

(No Model.)

N. J. TILGHMAN.  
LOW WATER ALARM.

No. 459,919.

Patented Sept. 22, 1891.

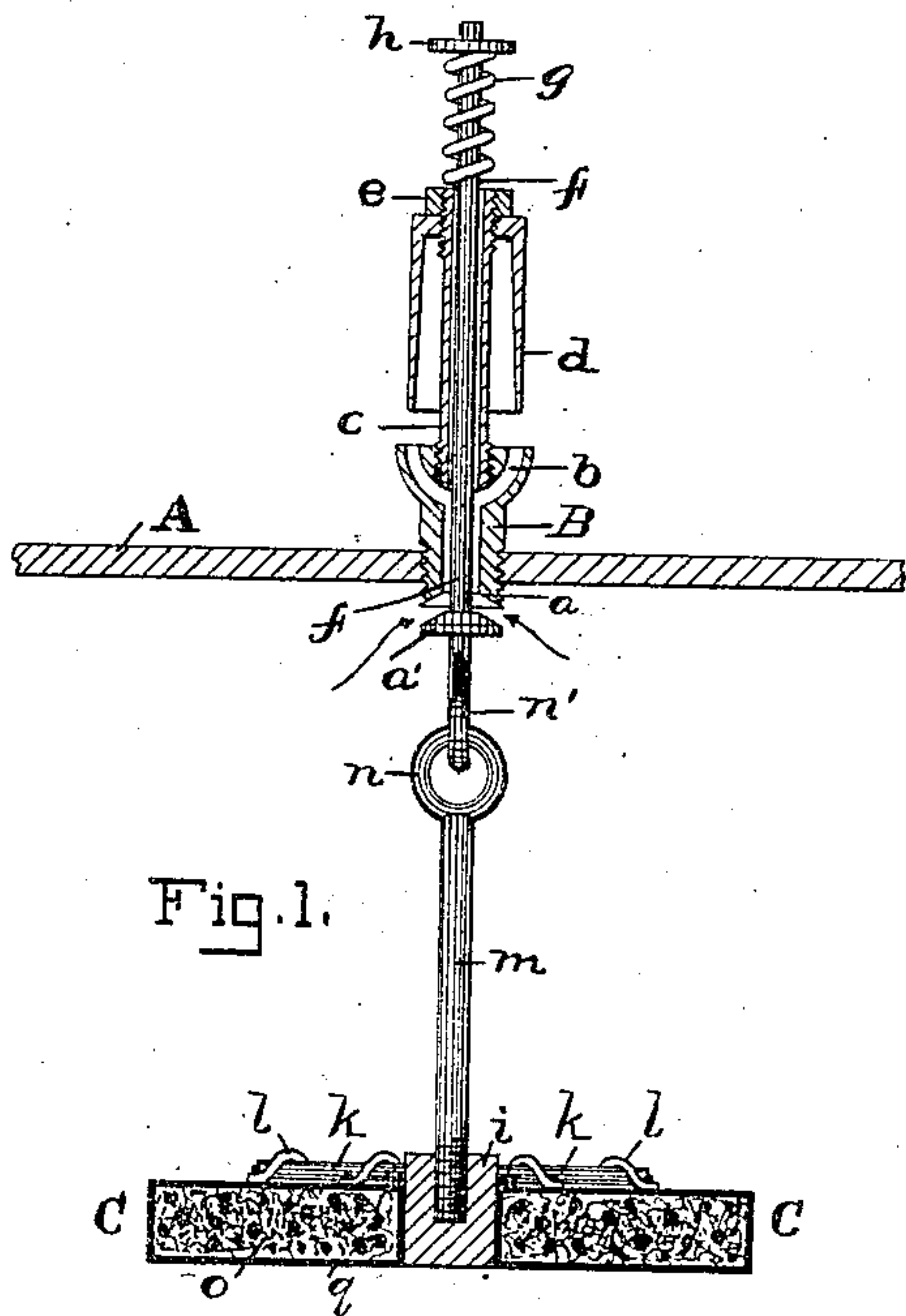


Fig. 1.

