

(No Model.)

C. B. GARDNER.  
WOOD PULP FOR THE MANUFACTURE OF REFRIGERATORS AND ART OF  
MAKING THE SAME.

No. 374,183.

Patented Dec. 6, 1887.

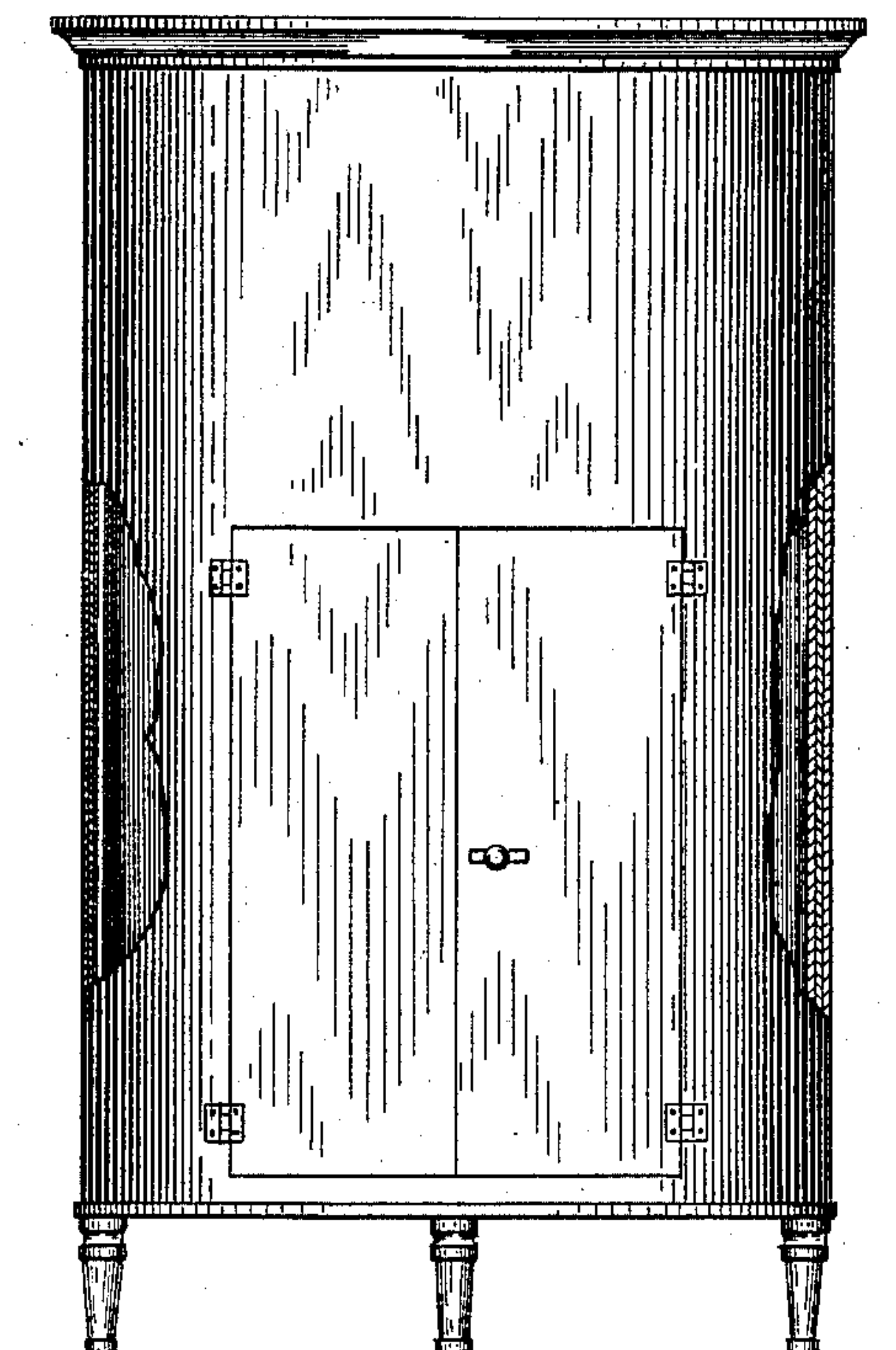


Fig. 1.

