

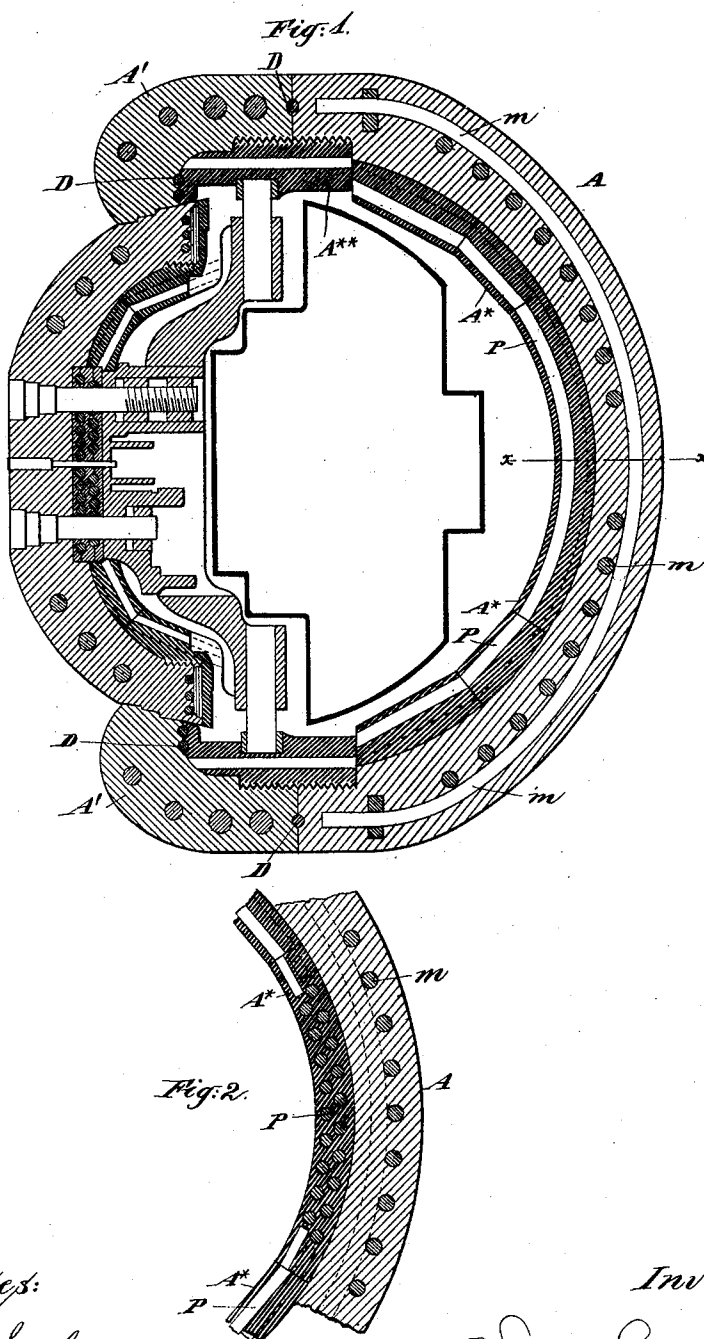
(No Model.)

2 Sheets—Sheet 1.

W. CORLISS.
SAFE.

No. 478,989.

Patented July 19, 1892.



Witnesses:

Charles R. Searle.
M. F. Boyle.

Inventor:

William Corliss
by his attornies
Thomas S. Sisson

(No Model.)

2 Sheets—Sheet 2.

W. CORLISS.
SAFE.

No. 478,989.

Patented July 19, 1892.

Fig. 3.

