

(No Model.)

O. W. KETCHUM.
DIE FOR BEADING METAL PULLEYS.

No. 537,291.

Patented Apr. 9, 1895.

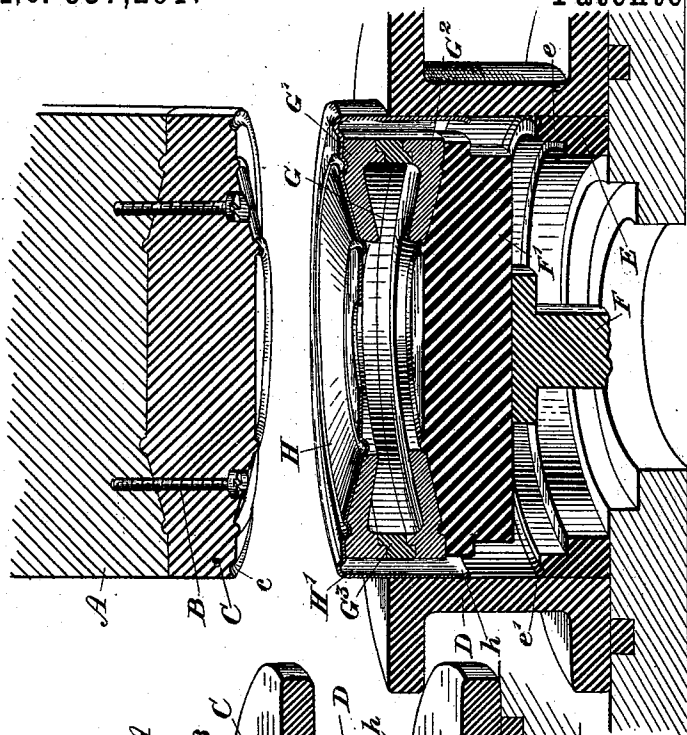


Fig. 1.

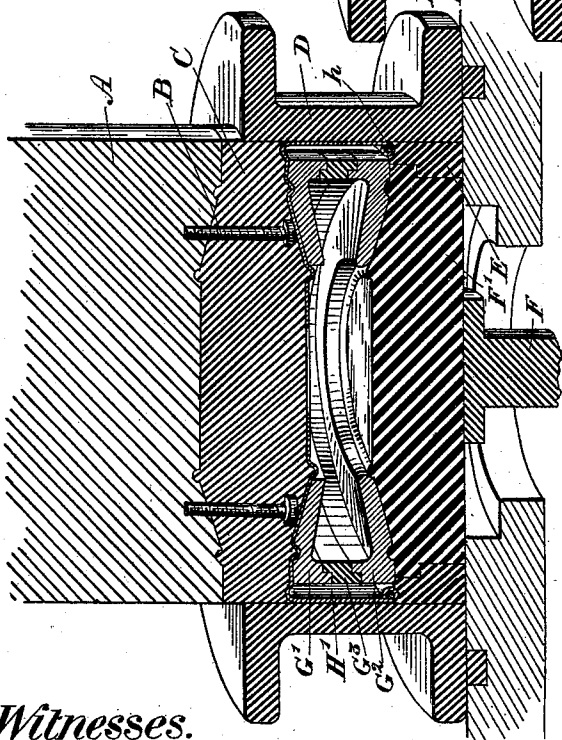


Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

OLIVER WILLIAM KETCHUM, OF TORONTO, CANADA.

DIE FOR BEADING METAL PULLEYS.

SPECIFICATION forming part of Letters Patent No. 537,291, dated April 9, 1895.

Application filed June 16, 1894. Serial No. 514,722. (No model.)

To all whom it may concern:

Be it known that I, OLIVER WILLIAM KETCHUM, manufacturer, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Dies for Beading Metal Pulleys, of which the following is a specification.

My invention relates to improvements in presses for forming a bead on the edge of the rim of sheet metal pulleys in which the web is preferably formed integrally with the rim and the object of the invention is to design such a form of dies and apparatus as will upon one downward stroke of the ram effectually form up an inwardly turned bead on the free edge of the rim of the pulley and it consists essentially of securing to the upper ram of the press a die corresponding in form to the web and forming on the stationary portion of the lower die an annular groove in which the bead is formed, the pulley being supported upon the lower ram by a supplementary ring of peculiar construction and the upper ram being designed to be brought down against the pressure of the lower ram so as to force the edge of the rim into and around the annular groove formed in the stationary portion of the die as hereinafter more particularly explained.

