

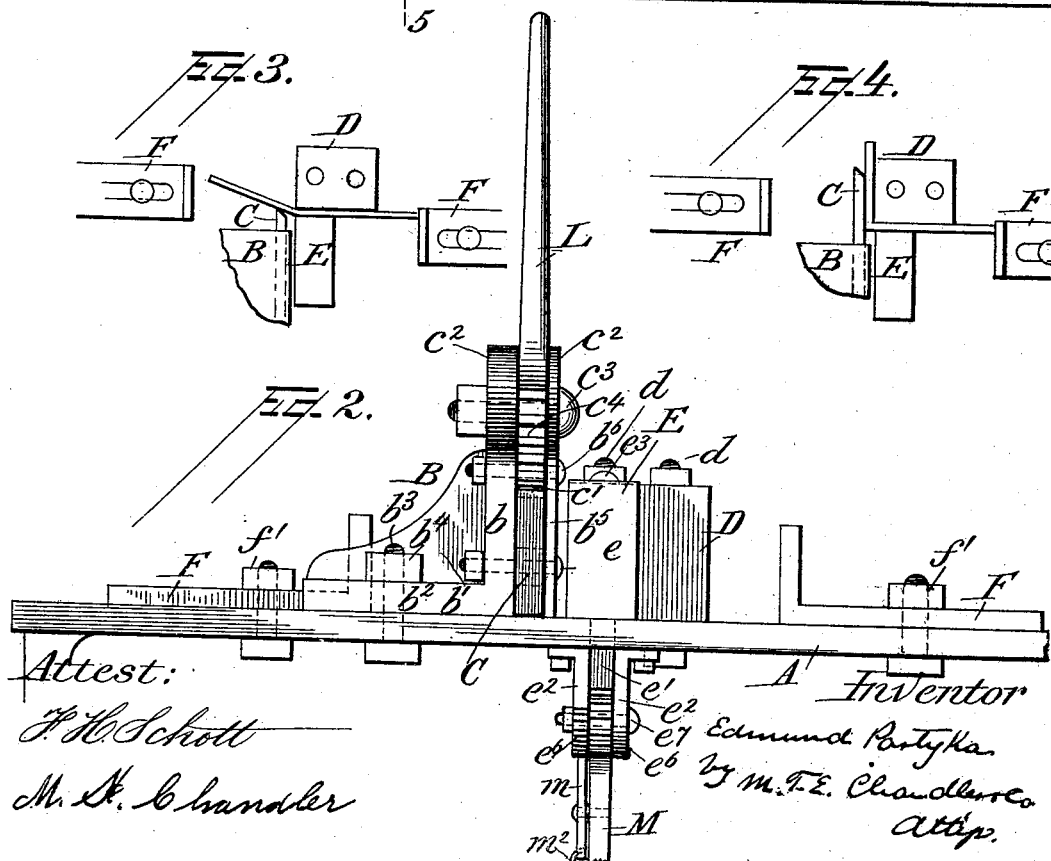
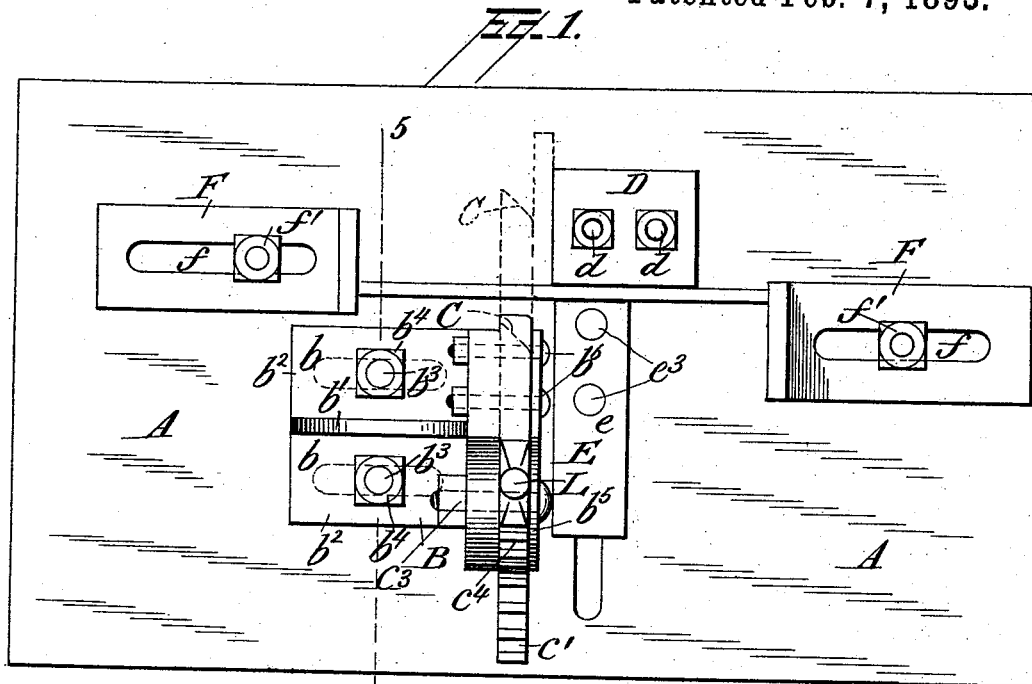
(No Model.)

