

J. Farrel,
Burglar-Proof Safe.
N^o 38,573. Patented May 19, 1863.

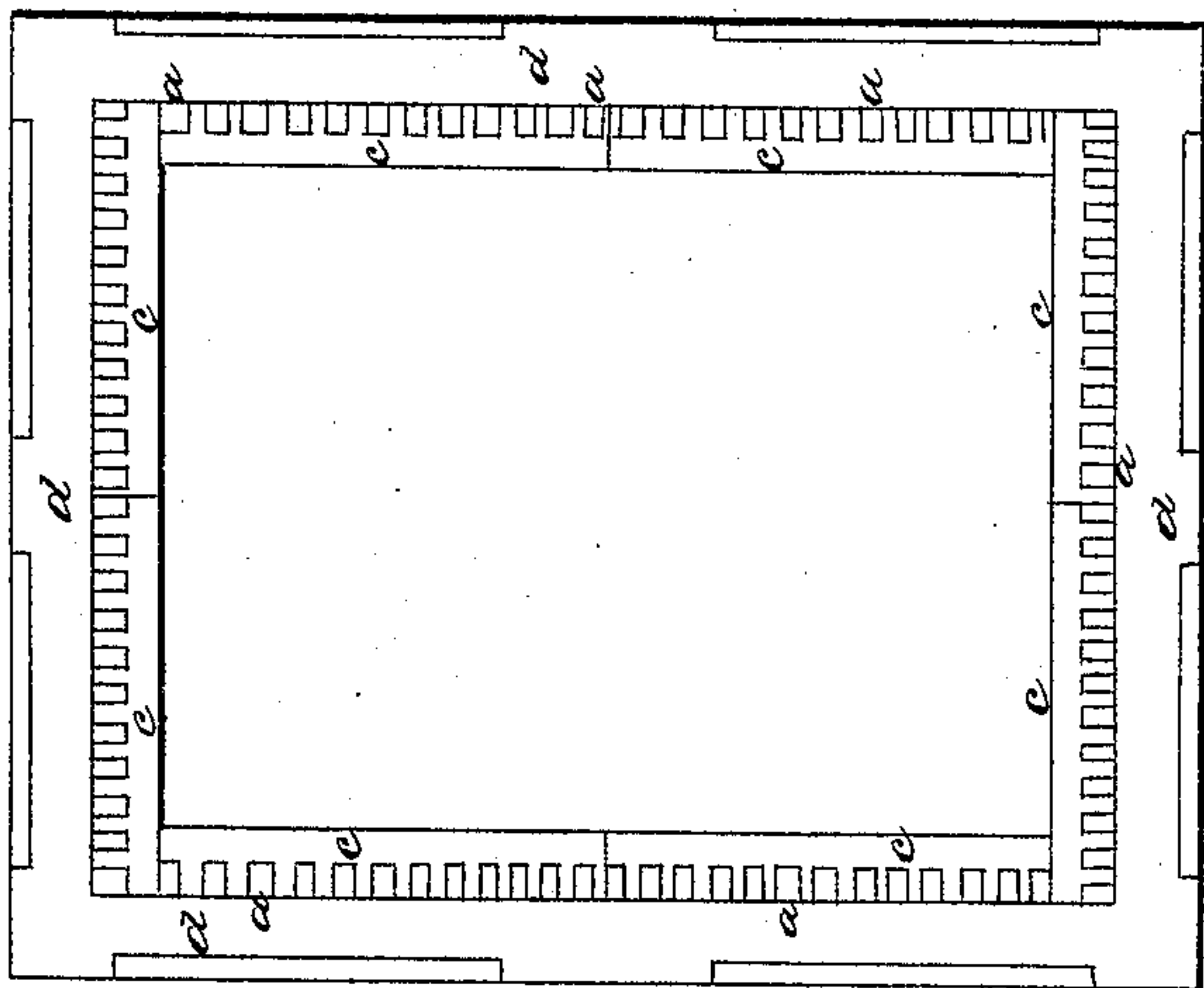


Fig. 3

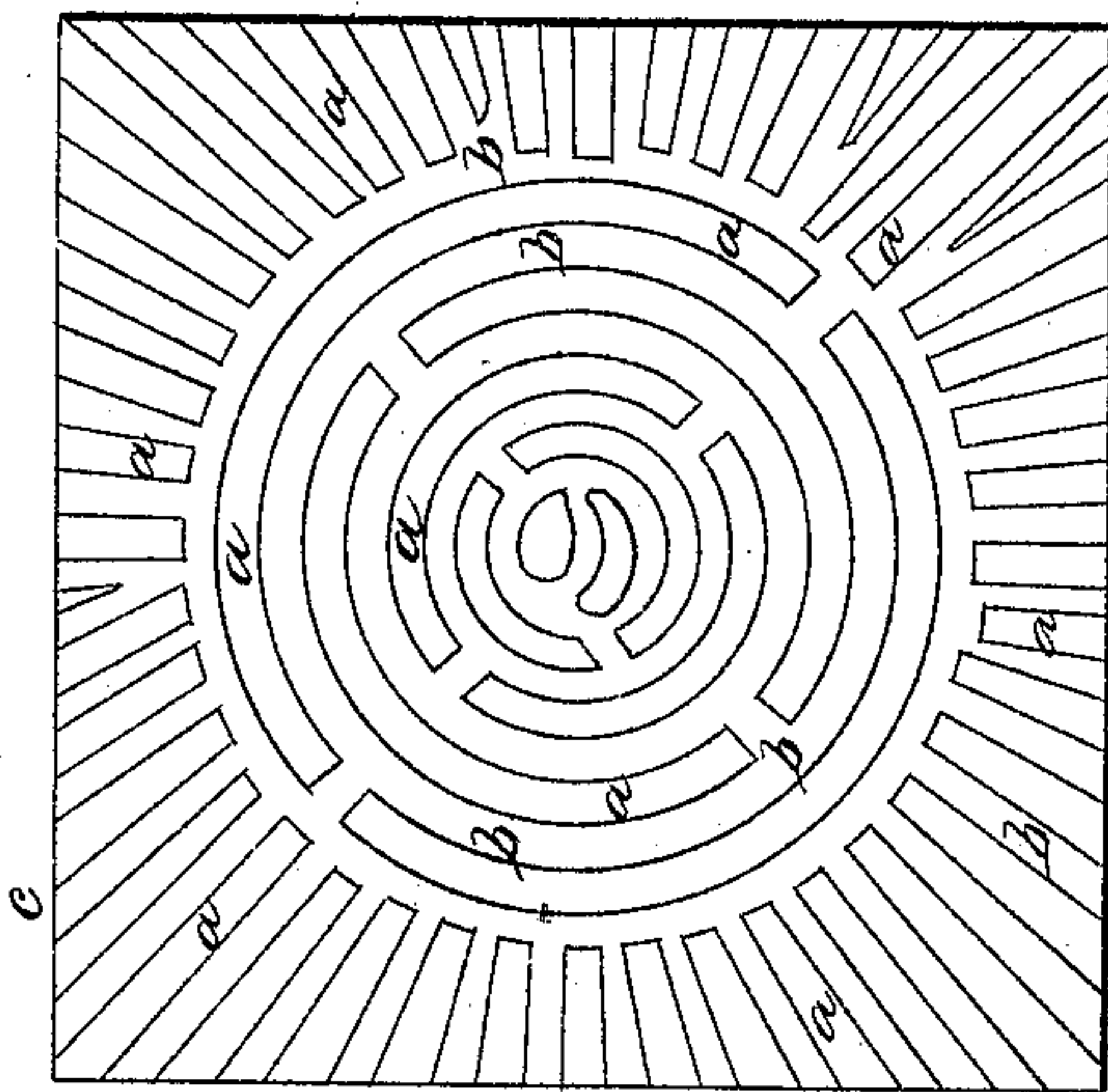


Fig. 2

