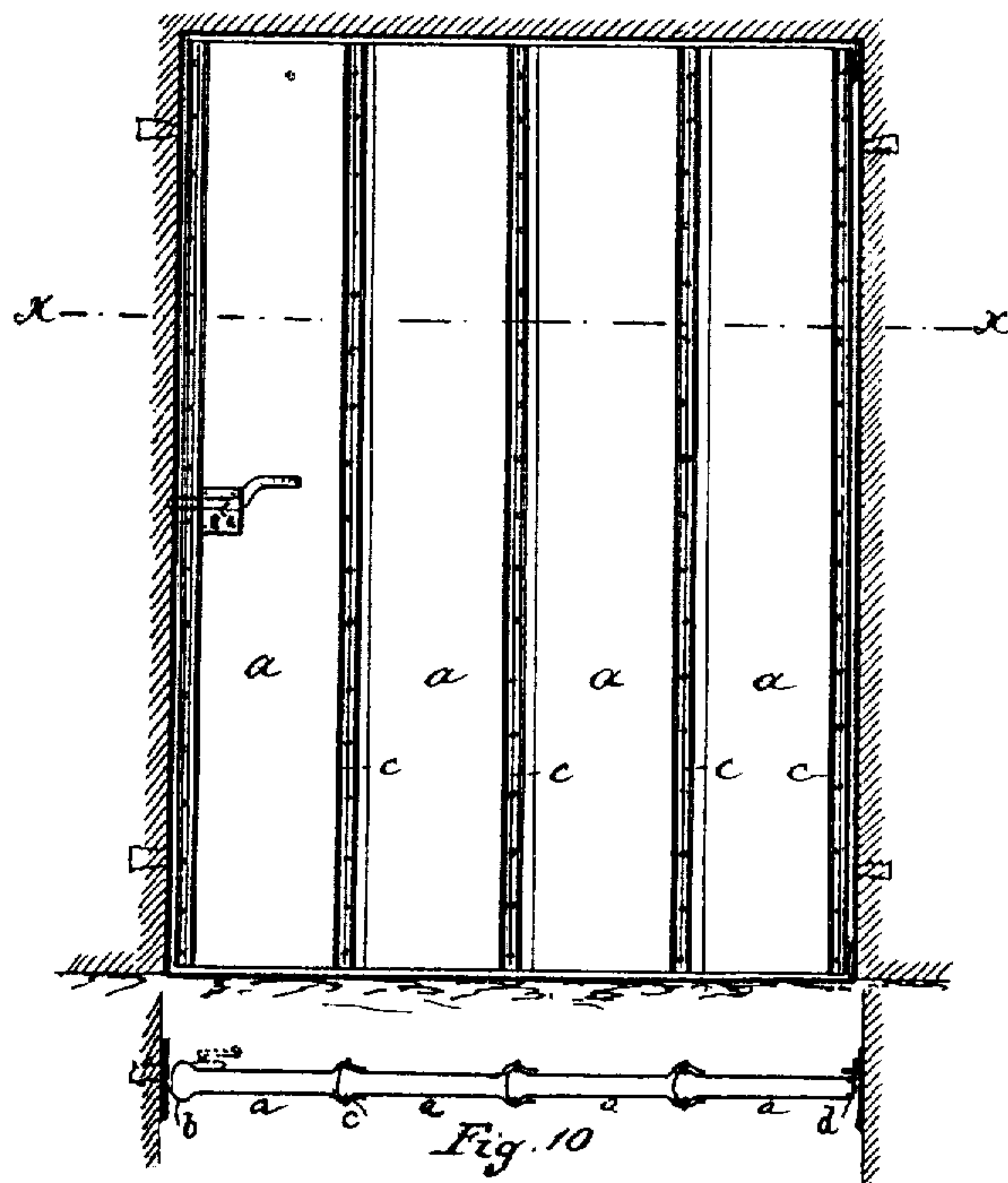


Fig. 10.

