

A.G. Coes,

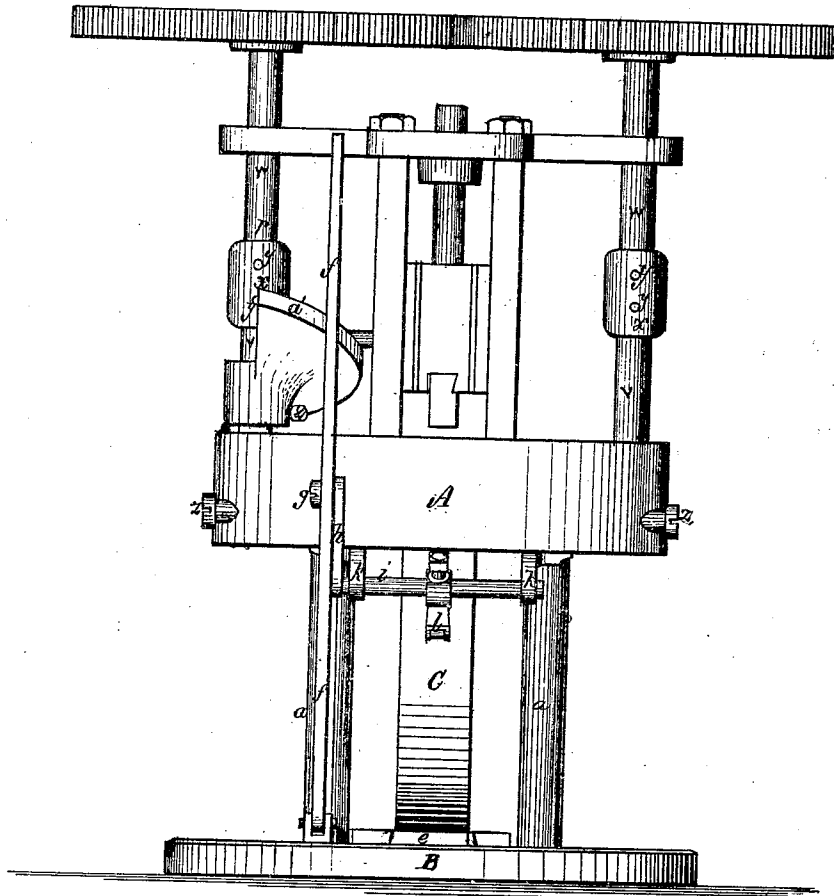
5. Sheets. Sheet 1.

Heading Wrench Bars.

No. 104,931.

Patented July 5, 1870.

Fig. 1.



Witnesses

Geo. A. Spring.

Edmond Griffith.

Avery Gates Coes.

by his Attorney

Frederick Curtis.