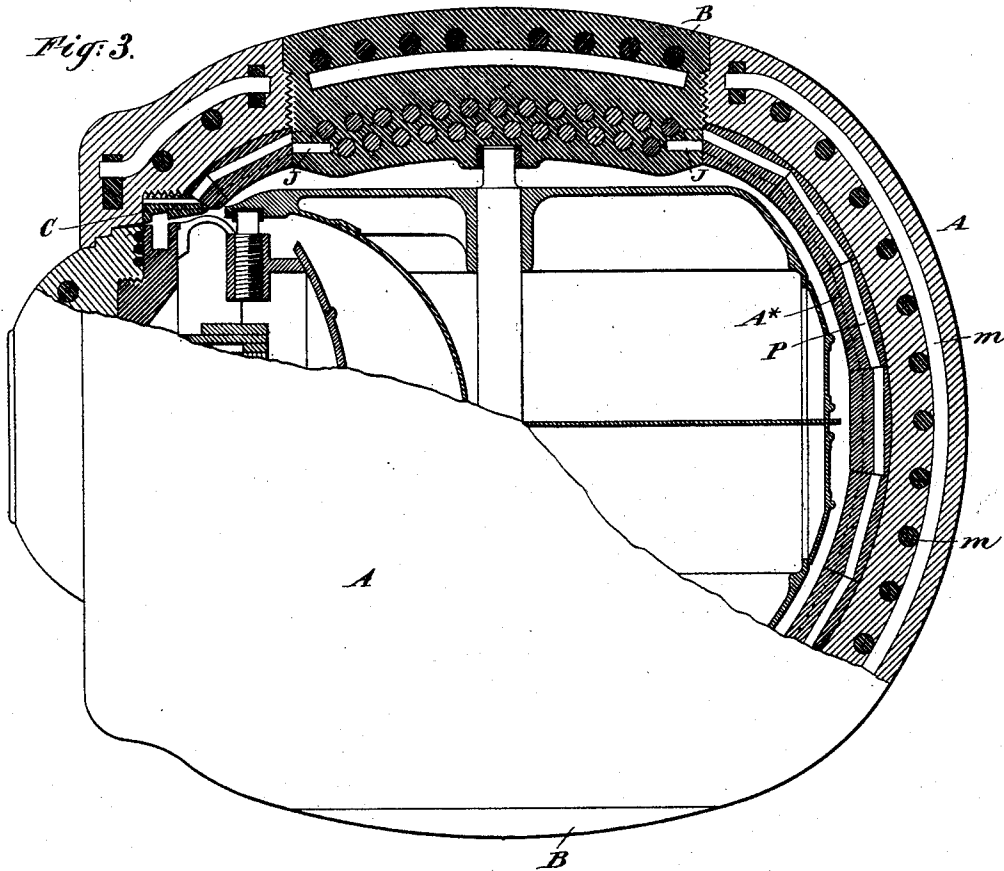
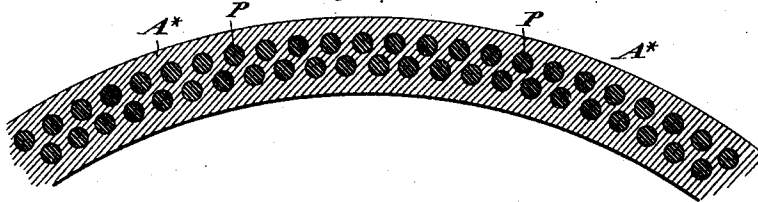


Fig. 4.



Witnesses:

Charles R. Searle,
M. F. Boyle

Inventor:

William Corliss
by his attorney
Thomas Drew Sutton

UNITED STATES PATENT OFFICE.

WILLIAM CORLISS, OF PROVIDENCE, RHODE ISLAND.

SAFE.

SPECIFICATION forming part of Letters Patent No. 478,989, dated July 19, 1892.

Application filed July 28, 1891. Renewed May 27, 1892. Serial No. 434,531. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CORLISS, a citizen of the United States, residing in the city and county of Providence, in the State of Rhode Island, have invented a certain new and useful Improvement in Burglar-Proof Safes, of which the following is a specification.