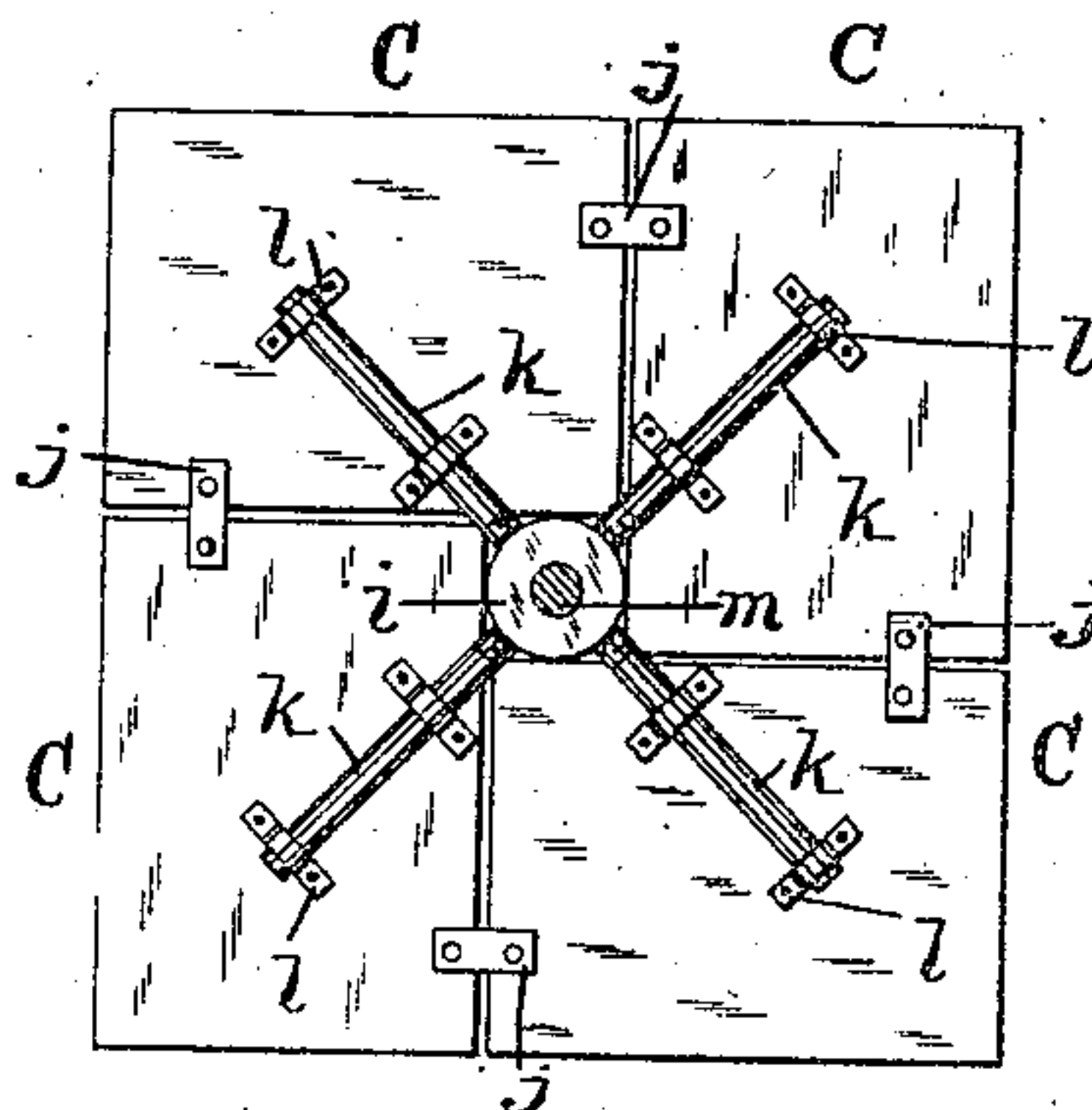


Fig. 2.