Inventor  
E. de la Sauce  
by his Atty W. T. Thompson.

Witnesses  
Geo. B. Diamond,  
H. P. Shoolbridge.

# UNITED STATES PATENT OFFICE.

ERNST DE LA SAUCE, OF BERLIN, GERMANY, ASSIGNOR TO E. DE LA SAUCE & KLOSS, OF SAME PLACE.

## U-SHAPED METAL PLATE FOR METAL STRUCTURES.

SPECIFICATION forming part of Letters Patent No. 376,979, dated January 24, 1888.

Application filed October 14, 1887. Serial No. 252,397. (No model.) Patented in France January 12, 1887, No. 180,850.

*To all whom it may concern:*

Be it known that I, ERNST DE LA SAUCE, a subject of the King of Prussia, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in U-Shaped Metal Plates, (for which I have obtained Letters Patent in France, No. 180,850, dated January 12, 1887,) of which the following is a specification.

My invention relates to an improved system of U-shaped metal plates, particularly of sheet iron or steel bent into the form of a U with parallel sides, into which, at or near the bottom, or the bottom and top, of each side a recess or boss is formed extending through the whole length of the plate and projecting either outside or inside.

Referring to the accompanying drawings, Figures 1, 2, 3, 4, 5, and 6 represent several profiles of such U-shaped metal plates, the height of the sides *a* of which is always larger than the breadth of the bottom *b*. Such profiles are bent from a flat sheet-metal plate of any suitable length by a special bending-machine, which, however, forms no part of this invention. At the bottom and top of each of the sides *a* of a U-shaped bent plate a recess or boss, *c*, is formed or pressed into the metal. In Fig. 1 the semicircular recesses *c* are projecting outside of the sides *a*, and a rounded corner from the plane of the side to the plane of the bottom is thus formed. In Fig. 2 they are projecting inside. In Figs. 5 and 6 the corresponding recesses *c* are angular. In Fig. 3 the recesses *c* are formed into the upper and lower edges of the sides *a* of the plate, and in Fig. 4 the said recesses *c* are only formed into the bottom edges of the plate-sides *a*.

This improved system of U-shaped bent metal plates as an article of manufacture is particularly destined for constructing buildings of various kind—such as sheds, huts, cabins, watchmen's houses, and the like—but also for constructing warehouses, barracks, and buildings of a larger size, tanks, reservoirs, cisterns, and other compartments.

In constructing a building or reservoir or the like of such U-shaped bent plates the bottom *b* of one bent plate is fitted into the open end of another bent plate in such a manner that

the bottom recesses *c* of one plate enter into the top recesses of another plate, or vice versa, as clearly shown in Fig. 7. By this means the several U-shaped bent plates clasp each other, and a series of such bent plates may be united without riveting or the like, having a sufficiently strong hold one upon another by the recesses fitting into each other; but to give a wall or combination of such U-shaped bent plates an additional strength rivets may be used to unite every two of the bent plates, as shown in Fig. 7. The riveting is done by a special machine. The jointing between every two of the bent plates may further be tightened by the application of a suitable packing or jointing or cementing material between the surfaces of the two recesses clasping each other.

For strong metal plates I prefer the profile shown in Fig. 4, in which the recesses *c* are formed only at the lower edges of the sides *a* of the bent plate. The upper straight ends of the sides *a* of the bent plate fit into the recess *c* of the next plate, as shown in Fig. 8. By this means I obtain perfectly flush and even surfaces of the wall composed of such U-shaped bent plates, while with the other profiles ribs or webs will project outside or inside, formed by the recesses *c*. The U-shaped bent plates, thus united with or without the aid of rivets, form double or hollow walls, the sides of which are kept apart and stiffened by the bottoms *b* of the several bent plates, as shown in Figs. 7 and 8. By this means the hollow walls offer a considerable resistance to any pressure acting against their sides, and are not easily deflected and brought out of shape save by great violence. The hollow space between the two sides *a* of each bent plate, being filled with air, which is a non-conductor of heat, offers any required safety against fire, which, attacking the wall on one side, will not be able to destroy the opposite side, owing to the intermediate hollow or air-filled space. If convenient, this space between the two sides may be filled up with sand or ashes or any other convenient material, preferably a non-conductor of heat.

