(Model.) 3 Sheets—Sheet 1.

W. CORLISS.

BURGLAR PROOF SAFE.

No. 261,533. Patented July 25, 1882.

FIG. 1

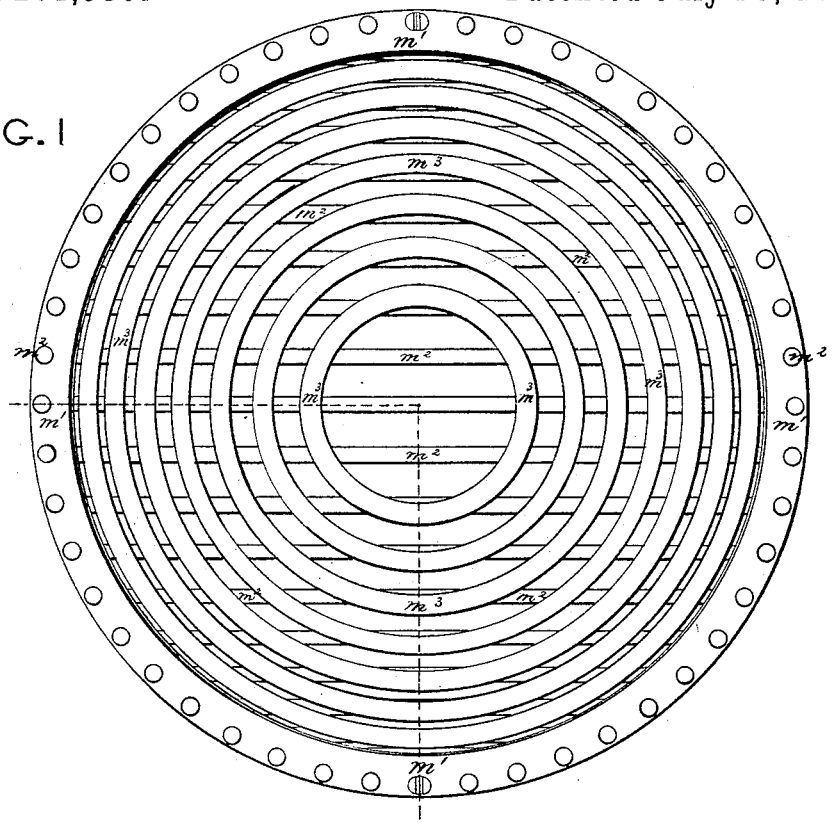

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FIG. 2

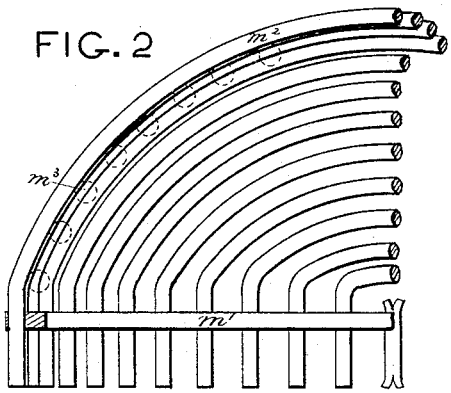
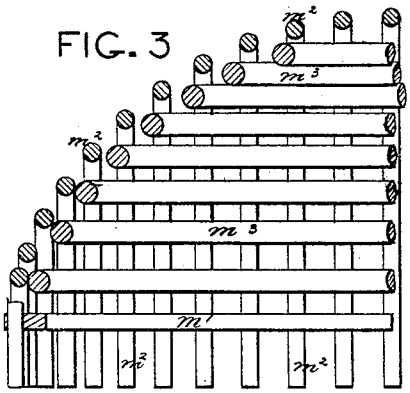


FIG. 3



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C. A. Seaton

(Model.) 3 Sheets—Sheet 2.

