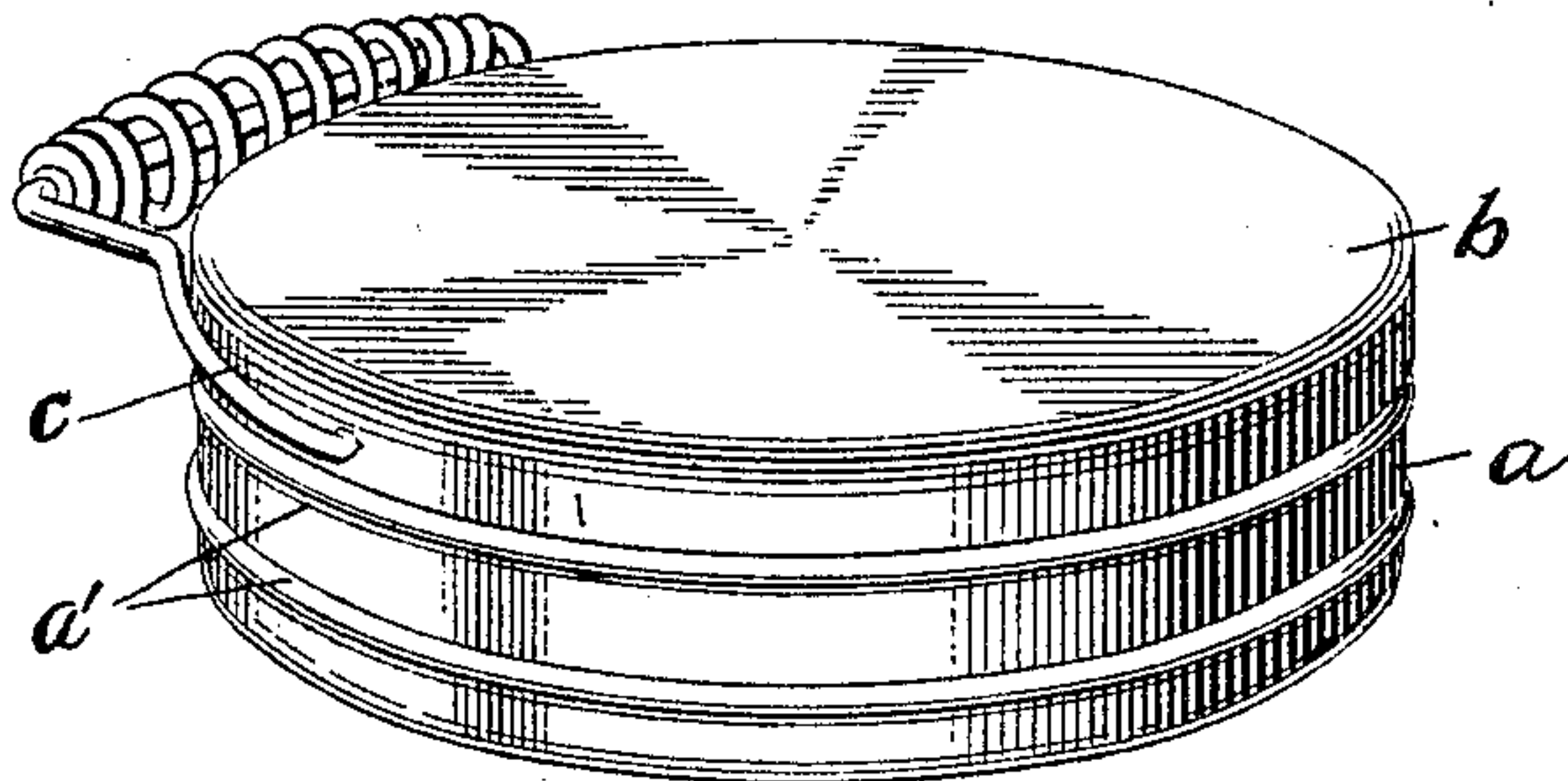
