(No Model.)

C. H. ADAMS.

BENDING PLIERS.

No. 429,989. Patented June 10, 1890.

Fig. 1.

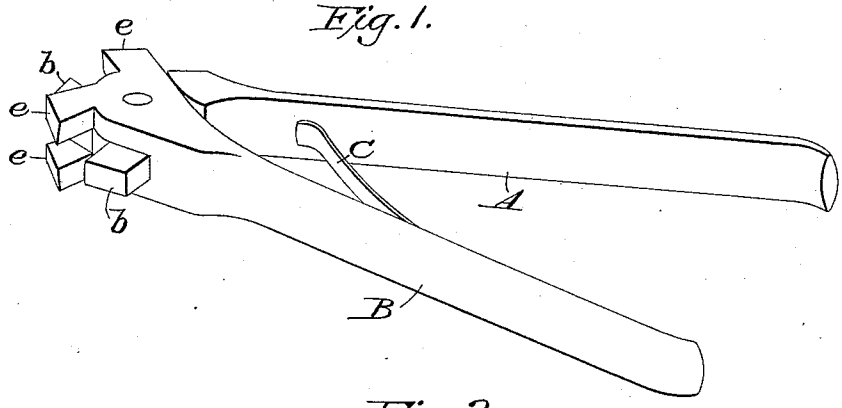


Fig. 2.

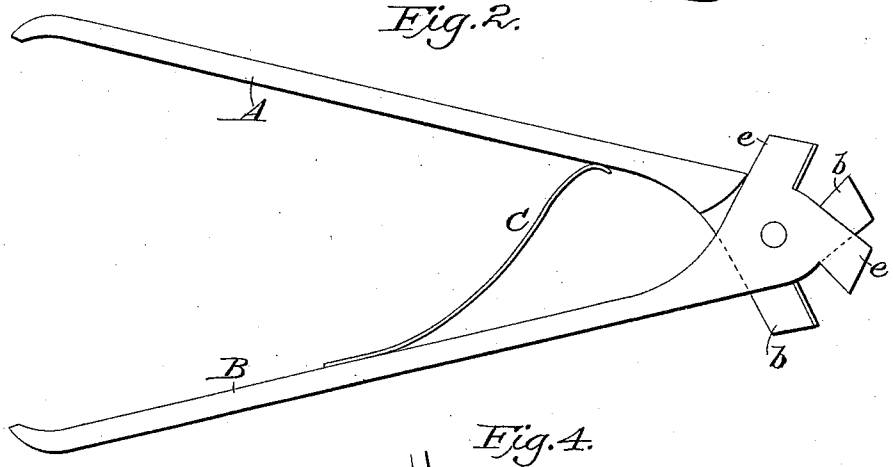


Fig. 3.

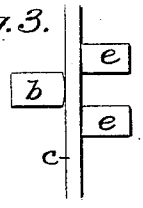
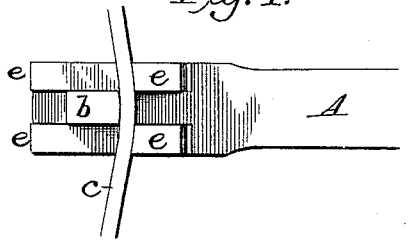


Fig. 4.



Witnesses:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES HENRY ADAMS, OF MOHAWK, ASSIGNOR TO THE REMINGTON STANDARD TYPE WRITER MANUFACTURING COMPANY, OF NEW YORK, N. Y.

BENDING-PLIERS.

SPECIFICATION forming part of Letters Patent No. 429,989, dated June 10, 1890.

Application filed April 7, 1890. Serial No. 346,892. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY ADAMS, a citizen of the United States, residing at Mohawk, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Bending-Pliers, of which the following is a specification.

My invention consists of a hand-tool made in the general form of pliers with peculiarly-formed jaws, as hereinafter more fully set forth.

Figure 1 is a perspective view, and Fig. 2 a side elevation, of the tool complete. Fig. 3 is a diagram showing the ends of the jaws with a rod inserted ready to be operated upon, and Fig. 4 is a similar view showing the rod after being operated upon.