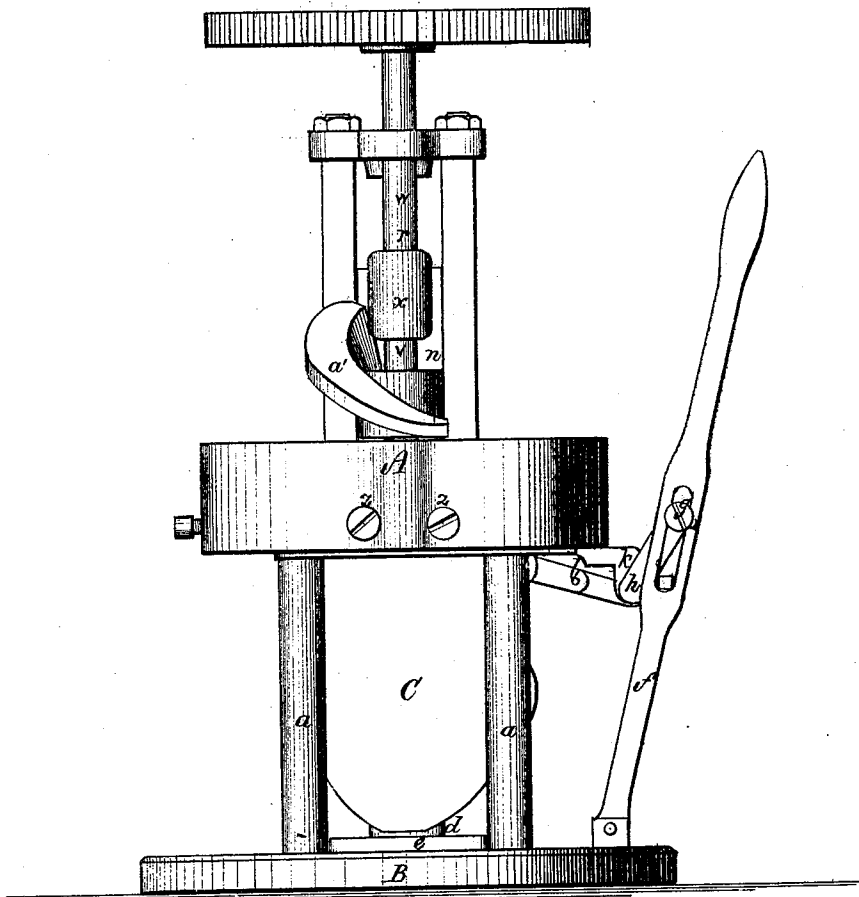
A. G. Coes,

Heading Wrench Bars.

No. 104,931.

Patented July 5, 1870.

Fig. 2.



Witnesses.

Geo. A. Loring.
Edward Saffell.

Avery Gates Coes.

by his Attorney,
Frederick Curtis.

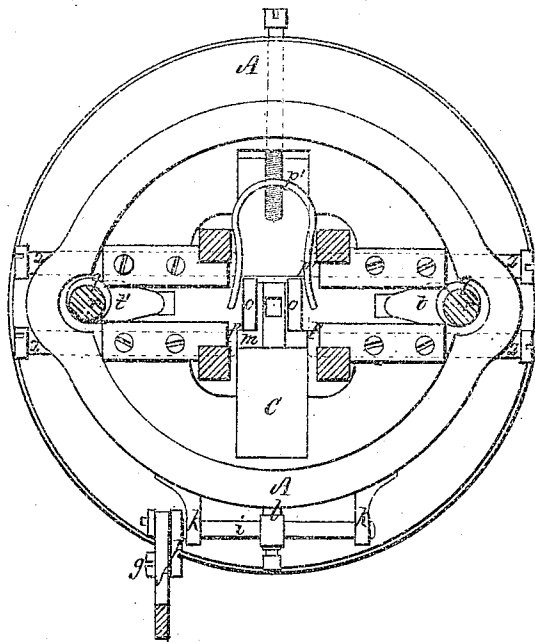
A. G. Coes,

Heading Wrench Bars,

No. 104,931.

Patented July 5, 1870.

Fig. 3.



Witnesses.

Geo. A. Loring.

Edward Griffith.

Aury Gates Coes.

by his Attorney.

Frederick Curtis.

