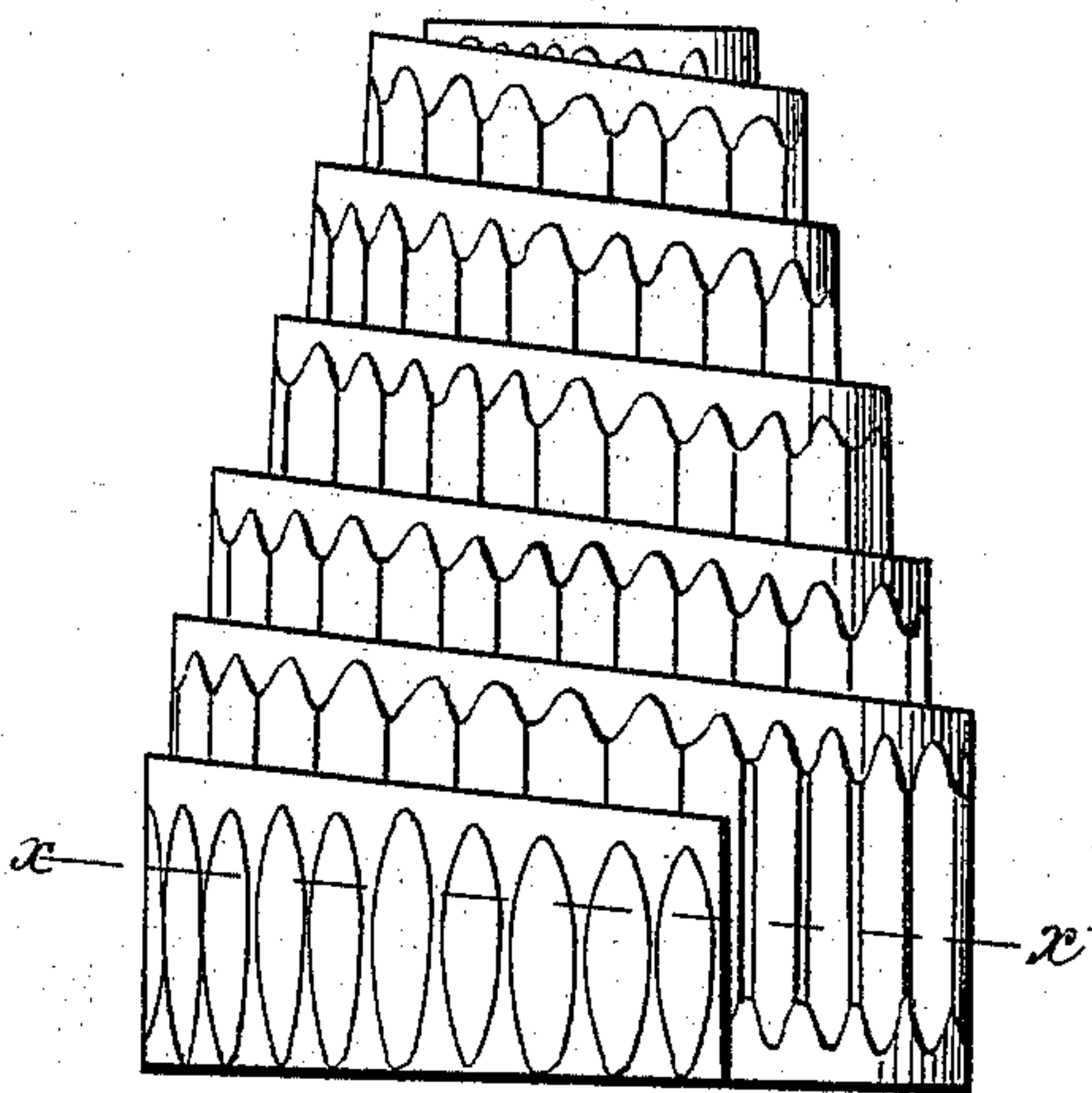


R. VOSE.  
Car Spring.

