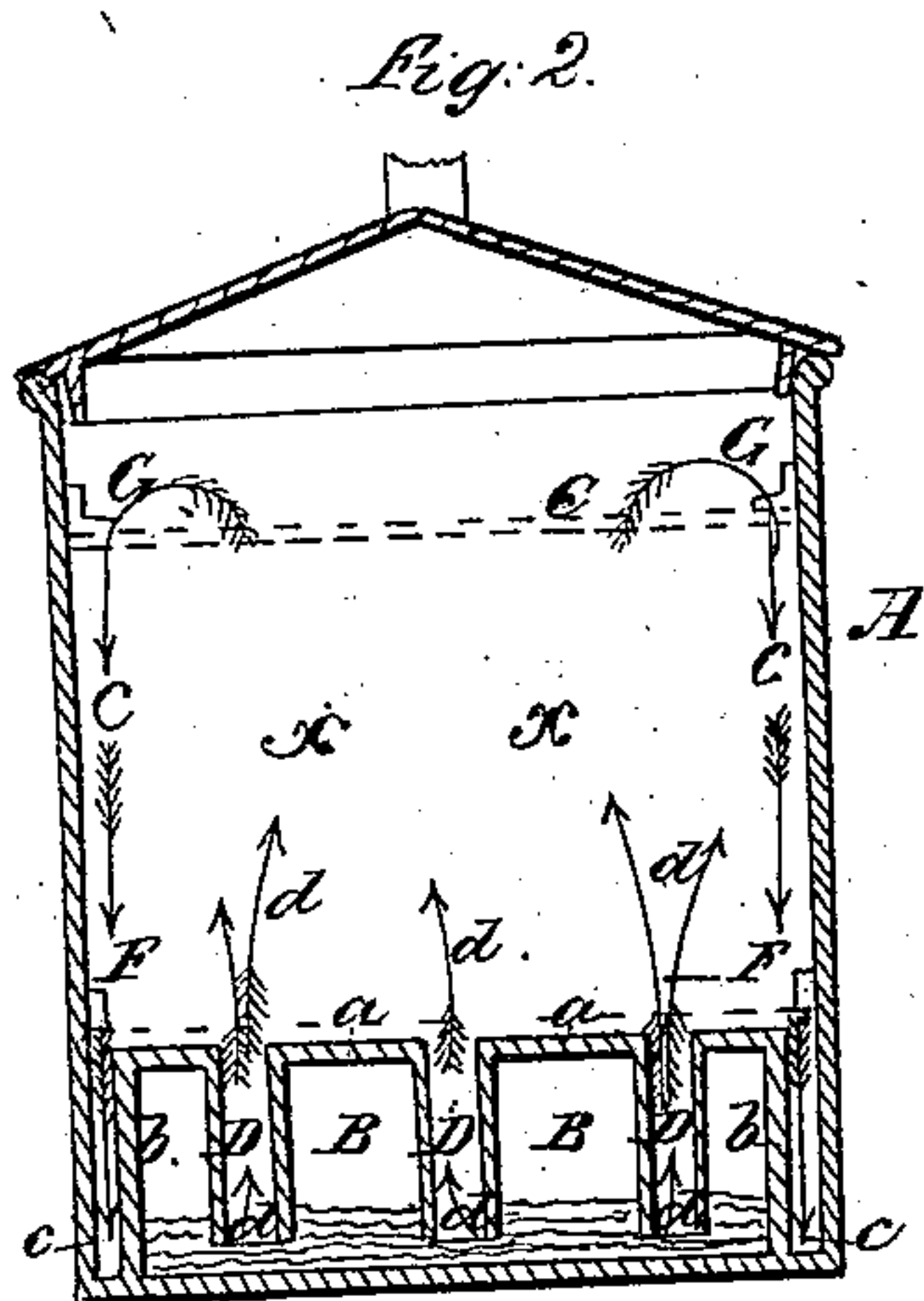
