109. SAFES, BANK PROTECTION
AND RELATED DEVICES.
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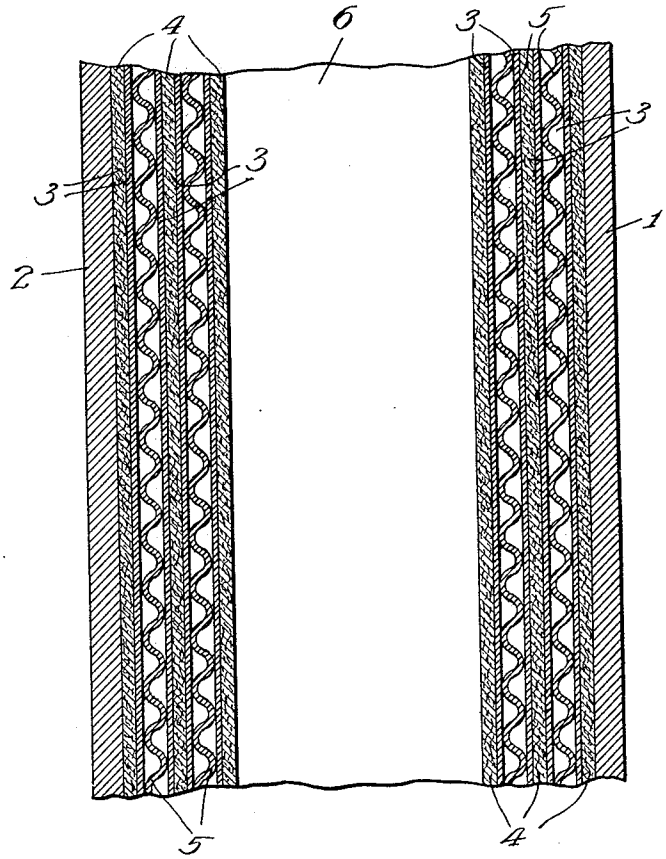
O. H. L. WERNICKE.

INSULATING LINING FOR SAFES.

APPLICATION FILED FEB. 24, 1913.

1,084,986.

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AND RELATED DEVICES.
84

UNITED STATES PATENT OFFICE.

OTTO H. L. WERNICKE, OF GRAND RAPIDS, MICHIGAN.

INSULATING-LINING FOR SAFES.

1,084,986. Specification of Letters Patent. Patented Jan. 20, 1914.

Application filed February 24, 1913. Serial No. 750,251.

To all whom it may concern:

Be it known that I, OTTO H. L. WERNICKE, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful Improvement in Insulating-Linings for Safes, of which the following is a specification.

My invention relates to improvement in heat-insulating linings, more especially for steel safes.

My object is to provide such a lining of a combination of materials which will offer particularly great resistance to heat penetration, and be light in weight as well as inexpensive and easy to apply.

In the practical application of my invention, as a heat-insulating material for steel fireproof safes, I provide a lining consisting of alternate layers of an incombustible absorbent material, such as asbestos, or mineral wool, and an organic material such as strawboard or wood fiber. The lining thus constructed is cemented or otherwise applied to either or both of the adjacent surfaces of the inner and outer steel plates of the hollow wall of the safe.

In the accompanying drawing which shows a broken section of the hollow wall of a safe provided with my improved lining the reference numerals 1 and 2 designate respectively the outer and inner steel plates of the hollow wall and 3 linings of my improved construction consisting of layers 4 of asbestos, or the like, and intermediate layers 5 of preferably corrugated straw-board or other suitable organic material. The layers constituting the lining are fastened together with cement, or otherwise, and the lining in each instance is cemented at one of its outer asbestos surfaces to the steel plate. The cement employed may be silicate of soda.

There is a growing demand for steel safes, which, while affording fireproof protection and large storage capacity, will be lighter in weight, than the fireproof safes hitherto usually provided, to avoid undue strain and stress in buildings. These lighter steel safes as hitherto usually constructed have hollow walls lined with asbestos an inch or more in thickness, which linings necessarily add greatly to the weight of the safe and to the cost of manufacture. Such safes will withstand fire for a reasonably long period without a rise of temperature inside that would destroy papers; but in practice, it frequently happens after the safe gets thoroughly warmed up in a fire and the building collapses, that the safe falls to the basement and is covered with brick, mortar, or other refuse, causing the heat stored in the walls of the safe to radiate inward, and papers or other contents, which remained in good condition to the end of the actual fire, to be affected by the rising temperature until injuriously carbonized. My improved lining operates to withstand heat penetration much more effectively than is the case, for example, where asbestos alone is employed. Heat applied to the outer plate 1 of the wall in time penetrates through the adjacent layer 4 of asbestos, or the like, and by attacking the first layer 5 of organic material subjects the same to destructive distillation causing it to give off moisture which tends to saturate the next layer of asbestos, or the like. Inasmuch as the temperature of the layers while moist cannot rise above the boiling point of water until the moisture has been driven off, and as the moisture in evaporating absorbs a large amount of heat, the penetration of a destructive temperature through the lining is much slower than through a dry insulating material, such as asbestos alone, of the same thickness. By incorporating a comparatively small quantity of saturated solution of chlorid of calcium with the asbestos layers, the said layers are rendered hygroscopic and will hold the water driven off from the organic layers for a longer time than otherwise, and thus still further retard the penetration of heat. As the organic material is subjected by the heat to destructive distillation, its fibrous constituent becomes charred and keeps its shape. There is an advantage in providing the straw-board, or the like, in corrugated sheets, as stated, because the sheets thus add to the thickness of the lining without increasing its weight.

A lining constructed as described is not only less expensive than a lining of asbestos alone of the same thickness, but is much lighter in weight and much more effective in withstanding heat penetration. The insulation between the steel plates is further enhanced by the dead air space 6 between the linings.

The foregoing description is intended to convey a clear understanding of my invention in what I now believe to be the best

form of its embodiment, and no undue limitation should be understood therefrom.

It is my intention to claim all that is novel in my invention, and that the claim shall be construed as broadly as the prior state of the art may warrant.

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

A hollow safe-wall comprising outer and inner walls and a heat-insulating lining, formed with layers respectively of incombustible absorbent material and organic material, secured to each of said walls, the inner surfaces of said layers being in contact with each other, and the linings separated from each other by a dead air space.

OTTO H. L. WERNICKE.

In presence of—
GEORGE H. CURRY,
F. A. MONTELIUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."