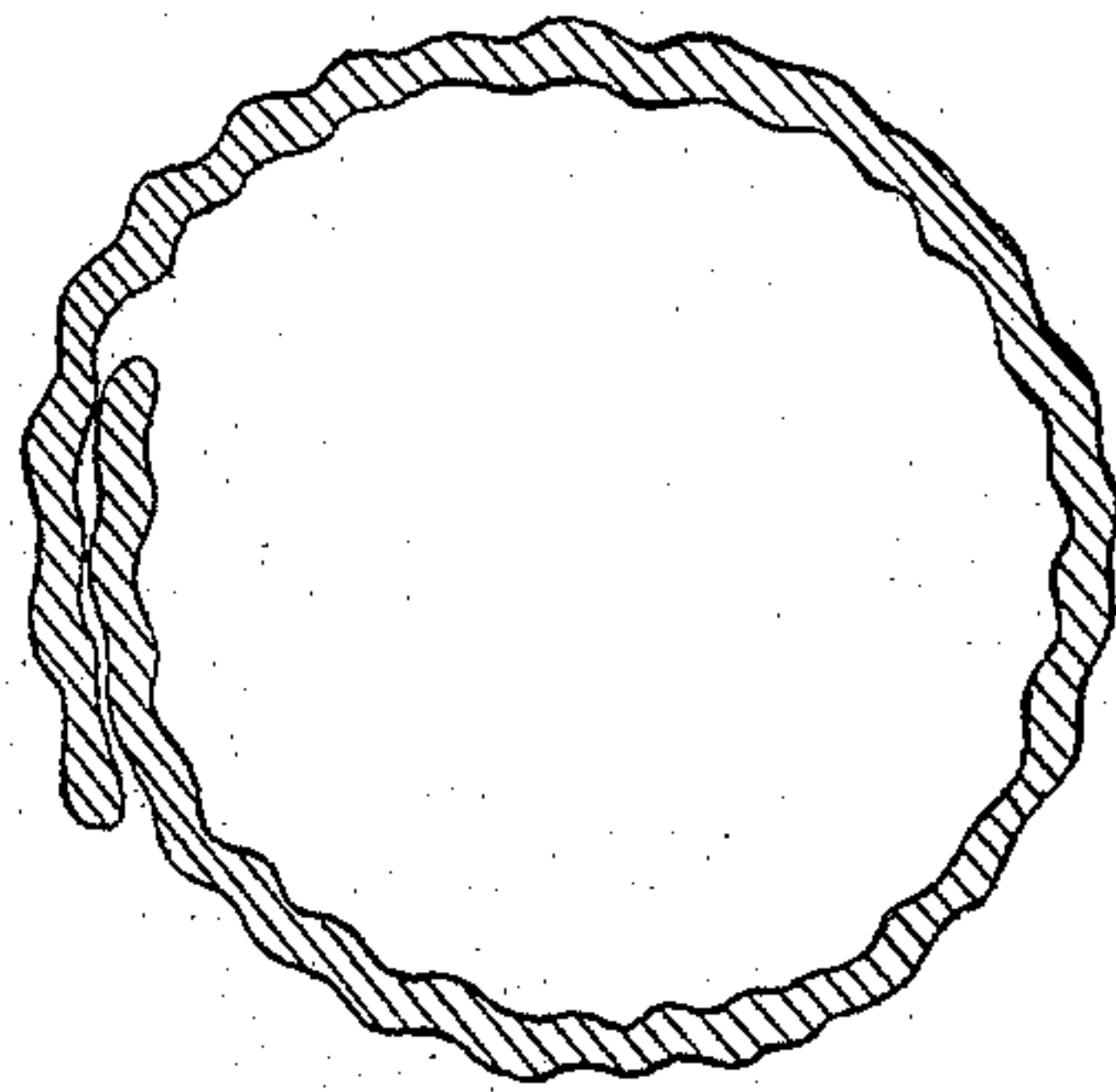
No. 68,133.

Patented Aug. 27, 1867.

