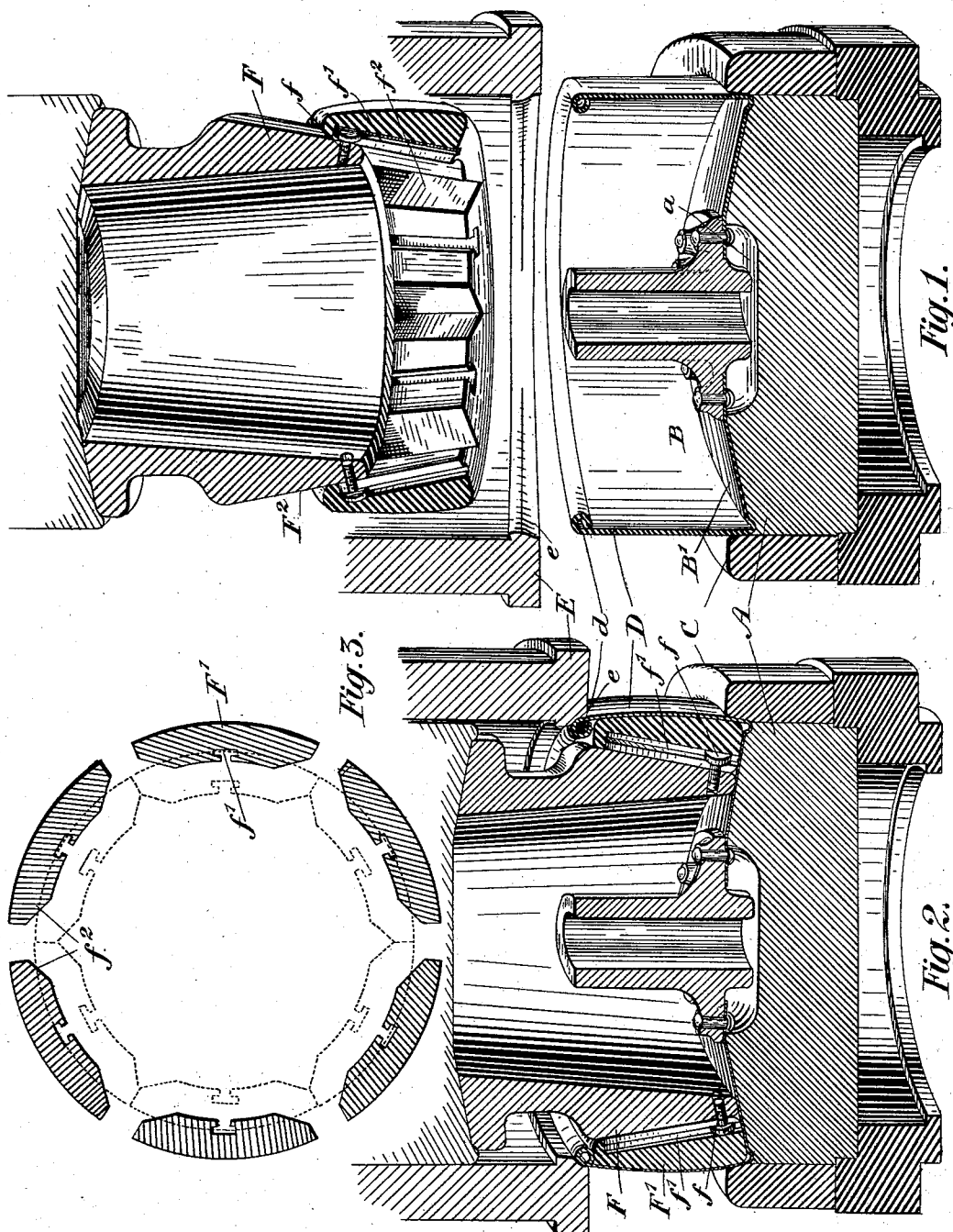


(No Model.)

O. W. KETCHUM.
DIE FOR CROWNING SHEET METAL PULLEYS.

No. 565,993.

Patented Aug. 18, 1896.



Witnesses.

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UNITED STATES PATENT OFFICE.

OLIVER WILLIAM KETCHUM, OF TORONTO, CANADA, ASSIGNOR TO JOHN PELL NORTHEY, OF SAME PLACE.

DIE FOR CROWNING SHEET-METAL PULLEYS.

SPECIFICATION forming part of Letters Patent No. 565,993, dated August 18, 1896.

Application filed June 16, 1894. Renewed December 27, 1895. Serial No. 573,564. (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 Crowning Sheet-Metal Pulleys, of which the following is a specification.

My invention relates to improvements in dies for crowning sheet-metal pulleys; and the object of the invention is to devise a simple and efficient attachment to the press whereby the rims of sheet-metal pulleys may be readily crowned; and it consists, essentially, in providing a circular base-block with an annular flange for the reception of the web and the bottom edge of the rim of the pulley, an adjustable retaining-ring for the top of the rim of the pulley, and a sectional expansion-ring adjustably attached to the ram, so that when the ring is brought down it will pass within the free edge or bead of the pulley and upon its coming against the web will be forced outwardly, so as to form the crown, as hereinafter more particularly explained.