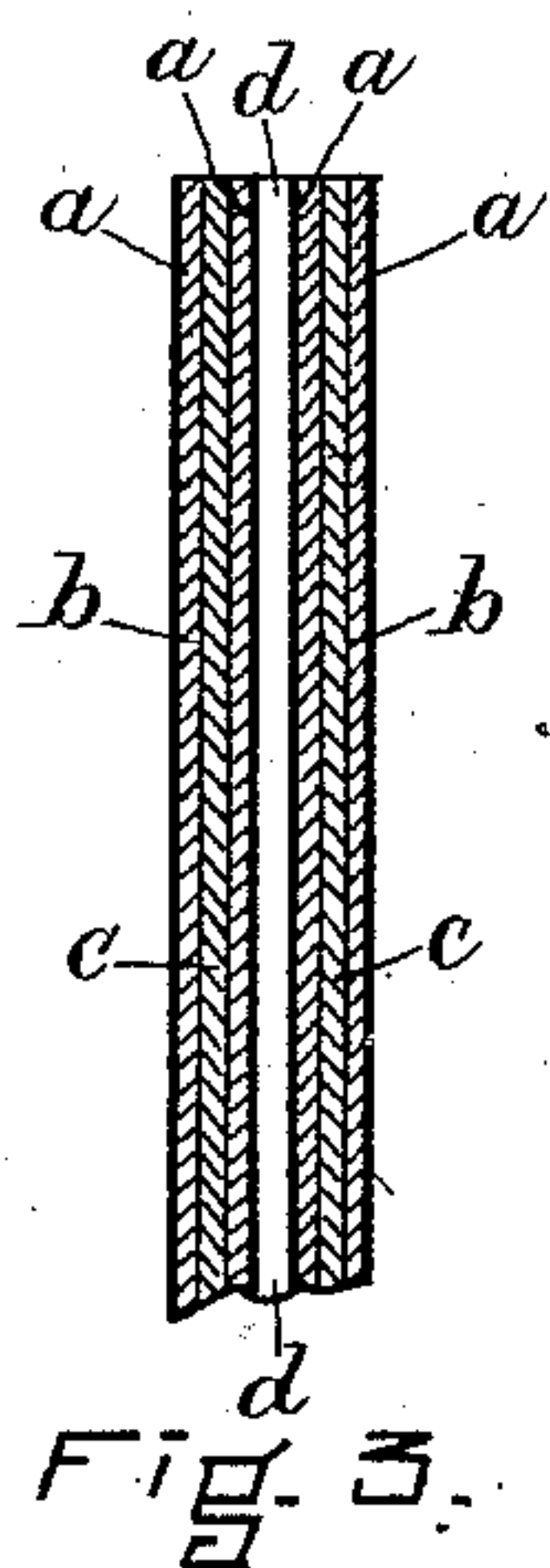


Fig. 3.

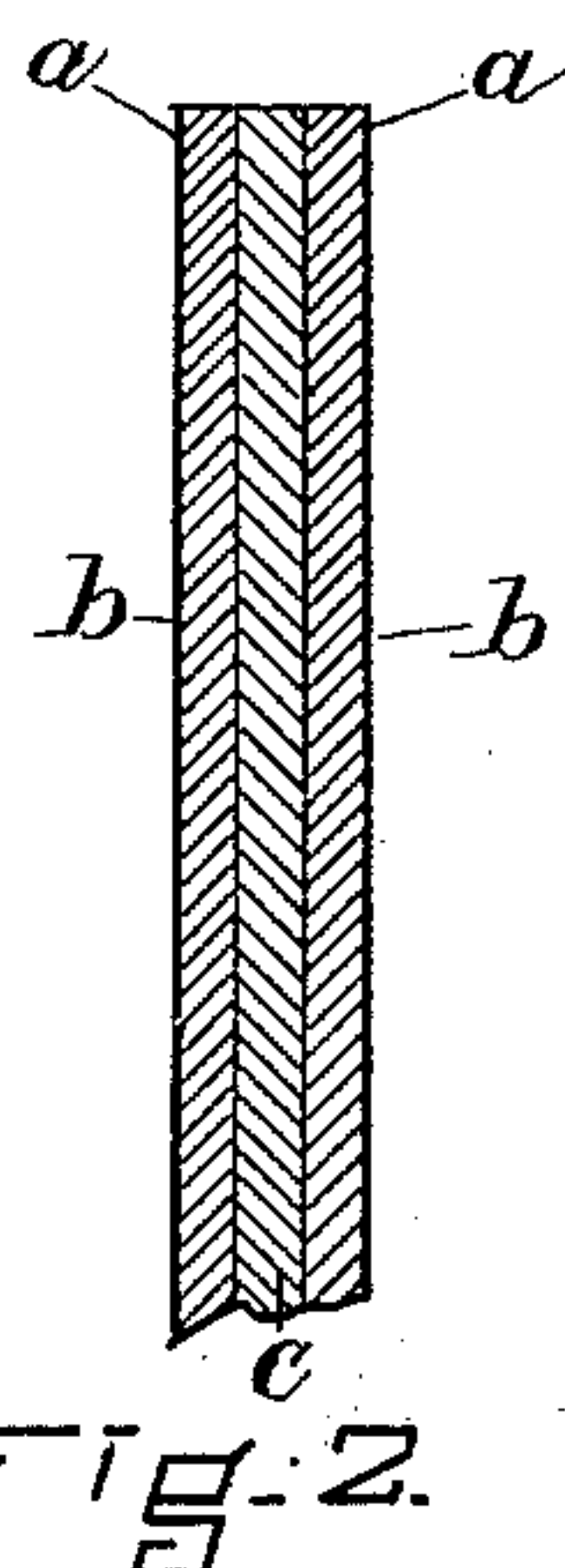


Fig. 2.

WITNESSES.