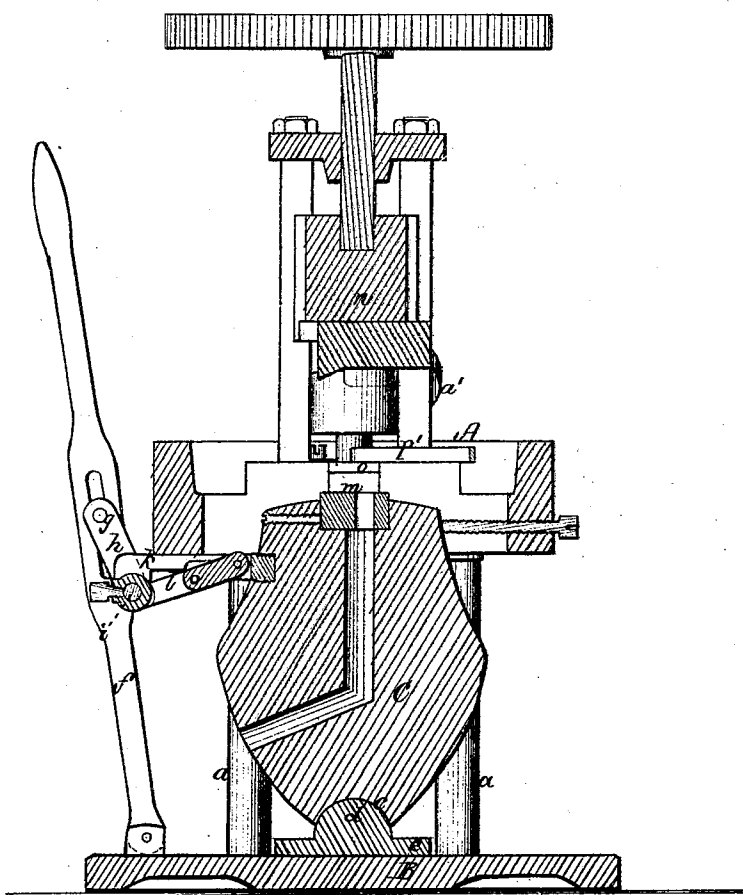
A. G. Coes, 5. Sheets, Sheet 4.

Heading Wrench Bars.

No. 104,931.

Patented July 5, 1870.

Fig. 4.



Witnesses.

Geo. A. Loring.

Edward Griffith.

Aury Gates Coes.

by his Attorney.

Frederick Curtis.

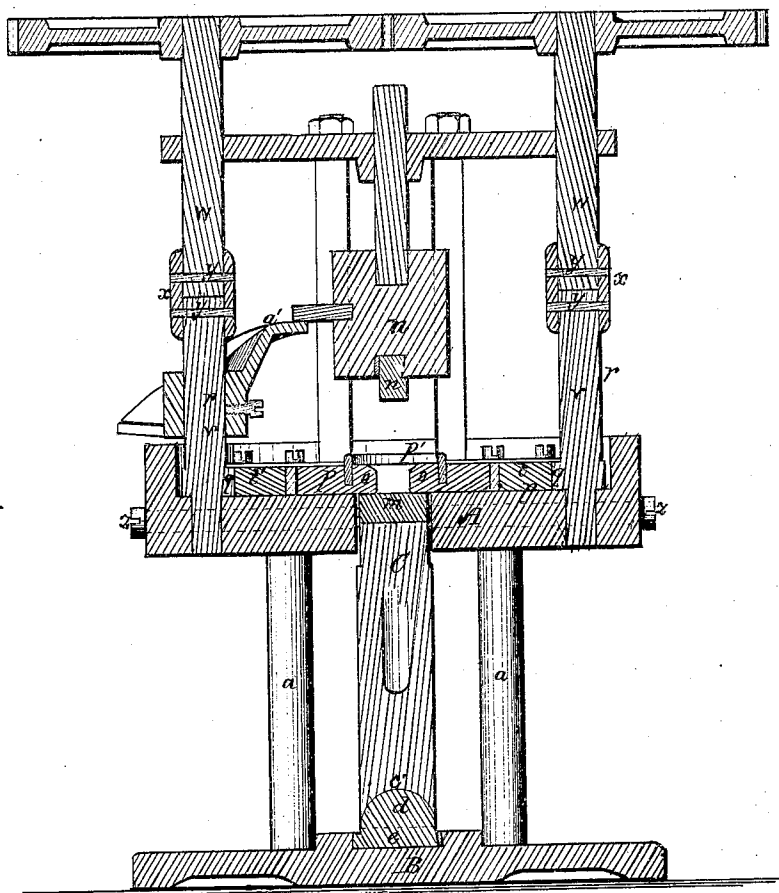
A.G. Coes,

Heading Wrench Bars.

No. 104,931.

Patented July 5, 1870.

Fig. 5.



Witnesses.

