

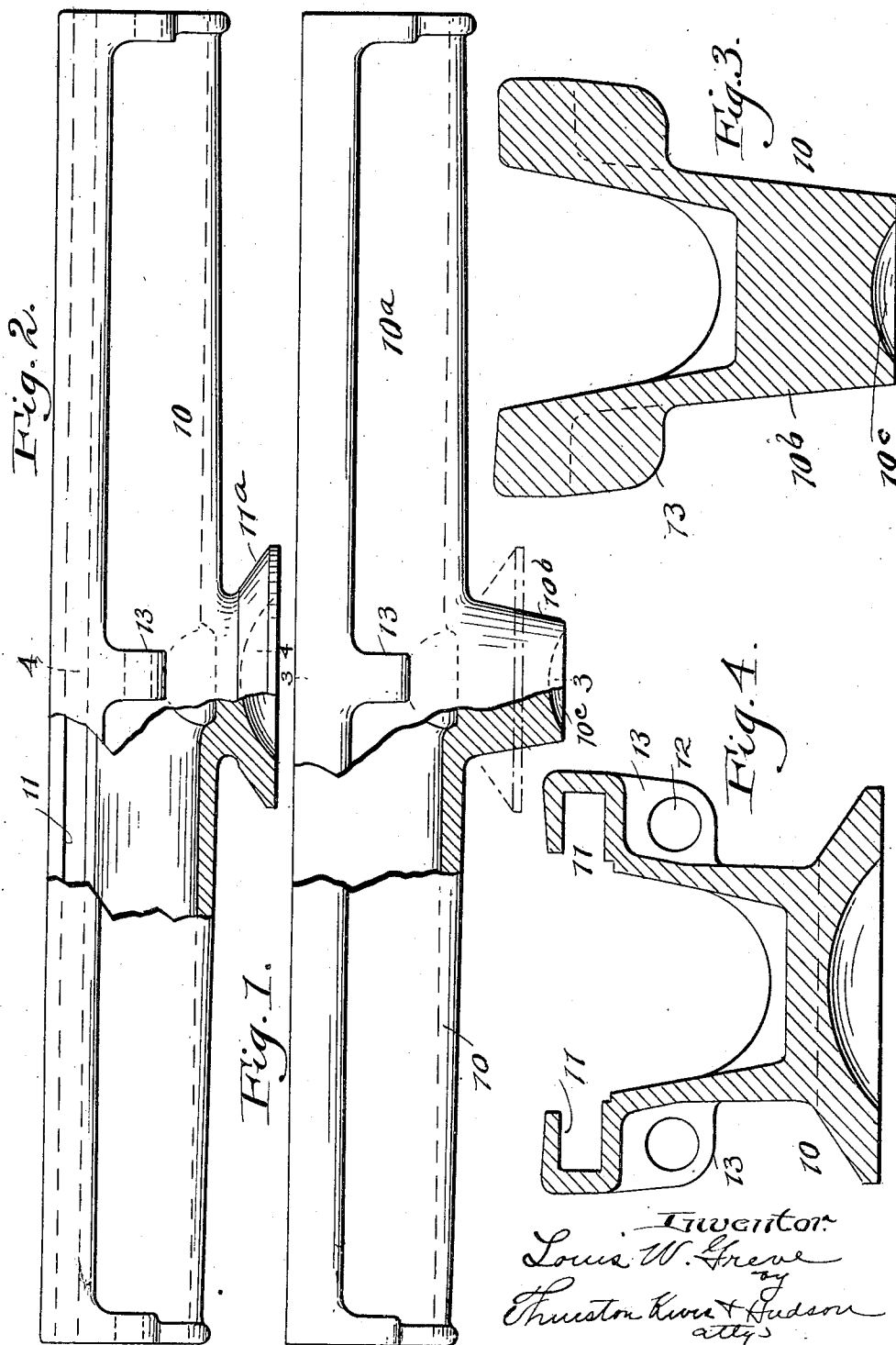
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L. W. GREVE

METHOD OF FORMING METAL ARTICLES

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UNITED STATES PATENT OFFICE.

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METHOD OF FORMING METAL ARTICLES.

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To all whom it may concern:

Be it known that I, LOUIS W. GREVE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Methods of Forming Metal Articles, of which the following is a full, clear, and exact description.

