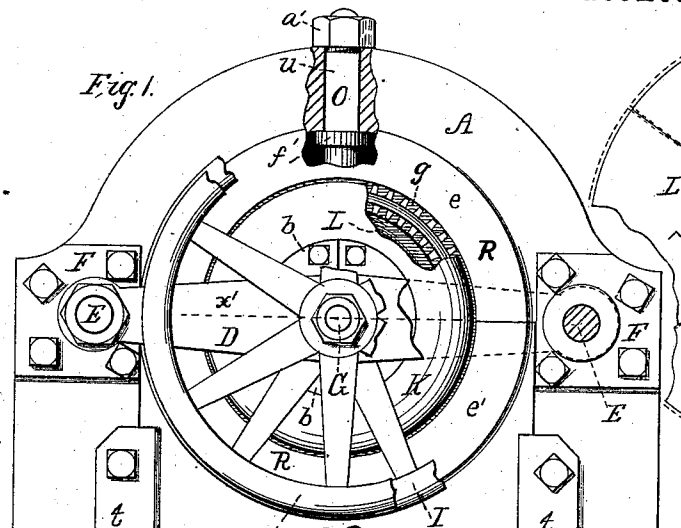
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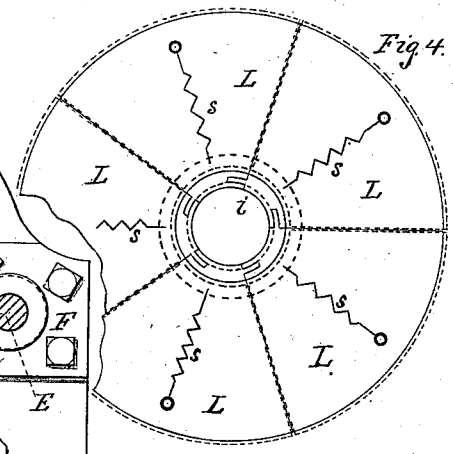
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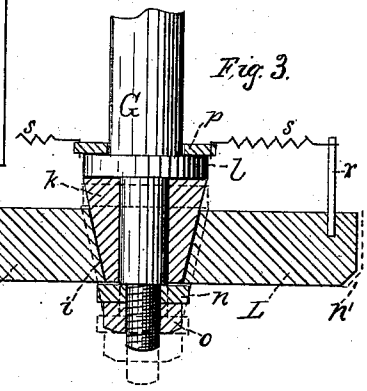
H. RUNG.

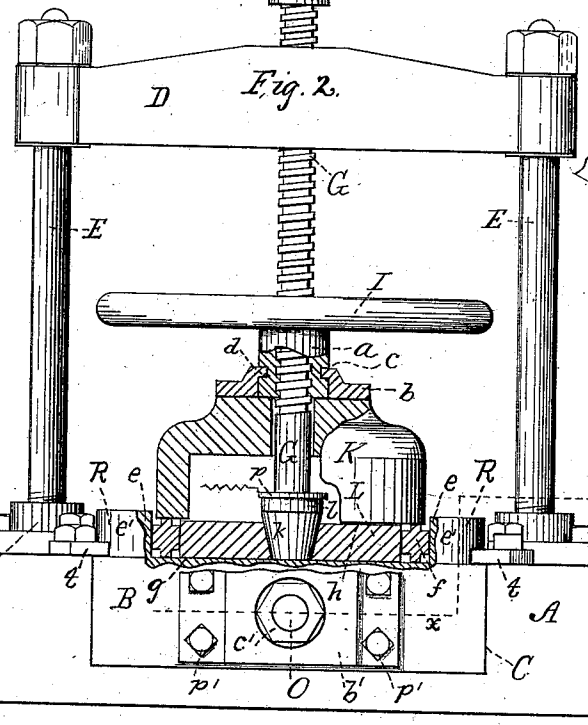
DEVICE FOR TRUING METAL CASTINGS.

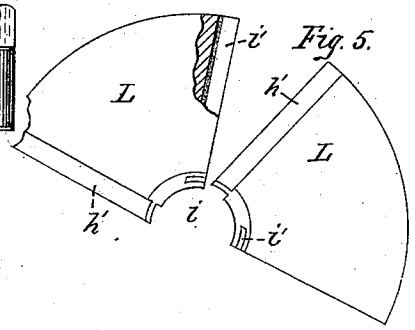
No. 373,855. Patented Nov. 29, 1887.

