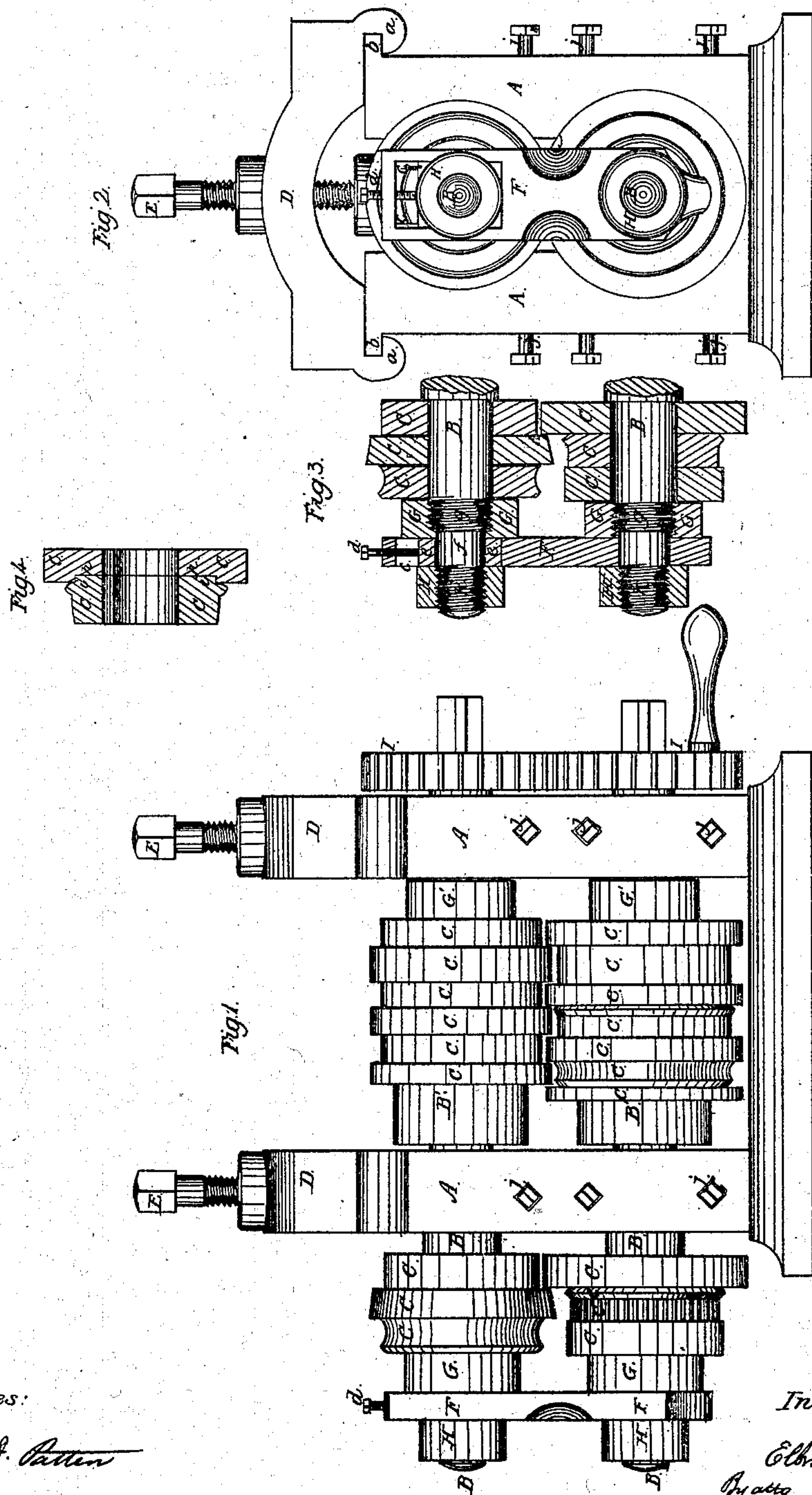


ROLLING MILL.

No. 47,886.

Patented May 23, 1865.



Witnesses:

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UNITED STATES PATENT OFFICE.

ELBRIDGE WHEELER, OF FELTONVILLE, MASSACHUSETTS.

ROLLING-MILL.

Specification forming part of Letters Patent No. 47,886, dated May 23, 1865.

