

(No Model.)

J. H. ALKER.

DIE FOR SWAGING AND SHAPING THE POINT END OF COUPLING PINS.

No. 245,690.

Patented Aug. 16, 1881.

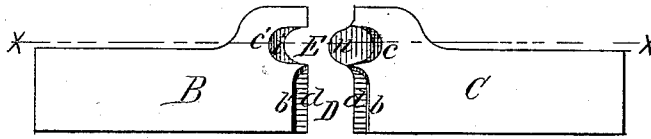


Fig. 1.

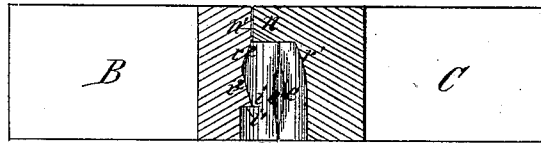


Fig. 2.

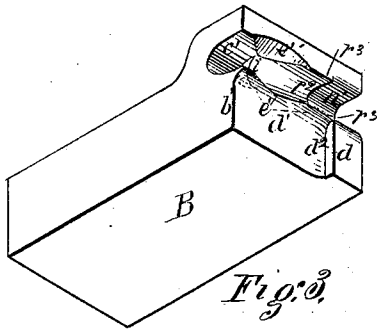


Fig. 3.

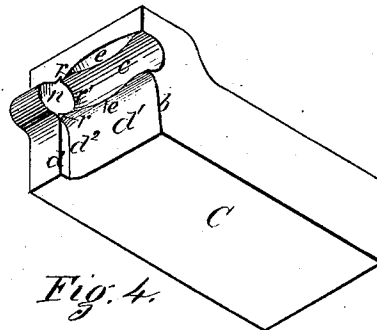


Fig. 4.

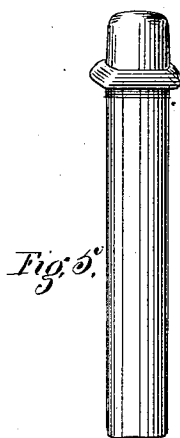


Fig. 5.

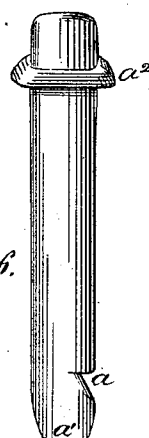


Fig. 6.

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DIE FOR SWAGING AND SHAPING THE POINT ENDS OF COUPLING-PINS.

SPECIFICATION forming part of Letters Patent No. 245,690, dated August 16, 1881.

Application filed May 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. ALKER, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Dies for Swaging and Shaping the Point Ends of Coupling-Pins; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a view, in elevation, of my improved dies for shaping and forming the points of coupling-pins. Fig. 2 is a sectional view through one die-cavity, the section being taken horizontally in the plane of the line $x x$, Fig. 1. Figs. 3 and 4 are perspective views of the dies, showing the forms of cavities made in them respectively. Fig. 5 shows a blank upon which said dies are to operate, and Fig. 6 shows a coupling-pin having its point shaped and finished in illustration of the work performed by the dies.

My invention relates to dies for shaping and forming coupling-pins for railway-cars of the class shown in Fig. 6 of the drawings. Such pins have an oval or elliptical body or stem in cross-section, with a tapered point, a' , an indentation or notch, a , in one edge near the point, and a shoulder or head, a^2 , at or near the opposite end.

My improved dies are designed especially for shaping the point of such a pin, including the notch a and tapered point a' . In doing such work heretofore it has been customary in most cases to make use of hammers or hammer-dies, by which the desired shape was secured by a forging operation. Workmen possessing a considerable degree of skill are required to operate hammers or hammer-dies so as to secure good and uniform results.

The purpose of my invention is to reduce the cost of manufacture of these articles by increasing the quantity or number which a workman can turn out in a given time, and also by bringing the operation within the ability of comparatively unskilled workmen. This is done by the use of dies adapted in form to be operated by a uniform compressing-motion equal in extent for all strokes.

My improved dies are constructed and operated as follows:

Two dies, B and C, are employed, the die C being fixed in position, by preference, upon a horizontal bed, and the die B being movable horizontally toward and from the working-face of die C. Uniform positive motion may be given to die B by cam or crank, as in ordinary bolt-machines, or by other suitable mechanism, whereby the die is moved equally on each and every stroke. In the working-face of each of these dies are formed parts of two die-cavities, D and E. The cavity D is formed of two similar parts, $b b'$, one in each die-face. It is open along its lower edge and at the front end. End walls, d , close the inner or rear end of the cavity when the dies are brought together, and the side walls, d' , are adapted in form to the flattened sides of the blank. At their inner ends these side walls are sloped outward a little toward the face of the dies, as at d^2 , thereby diminishing the depth of each part cavity at that point. The purpose of thus sloping the side walls is to reduce or taper the point of the blank on its flattened sides, while the parallel sides d' of the cavities give the body of the stem equal thickness and form for a short distance back of the point. The purpose of this latter feature of construction will presently more fully appear.

Above the cavity D are formed two parts, $c c'$, of an edge-working cavity, E. In die C the bottom and side walls of part cavity c conform to the rounded edge and a portion of the side faces of the blank, except that along the central part of the cavity the side walls are hollowed out or cut away, as at e , to afford space for spread of metal, as presently described; also, at the inner end these side walls are sloped inward, as at r , corresponding to the taper given to the point of the blank on its side faces in cavity D, and also the bottom wall has a corresponding outward slope, as at r' , the purpose of which is to taper one edge of the blank at the point while the side walls at r preserve the tapered form of the sides of the blank as previously given in cavity D. The rear or inner end of this part cavity c is closed by a wall, n , which extends in a rounded projection beyond the face of the die. This wall

n serves as a stop against which the blank is fed; also, by projecting beyond the face of die C it covers the whole or the greater part of the end of the pin with an undivided wall, which gives a point without fin and well finished on the end. It also serves, in connection with a corresponding cavity in die B, presently described, as a guide to bring the dies together properly.

