

(No Model.)

S. SMITH.

FIRE AND WATER INDICATOR FOR STEAM BOILERS.

No. 432,773.

Patented July 22, 1890.

FIG. 1.

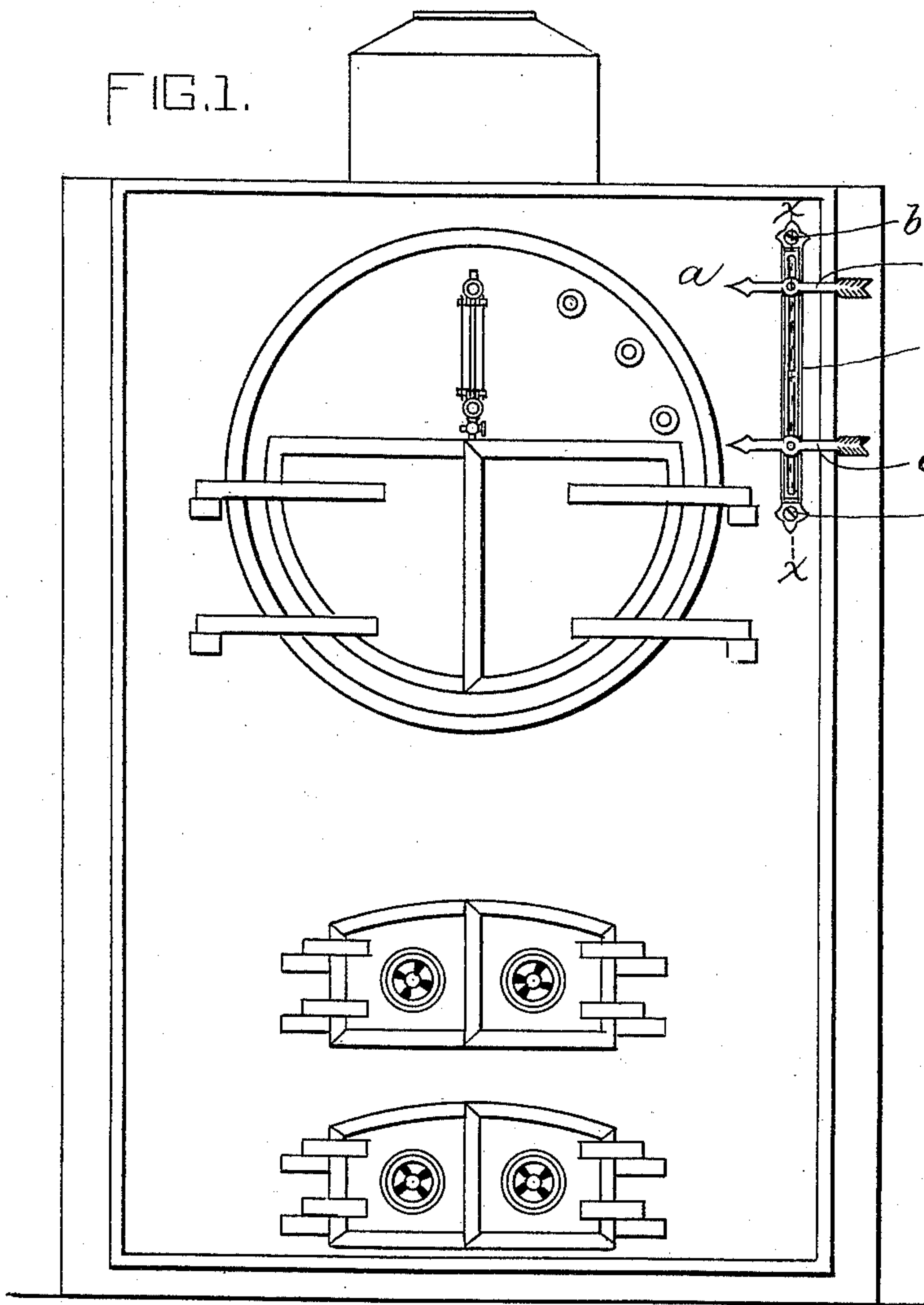


FIG. 2.