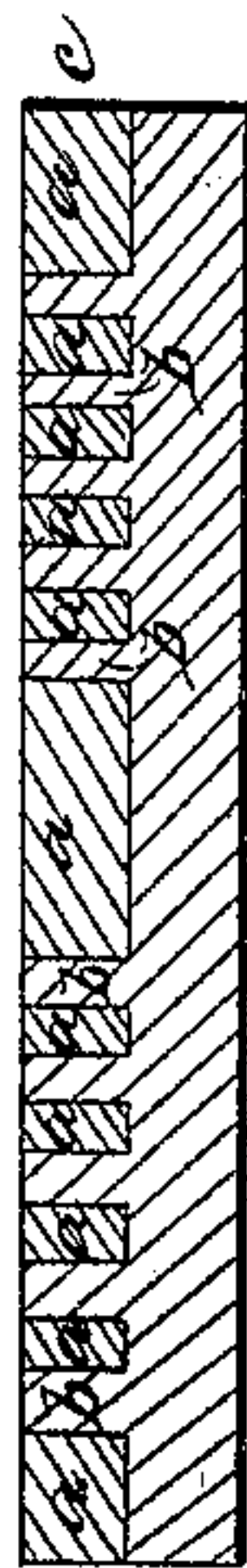
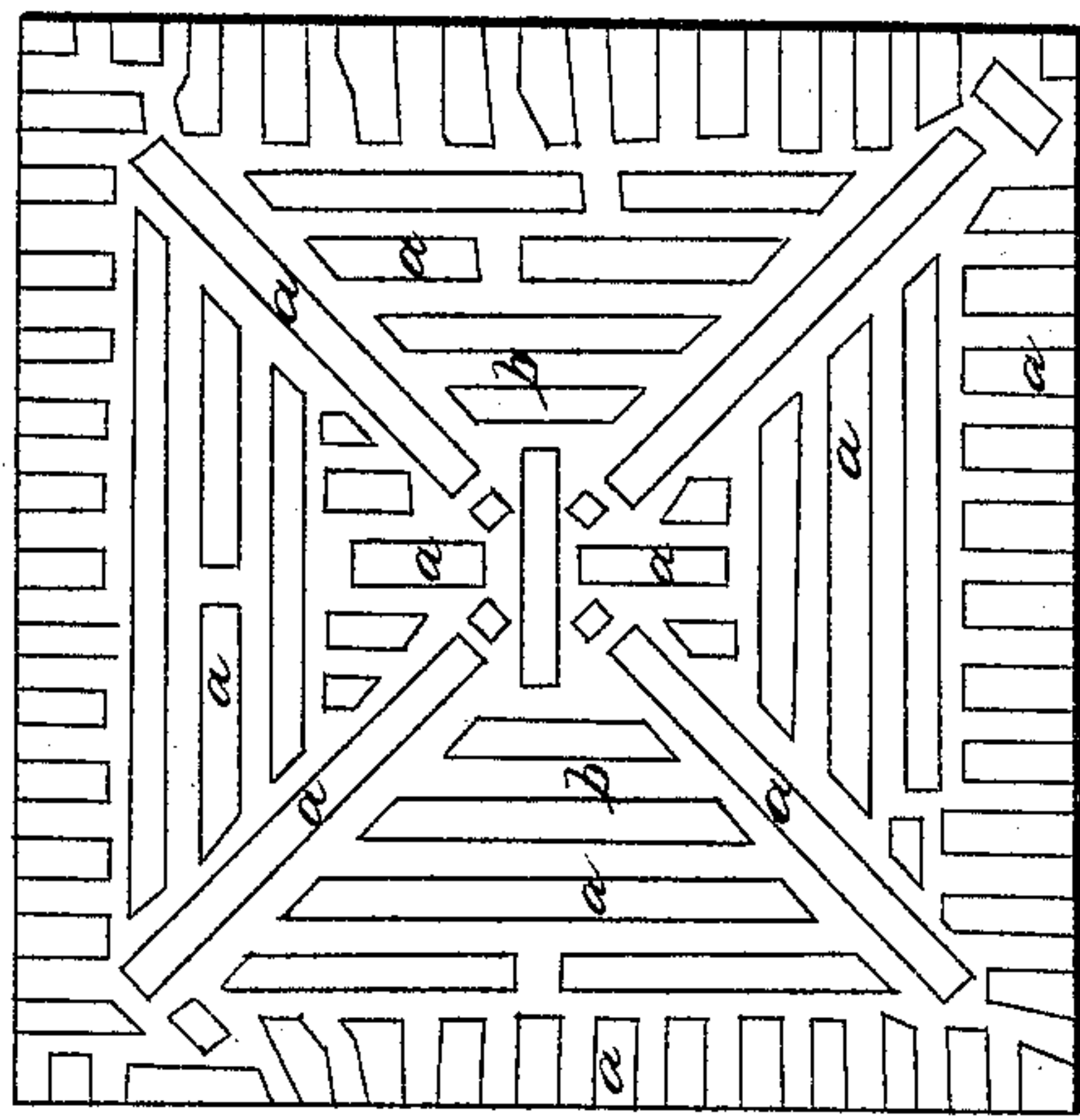


