JAMES SUGDEN & E. J. SUGDEN.

Improvement in Machines for Bending Rake Teeth and other Articles.

No. 124,863. Patented March 19, 1872.

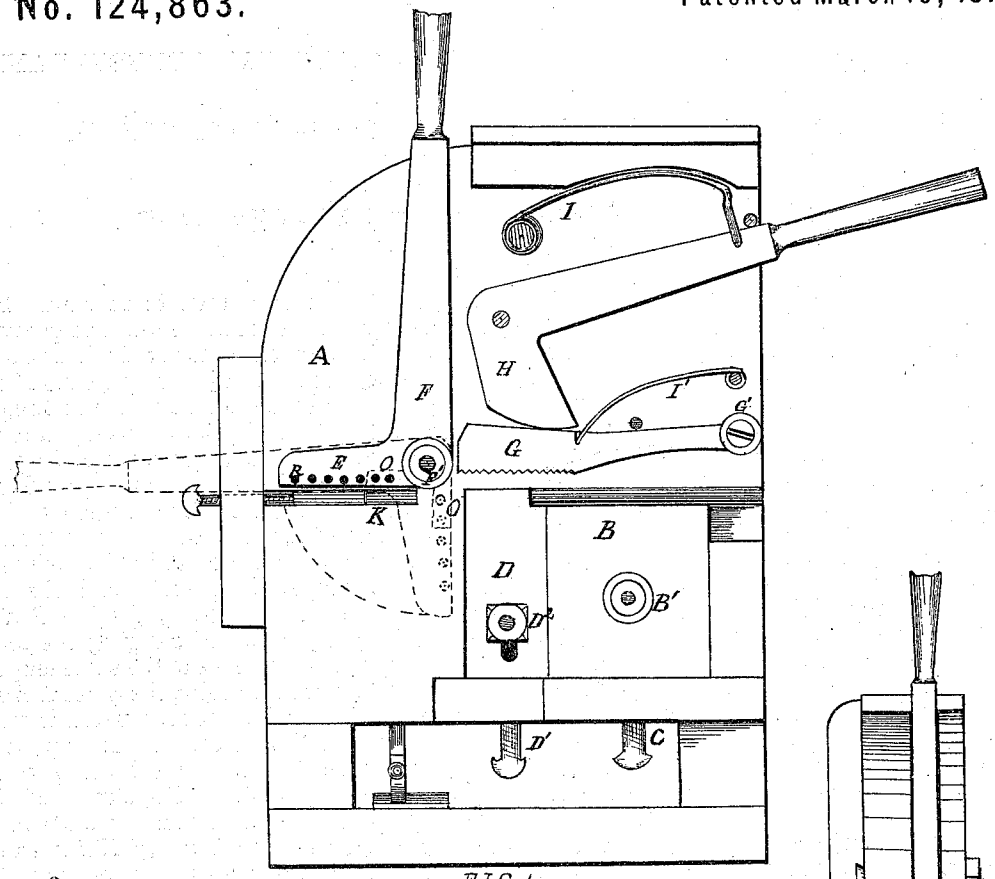

FIG. 1.

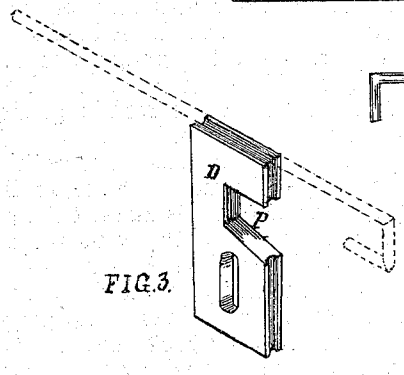

FIG. 3.

FIG. 6.

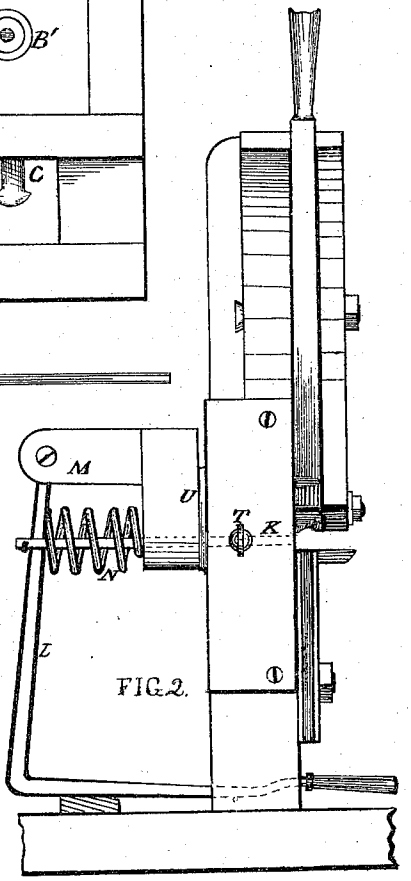

FIG. 2.

FIG. 4.

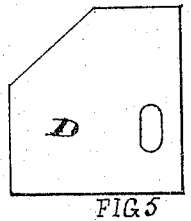

FIG. 5.