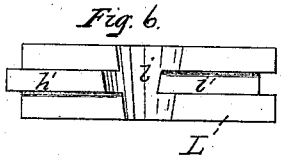












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(No Model.) 2 Sheets—Sheet 2.

H. RUNG.

DEVICE FOR TRUING METAL CASTINGS.

No. 373,855. Patented Nov. 29, 1887.

Fig. 7.

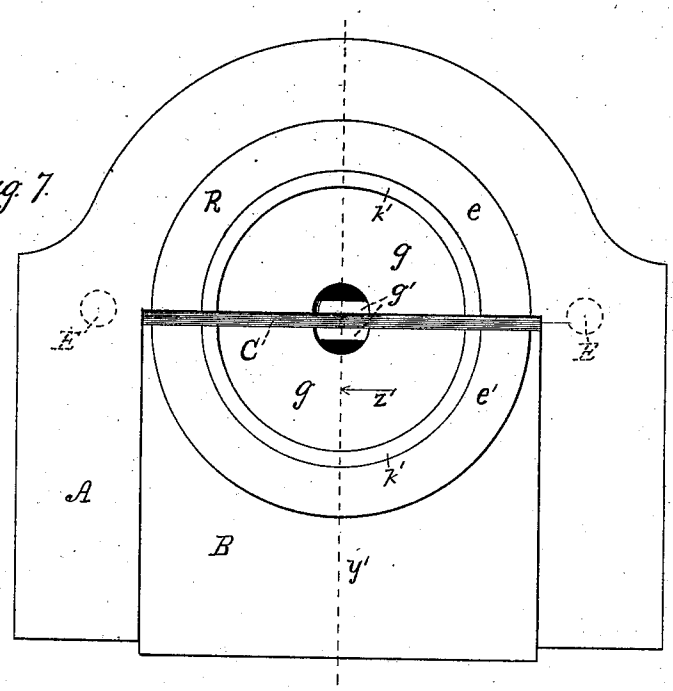
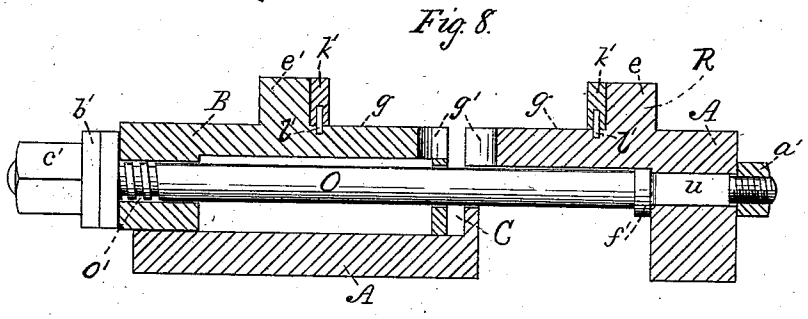


Fig. 8.



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UNITED STATES PATENT OFFICE.

HENRY RUNG, OF ROCHESTER, ASSIGNOR TO HELEN M. KIRKPATRICK, OF MACEDON, NEW YORK.

DEVICE FOR TRUING METAL CASTINGS.

SPECIFICATION forming part of Letters Patent No. 373,855, dated November 29, 1887.

Application filed September 10, 1887. Serial No. 249,312. (No model.)

To all whom it may concern:

Be it known that I, HENRY RUNG, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in a Press for Truing Metal Castings, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

Castings of steel, malleable iron, and other metal frequently come from the mold more or less warped and bent out of shape, and have to be subsequently heated and brought to shape by an after process.

The object of my invention is to produce a device by means of which circular or annular castings of steel, for instance, may be trued up or brought to a proper shape by means of strains or pressures, one exerted radially and the other longitudinally, the device being hereinafter fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of my device for truing circular or annular castings, parts being broken away and various parts sectioned, as on the dotted line *x* in Fig. 2, the view being taken as indicated by arrow *y;* Fig. 2, a view of the same, taken as indicated by arrow *z* in Fig. 1, parts being vertically sectioned, as on the dotted line *x'* in Fig. 1, and other parts broken away; Fig. 3, a diametrical section of the sectors, the cone and other parts at the lower end of the vertical screw viewed in the direction in which Fig. 2 is seen, the parts being shown in two positions by full and dotted lines; Fig. 4, a plan of the sectors; Fig. 5, a plan of two of the sectors separated to more fully show their form; Fig. 6, a view of a sector looking toward the apex or point thereof; Fig. 7, a plan of the bed-piece and slide with the upper parts omitted, seen in the direction in which Fig. 1 is seen; and Fig. 8, a longitudinal section of the same, taken on the dotted line *y'* and viewed as indicated by the arrow *z'*.

