J. McWILLIAMS.

MACHINE FOR BENDING METAL PIPES.

No. 183,190. Patented Oct. 10, 1876.

Fig. 1.

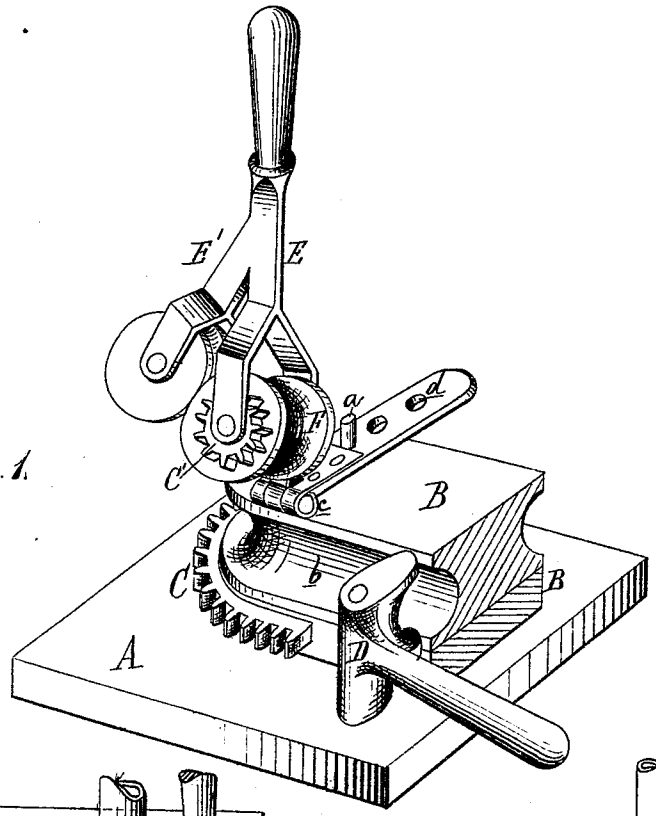


Fig. 2.

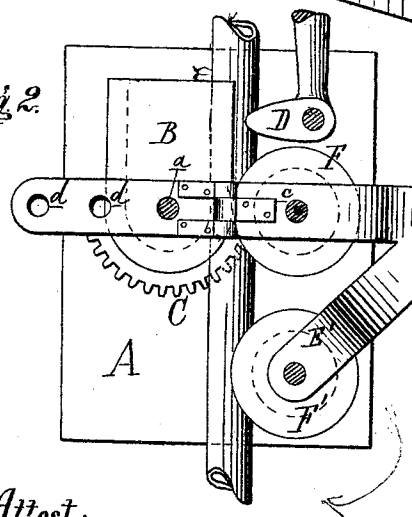
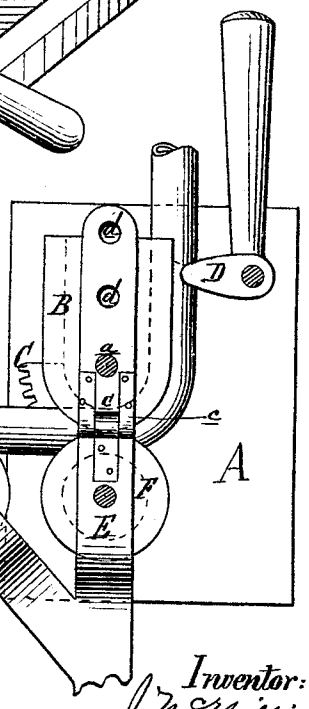


Fig. 3.



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JOSEPH McWILLIAMS, OF DETROIT, MICHIGAN.

IMPROVEMENT IN MACHINES FOR BENDING METAL PIPES.

Specification forming part of Letters Patent No. **183,190**, dated October 10, 1876; application filed April 5, 1876.

To all whom it may concern:

Be it known that I, JOSEPH McWILLIAMS, of Detroit, in the county of Wayne and State of Michigan, have invented an Improved Pipe-Bending Machine, of which the following is a specification:

My invention has for its object to furnish a machine by means of which metal pipes can be bent to any desired angle and radius of curvature without crushing or altering the section of the bent portion; and it consists in a lever pivoted to a former and carrying two rollers, the one for bending the pipe around the former, and the other for rolling the bent portion of the pipe into the peripheral groove of the former; also, in gearing the latter roller to a sector on the former, so that it will axially rotate while revolving about the former.

Figure 1 is a perspective view of the machine, with the lever thrown up to introduce a pipe. Fig. 2 is a plan, showing the pipe introduced. Fig. 3 is a plan, showing the pipe partially bent.

In the drawing, A represents a bed-plate, upon which is secured a former, B, having a semicircular end, from the center of which rises a pivot-stud, *a*. The periphery of the former has a semicircular groove, *b*, adapted to receive one-half of the pipe to be operated upon. The lower edge of the former carries a geared segment, C, around the head, projecting from the lower edge thereof. D is a cam-lever, pivoted to the bed-plate near one corner of the former, and is adapted to clamp a pipe into the groove *b*, at the side of said former. E is a forked lever, whose lower strap of the fork is longer than the other one, and is formed with a joint or hinge, *c*, so that it can be folded upon itself. The hinged end of the strap is perforated with one or more holes, *d*, to pivot it to the stud *a*. In the fork of the lever a semicircularly-grooved wheel, F, is journaled, to the under side of which wheel, or to its axis, is secured a pinion, C′, which, when the lever is brought down, engages with the geared segment C. Then, as the lever is swung around the former on its pivot, the wheel will rotate on its axis as it is revolved about the segment. In practice, I find it preferable to give the wheel F a more rapid axial rotation than it would have if its periphery rolled in contact with that of the former, which is effected by increasing the radius of the segment and decreasing the diameter of the pinion. The effect of this is to roll the heated pipe into the groove of the former, and to preserve its true circular cross-section. The lever E is provided with a lateral fork, E′, carrying a grooved wheel, F′, which acts upon the straight pipe in advance of the wheel F, to bend the pipe around the former, the latter wheel serving as a finishing-roll to complete the bending process.

The lever E can be used for bending pipes to varying curvatures with other formers of different radii.

What I claim as my invention is—

In a bending-machine, substantially as described, the double forked lever E E′, grooved wheels F F′, and pinion C′, in combination with the former B, pivot-stud *a*, geared segment C, and a means for clamping the article to be bent to the side of the former, substantially as shown and set forth.

JOSEPH McWILLIAMS.

Witnesses:

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