To all whom it may concern:

Be it known that I, ELBRIDGE WHEELER, of Feltonville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Rolling Regular, Irregular, or Corrugated Forms in Metal; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a side elevation of a machine for the purpose. Fig. 2 represents a view from one of its ends. Fig. 3 represents a section through a portion of the rolling-dies, to show their mode of connection with the shafts, on which they are interchangeable. Fig. 4 represents a section through a pair of rings or dies, so made as to prevent the forming of a fin on the piece rolled by them.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention relates, first, to the uniting of the ends of the rolls that project beyond the housings with an adjustable link or yoke, to prevent them from springing or yielding as the metal to be rolled is passed between them.

It further relates to the fastening of the sections of dies or rings upon the shafts by means of screw-threads cut on the shafts themselves and a nut run thereon, so that the screw shall expand with the shaft as it expands and continue to firmly hold the sections, rings, or dies in place, which a key or wedge separate from the rolls or their shafts will not do; and my invention further relates to the countersinking of one or both faces of one of the sections of rings or dies and forming a shoulder or projection on the next adjacent ring or die, so that it will enter said countersink, and thus prevent the forming of a fin upon the piece of metal rolled by such dies.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A A represent the housings in which the rolls B B are hung. The portions of the rolls between the housings may be used for rolling regular, irregular, or ornamental rods, bars, blanks, &c., by means of a series of rings or dies, C, fastened thereon, and of such form or

forms as the special figure, design, or pattern to be produced may require, and that these rolls or shafts B may be readily removed, so as to change or arrange the series of dies thereon. The caps D of the housings are furnished with lugs *a*, that take over projections *b* on the uprights to hold them in place, the screws E, that hold down the followers on the journals of the top roll, aiding to thus hold said caps, and by this mode of fastening the rolls may be readily taken out to have the rings or dies removed or replaced, as occasion may require. I propose, however, on account of the trouble of changing the rings or dies when placed between the housings, to project the shafts B through and beyond one of the housings, and to arrange the rings or dies C on said projecting ends, as thus they are readily removed or changed; and to prevent the thus projecting ends of the rolls from springing apart under the force or pressure of the piece of metal passing through between them I connect the ends thereof by a link or yoke, F, and the upper end of this yoke F should have a slot or opening, *c*, and a set-screw, *d*, so that a bearing-block, *e*, in which the neck *f* of the upper roll rests, may be adjusted when the space between the rolls or the dies thereon is changed. The dies or rings C are held to their respective shafts by screw-threads *g*, cut upon the shafts themselves, over which a nut, G, is run.

I am aware that it has been proposed to hold sectional dies or rings upon a shaft by means of a key or wedge. To such holding devices I lay no claim, as they will not answer my purpose. The holding device must be a part and parcel of the shaft itself, for if separate therefrom the difference of expansion between the shaft and the key or wedge allows the sections to move, and thus make indifferent work, if not entirely give away under the force; but a screw cut on the shaft is a part of the shaft. It expands and contracts with the shaft, and thus under all circumstances remains a permanent holding mechanism. To prevent a vertical joint between the dies at the bottom, for instance, of a deep groove, or where a prominence is to be left on the article rolled, I countersink one or both faces of one of the ring dies or sections, as at *h*, Fig. 4, and form a projection, *i*, on the adjacent ring or die that will fit into said coun-

tersink, and thus change the direction of the joint, or break the joint, and prevent the metal from being forced therein and form a fin upon it.

By making the dies in sections almost any conceivable pattern of metal may be rolled out with regular, irregular, corrugated, or ornamented faces or sides; and, besides, the dies or rings are thus much more easily formed, as the contour of their perimeters may be easily made, being in rings, and nothing to prevent the free use of tools in giving them their shape or form. These rings or dies are interchangeable, and thus a few only may be so combined as to make a variety of forms or patterns.

The set-screws *j* are for changing the blocks, boxes, or followers that sustain the rolls, and to admit of their ready adjustment when the space between the rolls are changed.

H are screw-nuts run onto screws *k*, cut on the ends of the shafts *B*, for holding the link or yoke *F* in place.

I I are the gears for giving motion to the rolls or shafts.

The dies or rings between the housings may be similarly held as those beyond the hous-

ings—viz., by a collar or shoulder, *B'*, on the shaft, and a nut, *G'*, run up against the rings or sections when in place, the nut *G'* running on a screw-thread cut upon the shaft *B*, as in the other case.

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

1. Uniting the projecting ends of the rolls or shafts by means of a link or yoke, substantially as and for the purpose described.

2. The holding of the sections of dies or rings on their shafts by means of screw-threads cut upon the shafts and a nut or nuts run up against them, substantially as described.

3. The fitting together of the sectional rings or dies by means of countersinks upon one and a projection upon the next adjacent one, to break the joint between them, and thus prevent the forming of a fin upon the article being rolled, substantially as described.

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Witnesses:

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