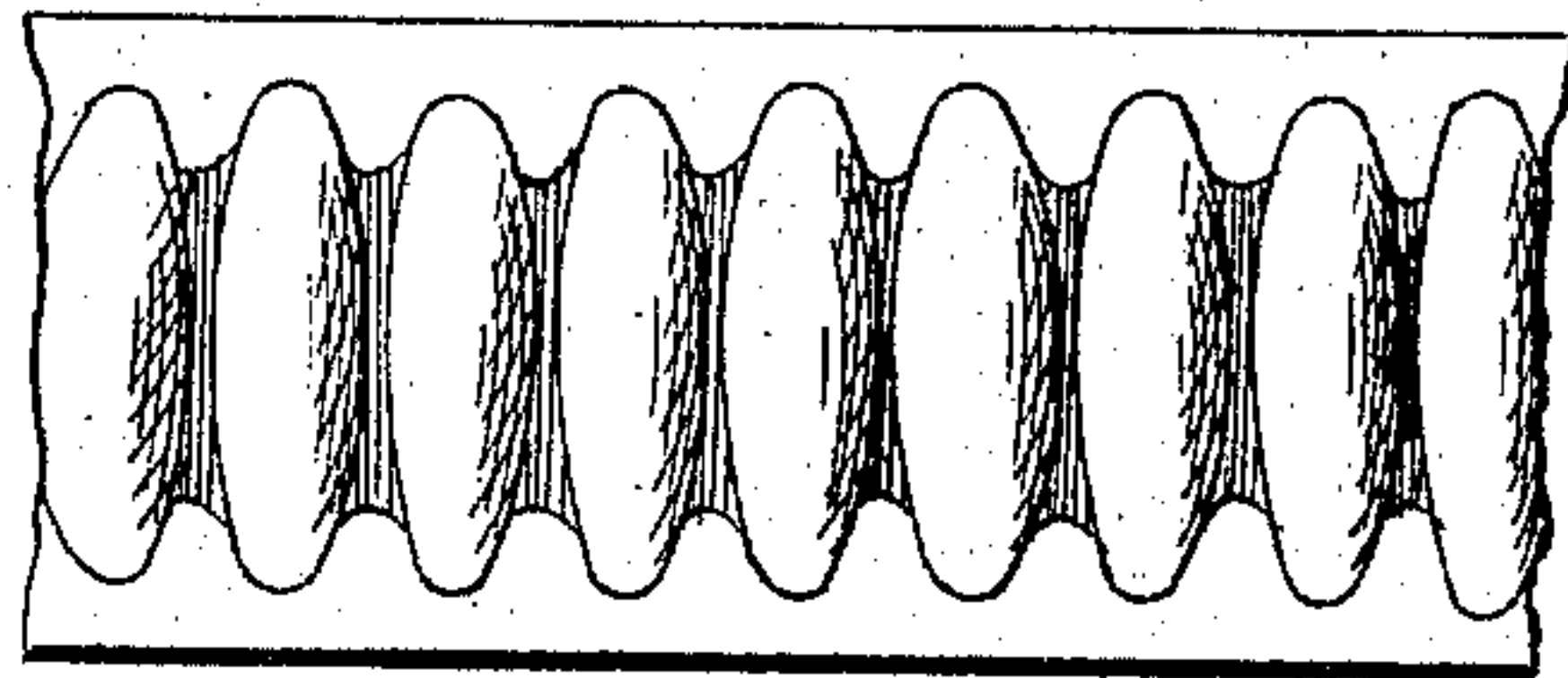
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses:

*H. H. Young*  
*Chas. M. Fay*

Inventor:

*Richard Vose*  
By *Dana A. Burr* atty

# United States Patent Office.

RICHARD VOSE, OF NEW YORK, N. Y.

*Letters Patent No. 68,133, dated August 27, 1867.*

## IMPROVED CAR-SPRINGS.

*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, RICHARD VOSE, of the city, county, and State of New York, have invented a new and useful improvement in Volute Springs; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation.

Figure 2, a transverse section in the line *x x* of fig. 1.

Figure 3, a plan illustrating the form of corrugations in the metallic before it is coiled into the spiral form; and

Figure 4 is an edge view of the crimped bar, with its corrugations illustrated by dotted lines, showing the depth thereof.

The nature of my invention consists in the construction of a volute spring out of a metallic bar having straight edges, but which is otherwise centrally and transversely corrugated, crimped, or fluted, or which is simply transversely corrugated.

In all volute springs formed of straight or grooved bars, as heretofore shaped and constructed, the necessary proximity of the coils in the spring renders it a difficult matter to obtain an even temper of the metal, from the fact that when inserted into the tempering bath the oil or liquid cannot freely pass between the coils, and does not reach nor act uniformly upon every portion of the spring. The object of my invention is to obviate this difficulty, and at the same time produce, with the smallest possible weight of metal, the strongest and most effective spring.

To effect this object I pass a suitable metallic bar or strip between crimping rollers, so formed as to swage the central portion of the bar into transverse corrugations, tapering at either end to a point near to the edge of the bar, so as to leave the same straight. The corrugations are formed by an indentation of the bar alternately on one side and the other, so that the depth or height of these corrugations shall not be greater than the original thickness of the bar, nor project beyond its edge, which retains its original thickness. The weakening of the bar, incident to the continuation of the channels or creases to the edge, is thus avoided.

The peculiar form which I impart to the bar by means of these transverse corrugations will very materially increase the strength of the spring without adding to its weight, whilst the corrugations open channels for the free passage of the liquid in the tempering bath between each coil, so that the temper of the entire spring shall be uniform.

Although I prefer, for the reasons stated, the form of corrugations which terminate within the edges of the spring, I contemplate crimping the bar transversely from edge to edge, as involving, to a certain extent, the novel and useful features of my invention.

The crimped bar may be coiled into the volute form upon a "Gardiner" coiling machine, or be rolled into a spiral coil upon a simple mandrel in a lathe, and subsequently forced into the necessary pyramidal form by means of a suitable conical punch and anvil.

Having thus fully described my improvement in volute springs, I claim as new, and desire to secure by Letters Patent—

A volute or spirally-coiled spring, formed of a metallic bar or strip, transversely crimped or corrugated, substantially in the manner herein set forth.

The foregoing specification of my improved fluted volute spring signed by me this      day of June, A. D. 1867.

RICH'D VOSE.

Witnesses:

ALBERT L. BUTLER,  
JAS. GILLET.