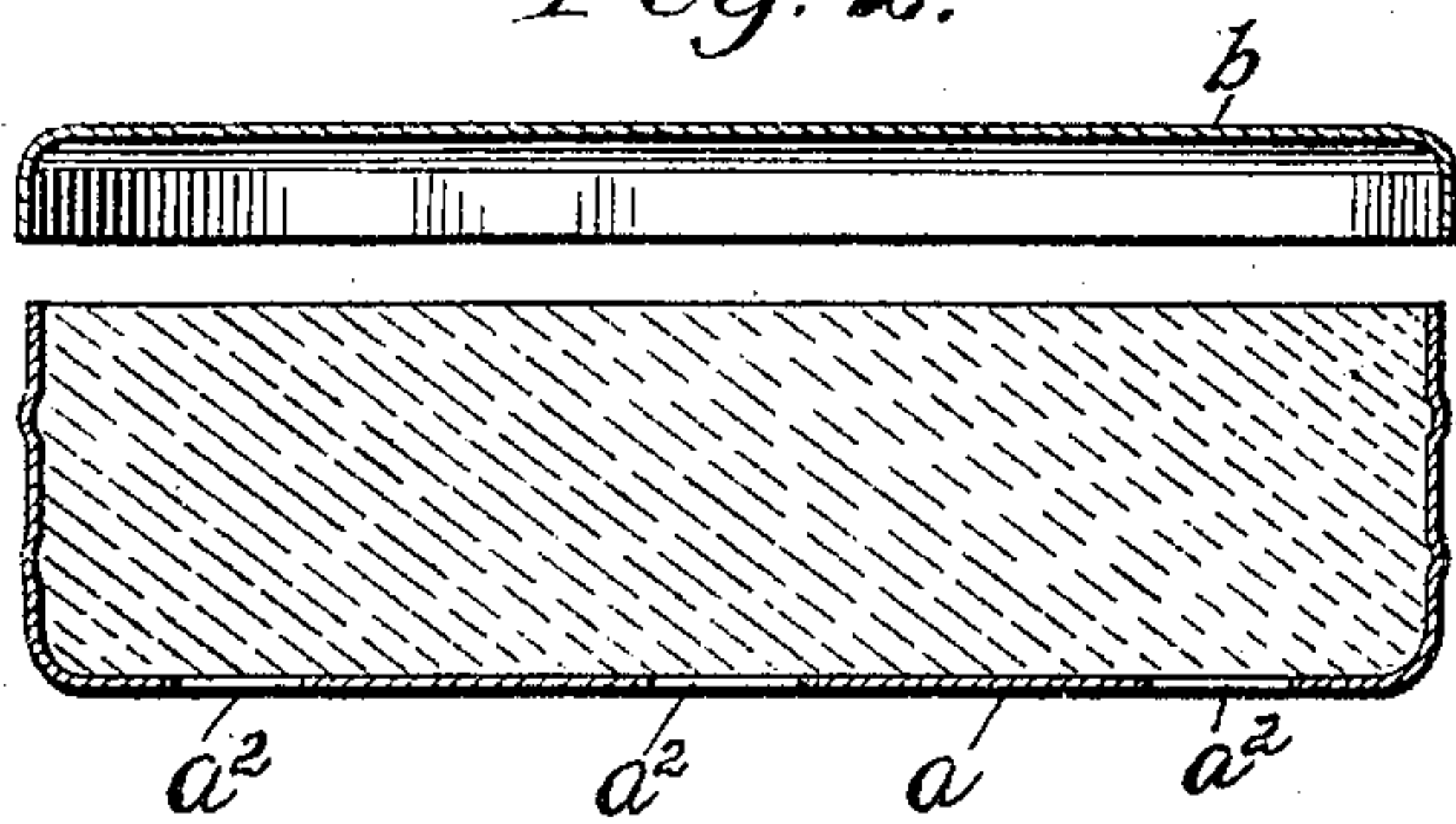


