

W. J. BALL.  
Machine for Bending Plow-Beams.

No. 216,077.

Patented June 3, 1879.

Fig. 1.

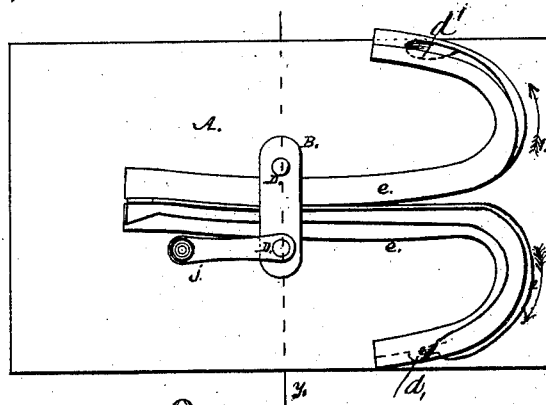


Fig. 2.

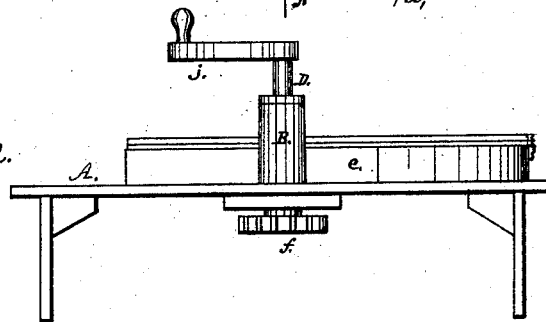


Fig. 3.

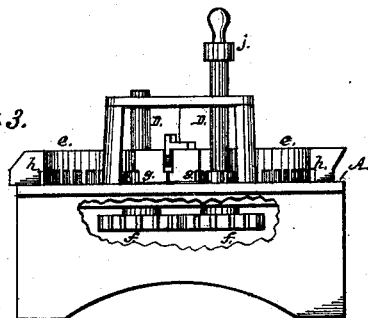


Fig. 4.

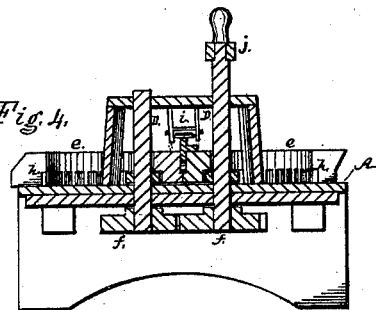
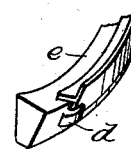


Fig. 5.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WARREN J. BALL, OF CANTON, OHIO.

## IMPROVEMENT IN MACHINES FOR BENDING PLOW-BEAMS.

Specification forming part of Letters Patent No. **216,077**, dated June 3, 1879; application filed January 14, 1878.

### *To all whom it may concern:*

Be it known that I, WARREN J. BALL, of Canton, county of Stark, and State of Ohio, have invented a new and useful Improvement in Machines for Plow-Beams and other Articles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improvement in machines for bending plow-beams and other articles; and consists of a table-roll and forms curved or bent in opposite directions, and operated by driving-gear.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a top or plan of my improvement. Fig. 2 is a side view of the same. Fig. 3 is an end view of the machine. Fig. 4 is a vertical and transverse section at line *y* of Fig. 1. Fig. 5 is a detail view, in perspective, of a portion of one of the forms, showing the article as connected thereto.

In the drawings, A represents the table, which is provided with suitable housings B for an adjustable roll, *i*, and for supports for vertical shafts D, for driving the gear-wheels for operating the forms *e*.

On the under side of the table A, and on the lower end of the vertical shafts D, are wheels *f*, which mesh into each other.

Above the table A, on the shafts D, are small wheels *g*, which mesh into the teeth *h* on the edge of each of the forms. The forms are curved or bent in opposite directions, and are for bending plow-beams constructed of iron or steel; but I do not confine my invention to the bending of plow-beams, for it is obvious that my improvement can be applied to the bending of a great number of articles

of different forms without departing from the principle of my invention.

One of said forms is provided at one end with a grooved projection, *d*, which receives one end of the article to be bent or shaped, and holds it in position to follow said form and take the desired shape, as clearly shown in Fig. 5. The other form is also provided with a recess, *d'*, into which said projection *d* fits when passing between the shafts D D. The ends of each form may be connected together, if desired, so as to form continuous or endless forms.

The operation of my improvement is as follows: The article to be formed is placed between, the forms *e* with the front end under the roll *i*, and by rotating the crank *j* it will revolve the shafts D, which will revolve the wheels *f* and *g*, the latter gearing into the teeth *h* of the forms *e*, causing the forms to travel in the direction indicated by the arrows 1 and 2. The article placed between, or on and between, the forms *e* will be bent to correspond to that of the faces of the forms *e*. The article placed between the forms is bent in the direction indicated by the arrow 2. The faces of the forms *e* operate conjointly with each other, and the travel of the forms are the same.

Having thus described my improvement, what I claim as of my invention is—

In a bending-machine, the combination, with the table provided with housing B and roll *i*, of the forms *e e*, curved or bent in opposite directions, and provided with gear-teeth *h*, into which mesh driving-gear for operating said forms, and one form having a device for receiving one end of the article to be shaped, substantially as and for the purpose herein shown and described.

WARREN J. BALL.

Witnesses:

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