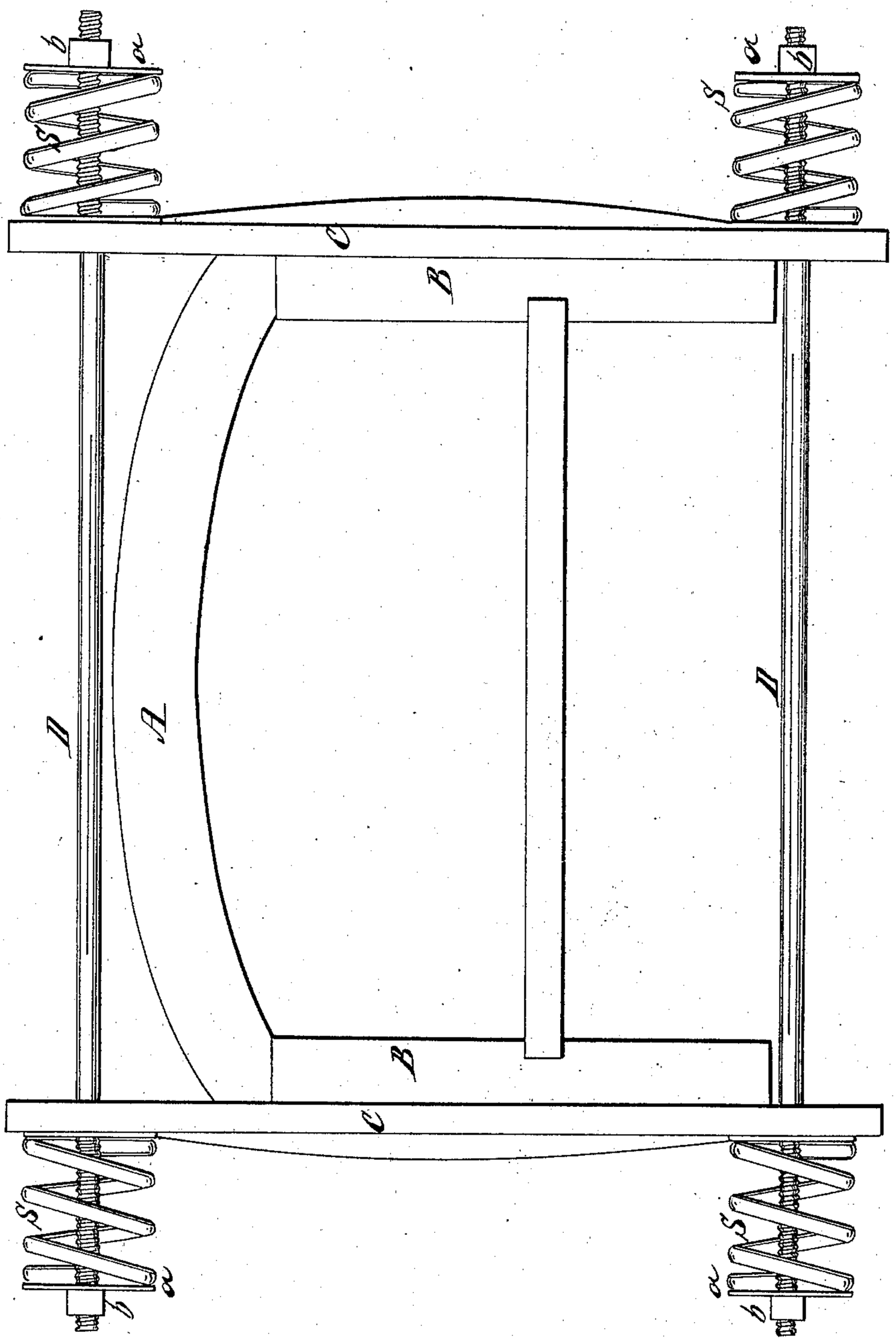
# R. Wells,

## Protecting Furnaces,

No. 15,832. Patented Sep. 30, 1856.



# UNITED STATES PATENT OFFICE.

RICHARD WELLS, OF BALTIMORE, MARYLAND.

## IMPROVEMENT IN FURNACES.

Specification forming part of Letters Patent No. **15,832**, dated September 30, 1856.

*To all whom it may concern:*

Be it known that I, RICHARD WELLS, of the city of Baltimore and State of Maryland, have invented a new and useful Improvement in Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, forming part of this specification, which represents a front elevation of a furnace, showing the rods and supporting-plates.

This invention is designed to remedy a defect in the construction of furnaces with rigid tie-rods connecting the side supports, whereby the expansion of the furnace material bends or ruptures the supporting-plates, so as on contraction to leave the masonry without support, and thus render the arch liable to fall in.

The invention consists in placing between the outer surface of the supporting-plates and the nuts of the tie-rods strong springs, either spiral or made up of a series of plates, so that the requisite degree of pressure may at all times be exerted by the supporting-plates against the masonry of the furnace, as will be hereinafter set forth.

In the drawing, A is the arch of the furnace, and B the sides thereof. C C are the supporting-plates, united by tie-rods D D. Between the outer faces of the supporting-plates, and washers *a*, inside of nuts *b*, are springs S, of sufficient strength to exert the requisite pressure against the supporting-plates. These springs may be spiral or of any other form suitable. This construction prevents the pressure against the masonry from being relaxed by expansion of the tie-rods, and also prevents the pressure due the expansion of the masonry from rupturing the supporting-plates, in either of which cases the necessary support of the arch is removed and the crown falls. This liability to injury is altogether removed by the elasticity of pressure exerted by the tie-rods, as set forth above. The number of tie-rods will depend on the depth of the furnace, as in ordinary constructions.

I claim—

In the construction of furnaces, the introduction of springs between the supporting-plates and the fastenings of the tie-rods, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

RICHD. WELLS.

Witnesses:

GEO. PATTEN,

JOHN S. HOLLINGSHEAD.