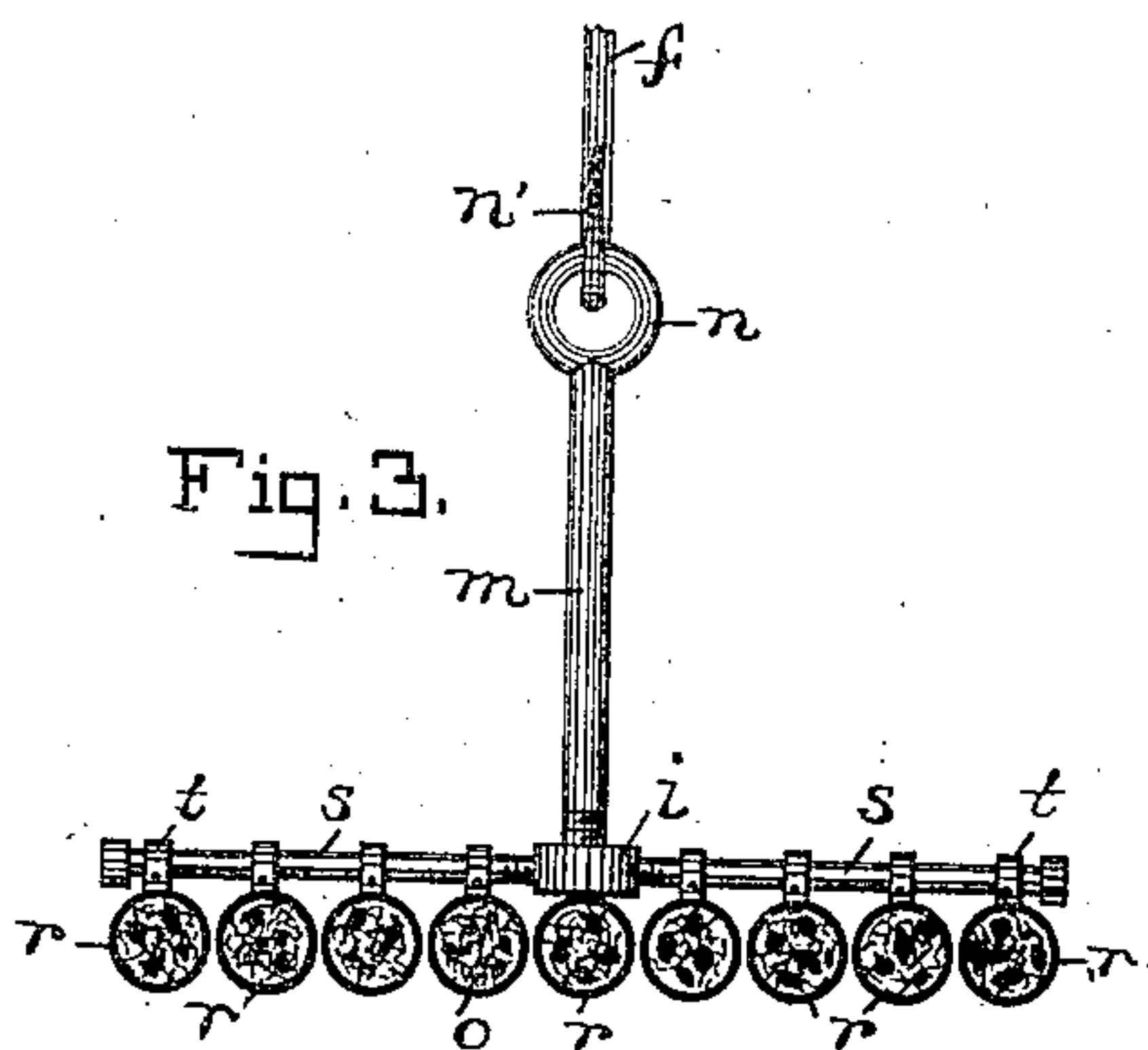


Fig. 3.