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FIG. 4

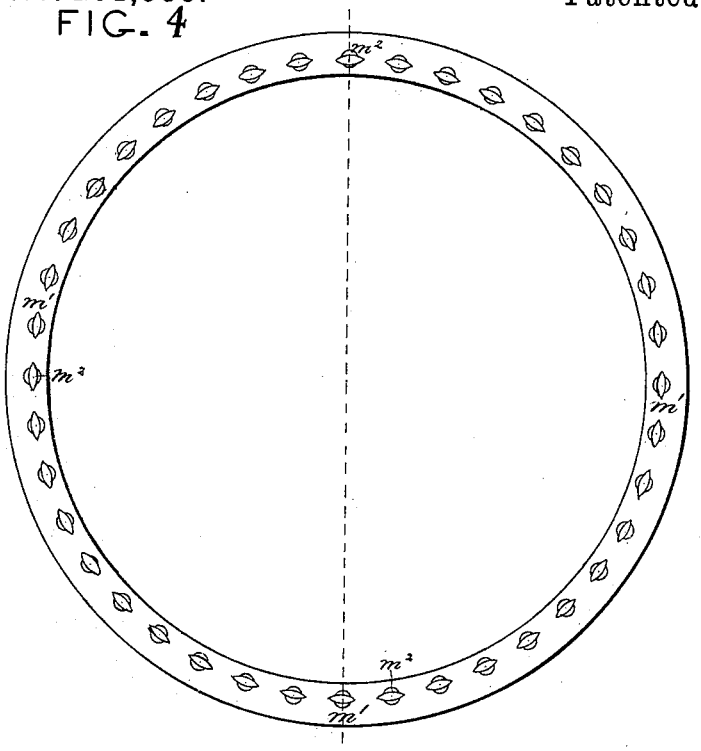


FIG. 5.

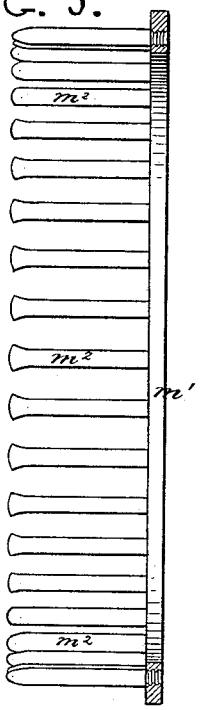


FIG. 6

FIG. 7

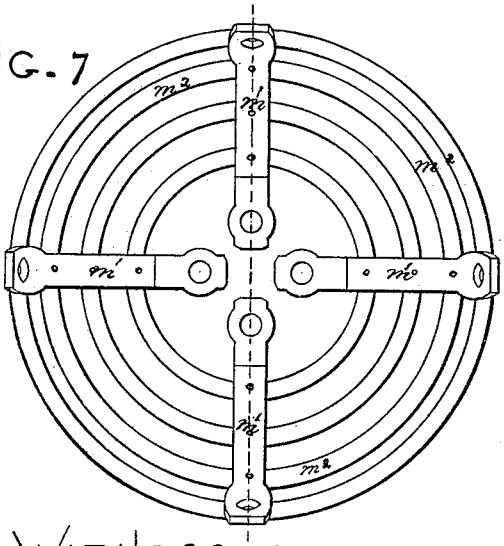
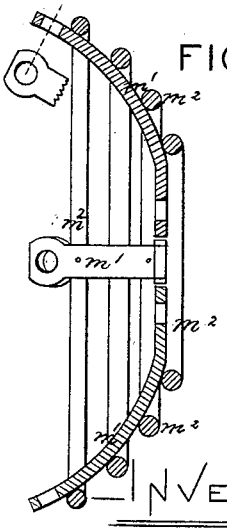


FIG. 8.



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(Model.) 3 Sheets—Sheet 3.

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BURGLAR PROOF SAFE.