Fig. 1



Witnesses;
A. Seelacy
W. H. Bishop

Inventor;
John Farrel

UNITED STATES PATENT OFFICE.

JOHN FARREL, OF NEW YORK, N. Y.

IMPROVEMENT IN SAFES.

Specification forming part of Letters Patent No. 38,513, dated May 19, 1863.

To all whom it may concern:

Be it known that I, JOHN FARREL, of the city, county, and State of New York, have invented a new and useful Improvement in Burglar-Proof Safes, Chests, and Vault-Doors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a face view of one of the plates prepared according to my said invention; Fig. 2, a cross-section thereof, and Fig. 3 is a face view of a modification.

The same letters indicate like parts in all the figures.

For the purpose of rendering safes, chests, and vault-doors proof against drills and other similar instruments used by burglars for getting access to the inside of safes, chests, and vaults, such structures have heretofore been made with one or more thicknesses of cast-iron obtained from franklinite ore or chilled cast-iron; but however hard these substances may be, it is now known that drills can and have been made which can effectually cut through them. I have, however, discovered or invented a mode of construction which cannot be cut through by any known kind of drill or other similar cutting-instruments; and my said invention for this purpose consists of plates or blocks composed of hard and comparatively soft metal, in alternate strips or bits, so narrow that in attempting to drill holes through such compound plate or block it shall be necessary to cut into the soft and hard metal.

My said invention is based on two well-known facts, viz: First, that to successfully drill through very hard metal, such as cast franklinite iron, chilled iron, or hardened steel, great pressure must be applied to the drill; and, second, that soft metal is more readily cut, particularly when great pressure is applied to the drill, than hard metal.

By composing a plate of alternate strips or bits of hard and soft metal so narrow or small that the diameter of the drill or other rotating cutting-instrument is greater than any one strip or bit of hard or soft metal, the pressure necessary to be applied to successfully cut the hard metal will cause the instrument to cut the soft metal more rapidly than the hard, so that in the rotation, when it comes into contact with the hard metal under the pressure

necessarily applied, the instrument will be broken.

The mode of application of the principle of my said invention which I have adopted, and which I prefer, is to cast plates of hard franklinite or other hard iron onto a series of thin rods or bars of wrought iron or other comparatively soft metal, so arranged that the hard metal cast thereon shall fill up and extend in thin strips or laminae between, and of about equal thickness with, the several thin strips or bars of soft metal; and the said hard metal being so cast as to form one continuous and unbroken surface beyond one or both edges of the series of strips or bars of soft metal, although I prefer to place the small bars of wrought-iron or other soft metal with their edges even with the surface of the casting, and extending into the casting at least half its thickness, if not more, making the block or casting plate for part of its thickness from edge to edge, or from the edges to the center, of alternate layers of hard and soft metal.