C. H. BOECK.  
HEAT RETAINER AND METHOD OF MAKING THE SAME.  
APPLICATION FILED OCT. 19, 1904.

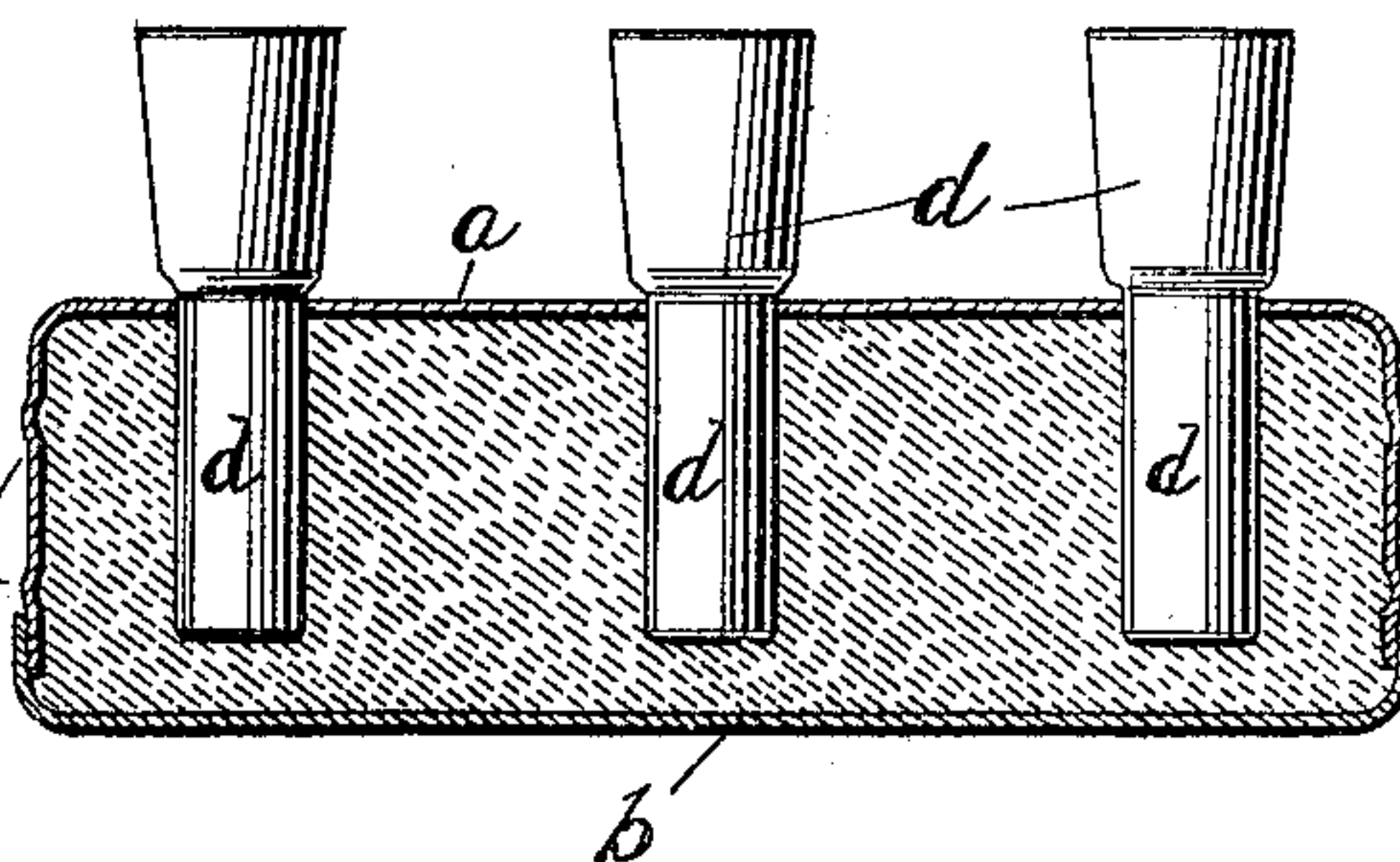
*Fig. 1.*