Figure 1 is a sectional perspective view of a portion of the press involved in my invention, showing the ram raised and the expansion-ring collapsed. Fig. 2 is a similar view showing the ram down and the expansion-ring extended so as to form a crown. Fig. 3 is a plan view showing in full lines the position of the expansion-ring when extended and in dotted lines the position when collapsed.

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

A is the circular base, which is made to conform with the shape of the web B' of the sheet-metal pulley B. The base A is provided with an annular upwardly-extending flange C, within which fits the bottom edge of the rim D of the pulley B.

D is the rim of the pulley. The rim D of the pulley is held in position at the top by a vertical adjustable ring E, which is held in any suitable support and adjusted vertically by any suitable means.

e is an annular groove made in the bottom edge of the ring E and designed to overlap the top of the bead d of the pulley. The ring E

has means, when the groove e is brought down upon the bead of the pulley, to retain such ring E in position, so as to securely hold the beaded edge of the pulley.

F is the forming-die, which is provided with a number of expansible ring-sections F'. The expansible sections F' have a dovetail groove f', formed, preferably, centrally within the inner concave of the section, into which extend the heads of the screw-bolts f, which are screwed into the lower tapered end F² of the forming-die F. The concave inner side of each section is tapered to correspond to the tapered end F² of the forming-die, and the screw-bolts f have their heads parallel with the taper of the end F². (See Figs. 1 and 2.) The outer contour of each section is formed on an arc corresponding to the arc of the crown desired for the rim of the pulley.

The forming-die F, it will be seen, is hollow, so as to permit of the hub of the pulley extending up into the same. There is also a recess a made in the base A, so as to permit of this end of the hub fitting into the recess and thereby allowing the web to fit snugly upon the base. The inner end of each ring-section described above is preferably beveled at f², as shown.

When the forming-die and ring E are raised into the position shown in Fig. 1, the pulley B may be placed in the position shown in Fig. 1. The expansible ring-sections will now have been contracted to their least extent, as shown in this figure and in dotted lines in Fig. 3. The ring E is first brought down, so as to securely grip the upper beaded edge of the pulley, and is rigidly secured in such a position for the time being. The forming-die is now brought down and when the bottom of the expansible sections reaches the web of the pulley upon the base A the expansible sections of the ring will be forced outwardly, and in being so forced will gradually and very perfectly form a crown to the pulley, as indicated in Fig. 2. Immediately upon the forming-die being drawn upwardly again it will be seen that the expansible sections will drop back into their contracted form upon being relieved from the pressure of the base, and therefore drawn out quite freely from the now crowned pulley.

Should the crowning be not quite perfect, seeing that there are spaces between the expansible sections when they are drawn out, the pulley may be turned round slightly and the forming-die brought down again and the crowning of the pulley will be perfectly completed. In practice, however, I find it is not necessary in most cases to perform this second operation.

When the sections F' are collapsed, their peripheries do not form arcs of one and the same circle; but this is unimportant, as during this period they are not being utilized. When, however, they are brought down and expanded to their fullest extent, as shown in Figs. 2 and 3, the outer surface of each section forms an arc of the same circle, and thus provides for the perfect formation of the crown on the rim of the pulley. Although I show the sections adjustably attached to the forming-die, it will, of course, be understood that these sections might be placed within the pulley and the die brought down so as to expand them and thus form the crown.

What I claim as my invention is—

1. A die for crowning sheet-metal pulleys comprising the base or support, having an annular flange for retaining the lower edge of the rim against outward displacement, the clamping-ring having an open center and a flange for retaining the other edge of the rim, and the die arranged to pass through the open center of the clamping-ring to crown the por-

tion between said ring and base, substantially as described.

2. In combination the base for supporting the pulley, the clamping-ring for engaging its upper edge, and the forming-die coacting therewith, said forming-die comprising a tapered plunger-head with a series of forming-sections having sliding connection with said head, substantially as described.

3. The combination with the circular base, A , surrounded by an upwardly-extending flange, C , of the tapered hollow forming-die, F , provided with screw-bolts, f , secured near the bottom end of the die and the expansible ring-sections F' , provided with grooves, f' , as and for the purpose specified.

4. The combination with the circular base, A , flange, C , of the ring, E , formed as specified, the forming-die, F , provided with expansible ring-sections, F' , suitably connected and adjustable upon the forming-die as and for the purpose specified.

5. The combination with the circular base, A , of the hollow forming-die, F , provided with a tapered end, F^2 , the bolts, f , and expansible ring-sections, F' , provided with grooves f' , designed to be adjustable upon the heads of the bolts, f , and the beveled ends, f^2 , arranged as and for the purpose specified.

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Witnesses:

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