2 Sheets—Sheet 1.

E. PARTYKA.
METAL BENDING MACHINE.

No. 491,187.

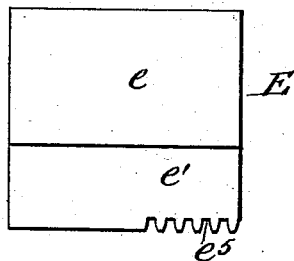
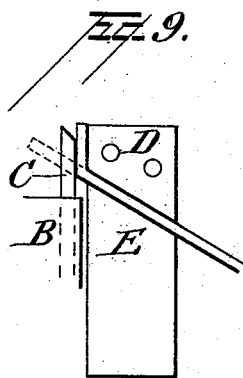
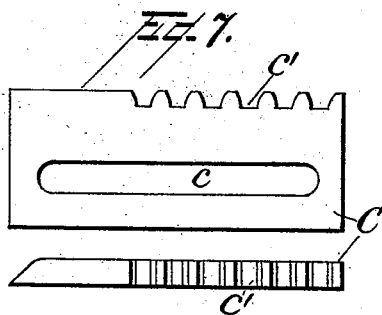
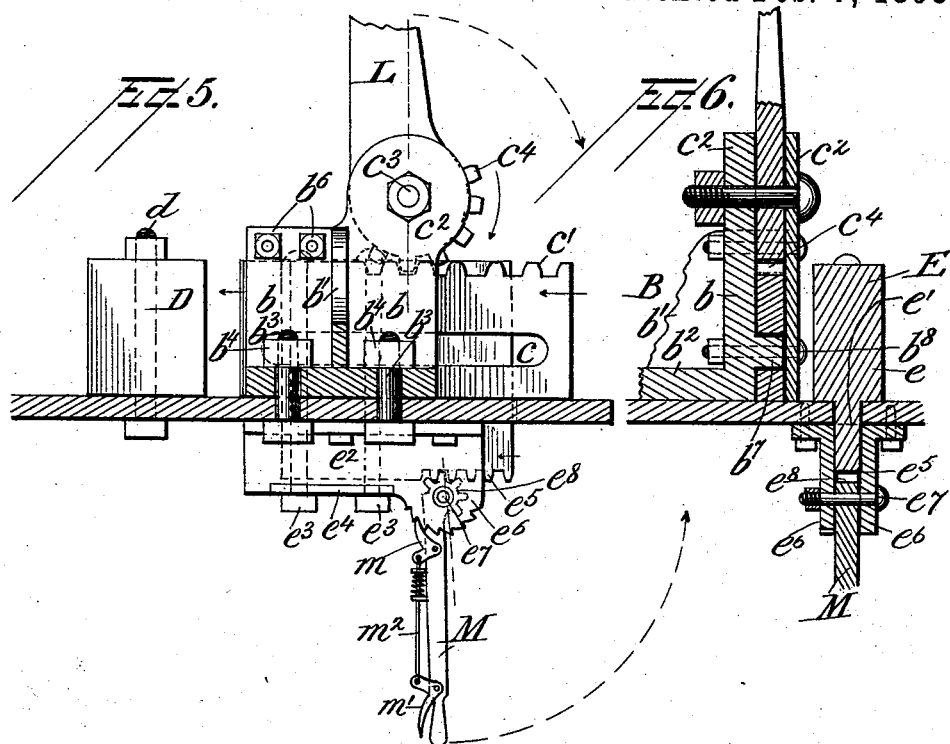
Patented Feb. 7, 1893.