Referring to the parts, A is the bed-piece of the device, designed to lie flat upon a bench or block, it being a heavy strong casting, and B a slide fitted in a rectangular recess, C, in the bed-piece, said piece B being likewise a heavy casting, the upper surfaces of said parts A and B, when put together, being in the same plane.

D is a stiff horizontal cross-bar held by vertical supports E, joined rigidly to the bed-piece A by some common or simple means, as foot-plates F, said cross-bar being some distance above the bed-piece.

G is a stout vertical screw-shaft fitted to a threaded socket in the cross-bar D, and provided above the cross-bar with a rigid hand-wheel, H, by means of which said screw-shaft is turned in its bearings in the cross-bar. I is a similar hand-wheel, having its hub *a* internally threaded to fit the thread of the screw-shaft.

K is a heavy circular cup-block held to have its under annular edge, *h*, bear against the work *f*—that is to say, the casting or piece to be straightened up or made true. The use of the hand-wheel I is to raise or lower said cup-block, it being connected with the latter by means of a divided annular plate, *b*, secured rigidly by bolts or otherwise to said cup-block. The hub *a* of the hand-wheel is formed with a transverse circular groove, *c*, and the plate *b* is formed with a circular tongue, *d*, to fit said groove, by means of which the cup-block is carried up or down as the hand-wheel I is turned one way or the other upon the screw-shaft G.

This device is designed more particularly for truing or straightening circular or annular castings, as toothed wheels or other similar pieces formed without hubs or arms used in the various manufactories. The piece *f* shown as being operated upon is an armless toothed gear cast of steel or other malleable metal. The bed-piece A and the slide B are respectively formed with a semicircular rib, *e* and *e'*, upon their upper sides, which together form a complete circular ring or circle, R, within which the piece *f* to be operated upon is placed. The axis of the screw-shaft G is concentric with the axis of the ring R. The pieces *f* to be straightened are liable to be untrue or irregular with reference to the planes of their flat sides and also in radial directions. Before being operated upon each piece is heated evenly to a low red color and placed within the ring upon the surfaces *g* of the parts A and B, which, as above stated, are in the same plane, and the cup-block K brought firmly down upon it by means of the hand-wheel I,

as above stated, which straightens out the longitudinal crooks or bends and causes its sides to conform truly with the plane of the surfaces *g* and of the edge *h* of the cup-block.

The radial irregularities of the piece *f* are corrected by the following means:

L shows a series of circular sectors placed within the piece *f*, having their peripheries in contact with the inner circular surface of said piece *f*. These sectors together form a complete circle and are formed with a central conical opening, *i*, and the screw-shaft G is provided at its lower end with a loose cone, *k*, to fit said conical opening. The cone is held between an upper collar, *l*, rigid with said screw-shaft, and a lower collar, *n*, made rigid with said screw-shaft by a clamping-nut, *o*, between which collars the cone freely turns. Now, by turning the screw-shaft G downward by means of the hand-wheel H, as stated, the cone will be forced farther into the opening *i*, causing the sectors to spread in radial directions against the piece *f*, pressing it fairly against the inner true surface of the ring, making it true as to radial directions. Above the collar *l* the shaft G is provided with a loose collar, *p*, and the sectors L are each provided with a pin, *r*, projecting upward from its upper face, said collar *p* and the respective pins *r* being connected by tension-springs *s*, which serve to hold the sectors at all times in contact with the cone. After a piece, *f*, has been made true by the sectors the shaft G is raised, and as the cone is drawn out of the sectors the latter are drawn together by the springs *s*, and when the collar *n* comes in contact with them they are raised out of the piece *f*, the cup-block having been previously carried up out of the way.

The sectors are each formed with a radial tongue, *h'*, and groove *i'*, the tongue of one fitting the groove of the next, which serves to keep the sectors in the same plane and cause them to move up and down as one piece when moved by the screw-shaft. The lower corners, *n'*, of the sectors are chamfered to cause them to enter the pieces *f* more readily.