Chas. Spaulding,  
Albert D. Groves,

INVENTOR.

Chas. B. Gardner.  
By Migh, Brown & Crossley  
attys.



# UNITED STATES PATENT OFFICE.

CHARLES B. GARDNER, OF ALLSTON, (BOSTON,) MASSACHUSETTS.

WOOD PULP FOR THE MANUFACTURE OF REFRIGERATORS AND ART OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 374,183, dated December 6, 1887.

Application filed March 10, 1887. Serial No. 230,384. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES B. GARDNER, of Allston, (Boston,) in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Wood Pulp for the Manufacture of Refrigerators and the Art of Making the Same, of which the following is a specification.

My invention relates to material for the manufacture of refrigerators, ice-chests, water-coolers, and analogous articles, and to the art of making and compounding such material.

In the construction of a refrigerator or analogous article designed to receive ice for the purpose of cooling the air contained in such article, in order to prevent decomposition in perishable materials or for the purpose of cooling water, it is very desirable, among other things, that the article should be constructed of material which is substantially a non-conductor of heat and practically unaffected by moisture, and that it should at the same time be easily cleansed, light in weight, and of low cost.

It has been found that wood pulp is among the best non-conductors of heat, and while it is light and comparatively cheap of production, and can readily be made up into various articles of ware, among them those named above, in order to render it practically impervious to moisture it becomes necessary to treat it with chemicals, so that its surfaces may be coated or enameled with water-proof material. This chemical treatment somewhat lowers the non-conducting properties of the material, and therefore renders it less desirable for the manufacture of refrigerators, water-coolers, &c., though in its chemically-treated state wood pulp is a better non-conductor of heat than most materials of which it is practical to form the articles mentioned.

It is the object of my invention to so construct the walls of a refrigerator, &c., of wood pulp as that a portion of such walls shall be composed of virgin non-chemically-treated pulp, while the other portion or portions are thus chemically treated, whereby the surfaces may be enameled, so as to render the material practically water-proof, and at the same time the structure will be so re-enforced with the material in its normal state as to render it in the highest degree a non-conductor of heat.

I accomplish the object mentioned by the improved process hereinafter described, which process results in the improved article, also explained hereinafter, both process and article being particularly pointed out in the claims.

To enable my invention to be the better understood by those skilled in the art, reference is to be made to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, the same letters indicating the same parts wherever they occur.

In the drawings, Figure 1 represents a front elevation of a refrigerator embodying my invention, parts being shown as broken out. Fig. 2 represents a cross-section of my improved material constructed in accordance with the process constituting one of the features of my invention. Fig. 3 is a cross-sectional view showing a modified manner of forming the walls of a refrigerator.

In carrying out my invention I form the pulp into sheets or hollow cylinders or other shapes in any of the known ways, making such sheets or cylinders, say, one inch in thickness, and chemically treat the same, so that the surfaces may be enameled or coated with a water-proof compound, as represented at *a*, such chemical treatment extending from the surfaces inward for but a short distance—say for one-third of the extent of the thickness of the material—as represented as *b*, leaving the interior *c* thereof in its virgin or natural state, and thus constituting a material for the manufacture of refrigerators and similar articles which is at once a superior non-conductor of heat, light in weight, entirely water-proof, and cheap of manufacture.

The description thus far given has been made with reference to the structure shown at the right in Fig. 1 and in Fig. 2. In Fig. 3 and at the left in Fig. 1 I have shown a structure for the walls of a refrigerator composed of two sheets of my improved material with an air-space therebetween, this form being designed for larger structures and instances where a larger wall or casing for a refrigerator of the highest non-conducting properties is desired.

By the material and process described I am enabled by well-known centrifugal action to form wood pulp into hollow cylinders of a size and shape suitable for refrigerators, like that,



for instance, represented in Fig. 1, or for other similar articles, and treat the same in such manner as to render it entirely impervious to water, and at the same time preserve its high properties as a non-conductor of heat. In addition to these advantages, articles of the kind mentioned can be made at low cost, be very durable, and so light in weight as to permit of their being moved from place to place with the utmost ease. It may also be mentioned that articles manufactured in accordance with my process may be easily ornamented and made attractive in appearance, and be readily cleansed and kept free from impurities of every kind.

Having thus described my invention, what I claim is—

1. As a material for the manufacture of refrigerators and analogous articles, wood pulp chemically treated from its surfaces inward for a portion of the way toward its center, leaving the central portion in its virgin or natural

state, and having its surfaces enameled or coated with a water-proof substance, substantially as hereinbefore set forth.

2. In the art of treating wood pulp for the manufacture of refrigerators and analogous articles, the improvement consisting in forming the pulp into sheets or hollow cylinders, then chemically treating such sheets or cylinders from the surfaces inward for a short distance toward the center, leaving the central portion in its natural or virgin state, and finally enameling or coating the surfaces with a water-proof substance, substantially as and for the purposes specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of January, A. D. 1887.

CHARLES B. GARDNER.

Witnesses:

ARTHUR W. CROSSLEY,  
FRANK S. MASON.