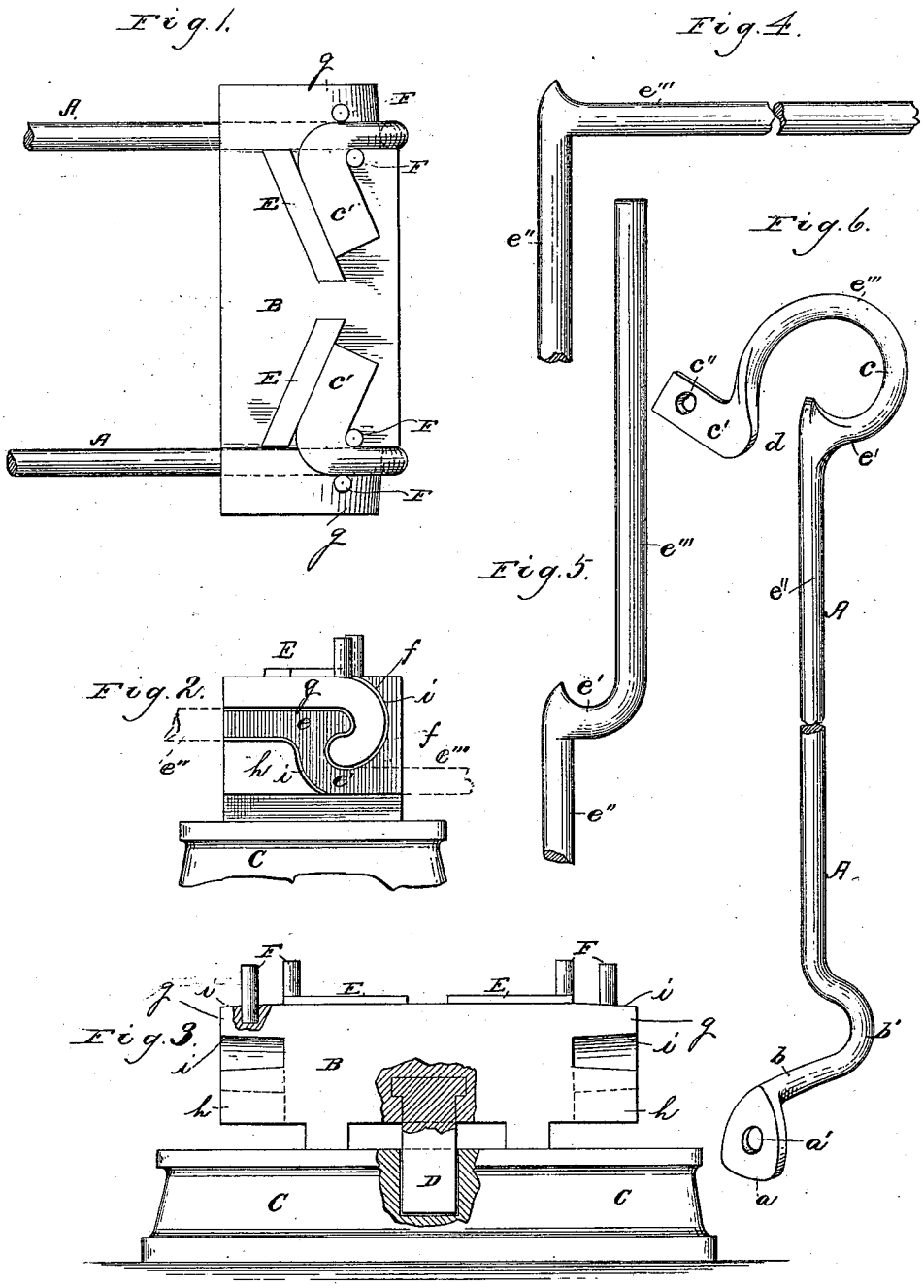
(No Model.)

D. C. & J. G. MAHON.

BENDING BLOCK.

No. 337,006. Patented Mar. 2, 1886.



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DAVID C. MAHON AND JOHN G. MAHON, OF CHICAGO, ILLINOIS.

BENDING-BLOCK.

SPECIFICATION forming part of Letters Patent No. 337,006, dated March 2, 1886.