In constructing a wall or other part of a building, a tank, reservoir, or the like, the U-shaped bent plates may be arranged headwise,



with their length vertically and one beside another, as shown in Fig. 9; or the bent plates may be horizontally arranged and fitted one into and over another.

5 In Fig. 9 I have shown a door constructed of such U-shaped bent-metal plates. Fig. 10 is a horizontal section of said door along the line *x x* of Fig. 9. Such doors are fire-proof, very light, and, accordingly, they turn easily on  
10 their hooks in the frame. The front edge of the door, with the lock, is formed by the bottom *b* of the foremost bent plate. The open back edge is closed by a channel-iron or flat rail or bar, *d*, as also the open top and bottom  
15 ends of the door.

In constructing buildings of any kind, or parts of same, or tanks, reservoirs, and the like, the different walls, floors, ceilings, roofs, &c., consisting of the U-shaped bent plates, as  
20 described, may be fitted closely together and united at any desired angle by the aid of iron beams, girders, rails, angle-irons, or timber, and the like, to which the U-shaped bent plates are riveted, screwed, or fastened by  
25 hooks or other convenient means. In a building constructed in this manner of U-shaped bent plates the adjoining walls may easily be so arranged that their hollow insides commu-  
30 nicate with each other to form flues or channels which may be utilized as air-conduits or for heating purposes. By this means a thorough ventilating or heating system may be established throughout the building without  
35 any particular flues and chimneys constructed for the purpose.

The bent plates may be galvanized, tinned, or varnished to protect them from rust. The inside walls and floors of a building may be lined with wood, if convenient.

40 In bending the plates into the U-shaped form, as described, and shown in Figs. 1 to 6, additional webs or recesses may be pressed into the metal of the sides *a* for the purpose of giving them superior strength. Such addi-  
45 tional webs or recesses, however, are not essential for the purpose in view; also, the sides

*a* of the bent plates may be easily provided, while being bent, with haut-relief or bas-relief ornaments pressed into them by the same operation which forms the recesses *c*. 50

I claim as my invention—

1. As an article of manufacture, metal plates bent into a U-shaped form, with recesses formed into the metal at or near the upper and lower end of the sides *a*, substantially as and for the  
55 purpose set forth.

2. As an article of manufacture, metal plates bent into a U-shaped form, with a recess, *c*, formed into the metal at the lower edge of the sides *a*, substantially as described, and shown  
60 in Fig. 4.

3. The combination of two or more metal plates bent into a U-shaped form, having recesses *c* formed into the metal, such recesses serving to give a hold of one bent plate upon  
65 another, substantially as and for the purpose described.

4. The combination of a series of U-section plates, *a*, having bottoms *B* at right angles to the sides, and recesses or projections *C*, with a  
70 terminal cover-plate, *d*, whereby a stout non-conducting cellular structure is obtained, with strengthening-plates *b b b x x d* at intervals and at each end.

5. The combination of a series of narrow U-  
75 plates, *A*, with rounded corners, curved bulges *c*, and terminal plate *d*, forming a door, whereby a strong fire-proof door is obtained, having rounded end to allow for radial action, and a series of strong vertical ribs and hollow frame,  
80 with a rounded universal joint between each panel capable of allowing of greater expansion on one side than the other through unequal heating in case of a fire.

In witness whereof I have hereunto signed  
85 my name in the presence of two subscribing witnesses.

ERNST DE LA SAUCE.

Witnesses:

OTHMAR LENS,  
B. ROI.