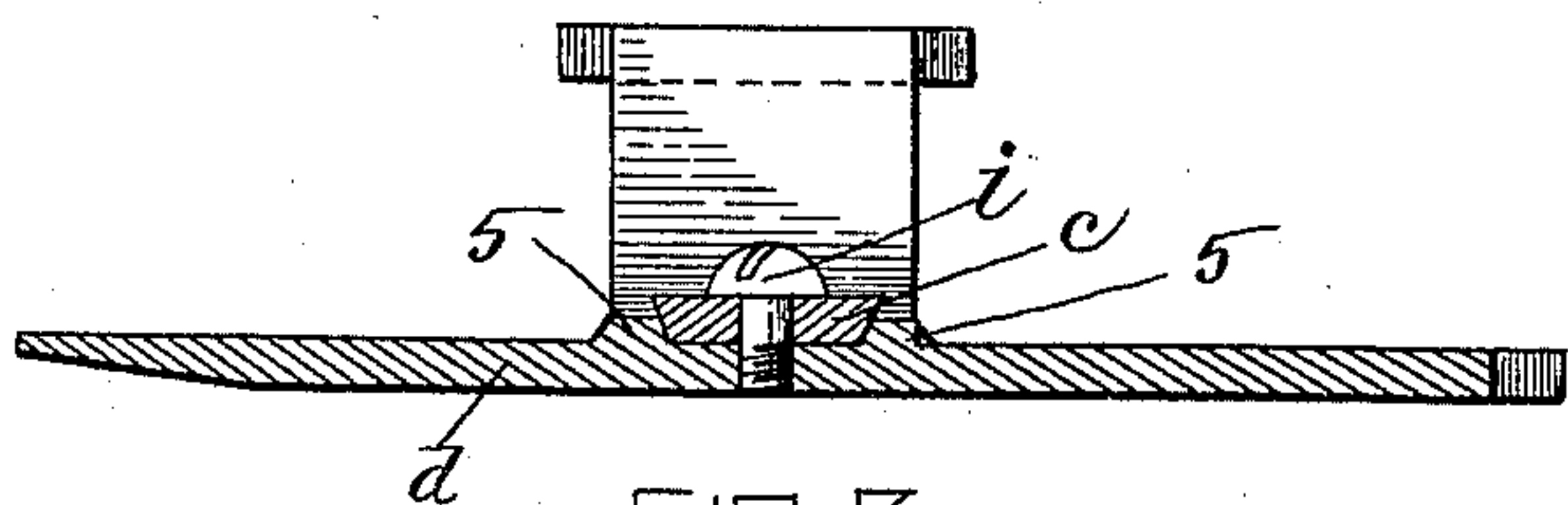
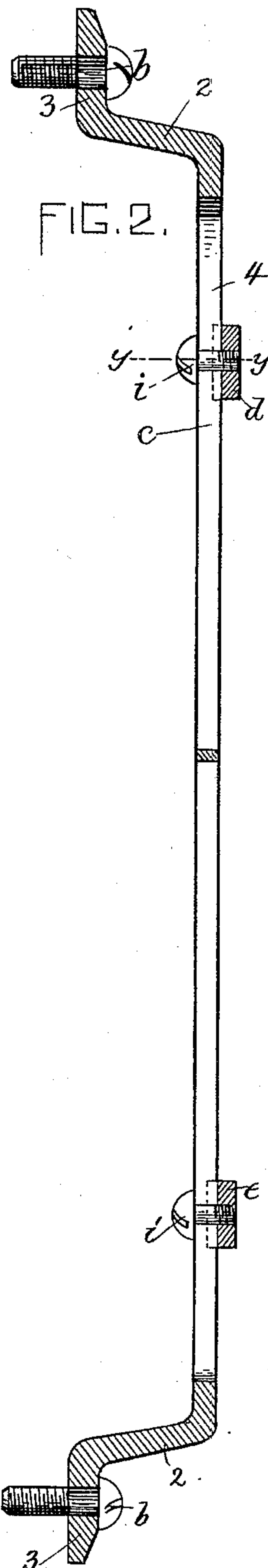


FIG. 3.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

SIDNEY SMITH, OF CAMBRIDGE, MASSACHUSETTS.

