

R. Montgomery,
Making Corrugated Beams,
Nº 24, 229, Patented May 31, 1859.

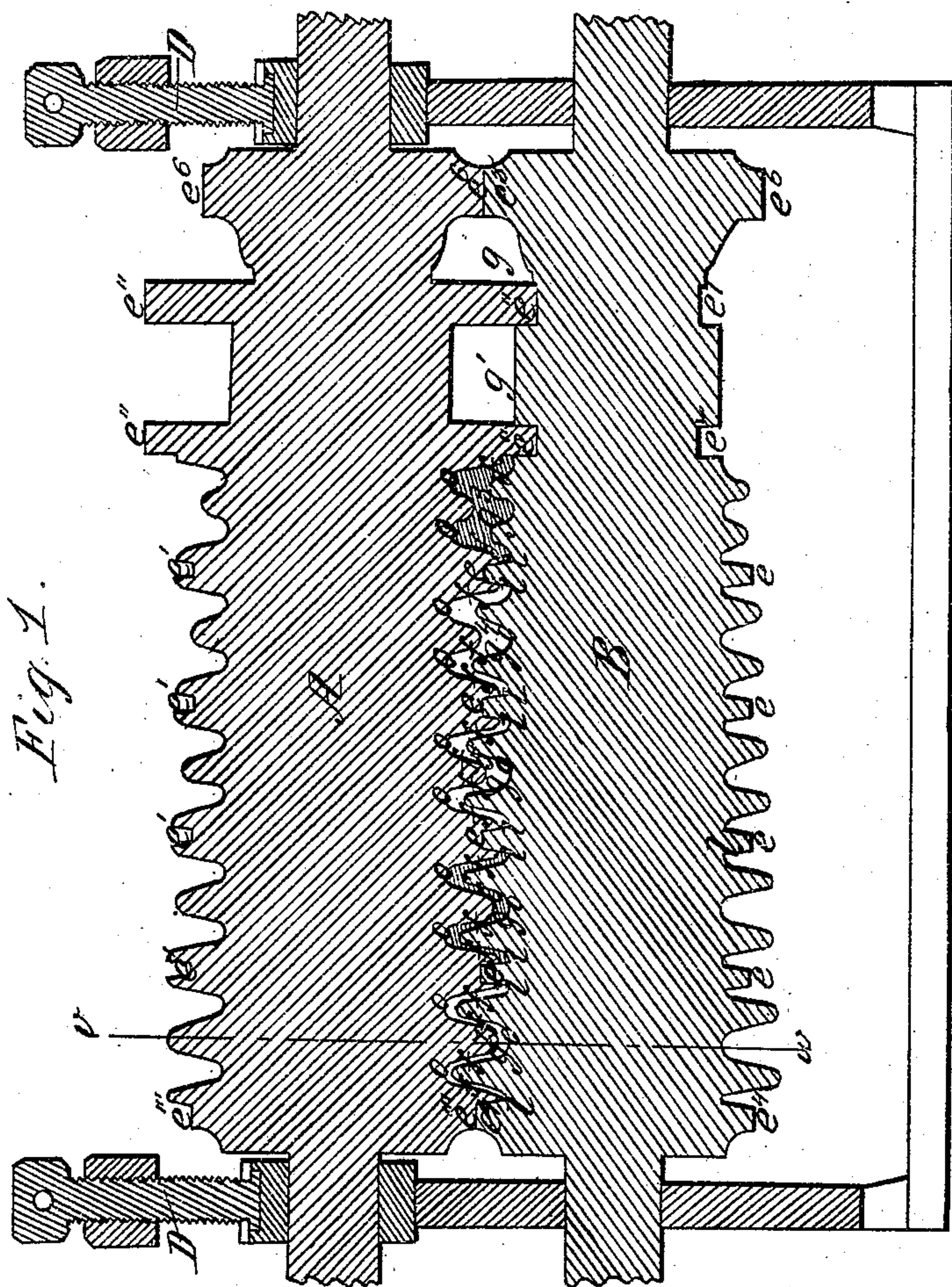
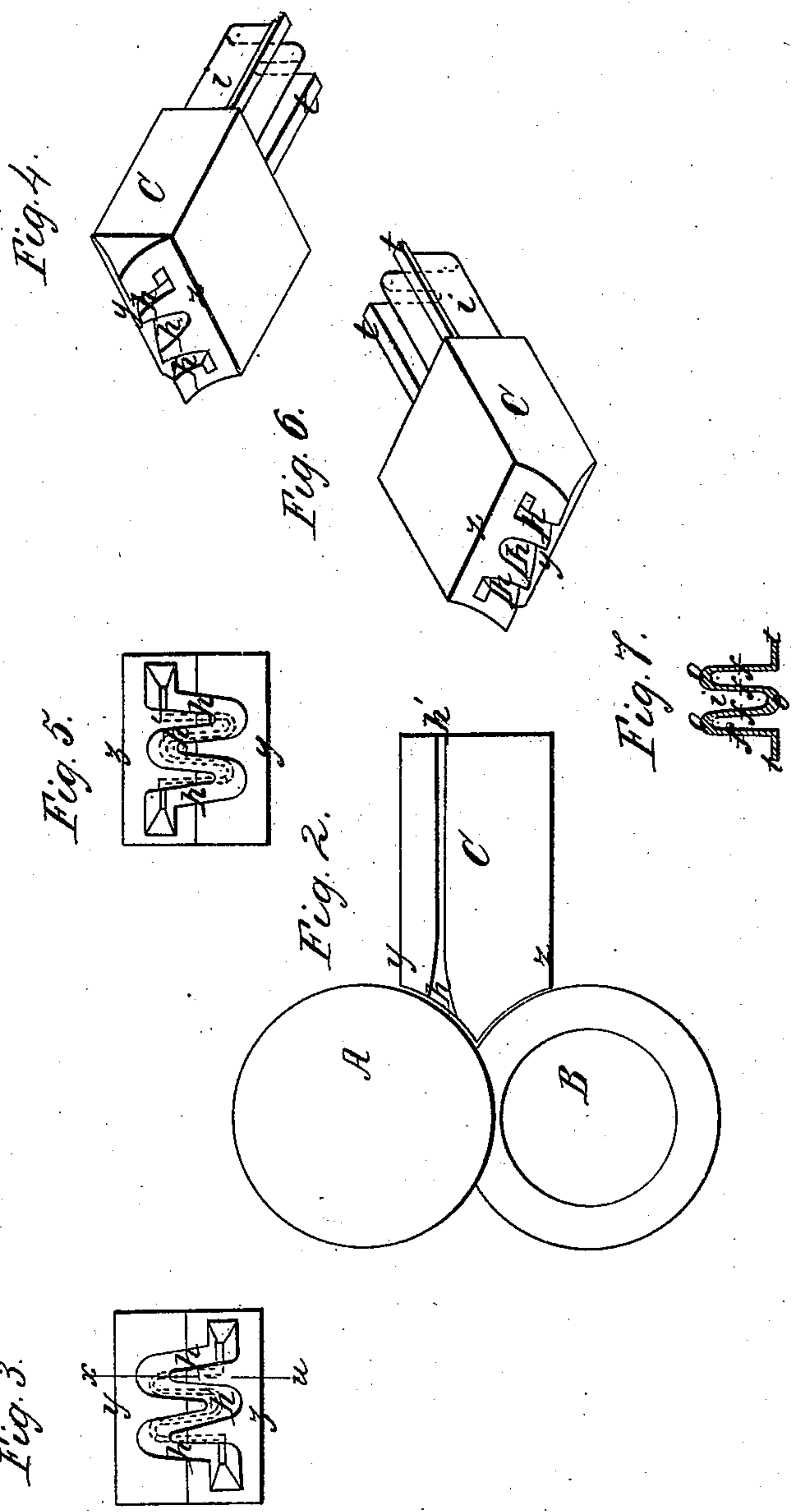