Geo. A. Loring.

Edward Giffen.

Aury Gates Coes.

by his Attorney.

Frederick Curtis.

UNITED STATES PATENT OFFICE.

AURY GATES COES, OF WORCESTER, MASSACHUSETTS.

IMPROVED MACHINE FOR FORGING THE HEADS OF WRENCHES.

Specification forming part of Letters Patent No. 104,931, dated July 5, 1870.

To all to whom these presents shall come:

Be it known that I, AURY GATES COES, of Worcester, in the county of Worcester and State of Massachusetts, have made an invention of new and useful Improvements in Machines for Forging the Heads of Wrenches; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawing, making part of this specification, and in which—

Figure 1 is a front and Fig. 2 a side elevation, Fig. 3 a horizontal section, Fig. 4 a vertical and transverse section, and Fig. 5 a vertical and longitudinal section, of a machine embodying my invention.

The machine herein described resembles, in its general characteristics, that exhibited in Letters Patent of the United States No. 29,360, and issued on the 31st day of July, 1860, to Loring Coes and myself, and may, in some respects, be considered in the light of an improvement upon such patented machine.

My invention may be stated to consist, first, in the combination, with the drop-hammer and side dies, of an upright anvil-block, vibrating upon a ball-and-socket joint, the socket being formed in the base of the block, substantially as and for the purposes hereinafter stated; secondly, in the combination, with the upright and vibratory anvil-block, of a toggle-joint and lever, constructed and arranged to operate said block, and to hold it rigid at the proper times, substantially as hereinafter set forth; thirdly, in the combination, with the vibratory anvil-block, when arranged and operating in connection with the side dies and drop-hammer, as described, of lateral adjusting-screws, arranged in the machine to support and guide the block upon the sides, as hereinafter set forth; fourthly, in the combination, with the drop-hammer and side dies, of the socketed anvil-block, the semi-spherical bearings upon which it vibrates, and an adjustable plate, upon which said bearings are supported, so that the position of the anvil may be adjusted, and the bearings and anvil may be removed from the machine whenever desired.

The drawing which accompanies this specification and illustrates my invention represents, at A, a horizontal tablet or bed-piece, cylindrical or elliptical in form, and supported

at some altitude above a base-plate or foundation, B, by means of columns *a a a a*. In this tablet A is created a central transverse orifice, extending nearly across its entire width, while within this orifice plays the upper end of a rocking or vibrating metallic block, C, the base of this block being formed with a concavous or cup-shaped socket or step, *c*, to embrace a semi-spherical or convex pivot or bearing, *d*, which thus becomes the means of support to such block, and serving the purpose not only of allowing the block to sway freely and with little friction upon it, but serves, by its form, the more valuable purpose of preventing collection and accumulation of scales and injurious substances, which, in machines of this character, are at all times a subject of great annoyance and injury to the bearings. Owing to the nature of this joint no loosening or play of the parts are liable to ensue, which are now very common, owing to the severe thrusts upon the anvil by the descending hammer. This semi-spherical bearing *d* is mounted upon or makes part of a flat plate, *e*, which is inserted within a groove, or between guides provided for its reception, in the base-plate B of the machine, by which means the relative position of the anvil-block may be adjusted or the same removed entirely from the machine.

The rocking or nodding motions of the anvil-block C upon its bearings are effected by means of an upright lever, *f*, pivoted at its lower end to the base-plate of the machine, and rising into a position in front of and above the tablet A, where it may be readily grasped by the attendant, such lever or "shipper" being swiveled at about its center to the wrist-pin *g* of a crank, *h*, applied to one end of a horizontal rocker-shaft, *i*, supported in proper bearings *k k* at the front of the tablet A, a toggle-joint, *l*, connecting the said rocker-shaft with the front face of the anvil-block C, as represented in Fig. 4 of the accompanying drawing.