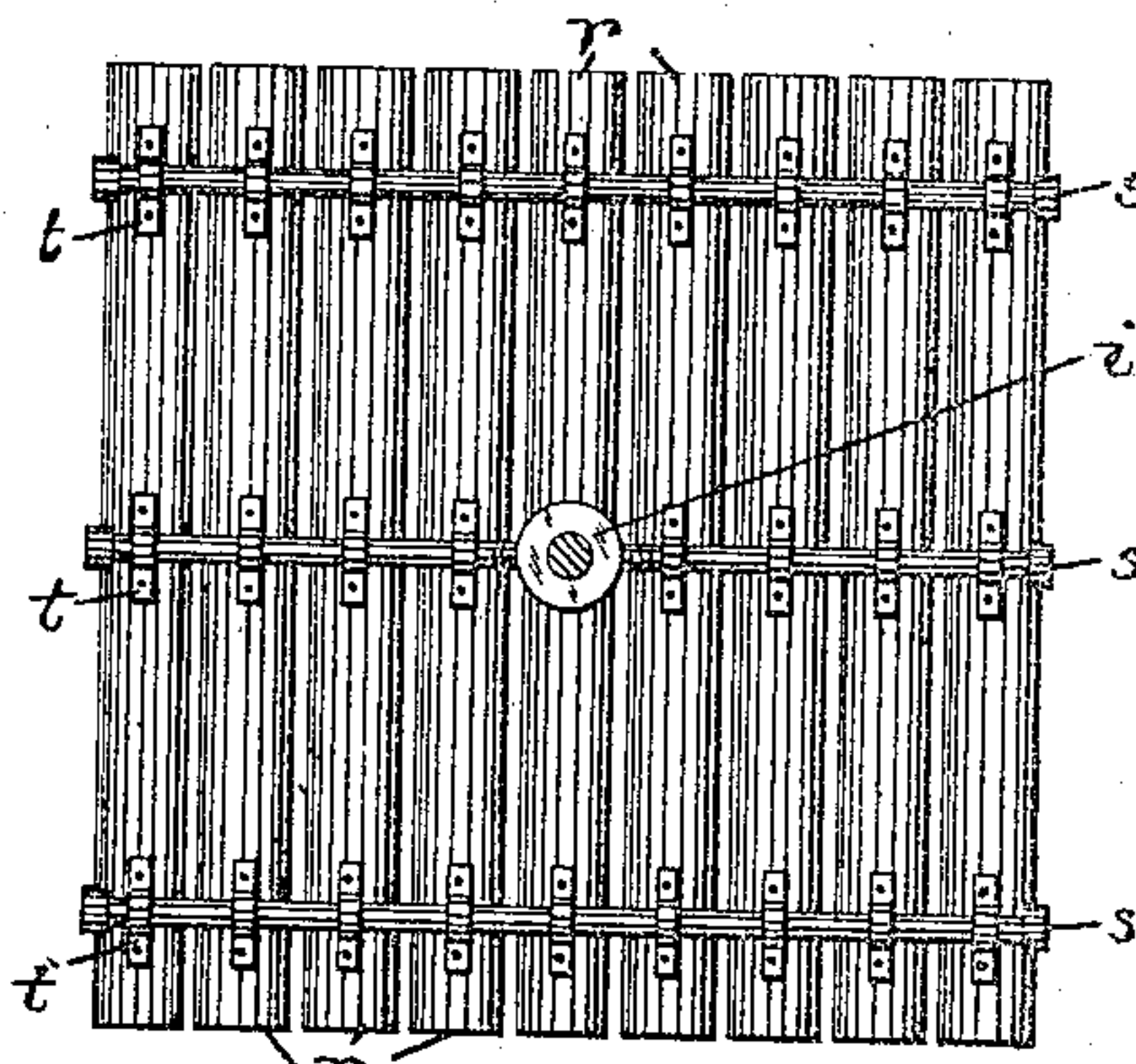


Fig. 4.