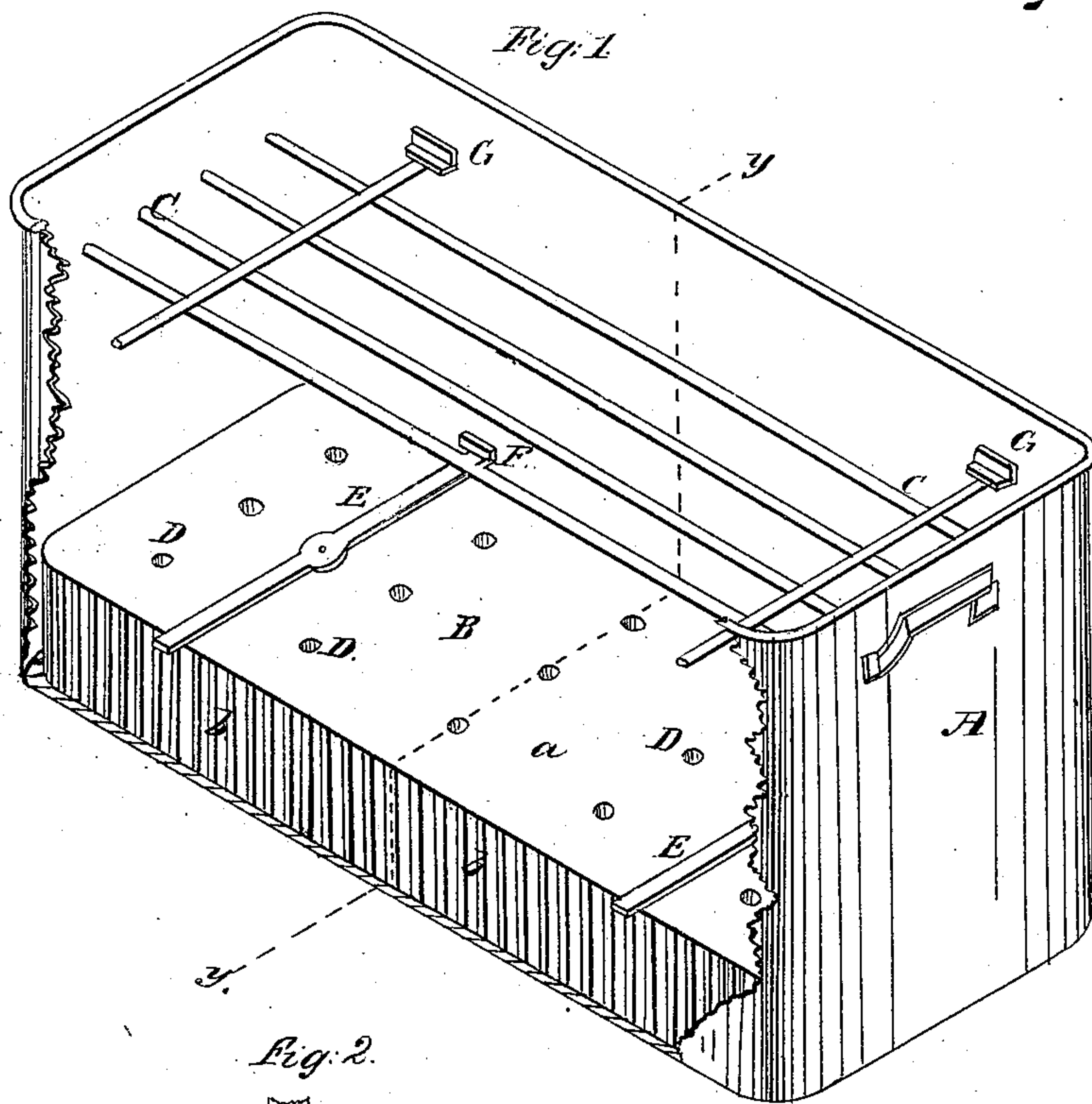