The special object of this invention is to produce a convenient tool for use in the alignment of the type-bars in type-writers, and which may also be used for other purposes. As is well-known, type-writers are provided with a series of type-bars pivoted at their outer ends to a circular frame and arranged to strike at the center, as is necessary in order to print straight lines. After these type-bars are pivoted to the frame they have to be aligned, and which is done by hand, the operator bending the bars slightly to one or the other side until they are brought to the exact position required. Heretofore this work has been done by the aid of ordinary pliers having two or more pairs of jaws with flat faces for grasping the bar and then bending it by swinging the handles in one or the other direction. This method is both tedious and uncertain, as the bar is liable to be bent too much or too little, and, besides, is liable, unless great care be taken to prevent it, to strain or injure the joints where the bars are pivoted to the frame.

My tool, which I denominate "bending-pliers," consists of two handles A and B, pivoted together, as shown. As shown in Fig. 1, the handle or lever B has a slot or opening formed in its head equal in width to one-third of its thickness, (more or less,) and the other handle or lever A is reduced in thickness at that point, so as to fit and be pivoted in said space, as shown clearly in Figs. 1 and 3. The lever B has projecting from its head two pairs of jaws *e e*, each pair being preferably arranged at an angle of about forty-five degrees from the line of the handle, as shown more clearly in Fig. 2, the two jaws of each pair being arranged directly opposite one another, as shown. In like manner the other lever A is provided with two single jaws *b*, arranged at a corresponding angle, the form or outline of the two levers and their jaws being the same, so that when taken apart and laid one upon the other they will both show the same outline, although this is not absolutely necessary. By this construction it will be seen that the single jaws *b* play freely back and forth in the central space between the jaws *e*, there being in this instance two sets of jaws, each set being composed of the two side jaws *e e* and one central jaw *b*, they being so arranged as to readily grasp a type-bar or any similar rod or article when the handles or levers A B are pressed toward each other, there being a spring C arranged to force them apart and open the jaws as soon as the pressure is released.

By examining Figs. 3 and 4 it will be observed that the face of the single or central jaw *b* is made convex or rounded, and that the corresponding faces of the side jaws *e e* are inclined from their outer edges inward toward the center, thus forming a concavity, so that when these jaws grasp a rod *c*, as shown in Fig. 3, the bearing will be at the center of the face of the single jaw *b* and at the outer edges of the side jaws *e e*, so that by pressing on the handles these jaws will operate to bend the type bar or rod *c*, as shown in Fig. 4, the bend being more or less, according to the degree of pressure.

By having the two sets of jaws arranged at an angle, as shown, it will readily be seen that the bar can be grasped from above by the lower set of jaws and be bent in one direction, or can be grasped from below by the upper set of jaws and be bent in the opposite direction, and that this can be done without changing the position of the hand materially and without turning the tool over, thus greatly expediting the work of aligning these type-bars.

While I have shown the tool as having but

two sets of jaws, it is obvious that more may be added, if desired, and that they may be arranged at any desired angle in relation to the handles; but for the special work mentioned the plan shown is most convenient. It is also obvious that they may be made with a single set of bending-jaws, either projecting straight forward or set at any angle preferred, and be exceedingly convenient for general use in bending wire, rods, or bars, and for also taking the bends out of the same by merely reversing the position of the wire, rod, or bar between the jaws, such a tool being exceedingly convenient in many branches of business. It is also obvious that the tool may be made much larger than here shown, and thus be adapted for use on larger articles, the principle or mode of operation being the same, as herein shown and described.

Having thus fully described my invention, what I claim is—

1. A bending tool or pliers consisting of two levers or handles pivoted together, one of said levers being provided with a pair of jaws, the faces of which are inclined from their outer edges inward transversely to form a concave bearing-surface, and the other handle provided with a single jaw, the face of which is made convex transversely, substantially as shown and described.

2. A bending tool or pliers consisting of the two pivoted levers or handles A B, one of which is provided with two or more pairs of jaws *e e*, the jaws of each pair being set opposite each other and having their faces transversely beveled or inclined toward the center, and the other lever or handle being provided with two or more single jaws, the faces of which are made to project at the center transversely, substantially as shown and described, whereby each set of jaws are adapted to bend articles grasped by them, as set forth.

3. A tool or bending-pliers provided with two sets of bending-jaws, substantially such as described, said sets of jaws being arranged to project at opposite sides at an angle of about forty-five degrees from the line of their respective handles, substantially as shown and described.

In witness whereof I hereunto set my hand in the presence of two witnesses.

CHARLES HENRY ADAMS.

Witnesses:
E. B. SCHMIDT,
W. K. JENNE.