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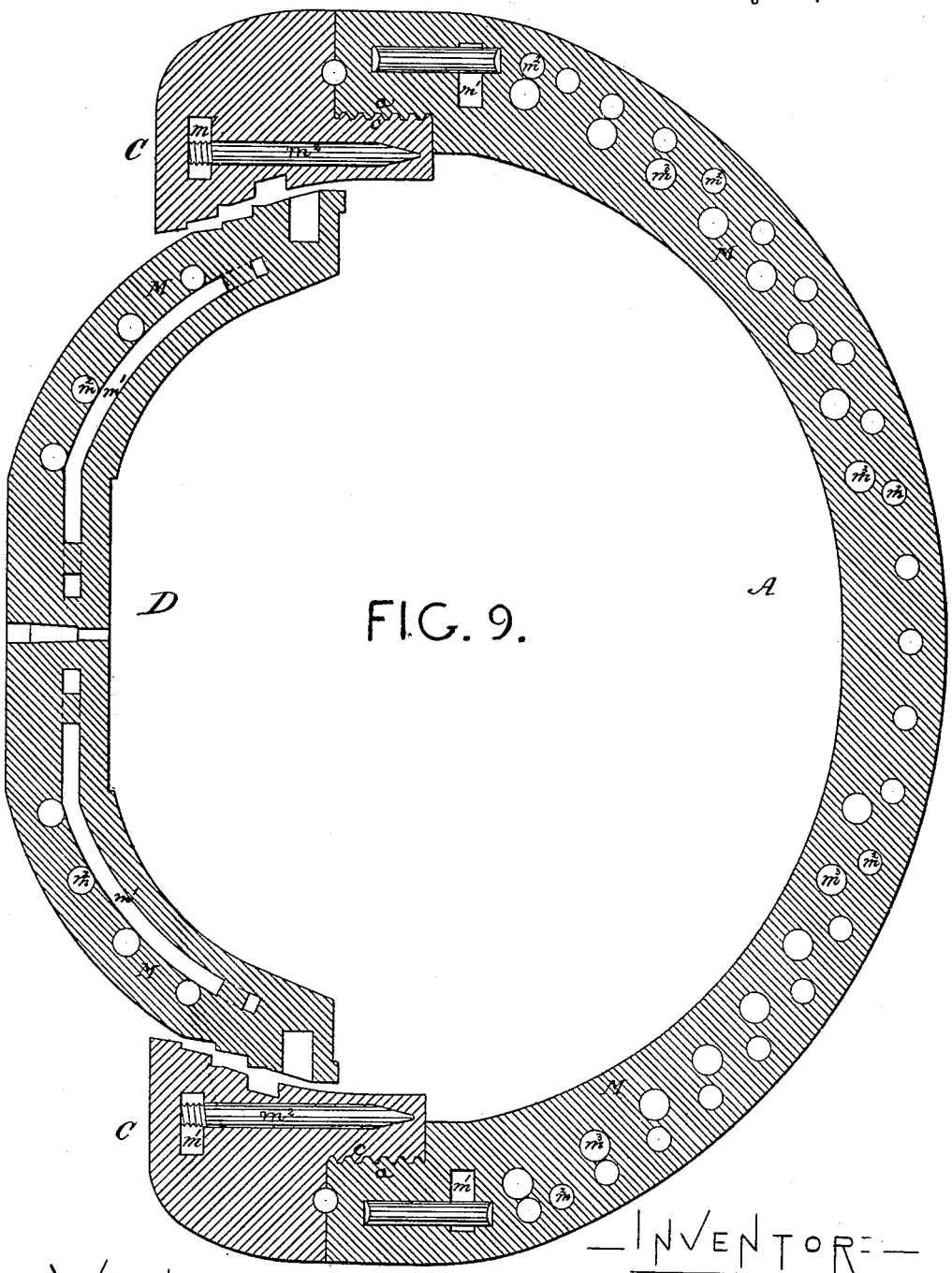

FIG. 9.

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Thomas D. Stetson

UNITED STATES PATENT OFFICE.

WILLIAM CORLISS, OF PROVIDENCE, RHODE ISLAND.

BURGLAR-PROOF SAFE.

