D. Bell.

Bending Metal Bars.

No. 40,899. Patented Dec. 15, 1863.

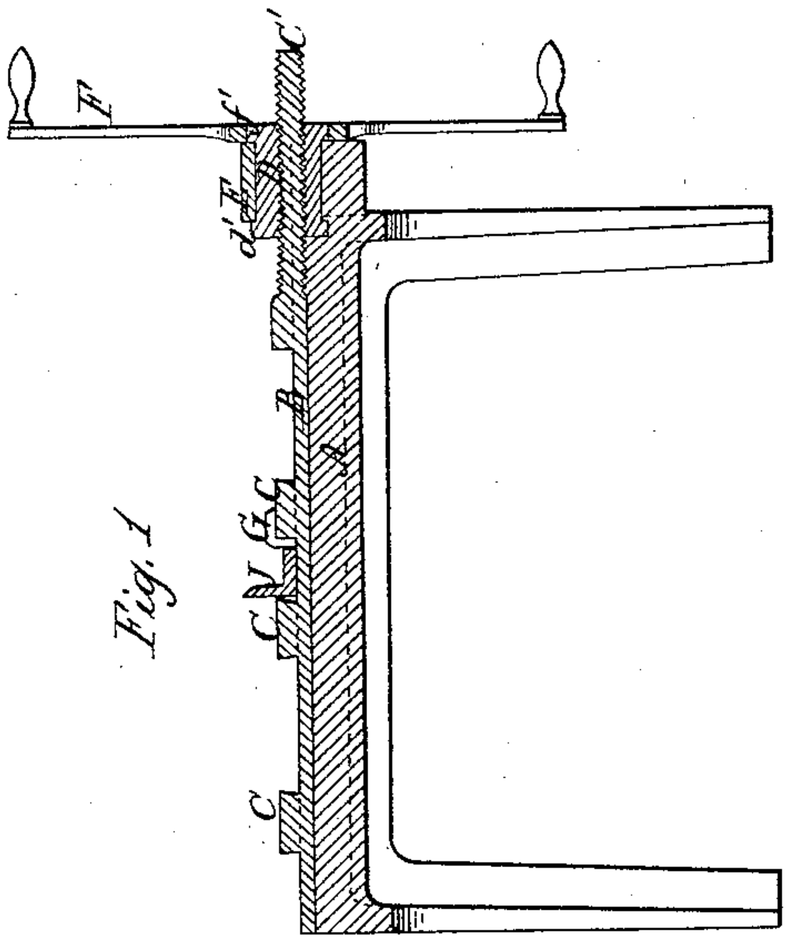

Fig. 1

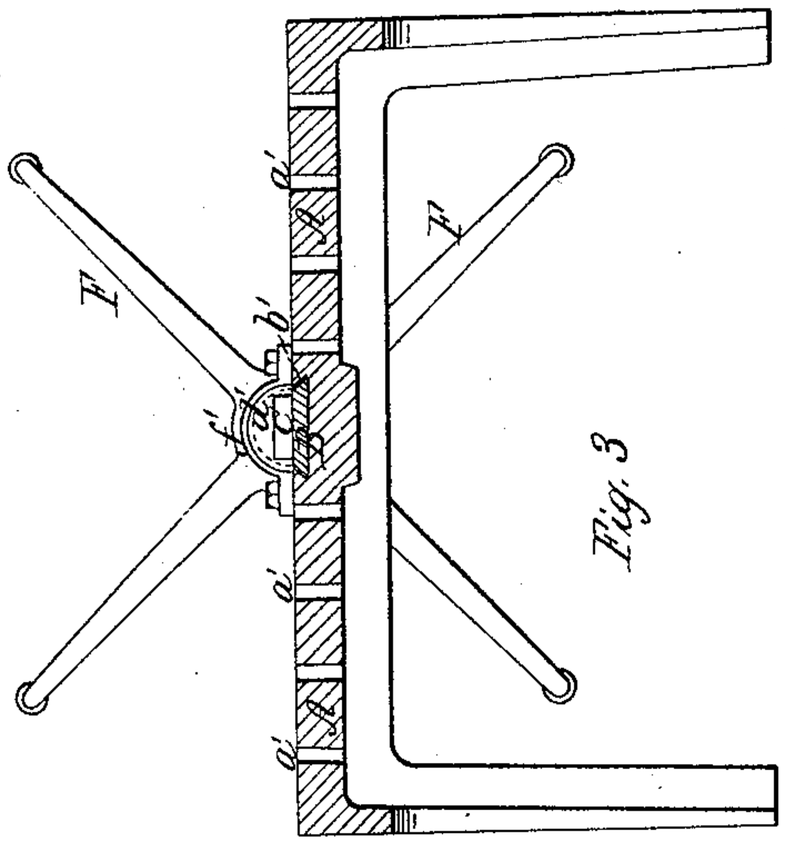

Fig. 3

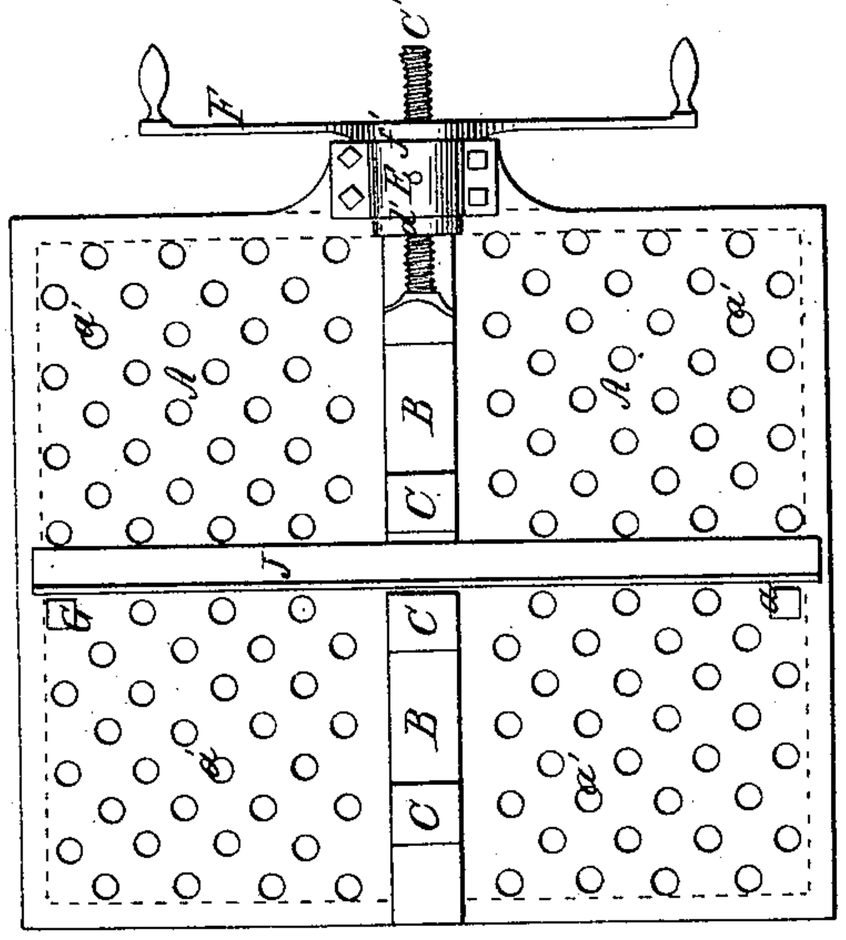

Fig. 2

Witnesses
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UNITED STATES PATENT OFFICE.

DAVID BELL, OF BUFFALO, NEW YORK.

IMPROVEMENT IN MACHINES FOR BENDING ANGLE-IRON.