Application filed December 10, 1885. Serial No. 185,321. (No model.)

To all whom it may concern:

Be it known that we, DAVID C. MAHON and JOHN G. MAHON, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bending-Blocks or Forming-Tools of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1 is a top or plan view of a block or tool embodying our invention, and showing the position of the completed article made thereon when the same is ready to be removed. Fig. 2 is an end view of the same. Fig. 3 is a side view thereof, shown partly in section, and also representing the means employed for mounting it detachably upon a pillow-block or anvil. Fig. 4 is a detail illustrative of the first operation or step in the manufacture of the iron which we completely form or bend by means of our block. Fig. 5 is a like representation, showing the second step in preparing the said iron for the said block; and Fig. 6 is a perspective representation of the completed or finished iron after the same is bent upon our said block.

Like letters of reference indicate like parts.

The purpose of our invention is to provide a block or tool to aid in the work of manufacturing wrought-iron bars or guide-rails employed in applying vertically movable and folding grain-car doors to the interior of cars.

In Fig. 6 we have represented an iron or guide rail, A, of the class referred to. The lower end of this iron is hammered out flatly, as shown at *a*, and this flattened portion is pierced to receive a screw or other fastening, as shown at *a'*. This flattened part may be termed the "lower end or foot" of the iron, and the purpose of flattening and piercing it is to permit of its being firmly applied to the car. This iron is permitted to project inward a little way near its lower end, as shown at *b*, and it is also bent or curved near its lower end, as shown at *b'*. From the curve *b* the iron extends directly upward to a curved portion, *c*, and the extreme upper end is flattened, as shown at *c'*, and pierced, as shown at *c''*, to admit of its being there applied to the car. This curved portion is open, as shown at *d*. The car-door is provided with staples or loops, through which the iron A passes. These irons (there being one upon each side of the door) form a part of the means for permitting the door to be raised vertically and afterward swung or folded horizontally toward or against the roof of the car, where it is temporarily suspended or retained by means of suitable catches. Heretofore it has been customary to make or forge these irons upon anvils, an operation which is comparatively slow and tedious, and hence the irons have been comparatively expensive.

Our present invention relates solely to certain novel means which we employ for the purpose of facilitating the manufacture of the said irons, all of which will hereinafter more fully appear.

B represents a block, made, by preference, of cast-iron, and C is a pillow-block on which the block B rests removably. We may here state, however, that the block C does not constitute a part of our invention, and we do not here intend to be restricted thereto, as an ordinary anvil or any suitable rest for the block B may be employed, instead of the block C. In the end of the block B we make a comparatively deep groove, *e*, formed to receive the bent portion *e'* of the iron A after the second step in its construction (illustrated in Fig. 5) has been taken. It will be perceived on reference to Fig. 5, in connection with Fig. 2, that if the iron, when formed as shown in Fig. 5, be arranged horizontally (one arm, *e''*, being upward) it may be arranged in the groove *e*, as indicated by the dotted lines shown in Fig. 2.

It will be perceived that one arm, *e'''*, of the iron A will project outward in one direction from the groove *e*. The other arm, *e''*, projects in the opposite direction. By this means the iron may be firmly held in the groove *e* while it is being manipulated in the manner hereinafter described. We also so form the block B, as shown at *f*, as to permit the arm or extension *e'''* to be bent upward and around in the manner indicated in Fig. 6. In other words, the end of the block B has upon it a projecting part, *g*, having a curvature at one end corresponding to the curvature which we wish to make at the upper end of the iron A. The block B has also on its end an extending part, *h*, resulting from the sinking of the groove *e*.

D is a square or polygonal shank depending from the block B. This depending part we make, by preference, of wrought-iron, and we cast the block B about its upper end by insert-

ing the said shank into the mold before pouring the metal into the latter, as is usual or is customary when casting one part to or about another. In the pillow-block C we sink a socket to receive the lower part of the shank D, the said socket corresponding in form to that part of the shank which enters it. By this means the block B, when placed upon the block C, is prevented from being turned during the operation of bending the iron A, as will hereinafter more fully appear.