I have discovered that a superior resistance to the attacks of burglars may be obtained by making the safe of great thickness, with the outer portion of chilled cast-iron and the inner portion of soft iron traversed by bars of hardened steel. I attain this condition and have the parts each complete in itself, unaffected by its relation to the other, by constructing each separately and applying them together cold. To obtain access to the interior of such a safe, a burglar must cut a large hole through the exterior portion, because the inner portion cannot be drilled until the temper of the steel has been drawn by heat. In the present state of the art there is no means of applying sufficient heat, except by a blow-pipe, and a small hole will not admit of heating in the bottom of the hole by a blow-pipe.

The improvement may be applied to safes of various sizes made to serve either as parts of a fixed vault or as portable safes. I will describe it as being carried out in a portable safe.

I have set forth in the specification of United States Letters Patent, dated April 30, 1872, No. 126,131, a construction of safe in which the exterior is approximately spherical and access to the interior is reached through a circular door. A system of further doors with locks, shelves with partitions, &c., is employed in the interior with liberty to revolve on a vertical shaft supported in bearings in the top and bottom of the safe, and I have in United States Letters Patent to me, dated January 30, 1883, No. 271,313, set forth a further provision by which I provide a main interior revolving frame with the door revolving on an axis carried in such frame near one edge thereof. This affords some advantages, particularly for safes of large size. The present invention applies to both styles of safe or to any other of a generally-globular form. The interior portion of the shell is made in pieces and is put in as a separate lining. One portion of the lining is a ring lying within

the point between the two parts of the outer shell and is screw-threaded on its exterior. It engages strongly with each of the parts and holds them together. The outer portion gives strength and offers what I believe to be insurmountable difficulties to the production by a burglar with the moderate resources at his command of the large hole necessary to admit of softening the steel bars in the interior portion. The interior portion or lining offers difficulties to the penetration by a drill or other tool which I believe to be insurmountable until the steel has been softened.

I esteem the safe absolutely invulnerable against any tools and powers which burglars can employ.

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 central vertical section, partly in elevation, showing the invention applied to a simple construction of safe; and Fig. 2 is a section of a portion on the line *xx* in Fig. 1. Fig. 3 is a view corresponding to Fig. 1, but showing the invention applied to a more elaborate form of safe. Fig. 4 is a horizontal section of a portion on a larger scale.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

Referring to Figs. 1 and 2, A is the main shell of the safe, made in two rigid pieces abutting squarely together, with a round bar of hardened steel let into the joint, half in one part and half in the other, to make this part of the safe impenetrable. The inner face of each part is screw-threaded near the edge for a purpose which will presently appear. Bars *m* of tough wrought iron are cast in the shell A in the manner set forth in the patent to me dated July 25, 1882, No. 261,533. I use the proper iron and form the casting A in chills, so that the entire exterior portion of casting A has great hardness, which cannot be materially affected by heat. The chilled iron incloses two series or layers of soft-iron bars *m*, those in one layer lying nearly or quite at right angles to the bars in the other layer. I mount within these parts a lining A* made of soft cast iron, constructed in separate sections, each having holes cored or otherwise pro-

duced in a direction nearly parallel to the exterior of the safe, in which holes are inclosed bars P of steel hardened to the highest possible degree. I have for convenience applied the term "bugs" to the hard-steel bars thus conditioned. The sectional lining is made with a concave disk at the back and the remainder in vertical rings formed independently each of the other and independently of the exterior of the shell. Each piece is finished with joint adapted to match the adjacent rings, and with an exterior face adapted to match against the inner face of the outer shell A. The rings are applied together and brace each other like the voussoirs of a masonry dome. This avoids the necessity for bolts or the like for securing this burglar-proof lining in place. I have in my experiments cored the holes in these pieces each in a cylindrical form and have introduced the steel in the form of cylindrical bars of nearly the same diameter, driving them forcibly into place. There are two layers of these hard bugs, those in the inner layer lying each just within the space between two of the bugs of the outer layer. The largest ring A^{##} is screw-threaded on its exterior. It is screwed firmly into the main body A and holds the entire lining in the main body fast. Then the outer front part A' is brought into engagement with the projecting edge of threaded lining and is by proper and efficient means revolved until it is screwed home. The parts are so fitted that when the outer parts A and A' come tightly together the outer edge of the lining-ring just meets fairly and firmly against the proper bearing in the interior of the front ring A'. The meeting joint of these parts, as well as the meeting joint of the parts A and A', is defended by hardened rings D, let into the metal, half in each.