In die B the part cavity *c'* is in general form and in size adapted to receive such portion of the end of the blank as is not inclosed in cavity *c*. On the bottom wall of *c'* is a triangular projection, *i*, extending across from side to side, having an abrupt face toward the open end of the cavity, as at *i'*, and an inwardly or downwardly sloping face, *i''*, toward the inner or closed end of the cavity. (See Fig. 2.) At the extreme inner end of this cavity *c'* the bottom wall again slopes outward, as at *r''*, corresponding to the sloping wall at *r'*, and is designed to taper the other edge of the blank between the notch *a* and the point. The side walls are also sloped inward, as at *r''*, corresponding to the walls of *c* at *r*, and for a like purpose.

Along either side of projection *i* the side walls of *c'* are cut away or hollowed out, as at *e'*. The edge reduction in the blank incident to forming the notch *a* thickens or bulges out its sides, such notch being formed by a single compression of the dies, and the hollowed-out walls *e e'* are designed to afford space into which the metal may flow, and thereby prevent, to a great degree, elongation of the blank between the notch and point. Such elongation, if permitted to any considerable extent, would, under a repetition of blows or compressions, result in producing an ill-shaped notch, *a*. By providing a solid end wall, *n*, against which the end of the blank abuts, and providing space within the die-cavity for the thickening or bulging of the metal under edgewise compression, I am enabled to prevent such elongation practically, and secure a product well shaped and finished; and I do not wish to limit this feature of my invention to the particular provision shown at *e e'*, as good results may be secured in substantially the same way by making the side walls of the cavity straight, or nearly straight, and making the cavity wider from side to side than the thickness of the blank; but I prefer the form shown, as I am enabled thereby to give better form and direction to the thickened part for subsequent reduction.

At the inner end of part cavity *c'* is made a recess or cavity, *n'*, adapted in size and form to receive the projection *n* on die C, which, when the dies are brought together, closes the entire end of the two-part cavity by a solid or undivided wall, as above described.

I have shown the side walls between cavities D and E thin and partially cut away by the hollowing out at *e e'*. They are made in this way principally for economy, since but

comparatively little wear or strain comes upon them. I do not consider this an essential feature of construction, and these walls may be made thicker, if desired; also, instead of making both cavities D and E in one set of dies they may be made in separate sets and mounted in such near relationship as to be capable of combined use, as herein described.

In operation the workman feeds the heated end of the blank (see Fig. 5) into part cavity *b* in stationary die C, against end wall, *d*, with the flattened sides vertical. As die B is forced against the interposed blank the flattened sides of the blank at the point will be tapered by the sloping walls *d''*, as before stated. The workman then transfers the blank to part cavity *c* in die C, feeding it against wall *n*, the flattened faces of the blank being horizontal. As die B is again forced toward C the edges of the blank are tapered at the point, the notch *a* is formed, and the blank is thickened or bulged out on its sides, as above stated. To reduce this thickened part to its former thickness the blank is again transferred to cavity D and subjected to compression on its side faces, thereby widening the blank at that part. The blank is again transferred to cavity E and subjected to edge-compression, and as the part operated upon has not been materially elongated the projection *i* will coincide with the notch *a* first formed, and restore, by this second pass, the desired form of notch and edge taper, which may have been somewhat distorted by the preceding pass in cavity D. This second pass in cavity E produces comparatively small reduction, consequently the blank is not much thickened by it, and the desired finish and form can usually be secured by a third or finishing pass in cavity D. Additional passes may be given, however, if desired, in either or both cavities, but ordinarily they will not be required. The principal duty devolving upon the workman in this operation is to transfer the blank from one cavity to the other, holding it in proper position and alignment, and he may be assisted in this, if desired, by any suitable or well-known form of rest or guide arranged in front of the dies.

Comparatively little skill is required in the workman—or, in other words, cheap labor may be employed—the shaping and forming being done by the dies under uniform conditions; whereas with hammers and hammer-dies, heretofore employed, a considerable degree of skill was required for proper handling of the blank and regulating the blows of the hammer in order to secure the desired results. The work can also be done rapidly with my improved dies, and a well-finished product secured at a reduced cost of manufacture.

I claim herein as my invention—

1. In dies for shaping and forming the points of oval coupling-pins, the combination of side-reducing cavity, D, for reducing and tapering the flattened faces of the blank, and edge-reducing cavity E, having end wall, *n*, cut-away

or widened side walls, e e' , projection i , and outwardly-sloping bottom walls, r' r^2 , substantially as and for the purposes set forth.

2. The stationary compression-die C, having part cavities b and c therein, the part b having end wall, d , and side wall, d' d^2 , and part cavity c , having projecting end wall, n , sloping bottom r' , and cut-away sides e , in combination with movable compression-die B, having part cavities b' c' , part b' having side and end walls, like part b , and forming therewith a complete cavity for reducing and tapering the flattened sides of an oval coupling-pin blank,

and part cavity c' having projection i , sloping bottom r^2 , cut-away side walls, e' , and inner end cavity or recess, n' , the same being adapted, with part c , to form an edge-reducing cavity for forming a notch and edge taper on the point of a coupling-pin blank, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOHN H. ALKER.

Witnesses:

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