After molding a pattern of the required size and form in sand, I place in the said mold rods, strips, or bars of wrought-iron *a*, with one of their edges resting on the bottom of the mold, leaving spaces between them about equal to their own thickness, as represented at *b*. These rods, strips, or bars may be arranged in concentric circles or in straight lines at right angles, or in any other direction. The hard metal is then run in the molten state to form the plate or block *c*, the thickness being greater than that of the soft-metal bars, say, about double, so that about one-half of the thickness of the plate will be of cast franklinite iron, which is the hardest metal known, and the other portion composed of alternate strips of the said hard metal and of soft metal.

The size of the bars or rods I have found most useful to prevent drilling is three-sixteenths of an inch on the edge, and about the same space for the hard metal between them. They can be made larger, if desired, but must be placed in such proximity that no drill or other like cutting or abrading instrument likely to be used can fail to strike in its rotation both the hard and the soft metal, the result of which will be that the pressure on the drill or cutting-tool necessary to make it cut the hard metal will cause it to work faster in the soft metal than in the hard metal, so that

it will be broken short off. This I have found to be uniformly the case in all my experiments.

To facilitate the flow of the molten metal between the rods or bars of soft metal when making the casting, I prefer not to extend the bars through the entire length of the casting, but make them shorter, leaving small spaces or interstices between the ends, as shown in the drawings, so that the melted metal will flow freely between and around the bars, combining the whole perfectly in forming the blocks or plates required. Round, oval, or half oval bars or rods of steel, small pieces of wrought-iron or soft metal, such as nails, screws, bits of old iron, &c., interspersed in the mold and cast in the plates or blocks, will answer in place of the bars or rods, provided they are always placed in such proximity to each other and properly embedded in the casting that no tool can be brought to bear without coming in contact with the hard and soft metal in the operation of drilling a hole, thereby producing such result as before described. After these plates or blocks, so composed of soft and hard metal, are completed, they are to be placed and properly secured to the inside of a frame, *d*, of wrought-iron of the usual construction, as represented, or of any other suitable construction, preferring to so place them that the face, composed of alternate bars of soft and hard metal, shall be toward the outside. I prefer to secure them in place by bolts passing through holes formed by the mold in casting the hard metal on the soft-metal bars; but other modes of fastening may be substituted.

The burglar-proof blocks or plates are cast from patterns made to suit the safe, chest, or vault door required to be drill-proof, so as to fit close to one another and cover closely and completely the whole of the space desired to resist a cutting-tool, so that if the outer wrought-iron case of said safe, chest, or vault door be drilled or penetrated the blocks or plates will effectually prevent all further progress.

In regard to making burglar-proof safes, I do not restrict myself to any particular method, as the safe, chest, or vault door, can be cast whole in the same manner with the wrought-iron bars, rods, or bits of soft-metal embedded in it, as above indicated; or, it may be cast whole in the same manner, and then incased, (outside,) or covered both outside and inside with wrought-iron and steel. Such safes, chests, or vault-doors may be made fire-proof by making a larger case of wrought-iron to go over and around burglar-proof chests; or one smaller to go inside, leaving the usual or necessary space between to introduce or fill in with any good fire-proof material. Instead of franklinite iron, the hard portions of the plates may be made of what is known as "chilled cast-iron," in which case such plates must be cast in metal molds. It will be obvious, also, that the hard portions may be made of steel properly hardened, and, in fact, such plates may be composed of other metals, provided the hard and soft metals are made to alternate on the principle and with a view to the result herein specified.

While my mode of combining hard and soft metals, as herein set forth, will incidentally give greater strength to such castings to resist breaking or force, I do not claim a combination of wrought and cast iron bars for that purpose; nor do I claim the use of franklinite, white iron, chilled iron, or any other hard metal to resist drills or cutting-tools; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The method of rendering safes, chests, or vault-doors burglar-proof by plates or blocks composed of alternate strips or bits of hard and soft metal arranged substantially as herein described, so as to resist the action of drills or other cutting-instruments on the principle herein specified.

JOHN FARREL.

Witnesses:

A. DE LACY,
WM. H. BISHOP.