# F. Judson, Wash Boiler

N<sup>o</sup> 81,174.

Patented Aug. 18, 1868.



Witnesses:

James H. Welch  
Thos. Houghton.

Inventor:

Fredrick Judson

# United States Patent Office.

FREDERICK JUDSON, OF CASTLETON, NEW YORK.

*Letters Patent No. 81,174, dated August 18, 1868.*

## IMPROVEMENT IN WASH-BOILERS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, FREDERICK JUDSON, of Castleton, in the county of Rensselaer, and State of New York, have invented a new and improved Wash-Boiler; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the improved wash-boiler, with its cover removed and one side broken away, to expose the interior of the boiler.

Figure 2 is a transverse section, taken in a vertical plane through the boiler, with the cover upon it.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to certain novel improvements on boilers, which are chiefly designed for cleansing clothes and other fabrics without manual labor, and by the agency of steam, operating to cause a rapid circulation of water through the fabrics placed in the boilers.

The nature of my invention consists in the application, within a suitable vessel or boiler, of a tubular steam-box or chamber, which is so constructed that, when the boiler is supplied with water and articles to be cleansed, and heat is applied to its bottom, a rapid ascent and descent of the water through the said articles will be caused by the alternate pressure and condensation of steam in the said steam-box or chamber, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings A represents a boiler or caldron, which may be made of any suitable material, shape, and capacity. I prefer to construct it with a flat bottom, as shown in fig. 2, but do not confine myself thereto. B represents a box or steam-chamber, which consists of a perforated top, *a*, supported upon the bottom of the boiler by a flange, *b*, and provided with tubes D, which extend down from all the perforations nearly to the bottom of the boiler A, as shown in fig. 2.

This tubular box forms a steam-chamber in the boiler during the process of cleansing fabrics, which chamber is below the fabrics and above the lower ends of the tubes D, and is designed to cause, by an alternate expansion and condensation of steam, a rapid ascent and descent of water through the superimposed fabrics, as will be hereinafter explained.

In order to prevent the steam-chamber or box B from being raised out of place by the pressure of steam which is generated in it while cleansing fabrics, I employ cross-bars or battens, E, upon the top of said box, with shoulders F upon the inner sides of the boiler A, which will not only hold the box B down in place against upward pressure, but will also allow of the ready removal of this box when required.

At a suitable point near the top of the boiler A is a rack, C, which consists of longitudinal rods secured to cross-rods. The extremities of the latter being adjusted beneath the shoulders or ledges G, fastened on the inner sides of the boiler A, will serve to keep the fabrics down in place during the operation of cleansing them.

If desirable, the steam-chamber may be constructed permanently in the boiler A, by providing this boiler with two bottoms, and leaving the required space between them.

The top plate will be constructed with tubes, which will form communications for the circulation of water and steam between the upper and lower chambers, as described, for the removable box or steam-chamber B. While a steam-chamber thus constructed would operate successfully, I prefer the removable chamber, as shown in the drawings, because it can be taken out of the boiler to cleanse or repair it.

Having described the construction of my improved wash-boiler, I will now show how it operates to cleanse clothing and other fabrics.

The fabrics to be cleansed, together with a suitable quantity of water and soap, or other washing-compound, are put into the boiler A, after securing the steam-chamber down in place. The rack C is then secured in place, to prevent the steam and ascending currents of water from throwing up the fabrics while cleansing them.

When heat is applied to the bottom of the boiler, steam will be generated in the chamber B, and the water



will commence to rise from the bottom of the boiler, in consequence of the difference in specific gravity of the heated and cool water, and also in consequence of the accumulation of steam in chamber B, above the lower ends of tubes D. When the steam in chamber B has attained a sufficient pressure to overcome the weight of the water and fabrics, nearly all the water will be expelled from said chamber, and caused to rise through the tubes D and through the fabrics. There will always be a small quantity of water left in the steam-chamber, below the lower ends of the tubes D, during the cleansing operation. As soon as the water in chamber B is expelled, the steam will escape through pipes D, and allow water to return again into said chamber, and as the temperature of this descending water will have become greatly diminished, the steam which remains in the steam-chamber will be condensed, which will produce a partial vacuum, and cause a rapid descent of the water to fill the chamber.

In this way, and by this alternate application of steam-pressure to the water and the condensation of steam in the chamber B, the water will be caused to circulate rapidly through the fabrics, which are confined between the rack C and the top of the steam-chamber, and thereby cleanse them.

In fig. 2, the red arrows indicate the ascent and descent of water in the boiler during the operation of cleansing fabrics. One of these arrows indicates the water descending and passing beneath the flange *b* of the steam-chamber. This will take place provided an opening is made at the lower edge of said flange, but where the steam-chamber is made permanent in the boiler, all the water will circulate through the tubes D, first ascending and then descending through these tubes.

Having described my invention, and its mode of operation, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the steam-chamber B, with its top *a*, sides *b*, tubes D, and cross-bars E, with the wash-boiler A, provided with the shoulders F, rack C, and supports G, in the manner and for the purposes herein described.

FREDERICK JUDSON.

Witnesses:

JAMES H. MELICK,

THOS. HOUGHTON.