This invention relates to a method of forming metal articles, and particularly a so-called guide shell for rock drills.

The guide shell in the production of which my invention has particular utility is composed of an elongated body portion with parallel ways, and provided on one side midway between the ends with a conical or flaring head by which the guide shell is designed to be supported.

The shape of this article is such that it would ordinarily be produced by casting. It could not be formed in its final or substantially final shape solely by the ordinary forging process in view of the tapering or flaring head which could not, in view of practical difficulties, be forged even in substantially its final form when the body portion is forged.

By the present invention I am enabled to produce a forged guide shell, and thus provide a far superior article to a cast guide shell, which has the disadvantage that it is very susceptible to cracking and breakage.

By the present invention the shell is produced by a combined forging and upsetting process, the flaring head being given its shape by an upsetting process after the body portion is formed, and the latter being forged with a tapering protuberance which is upset to produce a flaring head of the desired shape.

In the accompanying sheet of drawings wherein I have illustrated a guide shell formed in accordance with my invention, Fig. 1 is a side view of the forged piece from which the shell is produced, a portion being in section; Fig. 2 is a similar view of the completed shell after the flaring head has been formed by the upsetting process; Fig. 3 is a cross sectional view along the line 3—3 of Fig. 1; and Fig. 4 is a cross sectional view along the line 4—4 of Fig. 2.

Referring now to the completed guide

shell, it will be observed that it comprises an elongated trough-shaped body 10 open at the front side and having a pair of inwardly facing parallel ways 11 for receiving the tool to be supported, and having on the back face midway between its ends a flaring or conical supporting head 11^a. Due principally to the presence of the flaring head 11^a, the shell could not be produced in forging dies having provision for shaping the head to, or substantially to the shape shown, and this would ordinarily necessitate the shell being formed from cast metal, but a device having the shape shown and adapted for supporting a tool such as a rock drill would be very susceptible to breakage if formed of cast metal. By my invention I am enabled to produce the device partly by forging and partly by upsetting, with the result that a far more durable shell can be produced than would be possible by a casting process.

By my invention the piece is forged into the shape shown in Figs. 1 and 3, the body part 10^a having the same shape as the body of the finished shell except that the ways 11 must be subsequently machined, and holes 12 drilled in ears 13 with which the body of the shell is provided on opposite sides. Furthermore, when this piece is forged there is provided on the back side, midway between its ends, a solid protuberance 10^b which is of tapering contour, and at its free end is preferably concaved as shown at 10^c. In fact, it will be observed that when the piece is forged it has a general tapering form from the top of the front face to the end of the protuberance as will be observed by reference to Fig. 3, so that the piece can be readily formed in the matrix of the die, and readily removed from the die after it has been forged.

Then as a second step of the process the protuberance 10^b is upset in suitable upsetting dies into the shape of the flaring conical head 11^a, preferably recessed on its under side as shown in Figs. 2 and 4.

The upsetting is preferably done immediately after the forged piece is removed from the forging dies, and generally the piece will not have to be reheated, although whether or not it is reheated prior to upsetting is immaterial to the present invention.

When the protuberance 11^b has been up-

set to form the head 11^a, the piece is in completed form except for such machine work as may be necessary to form the ways 11, to true up the conical or flaring face of the head and the like. There is thus produced relatively inexpensively, a guide shell suitable for supporting a tool such as a rock drill, which shell is very strong, particularly where the head unites with the body portion of the shell.

Having described my invention, I claim:

1. The method of producing metal articles which consists in forging a member with an elongated body and with a protuberance between the ends, and upsetting the protuberance to form a laterally extending flaring or conical supporting head.

2. The method of forming a guide shell for a tool which comprises forging an elon-

gated body into a general tapering shape, and with a tapering solid protuberance formed thereon, and then upsetting the protuberance so as to expand it laterally and decrease its depth.

3. The method of forming a guide shell for a tool which comprises forging an elongated trough-shaped body having oppositely disposed sides and with a protuberance which in cross section has a tapering form merging into the sides of the body, and forming a flaring supporting head by upsetting the protuberance and thus spreading the metal to assume a conical form externally.

In testimony whereof, I hereunto affix my signature.

LOUIS W. GREVE.