SPECIFICATION forming part of Letters Patent No. 261,533, dated July 25, 1882.

Application filed April 2, 1879. Renewed December 30, 1881. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM CORLISS, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Burglar-Proof Safes; and I do hereby declare that the following is a full, clear, and exact description thereof.

I have in Letters Patent issued to me April 30, 1872, described a spherical form of safe with provisions for properly operating the door thereof, which possesses marked advantages.

It has long been proposed to toughen and strengthen rectangular safes by bars of wrought iron or steel inclosed within the casting. I have discovered and practically wrought out a mode of applying analogous bars in my spherical safe, so as to realize the advantages due thereto without interfering with the peculiar qualities of the spherical safe, and so as to give increased strength due to a firm uniting of the bars together before their introduction into the mold. I have also made a complete union between the cast and wrought metals, so that the safe utilizes for that reason the strength of the fibrous metal more fully than in ordinary safes.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a view of the basket, of wrought-iron or steel, which I prepare to strengthen the main body of my safe. The interior or hollow side is presented toward the eye. Fig. 2 is a partial section, showing the basket without the series of internal bars. The stout bar which unites the others by receiving them through it is shown in strong lines. The positions merely of the others are shown by dotted circles. Fig. 3 is a partial section at right angles to Fig. 2, and showing the basket with its internal parts fully in place. These parts, except the stout uniting-bar, may be attached by small wires. I have indicated no attempt to unite the parts of the basket strongly except by the single main hoop or uniting-piece. Figs. 4 and 5 show my corresponding strongly-united frame for what I term the "front ring." Fig. 4 is a face view, and Fig. 5 an edge view. Fig. 6 shows one of the parts detached. Figs. 7 and 8 show my strongly-united basket for the door. Fig. 7 is a face view looking at the hollow side. Fig. 8 is a central section. Fig. 9 is a central vertical section through the parts of the safe complete. This figure also shows the parts in their proper relations to each other for use, but with the door moved inward ready to be opened by revolving on an axis. (Not shown.)

Similar letters of reference indicate corresponding parts wherever they occur.

I adopt the general construction shown in the modification of my original patent dated March 25, 1873.

A is the main body, formed with an internal screw-thread, *a*.

C is the front ring, formed with a screw-thread, *c*, and applying strongly to A by turning one relatively to the other and keying it against unscrewing by a screw inserted in the joint from the inside.

D is the door, which will be understood as equipped with the mechanism shown in the patent last referred to, or otherwise adapted for convenient operation and for securing when properly closed.

The exteriors of all the parts A, C, and D are of some hard material which may be cast, and which is adapted to resist drilling—iron cast in a chill, franklinite, cast-steel, semi-steel, or the like. This cast metal M is formed in a suitable mold, and flows around and covers and unites strongly with the interior basket-work.

The basket-work in each instance contains two sets of pieces, $m' m^2$, strongly united together. They may be of any wrought-iron or any steel which will endure high temperature; but I will describe them as soft and tough Pennsylvania iron. They are properly curved to occupy the desired positions in the spherical casting, and when placed in the mold are held in their proper central positions in the castings by anchors. (Not represented.) The basket $m' m^2$ is tinned before it is placed in the mold, and on being surrounded by the melted cast metal the high temperature of the cast metal is imparted to the wrought metal and the tin serves as a flux, enabling the whole to unite.

In Figs. 1, 2, and 3 there is an additional set of parts, m^3, which lie just within the parts

m^2, and are lightly attached to the latter by small wires or the like. Such slight fastenings are only intended to serve the temporary purpose of holding the parts in the proper positions until the melted metal M can flow perfectly around them. After that the high temperature will ordinarily destroy the slight wire fastenings (not shown) which hold the parts m^3 and m^2 together; but before this is completed the cast metal M has sufficiently hardened to prevent the parts from becoming displaced.