Specification forming part of Letters Patent No. **40,899**, dated December 15, 1863.

To all whom it may concern:

Be it known that I, DAVID BELL, of the city of Buffalo, county of Erie, and State of New York, have invented a certain new and Improved Machine for Shaping Angle-Bars for Iron-Ship Building; 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 accompanying drawings, and the letters of reference marked thereon, in which—

Figure I is a vertical longitudinal section of my improved machine. Fig. II is a plan of same, and Fig. III a transverse vertical section.

Letters of like name and kind refer to like parts in either of the figures.

The nature of this invention consists in the combination of a sliding pressure-bar operated by a screw or other equivalent means, with a perforated table or bed-plate and adjustable pins or stops, whereby the angle-bars or other iron frames used in iron-ship building may be quickly and accurately shaped and adjusted to correspond to a mold or pattern of any required form.

A represents a cast-iron bed-plate or table, upon which the frame or angle-bar to be shaped or adjusted is laid. This bed-plate is bored full of holes *a'*, equidistant from each other.

B represents a sliding pressure-bar moving in a dovetail groove, *b'*, through the center of the table A, the top of the bar being flush with the top of the table. This bar has strong upward projections C formed upon it, forming jaws, between which the angle-iron frame or bar to be shaped and adjusted is laid. One end of this sliding pressure-bar is drawn out into a cylindrical form, and has a screw-thread cut upon it, as shown at *c'*.

D represents a revolving-nut or hollow sleeve, through which the screw *c'* works. It has its bearing in a journal-box, E, cast upon the side of the table, and is furnished with two flanges or shoulders, *d'*, which bear against the sides of the journal-box and resist the thrust of the screw.

F represents hand spokes or arms projecting from a hub, *f'*, which is keyed upon the nut or sleeve D. The nut is turned in either direction by means of these spokes, so that a corresponding movement is imparted to the sliding pressure-bar B and jaws C, the jaws holding onto the angle-bar, while the pressure-bar is moving in either direction.

G represents adjustable pins, which may be placed in any of the holes in the table required to obtain the right bearing upon the angle-bar. These pins will hold the angle-bar against the thrust of the pressure-bar, and hence any unevenness or short bend in the angle-bar may be quickly removed, and the angle-bar brought to its proper shape.

In the practice of iron-ship building the "ribs" or frames are formed of bars of iron, (angle-iron is now generally used,) heated in a furnace and bent into a shape to correspond as nearly as possible with a mold or pattern. It is scarcely possible to form them with sufficient accuracy in the short time which the iron retains its heat and pliability in the manner heretofore done, and a second heating being impracticable. It has been a matter of great difficulty and expense heretofore to give them the required accuracy of shape and to remove slight elevations or depressions in their outline.

The object of this invention is to furnish a means of removing these irregularities in the outlines of the frames and to shape them to an exact correspondence with the mold or pattern after they have become cold.

The practical operation of the above described device is as follows: The frame or bar J, to be adjusted is laid upon the table A and between the jaws C. The mold being applied and an elevation being found anywhere in the outline of the frame, the frame is moved upon the table until said elevation comes within the jaws of the pressure-bar, when a powerful pressure may be exerted against the elevation, such pressure being resisted by the pins G placed on the opposite side of the bar. The holes in the table allow the pins to be changed to accommodate all difference of size and form in the frames. Some experience is required to find the exact places to apply the pressure and the proper points to place the pins with relation to the bend, elevation, or depression to be removed; but with such experience frames may be adjusted so perfectly

as to need no further adjustment when set up in their places in the ship.

What I claim as my invention, and desire to secure by Letters Patent, is—

Shaping angle-bars for iron-ship building by means of the table A, including the adjustable pins G, and sliding pressure-bar B and jaws C, operated by a screw, substantially as described.

DAVID BELL.

Witnesses:
G. H. GOODRICH,
E. B. FORBUSH.