Fig. 1.

Witnesses;
Thos. H. Dodge
M. J. Montgomery

Inventor;
R. Montgomery

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UNITED STATES PATENT OFFICE.

RICHARD MONTGOMERY, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF CORRUGATED BEAMS.

Specification forming part of Letters Patent No. 24,229, dated May 31, 1859.

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 certain new and Improved Device for Manufacturing Corrugated or Laminated Iron Beams, designed to be used in constructing buildings, bridges, ships, &c., of which the following is a full and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, so as to enable others skilled in the art to make and use my invention.

Figure 1, Plate I, of the accompanying drawings represents a vertical section along the axes of the rollers; Fig. 2, Plate II, a vertical cross-section through the rollers A B on line *vw* of Fig. 1 and through the former C on the line *xy* in Fig. 3, which represents an end view of the former C detached. Fig. 4 represents a perspective view of the former C detached, *y'* being the top and *z* the bottom. Figs. 5 and 6 respectively represent an end view and a perspective view of the former C turned over. Fig. 7 represents a cross-section of the beam after it has passed through the former C.

The whole device consists of two rollers A and B of peculiar construction, arranged in suitable frames, one of the rollers above the other, and of a former C to be used in combination with said rollers, said former C being used in connection with the rollers A B, as represented in section, Fig. 2, where the pointed end *n* of the former C is shown in contact with the peripheries of the rolls A B, so that as the rolled beam is delivered from between the last forming-grooves in the rolls A B it passes directly into the flaring mouth *h h h* of the former C, and by which it is made to assume the form shown in Figs. 4 and 7.

The bearings of the upper roller A are made adjustable by means of set-screws D D for the purpose of properly adjusting the two rollers in relation to each other.

The roller A is provided with a series of projections and cavities of peculiar formation, which respectively correspond to a series of cavities and projections, with which the roller B is provided. When the outer rims *e''' e''* of the roller A and *e⁵ e⁴* of the roller B are in contact, or nearly so, then the projections or flanges *e'' e''* of the roller A will fit

into the cavities or recesses *e⁷ e⁷* in the roller B, and the projections *e* of the roller B will fit into the cavities *e'* in the roller A. The other projections and cavities of the two rollers will then be in such relative positions as represented in Fig. 1, forming a series of open spaces of peculiar form between the two rollers, (marked *g' g g³ g⁴ g⁵ g⁶ g⁷*), which correspond to the sections of the bar of iron in the successive stages of the operation through which it is passed to form the beam, hereinafter to be described. The sides of each of the projections *e* of the roller B are perpendicular where they approach the body of the roller, as seen at *l*, while their outer portions are slightly tapering, so as to fit the recesses *e'* in the roller A. These perpendicular portions *l* of the projections *e* are intended to form a square and smooth edge to the flanges *t* of the beam *i* when finished.

The bar of iron to be operated upon is successively passed through the cavities *g' g g³ g⁴ g⁵ g⁶ g⁷* in such a way that when the whole length of the bar has passed through one of the cavities it is passed onto and through the next one, &c. From the last cavity it passes into the mouth of and through the former C. It leaves the former C in its completed shape, as seen at *i*, Figs. 4, 6, and 7. The first hollow space *g'* through which the bar is passed is rectangular, as seen in Fig. 1. The second is of the shape represented at *g*. The space *g* is arranged at the end of the rollers and as near as possible to the journals of the rollers, because the transition from the shape *g'* to the shape *g* requires considerable more power than the preceding one or any of those which follow. The bar, after it leaves space *g'* and before it enters space *g*, is turned ninety degrees, and after it has passed through *g* and before it is inserted into space *g³* it is again turned ninety degrees. The object of the hollow spaces *g' g g³ g⁴ g⁵ g⁶ g⁷* is to work a rectangular bar into a shape the cross-section of which represents somewhat the letter M, while at the same time the relative form and arrangement of the spaces are such as to work the metal gradually thinner at the points *f f f* than at the points *o o o*.

The former C, into which the bar passes from *g⁷*, has a flaring mouth *h h* to receive the bar. The form of the mouth is of serpentine shape, as fully shown in the drawings,

the straight portions of which are slightly sloping, similar to the shape of the cavity *g*⁷. Farther back from where the bar enters the former C the mouth contracts, as shown in dotted lines at *h'*, and the straight portions of the serpentine become vertical, with horizontal flanges at the two ends of the serpentine corresponding to the final shape of the bar, as seen at *i t t*, Figs. 4, 6, and 7.

The object of this invention is designed to facilitate the manufacture of the corrugated beams patented to me on the 25th of September, 1855, and that, too, from a rectangular bar of iron, and thus save the expense and trouble of rolling the iron into sheets prior to its being made into my beams.

It will be observed that by preserving the flaring of the parts *f f f* until the rolling is completed a more perfect finish is given to the beam, owing to the uniform pressure which is thus applied to the surface of the beam, while its passage through and between the rollers is rendered more sure and even, owing to the same fact.

From the foregoing it will be seen that beams can be manufactured according to the plan heretofore patented to me, as aforesaid, from the crude bar of iron, and consequently with greatly-decreased expense, both as it regards fuel and labor.

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

1. The roller A, with its peculiarly-formed projections and recesses, in combination with the roller B, with its peculiarly-formed projections and recesses, arranged and operating in relation to each other substantially as and for the purposes set forth.

2. The rollers A and B, in combination with the former C, said parts being constructed, arranged, and operating in relation to each other substantially as and for the purposes described.

R. MONTGOMERY.

Witnesses:

THOS. H. DODGE,
M. J. MONTGOMERY.