

R. Montgomery,
Girder.

No. 87,278.

Patented Feb. 23. 1869.

Fig. 1

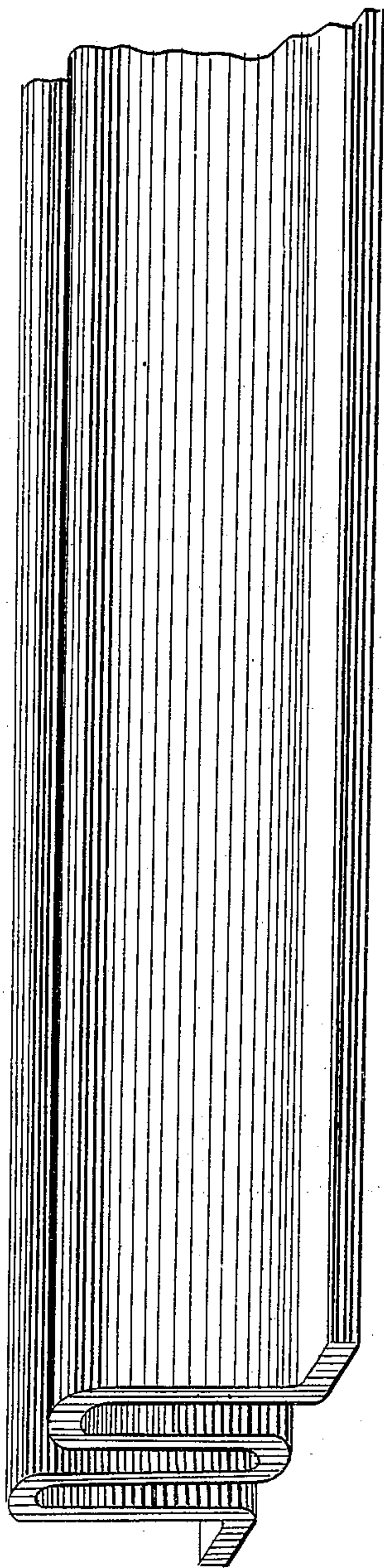


Fig. 4