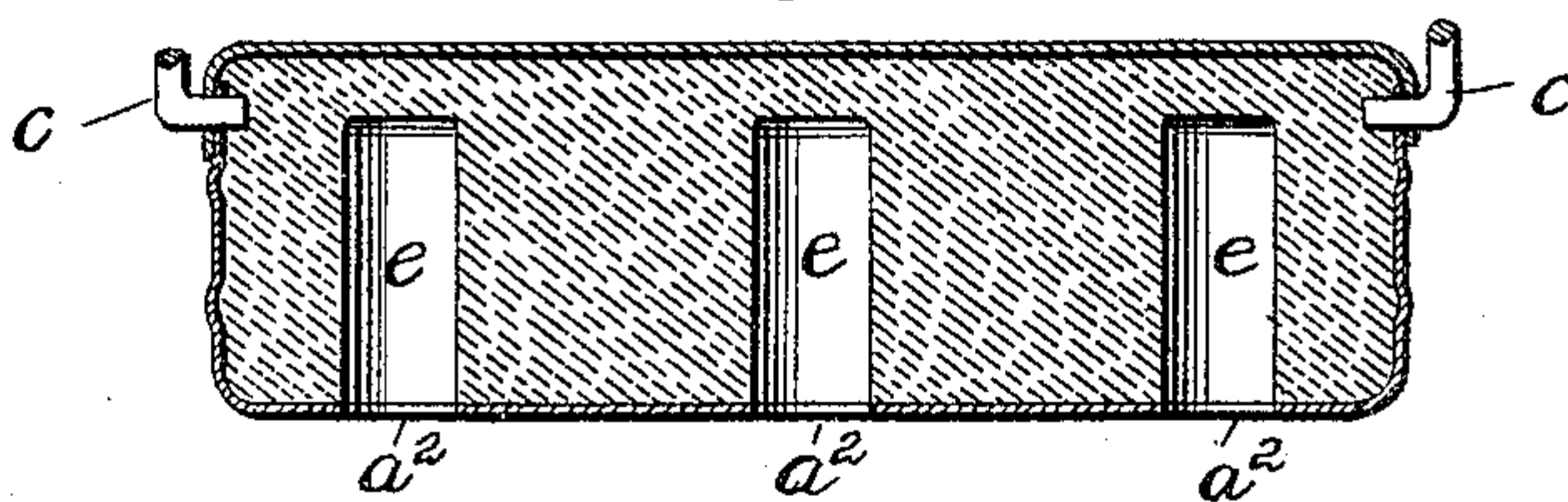
*Fig. 2.*



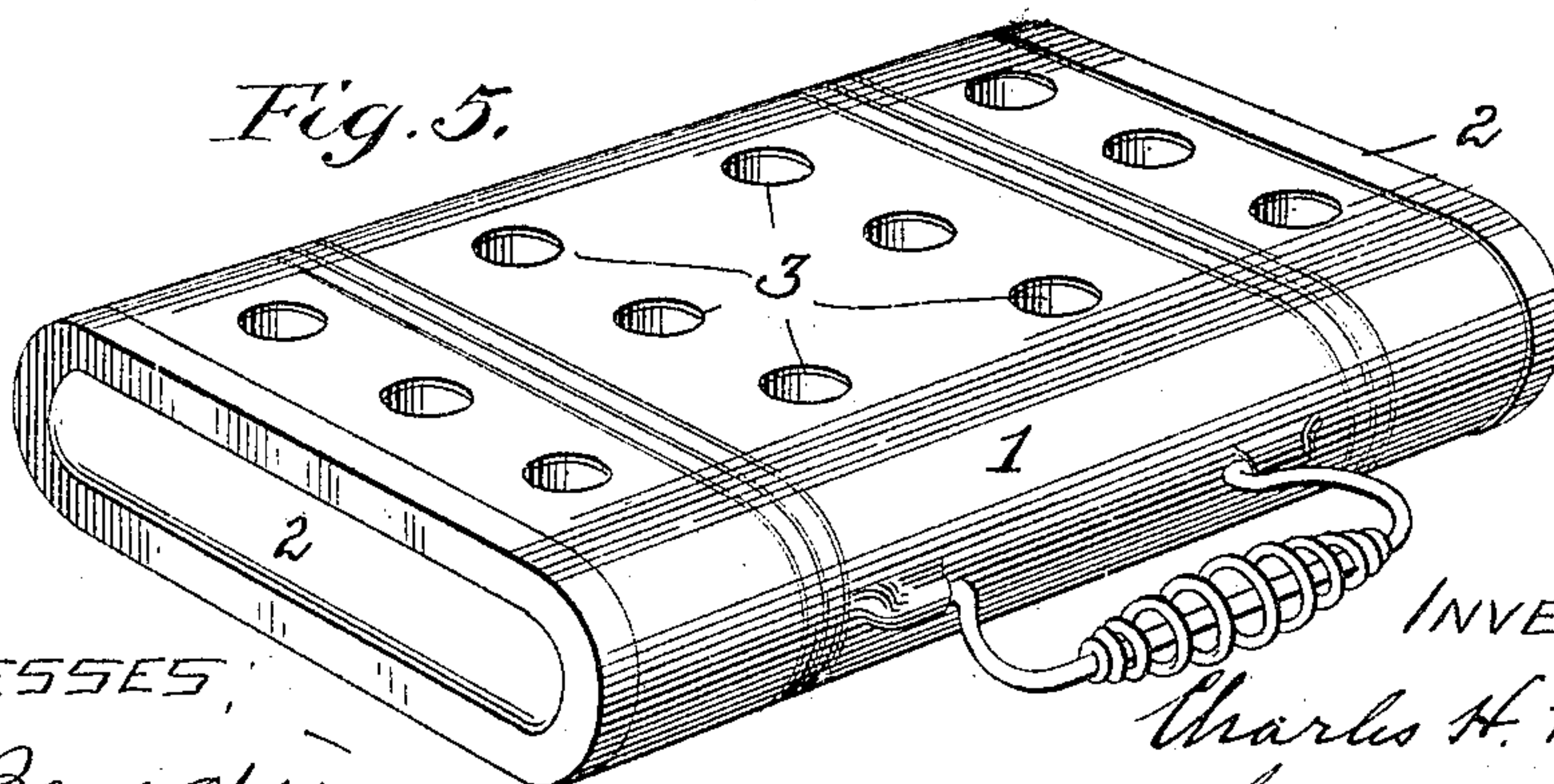
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