Figure 1 is a sectional perspective view showing the upper ram raised and the pulley placed in position ready to be beaded. Fig. 2 is a similar view showing both rams down and the pulley with the bead formed on it.

In the drawings like letters of reference indicate corresponding parts in each figure.

A, is the upper die block of the upper ram which has affixed to it by means of suitable bolts, B, a supplemental die block, C.

D, is the cylindrical portion of the lower die.

E, is a ring which is secured within the same at the bottom and provided with an upwardly extending shoulder or flange, e, which has an annular groove, e', made in the same next to and abutting the cylindrical portion, D.

F, is the lower ram, the die, F', of which is formed to correspond with the web of the pulley when it is being formed up into shape from a sheet of metal by the upper die block, A.

G, is the web-holder which is comprised preferably of an upper and a lower plate, G', G², respectively and a central ring, G³, which may be of any determined depth, this of course depending on the width it is desired to make the rim of the pulley. The ring, G³, is shown preferably connected to the upper and lower plates in step fashion although any other simple means of connections such as a tongue and groove may be employed. The plate, G², is made to fit the die, F', and the plate, G', is made of such a shape so that the web of the pulley, H, when reversed will fit snugly upon such plate.

The operation in forming the bead on the free edge of the rim, H', of the pulley, H, is as follows:—Before the pulley is put into the press the free edge of the rim is turned slightly inwardly as indicated in Fig. 1. It is then placed in position on top of the web holder, G, which it will be noticed is brought up by the lower ram, F, in the position shown in Fig. 1. The pulley is of course, placed upon the web-holder in the reversed position with the web uppermost so as to fit upon the web-holder as shown. The rim, H', extends down within the cylindrical portion, D. Hydraulic pressure is exerted upon the upper ram and lower ram. The pressure upon the upper ram being the greater, it will force down the lower ram upon its seat on the ring, E. In bringing it down the inwardly turned edge, h, of the rim, H', is guided by the grooves, e', around into the shape shown in Fig. 2, thereby forming a perfect bead around the entire free edge of the rim at a single operation. It will be noticed that as the web-holder is of less diameter than the pulley when the upper die is withdrawn and the lower ram forces the pulley back again into the position shown in Fig. 1, such pulley may be readily withdrawn.

In order to provide for the perfect forming of the bead without the pulley being distorted or thrown out of shape it is absolutely necessary that such a device as the web-holder must be provided and I find it extremely simple and effective to provide a supplemental ring for such web-holder whereby pulleys of different widths of rims may be beaded by simply providing other rings like, G³, of determinate width, this of course de-

pending upon the width of the rim of the pulley and the amount necessary to turn inwardly for the bead.

It will be understood that the groove, *c*, which I show on the face of the upper die at the circumferential edge might be used for turning the bead on the free edge of the rim of the pulley if the pulley were reversed to the position shown in Fig. 1. It will also be understood that the web holder, *G*, might be made of a single plate made to fit the face of the lower die and yet accomplish the object for which it is designed.

What I claim as my invention is—

15 1. A die for beading sheet metal pulleys comprising the lower die portion having the annular groove, the rim retaining ring adjacent to said groove, the web support and the plunger for forcing the pulley downward to cause its open edge to enter said annular groove, substantially as described.

2. In combination the lower die having the annular groove, the rim retaining ring, the plunger, and the web support of less diameter than the rim, substantially as described.

25 3. The combination with the upper die block and lower die block movable within the cylindrical portion of the lower die and means for supporting the pulley rigidly upon the

lower die block so that the rim extends within the cylindrical portion, of the ring secured within the cylindrical portion and forming a seat for the lower die block and having an annular groove formed in the top of the upper shoulder of the ring abutting the cylindrical portion of the die as and for the purpose specified.

4. The combination with the upper die block, *C*, and lower die block, *F'*, and web holder, *G*, the upper plate, *G'*, of which conforms to the reversed position of the web and lower plate of which conforms to the shape of the die block of the cylindrical portion, *D*, ring, *E*, having the annular groove, *e'*, formed at the top abutting the cylindrical portion as and for the purpose specified.

5. The combination with the upper die block, *C*, and lower die block, *F'*, and web holder, *G*, comprised of the upper plate, *G'*, lower plate, *G''*, and central ring, *G'''*, of the cylindrical portion, *D*, ring, *E*, having an annular groove, *e'*, formed at the top abutting the cylindrical portion as and for the purpose specified.

OLIVER WILLIAM KETCHUM.

Witnesses:

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