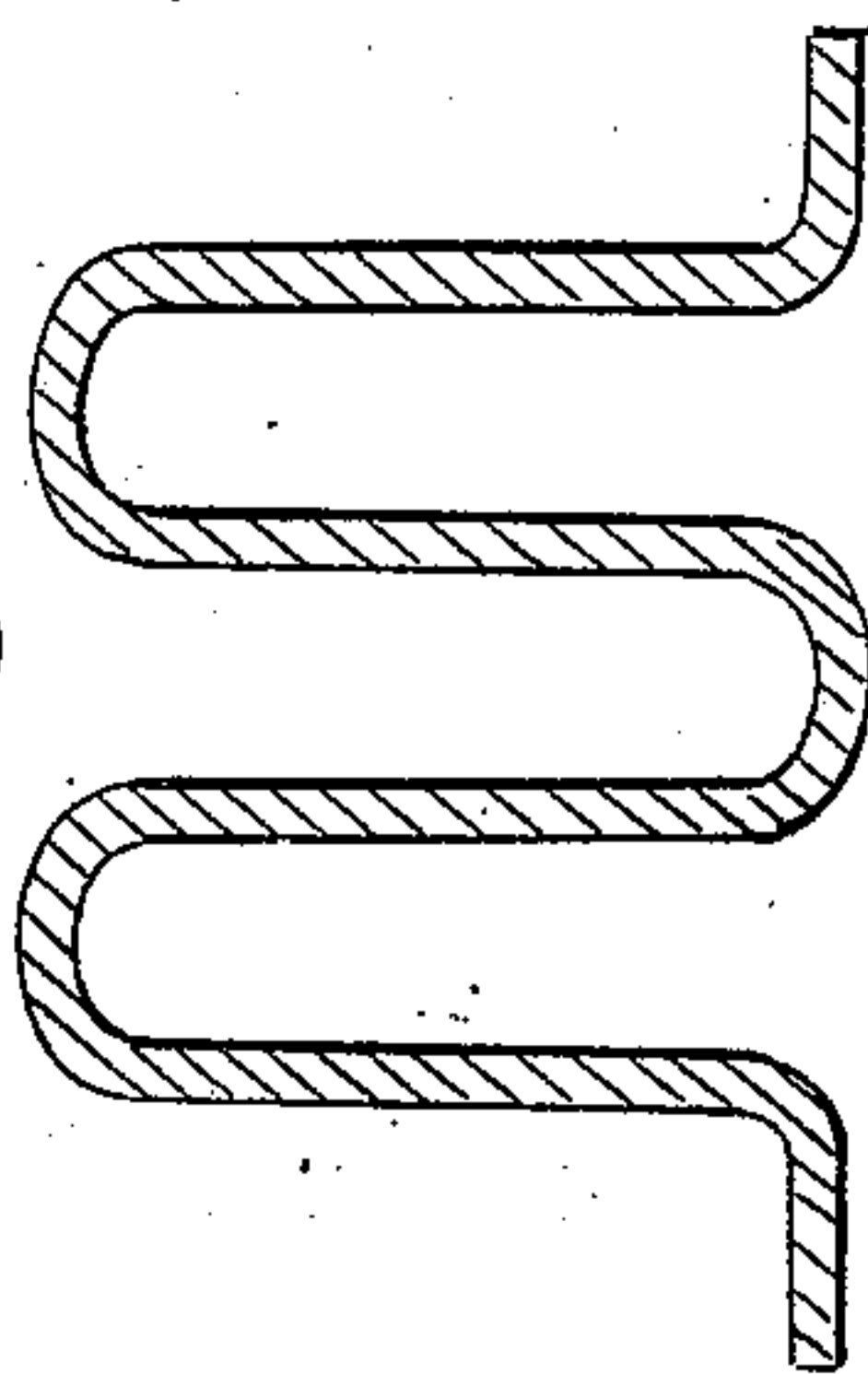


Fig. 3

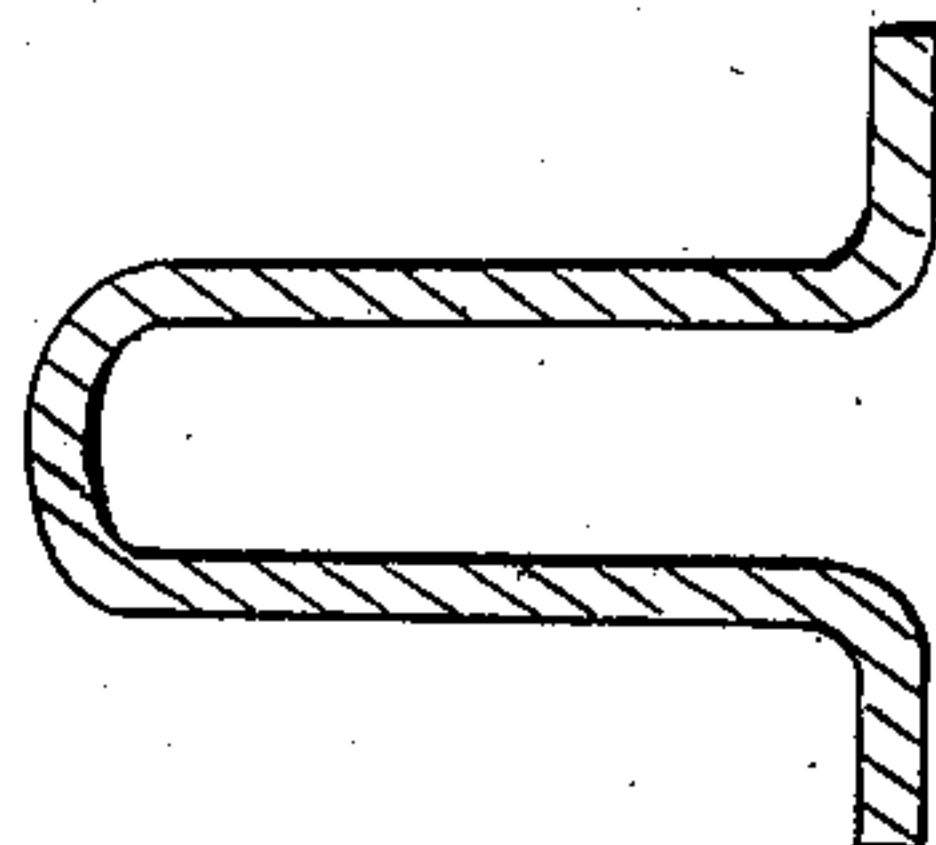
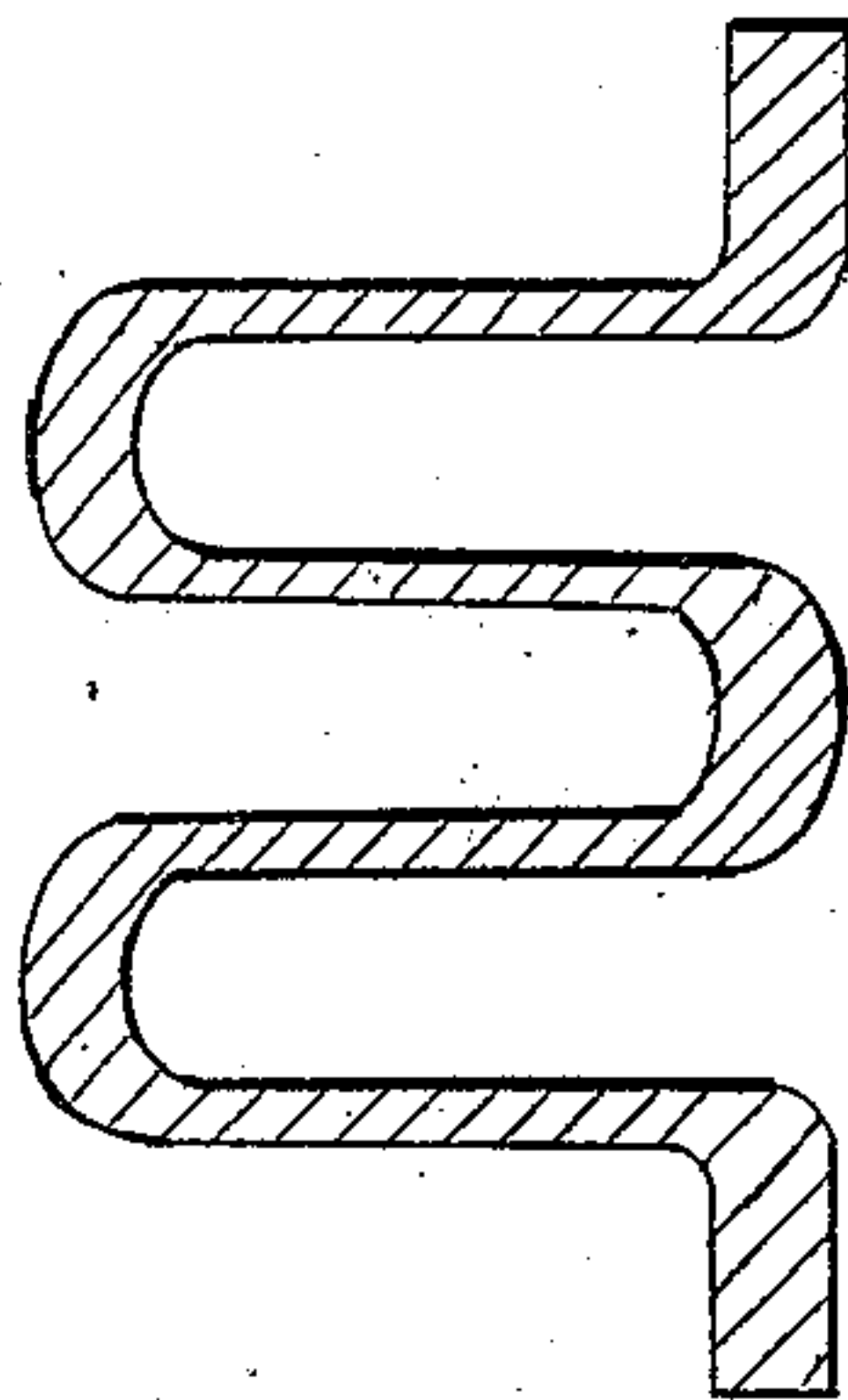


Fig. 2



WITNESSES
W. H. Rome
David A. Burr

INVENTOR
R. Montgomery



RICHARD MONTGOMERY, OF NEW YORK, N. Y.