WITNESSES:  
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INVENTOR:  
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BY William C. Brown  
his ATTYS.



# UNITED STATES PATENT OFFICE.

CHARLES H. BOECK, OF JACKSON, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO METAL STAMPING COMPANY, OF JACKSON, MICHIGAN, A CORPORATION OF MICHIGAN.

## HEAT-RETAINER AND METHOD OF MAKING THE SAME.

No. 804,090

Specification of Letters Patent.

Patented Nov. 7, 1905.

Original application filed January 11, 1904, Serial No. 188,557. Divided and this application filed October 19, 1904. Serial No. 229,182.

*To all whom it may concern:*

Be it known that I, CHARLES H. BOECK, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented a certain new and useful Heat-Retainer and Method of Making the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention (for which the present application is filed as a division of my pending application, Serial No. 188,557, filed January 11, 1904, for a heater) relates to heat-retainers or heating-pads comprising a metal shell containing a heat-retaining filling of hardened or solidified plastic material adapted to be preheated to serve as a warming agent in various kinds of auxiliary heaters—such as dish and coffee-pot heaters, foot-warmers, and the like; and the invention has reference particularly to an improved method of making such articles, whereby the pad is rendered exceedingly hard and solid, its filling very dense and compact, while most effectively constructed for rapidly absorbing heat and its shell tightly filled and free from liability of becoming dented or depressed out of shape in use.

The heat-retainer or heating-pad may be applied to numerous purposes and may be of any appropriate shape and construction, according to the particular use for which it is designed. It usually consists of a flattish metal shell, preferably of stamped steel or sheet metal, containing the aforesaid filling and having a tight-fitting or firmly-secured cap or cover preferably flanged to fit tightly to the body portion, the shell being also apertured, having, preferably, a plurality of holes or openings in its bottom side. The filling consists of any suitable substance or composition adapted to absorb, retain, and impart heat, such as any suitable cement or other plastic or mixture placed in the shell while in plastic state and afterward allowed to set and harden. The particular filling which I preferably employ is a plastic compound having great heat absorbing and re-

taining properties, but whose composition is a trade secret and need not be disclosed here.

In carrying out my improved method the substance or material in plastic state is placed in the receptacle or body of the shell, usually setting with its open end or side up, and after the receptacle has been filled and suitably packed its cover or cap is fitted or secured thereto and the shell is then turned with its bottom or apertured side up. Then by means of plugs or pins inserted through the aforesaid apertures and driven into the material while yet soft or plastic the filling is densified and by its displacement caused to fill up the shell in every part tightly and compactly. The plugs are left in the material while still soft and the pad or shell is then set in an appropriate place for drying the filling, being usually placed on steam-pipes or in a heating-oven for this purpose. When the filling has sufficiently set to allow withdrawal of the plugs, they are removed, leaving the densified tight consolidated filling or packing with cells formed therein coincident with or opening at the apertures in the shell, and the filling subsequently becomes completely hardened or solidified, thus finishing the product. By this method the heating pad or device is rendered exceedingly hard and solid and its shell so tightly filled as to avoid becoming dented or depressed out of shape by accident or otherwise in use, which cannot be otherwise attained, since experience has shown that it is impossible in any other way to fill and pack one of these heaters so completely with material as to prevent the stamped metal shell from becoming dented or misshapen more or less after the cement hardens. The spreading and densifying of the filling also causes it to bind or adhere more firmly to the internal walls of the shell, uniting the parts by internal engagement of the filling therewith, and the binding effect is increased by having the interior surfaces of the shell uneven, as by forming the shell with ribs or corrugation; which in addition to providing means for engagement by the filling also serves to strengthen the shell itself.

