(No Model.)

C. E. GOULD.

DIE FOR MAKING ROLLED FORGINGS.

No. 418,562. Patented Dec. 31, 1889

Fig. 4.

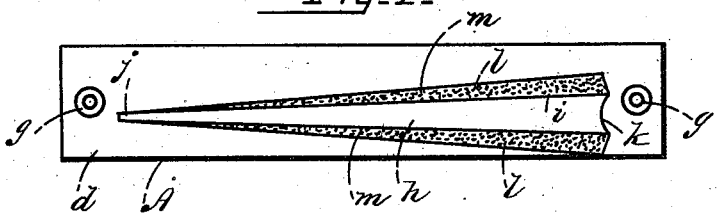


Fig. 3.

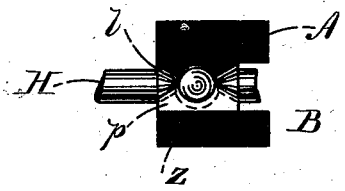


Fig. 1.

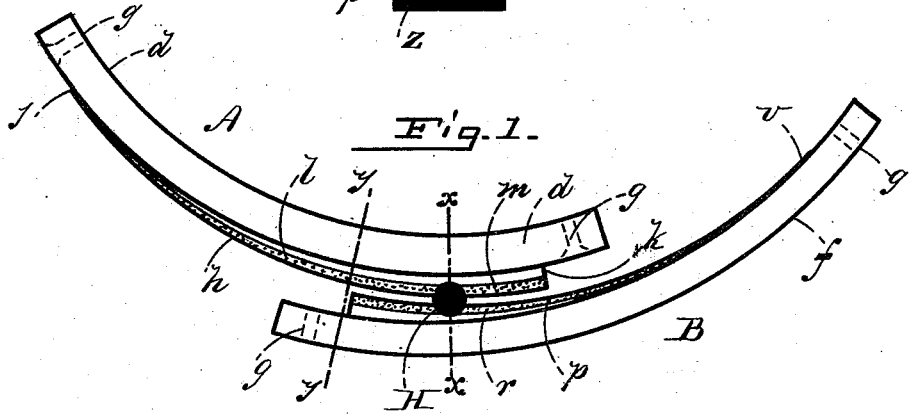


Fig. 2.

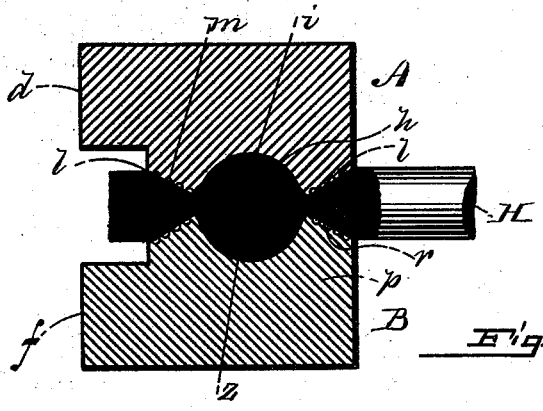


Fig. 5.

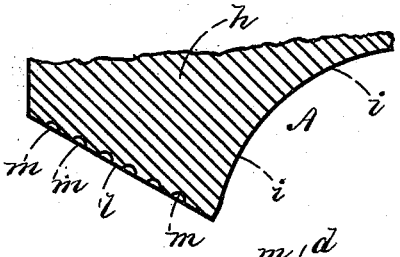
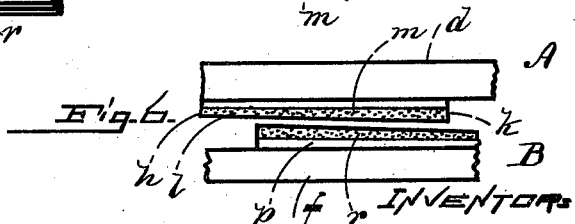


Fig. 6.



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UNITED STATES PATENT OFFICE.

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DIE FOR MAKING ROLLED FORGINGS.

SPECIFICATION forming part of Letters Patent No. 418,562, dated December 31, 1889.

Application filed August 14, 1889. Serial No. 320,726. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. GOULD, of Leominster, in the county of Worcester, State of Massachusetts, have invented a certain new and useful Improvement in Dies for Making Rolled Forgings, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved dies represented as in use; Fig. 2, an enlarged vertical section taken on the line *x x* in Fig. 1; Fig. 3, a vertical section taken on the line *y y* in Fig. 1; Fig. 4, a plan view of the convex die, and Figs. 5 and 6 sectional views illustrating details of construction.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to dies for making rolled forgings which are especially applicable for use with rolled-forging machines having a vertical rotary or reciprocating movement; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A B represent the dies considered as wholes. The bed-pieces *d f* of these dies are curved on arcs of the same circle and are provided with screw-holes *g* at each end to attach them to the machine. The working-face *h* of the die A is disposed longitudinally on the outer face of the bed-piece *d*, forming a die convex in longitudinal section. In the die illustrated, which is particularly adapted for rolling balls or similar globular forms, the working-face *h* is provided centrally with a longitudinal groove *i*, which is curved in cross-section and widens and deepens gradually from its forward end *j* to its rear end *k*, at which point it is nearly semicircular, as best shown in Figs. 2 and 5. The face *h* at each side of the groove *i* is beveled, forming cutting-bosses *l*, which gradually increase in height or width from the toe *j* to the rear end *k* of said face, as shown in Fig. 4. The faces of the bosses are punctured or indented at *m* in such manner that the edges of said indentations do not project above or beyond the surface of the bosses. Such indented or intaglio biting-surfaces have the advantage over serrated or cameo biting-surfaces in that they present a truer face to the work, wear longer, and leave the stock in better condition for the next rolling operation, as they do not rough-up the cone end of the stock, so as to cause a waste thereof. In case these dies become worn down new indentations can be readily made. The die B has its working-face *p* disposed longitudinally on the inner face of its curved bed-piece *f*, forming a die concave in longitudinal section. Said working-face is provided with a groove and diverging inclined cutting-bosses *r*, having indented faces all constructed in substantially the same manner as the face of the die A.

In the use of my improvement the dies are placed in the position shown in Fig. 1, their working-faces being adjacent and standing in a plane passing longitudinally through the centers of both. The rod or ingot H from which the forging is to be formed is placed diagonally across the dies, which move in opposite directions, the toes or points *j v* of their working-faces approaching each other and engaging the rod on opposite sides. As these dies pass each other their cutting-bosses *l r* are forced into the rod forming the ball *z* in a manner readily understood by all conversant with such matters. The heated metal of the rod is forced into the indentations *m* in the beveled faces of the cutting-bosses, the dies being thus prevented from slipping thereon, and the rod caused to rotate rapidly between them as they move. This renders the formation, especially of spherical or cylindrical articles, much more perfect. The beveled faces of the bosses *l r*, inclining outward, as shown in Fig. 2, force the superfluous metal away from the ball into the body of the bar.

Having thus explained my invention, what I claim is—

The combination of a die concave longitudinally and a die convex longitudinally, the faces of said dies having grooves and outwardly-beveled cutting-bosses at the sides of the grooves, the beveled sides of said bosses being provided with indentations, the bases of said indentations being flush with the surface of the bosses, substantially as described.

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