The slide B is operated by a horizontal screw-shaft, O, passing through both pieces A and B, as shown in Fig. 8. At *u* this screw-shaft is formed square and rests in a square socket in the bed piece so that it shall not turn therein, said shaft being made rigid in the bed-piece by means of an internal collar, *f'*, and an external nut, *a'*. At its opposite end the screw-shaft O passes freely through an opening, *o'*, in the slide, and is threaded thereat and provided with a nut, *c'*, the latter being held to said slide by a plate, *b'*, made rigid by screw-bolts *p'*. The nut *c'* is formed with a circular flange, *d'*, which flange, filling a corresponding cavity in the plate *b'*, prevents the nut from leaving the slide B as it is turned upon the screw-shaft. By turning the nut *c'* to the right or left the slide will be carried toward or from the axis of the screw-shaft G. Simple gibs *t* are employed to hold the slide B in place in the recess C. The rib *e* has its concave side turned toward the recess C, and the corresponding rib, *e'*, has its concave side oppositely turned, so that both together form a complete ring or circle, R, when the slide is pressed forward by the nut *c'*.

In using this device the piece *f* to be made true is heated to a dull red and placed in the ring R, and the slide brought up by the nut *c'*. The sectors are then lowered into the piece *f* by the hand-wheel H and pressed outward by the cone, as above stated. The cup-block is then brought firmly down on the piece *f* by the hand-wheel I, all of which parts being allowed to remain for a minute, when the piece is taken out true in form.

For work of smaller diameter I employ circular steel pieces *k'* to drop into the ring R, within which the piece to be trued is placed. As a matter of convenience these steel pieces are provided with pins *l'*, to extend into depressions in the parts A and B, to hold them in place. Equal semicircular cavities *g'*, concentric with the respective ribs *e e'*, are formed respectively in the parts A and B, which together form an opening, allowing the clamp-nut *o* and the collar *n* to pass downward without obstruction when the cone is forced down between the sectors, as above stated.

In constructing these devices it may be convenient to have the shaft O held to move longitudinally in both pieces A and B, and provide it with a nut like that at *c'*, in the place of the nut *a'*, and a plate like *b'* thereat, so that both said parts A and B shall move toward or from each upon the shaft in operating the device.

What I claim as my invention is—

1. In a device for truing or straightening metal castings, a bed-piece formed with a rectangular recess, a semicircular rib having its concave side turned toward said recess, and a sliding piece or slide fitted to said recess and formed with a rib corresponding to said rib of the bed-piece, these ribs together forming a complete ring or circle, in combination with a horizontal screw-shaft rigid with said bed-piece and parallel with the sides of said slide, and a screw-nut for said shaft outside of said slide.

2. In a device for truing metal castings, a bed-piece formed with a rectangular recess, a semicircular rib having its concave side facing said recess, a sliding piece in said recess formed with a similar semicircular rib, said ribs together forming a circular ring, and a screw-shaft and nut to operate said slide, in combination with a cross-bar and supports therefor, a vertical screw-shaft held by said cross-bar, a hand-wheel for said shaft, a cone upon said shaft, and a series of sectors operated by said cone.

3. In a device for truing metal castings, a bed-piece formed with a rectangular recess, a semicircular rib having its concave side facing said recess, a sliding piece or slide in said recess formed with a similar semicircular rib, said ribs together forming a circular ring,

a screw-shaft to operate said slide rigid with said bed-piece, and a nut for said shaft, in combination with a cross-bar and supports therefor, a vertical screw-shaft held by said cross-bar, a rigid hand-wheel for said vertical shaft, another hand-wheel having its hub internally threaded to fit said vertical screw-shaft and turn thereon, and a cup-block concentric with said vertical screw-shaft and ring, controlled by said hand-wheel turning on said vertical screw-shaft.

4. In a device for truing metal castings, a bed-piece formed with a rectangular recess, a semicircular rib having its concave side facing said recess, a sliding piece in said recess formed with a similar semicircular rib, said ribs together forming a circular ring, and a screw-shaft and nut to operate said slide, in combination with a cross-bar and supports therefor, a vertical screw-shaft held by said cross-bar, a hand-wheel for said vertical shaft, a cone upon said vertical shaft, a loose collar upon said vertical shaft above said cone, a series of sectors, each provided with an upwardly-projecting pin, and a series of springs joining said respective pins and said loose collar.

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