2 Sheets—Sheet 2.

No. 491,187.

Patented Feb. 7, 1893.



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UNITED STATES PATENT OFFICE.

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METAL-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 491,187, dated February 7, 1893.

Application filed June 16, 1892. Serial No. 436,888. (No model.)

To all whom it may concern:

Be it known that I, EDMUND PARTYKA, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Metal-Bending Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to improvements in metal bending machines of that class which is particularly adapted to the use of small iron-workers, such as blacksmiths, who frequently have an occasion to bend an iron bar or plate into a simple angular form.

It has for its object the construction of such a device that will be particularly adapted to the purpose, which will be simple in its operation, cheap in its manufacture, and at the same time efficient as to its use.

The invention consists essentially of a main table or base, upon which are mounted forming-blocks in such a manner that they can be replaced by others of different configurations so that bends of different shapes may be formed, the forming-blocks consisting of an anvil provided with means for firmly securing it in place and of a dog mounted so as to be adjustable relatively to the anvil, the carriage, in which the forming-tool is seated, secured to the base plate so as to be relatively adjustable to the forming-blocks, and the guides or gages adjustably secured so as to hold the iron bar or plate in its proper position.

The invention further consists of the novel combination and arrangement of parts such as will be hereinafter more fully described, pointed out in the appended claims and illustrated in the accompanying drawings.

In the accompanying drawings, in which similar letters of reference designate corresponding parts, Figure 1 is a plan view of a machine embodying the invention. A metal bar is shown in position ready to have a rectangular bend formed in it. Fig. 2 is a rear elevation. Figs. 3 and 4 are detail views, illustrating the arrangement and mode of operation of the forming-blocks, the forming-tool and the gages. Fig. 5 is a vertical section on

the line 5—5 of Fig. 1. Fig. 6 is a detail view showing a vertical cross section through the carriage and one of the forming-blocks. Fig. 7 is a detail view showing a side elevation and a plan of the forming-tool. Fig. 8 is a detail showing a side elevation of the forming-dog. Fig. 9 is a detail view illustrating the configuration of the forming-blocks and their operation in forming an obtuse angle in a bar or plate.

Referring to the drawings, A designates the main table or support of any construction suitable in the premises, which carries the several operative parts, consisting essentially of the forming-blocks, the forming-tool, the gages, and their adjuncts.

The forming-tool C is a piece of metal, substantially rectangular in shape, supported in a carriage B. The latter is composed of a plate *b* bent to an angular form and strengthened by a web or brace *b'*. The base portion of the plate, *b*², is slotted transversely and is provided with bolts *b*³, *b*³, which project through the base plate A and register with the slots so formed, being provided with nuts *b*⁴, *b*⁴. The object of the bolts and slots is to allow an adjustment of the carriage. To the plate *b* is secured the plate *b*⁵, similar in contour to the upright portion of the first mentioned plate, by means of the bolts *b*⁶, *b*⁶. Between the plates *b* and *b*⁵ the forming-tool C is movably seated, the contacting surfaces of the plates and tool being such as to produce the least friction possible, and further the two plates are so connected as to allow as little movement sidewise of the forming-tool as possible.

The forming-tool C is slotted horizontally at *c* and with this slot a lug *b*⁷ extending from the upright portion of the plate *b*, registers. This lug forms a guide to steady the forming-tool in its movement and to limit its play, and also serves to regulate the adjustment of the plate *b*⁵ relatively to the plate *b*, so that they cannot be brought so close together as to bind upon the forming-tool. Through this lug and the plates *b* and *b*⁵ the bolt *b*⁸ extends, serving to more firmly unite the two plates forming the carriage. The upper edge of the forming-tool C is provided with a rack *c'* and its front end is beveled for a purpose which will be explained farther on. Between the

cheek-plates c^2, c^2 , formed by extensions of the plates b and b^2 , the lever L is pivoted near its lower end being journaled on the bolt c^3 and has formed on its lower end a pinion c^4 concentric with its pivotal point. This pinion engages with the rack c' of the forming-tool. By means of the lever L and the intermediate connections, the forming-tool can be moved back and forth in the carriage.

