

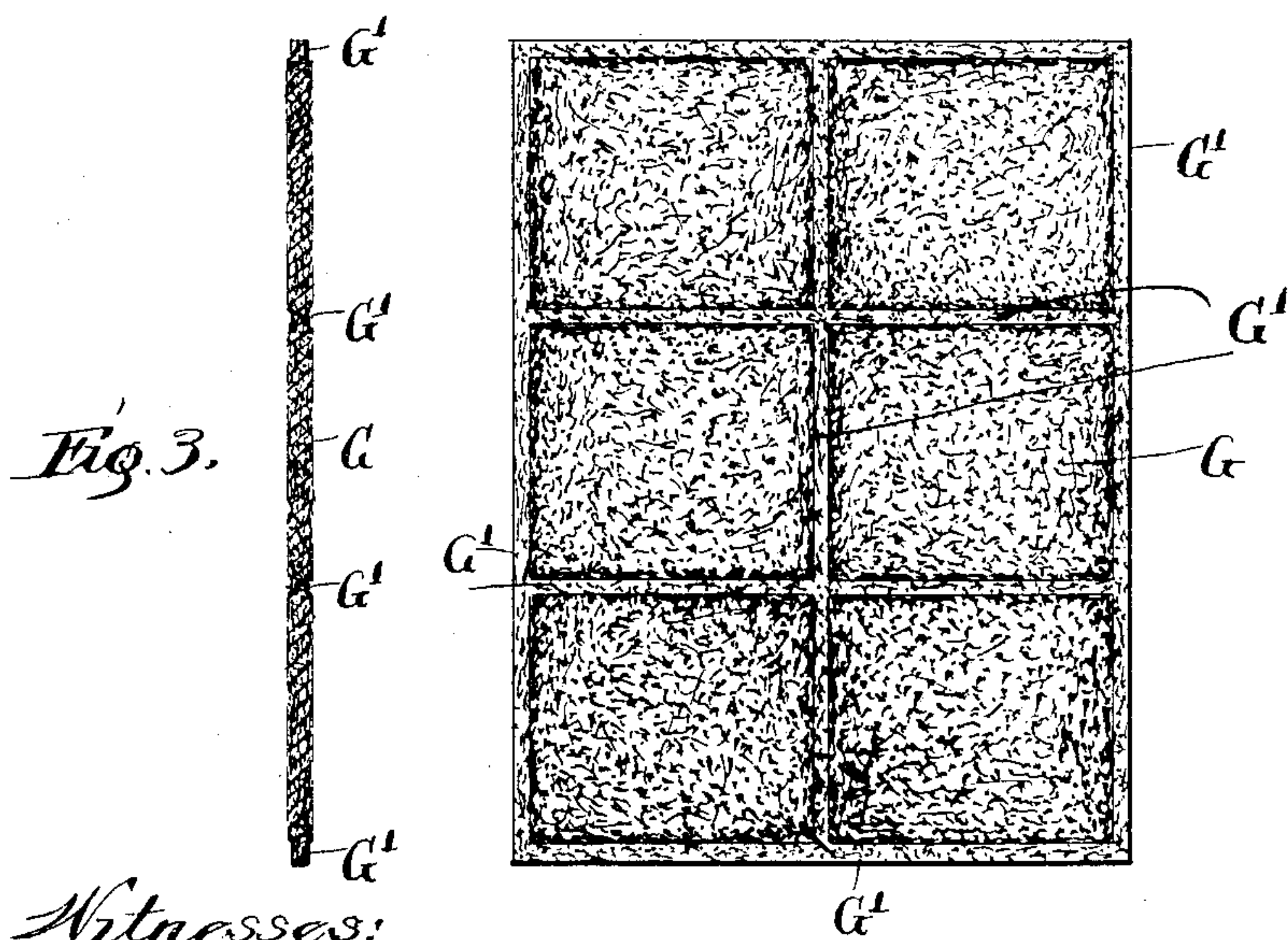
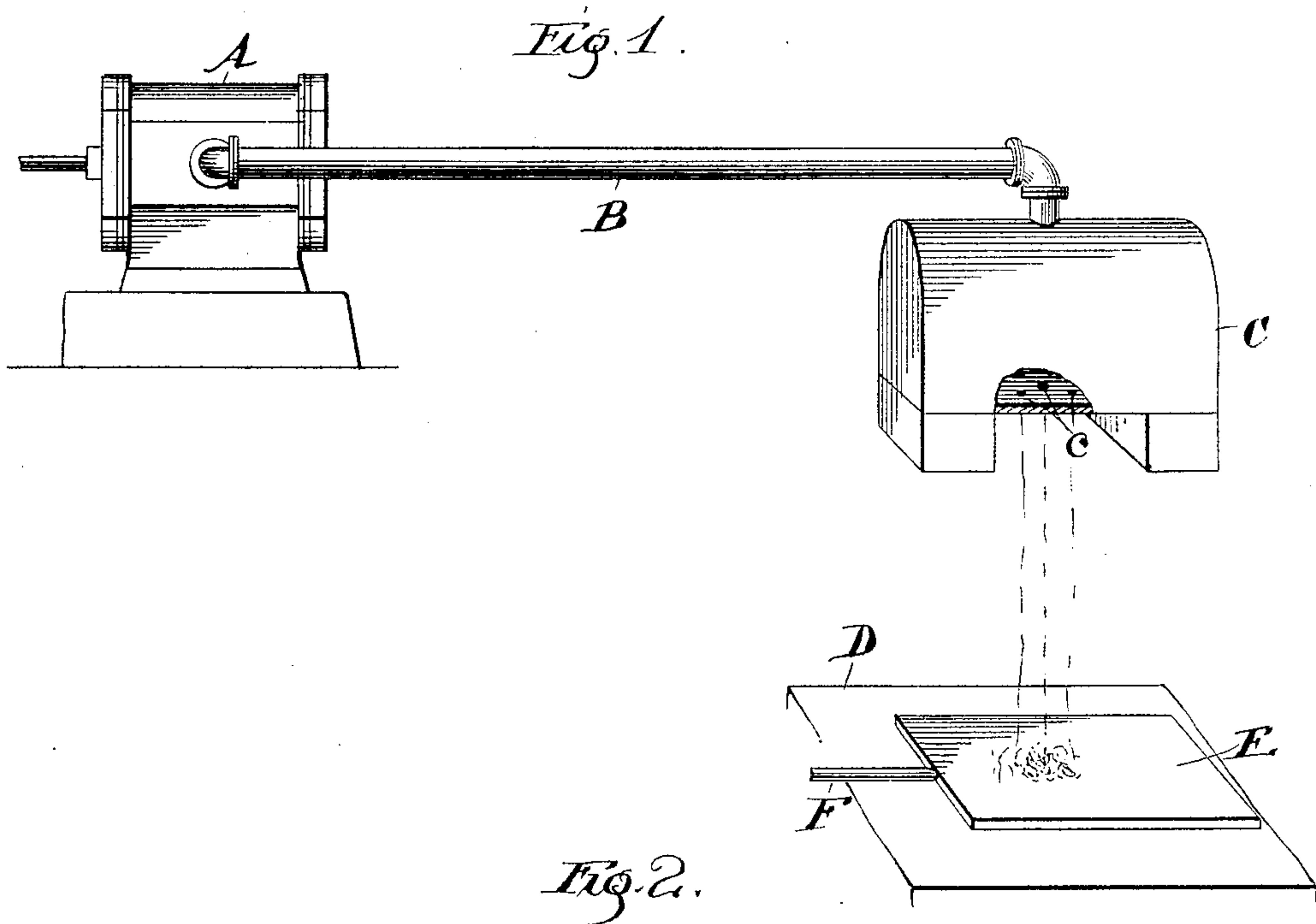
(No Model.)