WITNESSES:

Otto H. Ehlers.  
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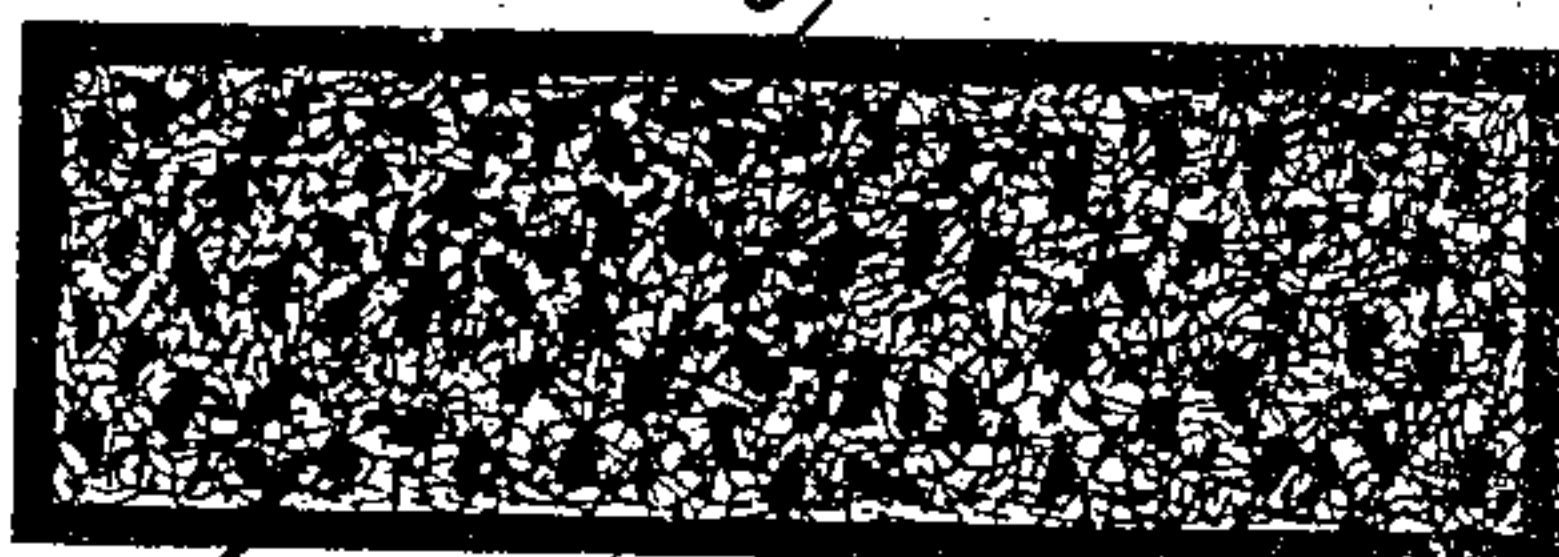


Fig. 5.

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# UNITED STATES PATENT OFFICE.

NOAH J. TILGHMAN, OF PALATKA, FLORIDA.

## LOW-WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 459,919, dated September 22, 1891.

Application filed May 21, 1891. Serial No. 393,570. (No model.)

*To all whom it may concern:*

Be it known that I, NOAH J. TILGHMAN, a citizen of the United States, residing at Palatka, in the county of Putnam and State of Florida, have invented certain new and useful Improvements in Low-Water Alarms for Boilers, of which the following is a specification.

This invention relates to an improved low-water alarm for steam-boilers; and the object in view is to combine with a suitable alarm a float which can be readily inserted through the man-hole of the boiler and at the same time will have sufficient size and weight to properly operate the whistle-valve.

To this end the invention consists in the novel features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, which illustrate the invention, Figure 1 represents a sectional view of the apparatus; Fig. 2, a top view of the float; Fig. 3, a sectional view of a modified form of float; Fig. 4, a top view of the same, and Fig. 5 a detail sectional view of one of the float-sections.

