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C. R. McKIBBEN.

DEVICE FOR BENDING SPECIAL SHAPES OF TUBES OR PIPES.

(Application filed Feb. 24, 1899.)

(No Model.)

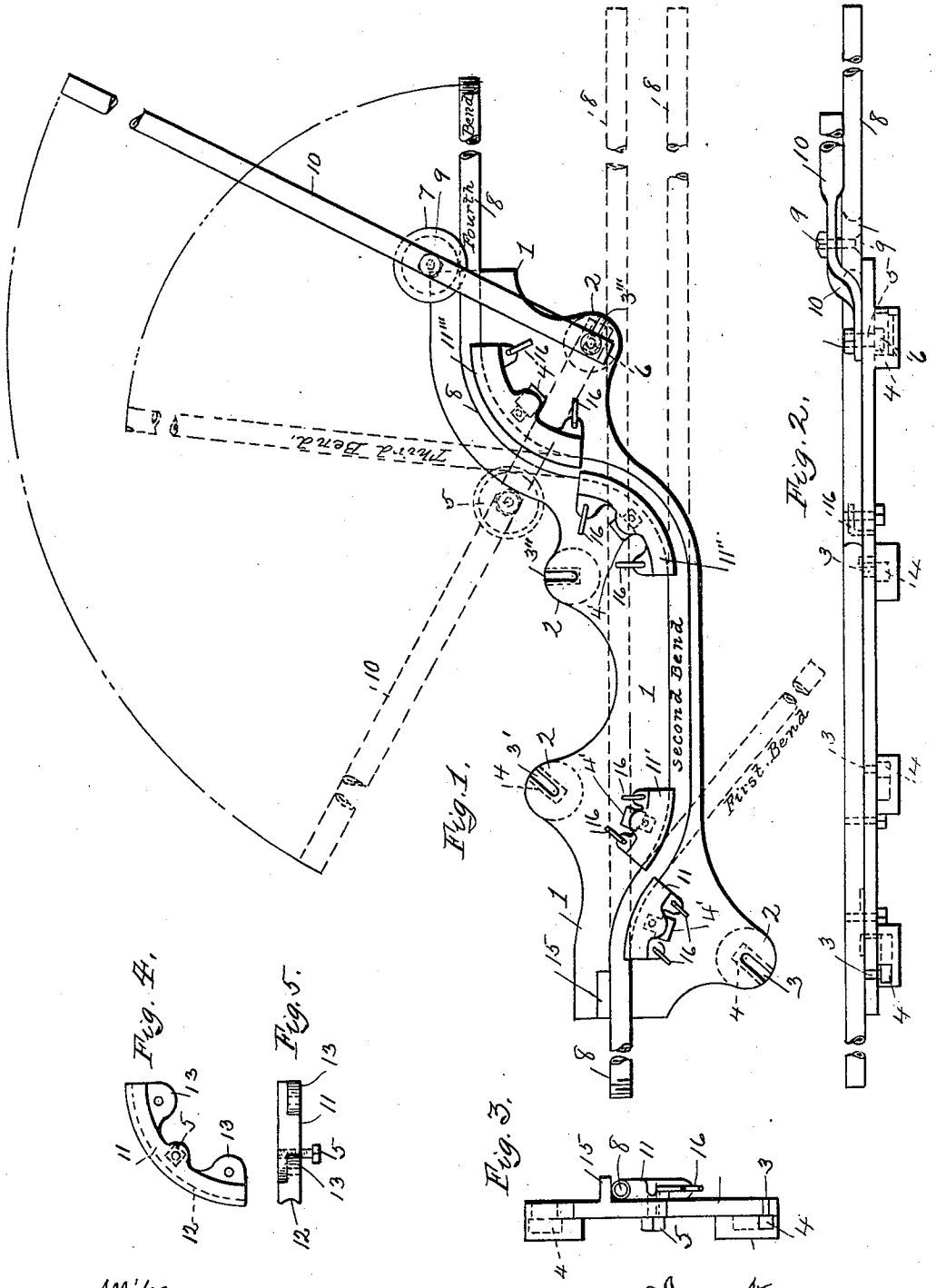


Fig. 1.

Fig. 2.

Fig. 4.

Fig. 5.

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

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DEVICE FOR BENDING SPECIAL SHAPES OF TUBES OR PIPES.

SPECIFICATION forming part of Letters Patent No. 641,535, dated January 16, 1900.

Application filed February 24, 1899. Serial No. 706,732. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. McKIBBEN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Bending Special Shapes of Tubes or Pipes; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved device for bending special shapes of tubes or pipes; and it consists in forming a bed-plate the contour of which will correspond to that of the finished article and providing a removable die or block for each bend of the pipe or tube; also, a means for securing the said dies or blocks to the bed-plate; also, a lever or means for bending the pipe or tube to the shape of the said dies or blocks, together with the certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a plan view of my improved device for bending tubes or pipes, which is constructed and arranged in accordance with my invention, the said view showing by means of dotted lines the several stages or bends of the pipe. Fig. 2 is a side view of the same. Fig. 3 is an end elevation. Figs. 4 and 5 are respectively a plan and a side elevation of one of the removable dies or forms over which the pipe or tube is bent.