In all the other features this safe shown in Figs. 1 and 2 may be as set forth in the patent to me dated July 25, 1882, No. 261,533.

Figs. 3 and 4 represent the main part of the invention applied to the form of safe set forth in the patent to me dated January 30, 1883, No. 271,313, and which for brevity I term a "planet" safe. The door revolves in a frame carried in a larger frame revolved in the interior of the safe. This construction is adapted for larger safes than that first shown. The main part of the outer shell of chilled iron toughened by basket-work of wrought iron is in one piece. The ring C around the door is of soft iron studded with hard-steel bars. It is made in three or more sections applied from the interior and strongly held in place by collars or rings on its exterior engaging in grooves in the adjacent surface of the shell A. There are two large circular openings, one in the top and one in the bottom, closed by strongly screw-threaded parts B, which I designate the "heads" of the safe. The main portion of each head is made of a sufficient thickness of cast-iron, the exterior chilled and traversed by bars of soft iron, the inte-

rior soft and having two layers of holes, in which hardened steel bars are driven. There are short transverse bars J of hardened steel set at two opposite positions in the periphery of each head to still further defend against the possibility of drilling. These thick bars with the chilled cast-iron and tough soft bars in their interiors correspond in appearance and in their general relations to the main body with heads, set forth in my previous patent of January 30, 1883, above referred to.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I have represented most of the lining-rings as having their inner faces presenting a straight outline in cross-section, and the holes and the hardened-steel bars P are shown as straight; but these points may be varied. I can, if preferred, make the inner faces of all the rings A concave-like the smallest one, and some or all the holes and bars P may be correspondingly curved; or I can make the smallest one with a straight inner face and make the holes and bars P in that, the smallest lining-piece straight, making all the rest curved.

The door may be defended by a separately-formed lining of soft iron having bars of hardened steel in holes cast therein; but the means for securing such lining to the door are different. I propose in some cases to use Mushet steel or other self-hardening metal for the bars P.

I claim as my invention—

1. In a burglar-proof safe, a shell the exterior face of which is of hard metal and the interior portion of which is made separately, as a lining, and is traversed by bars of hard metal, all combined and arranged substantially as herein specified.

2. In a burglar-proof safe, an exterior shell of hard metal traversed by bars of soft iron and a separately-formed lining of soft iron traversed by bars of hard steel applied together, substantially as herein specified.

3. In a safe, a lining of separately-formed pieces matched together like the voussoirs of domes, so as to be self-supporting, as herein specified.

4. In a burglar-proof safe, an exterior shell formed of separate pieces screw-threaded interiorly near the lines of junction, in combination with an exteriorly-screw-threaded connecting-ring, substantially as set forth.

5. In a burglar-proof safe, an exterior shell formed of separate pieces screw-threaded interiorly near the lines of junction, in combination with a lining formed of detached pieces matched together, and an exteriorly-screw-threaded connecting-ring forming a part of the lining and abutting against the outermost of the other lining-pieces, substantially as set forth.

6. The burglar-proof safe described, having an exterior shell A A' in separate pieces screw-threaded in their interior near the lines of junction, and lining A^{##}, extending across

the joint on the interior, separately formed of
soft iron correspondingly screw-threaded,
with hard-steel bars P inclosed therein,
adapted to serve the double function of a
5 burglar-proof lining and a connection for the
parts of the outer shell, as herein specified.
In testimony that I claim the invention above

set forth I affix my signature in presence of
two witnesses.

WILLIAM CORLISS.

Witnesses:

CHARLES B. GOULD,

ISAAC H. SOUTHWICK, Jr.