The parts $m' m^2$ are strongly united of themselves by means which hold them forcibly together independently of or additionally to the holding due to the cast metal M. The part m' is in the form of a stout hoop punched or drilled and receiving the parts m^2 in such holes. After all are inserted the stout hoop m' is compressed tightly upon the parts m^2 by blows of a hammer or otherwise, so that it shall slightly indent the material m^2 and hold the parts strongly engaged.

In Figs. 1, 2, 3, 4, and 5 the same mode of fastening is employed. In Figs. 1, 2, and 3 the parts m^2 are arch-shaped bars with the ends extended so as to be parallel and thrust through the holes in m'. In Figs. 4 and 5 the part m' is a corresponding stout hoop correspondingly punched or drilled; but the parts m^2 are short pins. One end is thrust through the part m' and secured as above described. The other end is spread, as indicated, to anchor strongly in the cast metal M additional to the adhesion due to the heated union with flux.

In Figs. 7 and 8 there are stout hoops corresponding to m^2, and a series of four stout transverse straps with rivets corresponding to m'. These latter take hold rivetwise of the parts m^2, and hold the whole in a strongly-united basket, additional to the hold insured by the enveloping cast metal M and the welding or adhesion of the latter to the surfaces.

The basket $m' m^2$ is carefully proportioned to the space it is to fill, and is held in such position that its parts will be completely embedded. It contributes to the burglar-proof qualities of the safe by being softer than the surrounding metal, tending by well-known laws to break any drill which may touch it. It also contributes to the strength by holding the parts reliably together after the casting has been fractured by any violence.

The riveting or analogous strong fastening of the parts $m' m^2$ together contributes to the strength of the completed structure and aids in holding the bars at the previous stages with the exactness required for spherical work.

I have experimented on a large scale, tinning the baskets in a sufficiently large bath of commercial tin. I find the cast metal unites with the wrought after such coating with an apparent weld. I can use red lead with some success as a substitute for the tin coating.

As a preparation for the tinning, I first treat the surfaces of the basket with dilute nitric acid and afterward with dilute muriatic acid in which zinc has been immersed. Then the tinning may be effected by a simple plunging in the bath of melted tin.

It will be observed that where the main body A overlaps upon the threaded part of the front ring, C, there are two layers of the wrought-iron basket-work—one layer in each part of the safe. I attach much importance to this peculiarity of the construction. It gives greatly-increased security to this part of the structure. In its absence the outer part might possibly be chipped away or the inner part might be broken across.

The spawling off or crumbling away from the exterior is one of the modes by which a burglar having plenty of time and tools would attack the safe. The basket-work extending over the threaded joint c is important in preventing that.

The rending apart of the front ring in the line of the outer joint by means of wedges driven into the latter from the exterior is another of the ways by which a burglar similarly conditioned would attempt an entrance. The basket-work extending under the screw-thread c prevents this.

I claim as my invention—

1. A wrought-iron basket-work composed of the stout ring m', perforated as shown, in combination with the curved ribs or transverse pieces m^2, extending through the same and strongly secured therein, adapted to serve in a spherical safe, and to contribute to the strength thereof by their direct connection, as herein specified.

2. The spherical safe described, of wrought and cast metal, the wrought metal being composed of two parts or sets of parts, the part m' being perforated and receiving the parts m^2 in the holes thereof, and strongly secured together in addition to the junction effected by the cast metal, substantially as herein specified.

3. In a spherical safe, the independent hoops or rings m^3, of wrought metal, in combination with the basket $m' m^2$, of strongly-joined pieces, and the whole enveloped in a harder cast metal, M, as herein specified.

4. A safe constructed in sections, having each of its parts separately formed with basket-work of wrought metal and presenting at the joint the duplicate basket-work, said parts overlapping one upon the other, one without and the other within the joint a c, substantially as and for the purposes herein specified.

In testimony whereof I have hereunto set my hand this 31st day of March, 1879, in the presence of two subscribing witnesses.

WILLIAM CORLISS.

Witnesses:

W. COLBORNE BROOKES,

CHARLES C. STETSON.