In use the heating pad or device is placed upon a stove or over a fire or lamp or other



source of heat, and in a short time it absorbs a large amount of heat, which it retains an hour or two or longer, according to the amount of heat absorbed and the subsequent use. The cells formed in the filling by the plugs serve to admit the heat or flame into the interior or body of the pad and, thus gain a more rapid and uniform heating of the filling. The device having been thus preheated may be put to any desired use, such as a foot-warmer, heater for the sick-room, or dish and coffee-pot warmer.

The accompanying drawings, hereinafter referred to, illustrate merely certain forms of heaters of the character described and steps in the method of making the same, it being understood that the invention is independent of the shape, uses, and details of mechanical construction of the device, but resides in the valuable method herein set forth and in the resultant article or product thereof.

In said drawings, Figure 1 is a perspective view of a heat-retainer or heating-pad such as preferably employed as a dish or coffee-pot heater, in which use the pad may rest in a suitable holder or upon an appropriate base, as shown and described in my aforesaid application, Serial No. 188,557. Figs. 2, 3, and 4 are vertical cross-sections of the same device, taken at different successive steps during the operation of making the same. Fig. 5 is a perspective view of a heater particularly suitable as a foot-warmer, such as shown and described in another application filed by me April 16, 1904, Serial No. 203,506, for a foot-warmer, the specification of which also describes the process covered by the present application.

In Figs. 1 to 4, *a* denotes the receptacle or body of the shell, having peripheral corrugations *a'* and bottom openings *a''*. *b* denotes its cap or cover, and *c* a handle or bail whose ends are shown inserted through registering apertures in the receptacle *a* and cover *b*. In Fig. 2 the receptacle *a* is shown setting right side up and filled with the plastic cement or heat-retaining material before its cover *b* is fitted thereon. Fig. 3 shows the shell with its cap attached setting bottom side up and having the plugs *d* inserted through the holes *a''* and driven into the material, densifying the filling, as aforesaid, and consolidating the whole mass into the reduced space caused by the presence of the plugs. Fig. 4 shows the completed pad after the material has set and the plugs *d* have been withdrawn, leaving the cells *e* in the densified filling.

In Fig. 5 the shell 1 is shown having caps or end pieces 2, one of which is removed to allow filling the shell and then secured in place, whereupon plugs are driven into the apertures 3 in the same manner.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The method of making a heat-retainer which consists in first providing a permanently-closed shell having a plurality of apertures with a filling of plastic material, then driving plugs through said apertures into the said material while yet plastic, and drying and hardening the filling.

2. The method of making a heat-retainer which consists in permanently inclosing plastic material in a closed shell having apertures therein, the said material completely filling the shell, then driving plugs through said apertures into the material while yet plastic, allowing the material to set, and then withdrawing the plugs.

3. The method of making a heat-retainer which consists in tightly filling an apertured receptacle with plastic material, then securing a cap or cover thereon, then driving plugs through the apertures and into the material while yet plastic, allowing the material to set, then withdrawing the plugs, and drying and hardening the filling.

4. A heating-pad comprising a permanently-closed shell having apertures therein and containing a filling composed of a set or hardened plastic substance, the same having been filled within the shell while plastic and then densified and expanded against the whole interior walls by the driving of plugs through the apertures and into such plastic filling.

5. A heating-pad comprising a closed shell having a side with a plurality of apertures, and a filling composed of a set or hardened plastic substance, the same having been tightly filled therein while plastic and then densified and expanded against the interior walls by the driving of plugs through the apertures into such plastic substance, the said filling having cells formed by the withdrawal of the plugs.

6. A heating-pad comprising a permanently-closed metal shell having a plurality of apertures and containing a filling composed of a set or hardened plastic substance formed with cells coincident with the apertures of the shell, the said celled filling being consolidated from the whole mass filled in the shell while plastic and then densified and expanded compactly against the whole interior of the shell by the insertion of plugs through said apertures into said filling.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. BOECK.

Witnesses:

D. R. TARBELL,  
G. E. DARR.