Witnesses.
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124,863

UNITED STATES PATENT OFFICE.

JAMES SUGDEN AND EDMONDS J. SUGDEN, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR BENDING RAKE-TEETH AND OTHER ARTICLES.

Specification forming part of Letters Patent No. 124,863, dated March 19, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that we, JAMES SUGDEN and EDMONDS J. SUGDEN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improved Machine for Bending Metallic Rods or Bars; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a front elevation of our improved rod-bending machine. Fig. 2 is an end view of the same, showing a spring gauge; Fig. 3 is a view of a double bending-die, showing in dotted lines the blank bent thereon; Fig. 4 is a view of a gauging-pin. Fig. 5 shows a bending-die; and Fig. 6, a blank after being bent.

Like letters of reference indicate like parts in each.

Our invention consists in the construction of an improved machine for bending metallic rods or bars to any desired angle; and its advantages consist in its simplicity of construction, and the ease and rapidity of its operation. We especially design our invention for use in bending the butt-ends of rake-teeth, although it may be used for bending rods or bars, and for many other uses.

To enable others skilled in the art to make and use our invention, we will describe its construction and mode of operation.

The operative parts of our machine are secured to an upright plate, A, fastened to an upright standard or post. At one side and standing flush with the front end of the plate A is the bench or table B, upon which the rod is laid preparatory to being bent. This table is secured to the plate A by the bolt B′ projecting through a slot in the lower part of the table, and is adjustable vertically by means of the set-screw C. Back of this table B is a former or die, D, against which the rod is bent by means of the jaw E on the end of the lever F, which pivoted or hung at F′, describes the arc of a circle, shown by the dotted lines, bringing the jaw E from a position parallel to the table B, to the position shown by dotted lines in Fig. 1, directly against the face of the die D. Said dies are raised or lowered by means of a set-screw, D^1, so as to suit the different-sized rods or blanks to be bent. For bending round rods the dies should be grooved to suit the different sizes. The rod when placed on the table B is held in place by means of the corrugated jaw or holder G, which is hinged at G′, and is operated by the cam-shaped lever H. When relieved from the pressure, the cam-shaped lever H and the corrugated jaw G are drawn back by means of the springs I and I′, so as to release the rod. Back of the table B and directly in the path of the rod which is to be bent is a gauge, K, against which the rod is placed before it is seized by the jaw G, and which is for the purpose of gauging the rods, so that they may all be bent to the same length. The gauge K works through the plate A from the opposite side. When at rest it stands flush with the face of the plate. On the opposite side it is attached to the bent lever L which is pivoted to the cleat M. The handle of the lever L projects through under the plate A to the front side. When the gauge K is needed, it is made to project from the side of the plate A by drawing forward the lever L. As soon as the lever is released, the gauge K is thrown back by the spiral spring N. Instead of the gauge K a pin may be inserted in graduated holes in the path of the rod.

The operation of our machine is as follows: The blank or rod is put on the table B and pushed back until it comes against the gauge K, which is drawn forward by means of the lever L. The lever H is then drawn down causing the corrugated jaw G to seize and hold the rod while it is being bent. The gauge K is then allowed to draw back, and the lever F is drawn down causing the jaw E to bend the rod against the die D. The lever H is let go, thereby releasing the rod from the bite of the jaw G and the rod is removed. The die D may be of any angle from one up to ninety degrees, and may be changed at pleasure by unscrewing the bolt D^2. In Fig. 5 we have shown a die, D, whose bending face when attached to the machine, will stand at an angle of about forty-five degrees to the line of the unbent rod. As the bending-edge of the jaw E wears away we insert therein a removable edge or die, O. In case it is desired to bend a rod twice to make the blank shown in Fig. 3, we make use of the die shown in Fig. 3. After the rod has been bent once, as described, it is pushed along

the table until it comes against the gauge a second time and is bent in the same way, the part which was first bent entering the cut-away part *p* of the die D. A gauge may be made by inserting a suitably-shaped tool, *y*, in the graduated holes R on the jaw E. By means of the set-screw T and ways U, the gauge may be forced toward or from the table B, so as to gauge the rod to any desired length.

By our improvement we are enabled to effect a great saving in the manufacture of rake-teeth and other like articles, and to do away entirely with the necessity of skilled labor.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. We claim, jointly, the bending-jaw E, clamping-jaw G, and the series of interchangeable dies D, substantially as set forth.

2. Also, in combination with the bending-jaw E and clamping-jaw G, the die D of Fig. 3, having a cut-away part, P, for the double bending of the rod, substantially as set forth.

3. The gauge K, in combination with the lever L, cleat M, and spring N, or their equivalents for operating the same, substantially as described.

In testimony whereof we, the said JAMES SUGDEN and EDMONDS J. SUGDEN, have hereunto set our hands.

JAMES SUGDEN.
EDMONDS J. SUGDEN.

Witnesses:
GEORGE NEUBERT,
JAMES I. KAY.