An outward movement of the shipping-lever *f* effects a straightening of the toggle-joint and an advance of the anvil-block sufficiently to clear its forging or operating face *m* from the path of movement of the drop die or hammer, which is represented at *n* in the drawing. Vice versa, an inward movement of the lever *f* returns the anvil-block to working po-

sition below and in the path of the descending hammer, it being observed that when, by the outward movement of the lever, the toggle-joint is distended until it assumes a straight line, it provides an unyielding abutment to preserve, without further care upon the part of the workman, the right position of the anvil pending the blows of the hammer.

The anvil-block C is provided with a central perpendicular orifice or cavity for reception of the shank of a wrench-bar, the upper or operating surface, *m*, of such anvil-block for a small portion thereof being of a raised and even plane, to serve as a bed for the head of the wrench-bar, which becomes necessary, owing to the convex outline of the upper part of such anvil-block.

The two side dies or abutments, which together form the side walls of the inclosure in which the head of the wrench-bar is forged or shaped, are represented at *o o* in the drawing as twin-shaped horizontal blocks of metal, sliding in ways or grooves *p p* formed for their reception in the upper face of the tablet A and upon opposite sides of the anvil, the inclosure between these sliding blocks, when at their nearest approach, determining the width of the bar-head as the latter is forged by the hammer *n* between them. These abutments *o o* must recede from one another as the hammer rises, in order to admit of ready escape-ment of the anvil-block and the wrench-bar; and to effect this separation of the abutments *o o* a yoked shaped spring, *p'*, is interposed between them.

The advance of the abutments or lateral dies *o o* toward each other are effected by means of eccentrics *q q*, placed upon upright shafts *r r*, disposed upon opposite sides of the anvil-block and revolving in bearings *s s* of the main frame, a link, *t* or *t'*, being interposed between the outer end of each abutment or die and the adjacent eccentric, in order to provide an anti-friction bearing at this point.

Heretofore the eccentrics *q q* have been formed integral with the shafts, which are in one piece, and of steel and wrought-iron welded.

This construction is a comparatively expensive one, while my plan is to form the shafts in two sections, and produce the eccentrics and the lower part, *v*, of the shaft in cast-iron, which is chilled to increase its hardness, such lower section of each shaft being joined to the upper section, *w*, by a sleeve, *x*, and set-screws *y y*, or in any suitable manner.

In addition to the economy of this construction of the shaft and eccentrics, the chilled iron has been found, in practice, to wear a much greater length of time than steel.

In carrying out the third part of my invention as embodied in this context, I screw through the bulk or metal of the tablet A of the machine, upon opposite sides of the anvil-block C and at right angles to its length, a number of long screws, *z z*, &c., these screws being advanced until the ends abut against the sides of the said anvil-block, thus forming guides to insure its correct position, and to change this position should circumstances necessitate it.

The drop press or hammer of the machine is represented in the drawing at *n* and its lifting-cam grade at *a'*. As these parts of the machine contain in themselves no point of novelty, further reference to them is omitted, as their operation will be apparent at a glance.

The peculiar arrangement of the anvil-block and its guiding-screws *z z* is productive of very valuable results, since it admits of a large space being left about the block for escape of scales, &c., thus avoiding the greatest evil now encountered in machinery of this nature.

Claims.

I claim—

1. The combination, with the drop-hammer and side dies, of an upright anvil-block vibrating upon a ball-and-socket joint, the socket being formed in the base of the block, substantially as and for the purposes stated.

2. The combination, in a machine such as described, of the upright vibratory anvil-block, with the toggle joint and lever, constructed and arranged to operate said block, as shown and set forth.

3. The combination, with the vibratory anvil-block, when arranged and operating in connection with the drop-hammer and side dies, as described, of the lateral adjusting-screws *z*, arranged in the machine to support and guide the block upon the sides, as shown and set forth.

4. The combination, with the drop-hammer and side dies, of the socketed anvil-block, semi-spherical bearings *e d*, and adjustable plate *e*, substantially in the manner and for the purposes described.

AURY GATES COES.

Witnesses:

W. W. RICE,

WM. H. HAMILTON.