To construct an apparatus in accordance with my invention, I provide a bed-plate 1 of a suitable size and form of construction, said plate consisting of a slab of metal comprising one or more pieces formed somewhat to correspond to the shape of the pipe or tube 8 when finished. This bed-plate 1 is provided with radial slots 3, formed at certain predetermined intervals corresponding to the several bends formed in the finished pipe 8, and the said slots 3, used for the reception of a bolt 6, acting as the purchase of a long and powerful lever 10, which, together with the operation, will be hereinafter fully described. Arranged about and secured to this bed-plate 1 is a series of removable dies or former-blocks 11, 11′, 11″, and 11‴, each of which consists of a block or piece of metal formed in the arc of a circle analogous with that particular bend or curve given to the pipe or tube at a certain point. This former-block 11 is provided above its periphery with a shallow groove 12, conforming to the radius of the pipe 8 being bent, and the said block held and confined rigidly in position by means of pins 16, passing through lugs 13, integral with the said plate. These pins 16 pass through the lugs 13 and also through the bed-plate 1 and may be withdrawn or replaced at will. To center each of these blocks 11, the same is provided with a depending bolt provided with a head 5, which is entered into a narrow slot 3 for the reception of the bolt. An enlarged slot 4′ beneath receives the head 5 in such a manner that when the said block 11 is in position the same will be prevented from rising when subjected to any great lateral pressure.

Attached to one extremity of a suitable lever 10 is a bolt or pin 6, acting as a fulcrum and arranged at right angles to its length, which may be entered and confined in any one of the slots 3, 3′, 3″, and 3‴, the said lever 10 being provided with a pivoted or journaled grooved wheel 7 some distance from the said fulcrum. By means of this lever 10 and grooved wheel 7 the various bends given to the pipe 8 (shown at Fig. 1 of the drawings) may easily be made.

In operation the special form or contour of the pipe or tube 8 (shown at Fig. 1) is received in certain lengths and in a straight form. The one end is placed between the first former-block 11 and a lug 15, cast integral with the bed-plate 1, the first block 11 being in position, all the others being removed. The fulcrum-pin 6 of the lever 10 is engaged with the slot 3 and the wheel 7 in close contact with the pipe 8. By pressure upon the said lever the pipe 8 is bent around the former-block to the position shown and indicated on the drawings as "first bend." After this bend has been made the second former-block 11′ is placed and secured in position (by means of the bolt 5 and pins 16) and the fulcrum 6 of the lever changed to the slot 3′. Then by applying pressure to the lever 10 the bend is made about the said block 11′, corresponding to that

shown and described as the "second bend" on the drawings. The third former-block 11″ is now placed in position and the fulcrum 6 of the lever 10 removed to the slot 3″ and the "third bend" made. Then the same process is repeated by placing the former-block 11‴ in position and moving the fulcrum of the lever to the slot 3‴. It will be readily seen that any number of bends may be formed by means of these removable former-blocks, as above described. Therefore I do not confine myself to the exact construction shown and described.

What I claim, and desire to secure by Letters Patent, is—

1. A bending apparatus consisting of a bed-plate provided with a series of fulcrum-slots, a series of former-blocks detachably secured to the said bed-plate, said former-blocks consisting of a block of metal formed in the arc of a circle analogous to the bend of or curve to be given to the article to be bent, and being provided at its periphery with a groove, and having lugs provided each with a hole whereby the said former is attached to the bed-plate, and a bending-lever capable of being removed from one of the said fulcrum-slots to another, substantially as described.

2. A bending apparatus consisting of a bed-plate having detachably secured thereon a series of alternately-arranged former-blocks, said bed-plate being provided at opposite sides with fulcrum-slots, in combination with a bending-lever capable of being removed from one to another of said fulcrum-slots, and provided with means whereby it may be secured in any one of the said fulcrum-slots, said means consisting of a fulcrum-bolt attached to the extremity of the said bending-lever, and arranged at right angles thereto, substantially as described.

3. A bending apparatus consisting of a bed-plate provided at opposite sides with fulcrum-slots, a series of alternately-arranged former-blocks detachably secured to the said bed-plate, said former-blocks being formed analogous to the desired bend of or curve to be given the article to be bent and being provided with a peripheral groove, lugs at each end of said former-blocks each provided with a hole, and a centering-bolt extending through each of the said former-blocks and into the bed-plate, and a bending-lever capable of being removed from one of said fulcrum-slots to another.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

CHARLES R. McKIBBEN.

Witnesses:
JOHN GROETZINGER,
JOS. L. SHINING.