E E are blocks or ribs cast upon the upper face of the block B. These ribs are arranged diagonally or are inclined in opposite directions, as is clearly indicated in Fig. 1. F F are removable pins in holes or sockets made to receive them in the block B. The projecting parts *g* and *h* are beveled somewhat, as indicated at *i i*, for the purpose hereinafter referred to.

In manufacturing the iron A in the form shown in Fig. 6 we proceed as follows: To the part *e''* we weld the part *e'''*, (to the upper end or part of the part *e''*,) setting the part *e'''* a little way from the end of the part to which it is applied, as indicated in Fig. 4. We deem it preferable, in order to give a neat and finished appearance to the upper part of the iron A, and also to form a neat curve, to hammer the extreme upper end of the part *e''*, so that it will be there contracted or beveled, as shown. While the iron is still hot we bend the part *e'''* up or over into the position indicated in Fig. 5. All this work we do upon an anvil in the manner usual in blacksmithing. The iron is now ready for being applied to the block B in the manner indicated in Fig. 2. To further bend the iron we arrange it in the said block, and then by means of a lever having a socket in one end (or other suitable tool) to receive the end of the part *e'''*, we bend the latter part up around the outer curved portion of the projecting part *g* of the block B, thus laying that part of the iron so bent between the pins F F. These pins serve as lugs which aid in retaining the iron in place for the next operation. We desire to state, however, that the outer pin F may be dispensed with, although we deem it preferable to employ it. After bending the iron up around the part *g* and between the pins F F, we bend it around at an angle to the plane of its curvature, as indicated in Fig. 1. The inner pin F stands in the angle of the bend thus last made, and after having given the iron this final bend we flatten it out by hammering, thus producing the flattened portion *c*. The hole *c''* may be made therein afterward in any suitable or well-known way. The block E aids in giving to the upper end of the iron its proper form, as it operates in conjunction with the pin F in producing that result. The said block E, however, is not absolutely essential, excepting to produce exact correspondence or uniformity. To remove the iron from the block B, we withdraw the pins F F and slip the iron off in the direction of the end of the block. The parts *g* and *h* of block B, by being tapering or beveled somewhat, permit the iron to be removed with facility. The iron is now completed and ready to be applied to the use for which it is intended.

We make both ends of the block B alike, excepting that the parts E E are inclined differently, as shown. By this means we are enabled to make "right" and "left" irons, as will be perceived.

In practice we find that it is only necessary to give the iron two heats—one to weld the parts *e''* and *e'''* together and to give it the curvature or bend shown at *e'*, Fig. 5, and another heat in order to give it its final bend and to flatten it, in the manner described, while it is on the block B.

Our experience in making these irons upon anvils in the ordinary methods of blacksmithing, and also making them by employing the block B as an aid, has demonstrated that the advantages which we seek are attained by using the said block.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A bending block or former adapted to receive or hold (at the curvature of the iron) an iron, *e'' e'''*, having a curvature, *e'*, the said block also having a part formed approximately like the curvature *c* of the said iron, in combination with a pin or lug arranged for contact with the said iron in the angle at the junction of the part *e'''* with the flattened portion *c'*, substantially as and for the purposes specified.

2. A bending block or former having thereon one or more projecting parts, *g g*, formed substantially as shown and described, and one or more projecting parts, *h h*, arranged, substantially as shown, with relation to the part or parts *g g*, in combination with one or more pins or lugs, F F, for the purposes set forth.

3. A bending block or former having thereon one or more beveled or tapering projecting parts, *g g*, and one or more beveled or tapering projecting parts, *h h*, in combination with one or more pins or lugs, F F, the said parts *h* and *g* being tapering or smallest at their outer ends or faces, all arranged, substantially as shown and described, with relation to each other, for the purposes set forth.

4. A bending block or former having thereon one or more diagonal or inclined blocks, E E, and also having upon one or both ends projecting parts *g g* and *h h*, both arranged substantially as shown and described, in combination with one or more pins, F F, for the purposes set forth.

In testimony that we claim the foregoing as our own we hereunto affix our signatures in presence of two witnesses.

DAVID C. MAHON.
JOHN G. MAHON.

Witnesses:
HENRY FRANKFURTER,
ADDIE HUSZAGH.