The forming-blocks consist of an anvil D and a dog E . The anvil block is provided with means for rigidly securing it in place in front of the forming-tool C and the dog E , being directly in front of the latter. In the present instance the anvil block is shown as being secured in place by the bolts d, d . The dog E is adjustably secured by the side of the carriage B , substantially parallel with the forming-tool. It consists of a main portion e , and an extension e' which extends through a slot formed in the base plate and registers with a guide formed by the angle plates e^2, e^2 , secured to the under side of the main plate or support. It is secured in place by the bolts e^3, e^3 , passing vertically through the front end of the same and the plate e^4 resting on the under side of the guides e'^2, e'^2 . The rear under side of the extension has formed therein the rack e^5 .

M designates a lever pivoted near one end between the cheek-plates e^6, e^6 , formed by extensions of the angle plates e^2, e^2 , being journaled on the bolt e^7 passing through the cheek-plates. It has formed on its upper end the pinion e^8 which meshes with the rack e^5 and serves through the rack and pinion to move the dog back and forth. The lever is provided with a spring catch or pawl m adapted to engage with the rack or toothed segment formed in the periphery of one of the cheek-plates e^6, e^6 , and is connected with a handle lever m' by the link m^2 , by means of which the pawl can be disengaged from the toothed segment. The purpose of the lever M and its connections is to adjust the dog and to secure it in such adjustment.

The guides or gages F, F , are formed of angle irons, the bases of which are quite long and are slotted at f, f . They are adjustably attached to the base plate by means of the bolts f', f' , passing through the slots in their bases.

The forming-blocks represented in the several figures, except Fig. 9, are shown as being adapted to form a rectangular bend. The blocks can be readily replaced however by others of different shapes, as shown in Fig. 9, to give any desired bend, several sets of different shapes being kept on hand for the purpose.

The operation of the device is as follows. The bar or plate in which the bend is to be made, having previously been heated to the required temperature, is placed in position against the anvil block, with the point at which the bend is to be made next to the corner of the anvil nearest the forming-tool.

The gages F, F , are then moved into position against the ends of the bar and serve to hold it in place. The dog E , by means of the lever M , is forced forward to grip the bar or plate between it and the anvil block and there locked by the pawl and ratchet mechanism. The carriage carrying the forming-tool is then adjusted so that the adjacent edges of the tool, if it were extended, and of the anvil would have an interval between them the same width as the bar. After the necessary adjustments have been made, the forming-tool, by means of the lever L , is moved forward against the bar causing it to bend around the corner of the anvil and thereby giving it the bend required. The beveled end of the forming-tool is to be preferred to the square end as it nurses the iron and tends to make the bend easier. The parts having been adjusted, it is obvious that but little time would be lost in placing the bar in position and forming the bend, thereby conserving the heat to the best possible advantage. It is not always necessary to heat the bar if it should be comparatively thin, as it could be bent cold.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is,

1. In a metal bending machine, the combination of the base plate, the forming-blocks mounted thereon, being relatively adjustable, the carriage adjustably mounted on the said plate and the forming-tool mounted in the carriage, so as to be movable independently of the movement of the said carriage, substantially as described.

2. In a metal bending machine, the combination of the base plate, the forming-blocks mounted thereon, one of which is adjustable relative to the other, the carriage adjustably mounted on the said plate, the forming-tool mounted in the carriage, so as to be movable independently of the movement of the said carriage, and the adjustable gages, substantially as described.

3. In a metal bending machine, the combination of the base plate, the anvil block fixed thereto, the dog mounted on the said plate relatively adjustable to the anvil and having an extension projecting through the main plate and having a rack formed on the said extension, the lever provided with a pinion engaging with the said rack, the carriage adjustably mounted on the said plate, and the forming-tool movably mounted in the said carriage, substantially as described.

4. In a metal bending machine, the combination of the base plate, the forming-blocks mounted thereon, one being adjustable relatively to the other, the carriage adjustably mounted on the main plate consisting of an angle plate, the plate secured to the upright portion of the angle plate, and the forming-tool movably seated between the angle plate and the plate attached thereto, substantially as described.

5. In a metal bending machine, the combination of the base plate, the forming-blocks mounted thereon, one being adjustable relatively to the other, the carriage mounted on the said plate, consisting of an angle plate adjustably attached to the main plate and of a side plate secured to the upright portion of the angle plate, the forming-tool movably seated between the two plates and having a rack formed in its upper face, and the lever

pivoted to the said carriage having a pinion formed on one end meshing with the said rack, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDMUND PARTYKA.

Witnesses:

LOUIS S. DEWOYNO,
C. J. R. SADKOWSKI.