The letter A designates the top of the boiler, and B a bushing screwed into the same and having at its lower end inside the boiler a valve-seat *a*, and at its upper end an enlarged part with an annular passage *b* leading from the bore of the bushing out of the top of the same. In the top of this bushing is screwed a hollow post *c*, the upper end of which is threaded and has screwed upon it a whistle-bell *d*, the lower circular edge of which is over the annular passage *b* in the bushing. It will be observed that the whistle is in this way provided. A lock-nut *e* is screwed on the hollow post *c* above the whistle-bell to secure the latter fixedly in position. A stem *f* extends through the bushing B and hollow post *c*, and has upon its lower end a valve *a'* to close the lower end of the bushing. The stem projects above the hollow post *c*, and a spiral spring *g* is placed upon it. This spring bears against a shoulder *h* on the end of the valve-stem and serves to keep the valve up to its seat when there is no steam-pressure in the boiler to act upon said valve. The stem passes loosely through the bushing B,

whereby steam may pass around it through the bushing to the whistle.

The float comprises a number of sections C, each of which is small enough to be readily inserted through the man-hole of the boiler. These sections, after being introduced severally into the boiler, are fitted together around a circular center piece *i*. The sections of the float are secured together by straps *j*, connecting their adjacent edges, and they are connected to the center piece *i* by rods *k*, which pass under straps or loops *l*, secured on the upper side of the float-sections and screw into the said center piece, as shown. A vertical supporting-rod *m* is screwed into the center piece and has at its upper end an eye *n*, which fits over a hook *n'* on the lower end of the valve-stem *f* below the valve.

I make the sections of the float of a composition of lead and asbestos (designated in the drawings by the letter *o*) and cover this composition with a copper jacket *q*. The purpose of this construction is to provide a float which will not be affected by the heat of steam and water in the boiler and which will have sufficient weight to overcome the spring *g* and open the valve *a'* and at the same time be light enough to float. It will be obvious that by properly proportioning the lead and asbestos, one being heavy and the other light, the desired weight can be arrived at. The float is intended to have about four-fifths the weight of its bulk in water. The purpose of the copper jacket *q* is to prevent water getting to the asbestos and soaking the same, which would obviously increase the weight of the float.

The float, as shown in Figs. 1 and 2, is made of four rectangular sections, which fit together around the center piece *i* and form a square float.

In Figs. 3 and 4 a modified form of float is shown, which comprises a number of tubular sections. The copper jackets are in the form of pipes *r*, and the lead and asbestos composition fills them. These tubular sections are arranged parallel to each other and are connected by rods *s*, extending through loops or straps *t*, secured to the pipes. The central rods screw into the center piece as in the other construction.



The operation of the device is as follows: The float is so hung that when the water is at the proper height in the boiler the valve  $a'$  is closed. The spring  $g$  serves to keep it tight to its seat in the absence of steam-pressure. When the water falls to the low-water level, the float drops and by its weight pulls open the valve  $a'$  against the tension of the spring  $g$ . Steam instantly rushes through the bushing B to the whistle and an alarm is sounded, giving notice of the fact that the water is low in the boiler.

It will be seen that by my peculiar construction of float in separable sections I am enabled to introduce it through the man-hole of the boiler and yet, when the sections are fitted together, have a float of sufficient size to operate the whistle-valve effectively. By the material of which the float is made it is given sufficient weight to readily overcome the spring which holds the valve to its seat.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a low-water alarm for boilers, the com-

bination, with a whistle adapted to be secured to the shell of the boiler and provided with a depending rod, of a center piece secured to the lower end of the rod, radially-projecting rods secured to the center piece, and sections removably secured to the rods and to each other, substantially as described.

2. A float for low-water alarms, consisting of a center piece, rods secured to and projecting radially from the center piece, a series of sections, straps for securing the sections to the rods and to each other, and a vertical rod projecting upward from the center piece.

3. A float for low-water alarms, consisting of a center piece, rods projecting radially therefrom, a series of rectangular sections below the rods, straps for securing the sections to the rods and to each other, and a supporting-rod.

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

NOAH J. TILGHMAN.

Witnesses:

COOK CARLETON,  
JOSEPH H. SPAFFORD.