## FIRE AND WATER INDICATOR FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 432,773, dated July 22, 1890.

Application filed June 29, 1889. Serial No. 316,059. (No model.)

*To all whom it may concern:*

Be it known that I, SIDNEY SMITH, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Fire and Water Line Indicators for Steam-Boilers, of which the following is a specification.

This invention has for its object to provide improved means for indicating the proper height of the water-line of a steam-boiler, and, if desired, the height of the fire-line. It is found in practice that the height of the water-line of a steam-boiler for effective work with economy of fuel can only be determined by a test in each case, the proper height varying in different boilers. I have found that of two tubular boilers of the same diameter and length and connected with the same chimney one required two and a half inches of water above the tubes, while the other required eight inches, and neither boiler worked satisfactorily with the water-line at any other height.

My invention consists, first, in a water-line indicator comprising a holder adapted to be attached in a vertical position to a boiler-head, and an arm or indicating device which is vertically adjustable on said holder and is provided with means for positively securing it at any point to which it may be adjusted, so that when the holder is attached to the boiler the said arm may be adjusted to the point which is found by tests to be the proper water-line for the boiler and then secured at said point.

The invention also consists in another indicator applied to said holder at a lower point to indicate the fire-line. Said arms are preferably provided with distinguishing marks or characteristics, such as the words "water-line" and "fire-line;" or they may be differently colored or distinguished each from the other in any suitable way, as by painting the one blue and the other red.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a front end elevation of a boiler-casing provided with my improved indicator. Fig. 2 represents a section on line *x x*, Fig. 1. Fig. 3 represents a section on line *y y*, Fig. 2.

The same letters of reference indicate the same parts in all of the figures.

In the drawings, *a* represents the front plate

of the casing of a tubular boiler, to which is attached by screws *b b* the holder *c*, which supports the water-line indicator *d* and the fire-line indicator *e*. Said holder is preferably composed of a plate, which is bent at its ends to form legs 2 2, having ears 3 3, which rest on the casing *a* and are secured thereto by the screws *b b*. The main portion of the plate is offset from the casing by the legs 2 2 and is provided with a longitudinal slot 4. The indicators *d e* are here shown as arrow-shaped arms having projections 5 5 formed to bear on the edges of the holder *c*, and secured to the holder by screws *i* inserted in the backs of the said projections, the heads of the screws bearing against the rear side of the holder at opposite sides of the slot 4. The arms *d e* are thus held at right angles with the holder *c*, and are enabled to be adjusted to any points on the holder by loosening the screws *i* and positively held at any points to which they may be adjusted by tightening said screws.

The importance of this adjustable water-line indicator, adapted to be firmly secured at any desired height on or in suitable relation to a boiler, cannot be overestimated, not only for safety, but also for economy and power. The extent to which the slotted body of the plate is set off from the casing *a* is such as to make the indicators *d e* stand out from the casing as far as the gage-tube *p* stands out, so that said indicators point directly at the gage-tube.

I claim—

The improved indicating device composed of the longitudinally-slotted plate constructed for attachment to a boiler-casing or other fixed support in proximity to the boiler-front, and the transverse arms of different indicating character, adapted to be secured on the plate, one at the fire-line and one at the water-line of the boiler, and provided with set-screws passing through the slot in the plate, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 24th day of June, A. D. 1889.

SIDNEY SMITH.

Witnesses:

C. F. BROWN,

A. D. HARRISON.