Letters Patent No. 87,278, dated February 23, 1869.

IMPROVED STEEL BEAM.

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 MONTGOMERY, of the city, county, and State of New York, have invented a new and useful Improvement in Corrugated or Folded Steel Bars or Beams; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of a portion of my improved corrugated steel bars or beam;

Figure 2, a transverse section thereof; and

Figures 3 and 4, transverse sections of modified forms of my folded or corrugated steel bars or beams.

The nature of my invention consists in the production of a longitudinally-corrugated or folded bar or beam of steel, by passing a pile or bloom of steel between suitable rolls, constructed specially for the purpose, whereby I unite the advantages to be derived from the great strength of this metal, with the important advantages found in a longitudinally-corrugated or folded form thereof, in supporting weight or resisting strain.

It is well known that a bar or beam of metal, bent or rolled to present one or more longitudinal, flat, and parallel sides, connected by inverted or uninverted arches, will possess the greatest amount of transverse strength, and consequently support a greater amount of weight or pressure, in comparison with its own weight, than a bar or beam of any other form.

The object of my invention is to combine with this superior form and disposition of the metal, the superior advantages found in steel, and thereby produce a new article of manufacture and use, and herein consists its novelty, as heretofore all attempts to obtain this result have wholly failed.

My improved steel bars or beams are manufactured by rapidly passing a pile or bloom of steel, at a suitable temperature, successively through or between grooves or forming-spaces, between metallic rolls, whereby the bar is gradually but continuously reduced and shaped into the longitudinally-grooved, corrugated, or folded form desired.

I prefer, for general use, to make my bars with two or more folds, thickened at their arches, as illustrated in fig. 1; but I contemplate forming my steel corrugated beams of a uniform thickness of metal throughout, as shown in fig. 2, and also of a single fold, as shown in fig. 3, either thickened at the arches or made uniform.

In these improved steel bars, the fibres of the steel

are carried longitudinally, there can be no cross-grain therein, whilst the process of their manufacture tests the metal severely at every point, so that the least flaw, defect, or weakness therein, is at once apparent, whereas the corrugated bars heretofore used, made from sheet-metal more or less laminated, are without fibre, and not only lacking in tensile strength, but also subject to all the defects of the metallic plates from which they are constructed.

These steel bars are of singular value for railway-rails, as they possess not only immense endurance, but also such elasticity as to prevent almost entirely the rough shocks caused by the least unevenness in an iron rail, or in its support upon a roadway, which are so destructive not only to the rolling stock of the road, but to the rail itself.

Their elasticity also prevents them from spreading, as would be the case more or less with an iron rail of the same form, and hence increases the safety of the road.

The singular lightness of my improved bars, in comparison with their strength, is another most important and valuable feature thereof.

With greater elasticity, and far greater endurance, a corrugated bar of steel made, as herein described, will sustain a weight which would bend a wrought-iron bar of the same corrugated form one-third heavier, or of the ordinary rectangular form, of twice its weight. Hence these improved bars are especially adapted for the construction of elevated railways, where a reduction of the weight of the superstructure is of the greatest importance, as well as for use as beams in the construction of bridges, and for the support of floors and roofs in all manner of buildings.

The superior surface of the steel, presenting a film or coat which does not readily oxidize, increases its durability as compared with iron when exposed to the air, and offers an additional advantage in favor of the steel bar.

Having thus fully described my invention,

I claim, as a new article of manufacture, and desire to secure by Letters Patent—

A longitudinally-corrugated steel bar or beam, produced substantially as herein described.

Witness my hand, this 23d day of January, 1869.

R. MONTGOMERY.

Witnesses:

DAVID A. BURR,
WM. H. ROWE.