A. C. CROFTAN.

ART OF MAKING PLATES FOR ELECTRIC BATTERY PURPOSES.

No. 603,499.

Patented May 3, 1898.



Witnesses:  
Chas. O. Shurvey,  
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by  
Niles Marcus Bitner  
Att'y



# UNITED STATES PATENT OFFICE.

ALFRED C. CROFTAN, OF CHICAGO, ILLINOIS.

## ART OF MAKING PLATES FOR ELECTRIC-BATTERY PURPOSES.

SPECIFICATION forming part of Letters Patent No. 603,499, dated May 3, 1898.

Application filed February 5, 1897. Serial No. 622,081. (No specimens.)

*To all whom it may concern:*

Be it known that I, ALFRED C. CROFTAN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Art of Making Plates for Electric-Battery Purposes, of which the following is a specification.

My invention relates to certain improvements in the art of manufacturing spongy lead plates, the special purpose being to produce suitable plates for storage batteries.

To such end it consists in a certain new and improved method and in a certain new and improved spongy lead plate, both of which will be fully described below and the essential features of which will be pointed out in the appended claims.

In the drawings furnished herewith I have shown in Figure 1 a simple form of apparatus to illustrate my improved method, and have also shown in Figs. 2 and 3 the preferred form of my improved lead plate or battery grid.

In this specification for convenience I have used the term "lead" to cover any metals which are commonly used for this purpose—as, for instance, lead, zinc, antimony, or other metal.

Describing first the improved method, the apparatus shown to carry out the same consists of an air-compressor A, connected by means of a pipe B with a retort C, in the bottom of which are a series of small orifices *c*. Said retort is arranged above a suitable support D, upon which is a receiving-plate E, provided with a handle F, by means of which it can be moved about upon the support D.

In practicing the method the retort C is supplied with lead, which is melted by the application of heat, and an air-pressure maintained in the retort by means of the compressor A sufficient to crowd the lead out through the orifices *c*. The distance between the retort C and the receiving-plate E is such that the metal as it falls from the retort reaches the receiving-plate in a semisolid form—that is to say, it is cooled down sufficiently to prevent it from running together into a solid mass, and yet it is still in a sufficiently plastic condition to weld together as

the particles pile up one upon another. These particles are of a stringy nature, and the receiving-plate E is vibrated back and forth and from side to side, so as to pile up the stringy particles into a spongy mass, the portions of which are welded together at their points of contact. The plate thus obtained is comparatively light and exceedingly porous because of the stringy form or shape of the particles of lead, the interstices between said particles being much larger than if the lead were in the form of globules or finely-divided dust, which would result from blowing or showering it in the same semisolid condition into a chilling-receptacle. The spongy lead plate thus formed is next subjected to pressure upon certain portions to form comparatively solid strengthening ribs or frames. This may be done by means of suitable presses and dies or rolls, which it is not thought necessary to illustrate in the drawings. The completed plate is shown in Figs. 2 and 3, the spongy portions G being made up of the stringy lead particles welded together and the comparatively solid portions G' forming ribs or a strengthening-frame welded to the spongy portions.

I claim as new and desire to secure by Letters Patent—

1. The improved method of forming spongy lead plates, which consists in forcing molten lead through a series of small orifices and allowing it to pile up just before solidifying upon a horizontally-vibrating surface; substantially as described.

2. The method of forming spongy lead plates, which consists in forcing the lead in a molten condition through a series of small orifices, receiving it at a temperature intermediate between a running and a congealing temperature upon a horizontally-vibrating support and afterward compressing certain portions of the spongy mass thus formed to produce comparatively solid strengthening ribs or frames, substantially as described.

ALFRED C. CROFTAN.

Witnesses:

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