

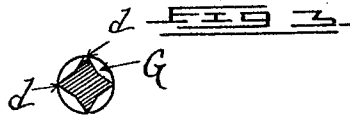
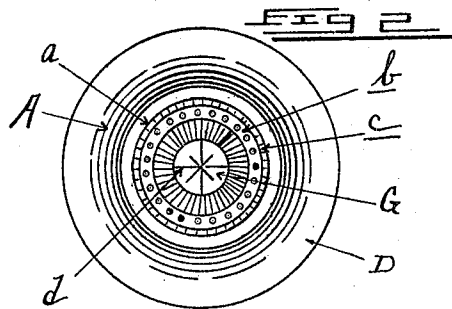
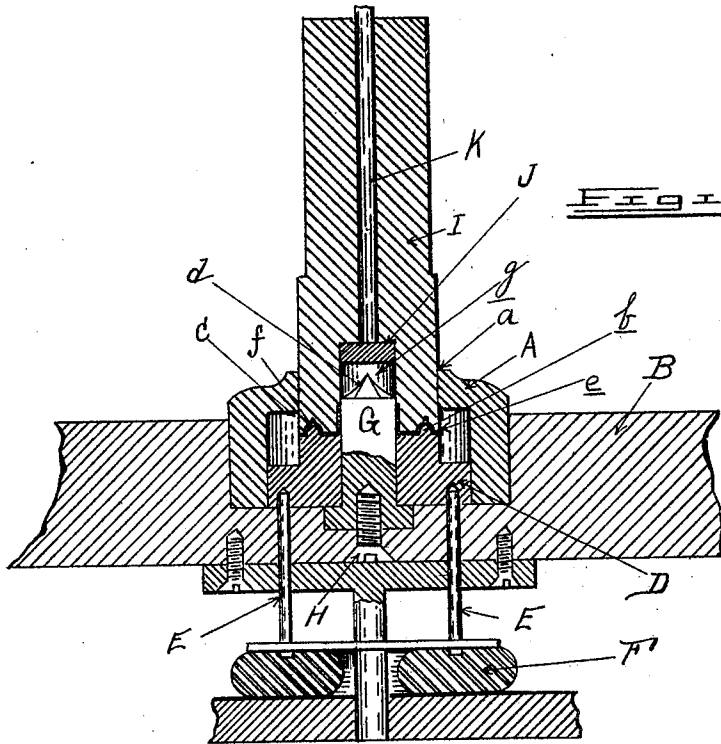
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PATENTED OCT. 17, 1905.

B. BRISCOE.

DIE FOR FORMING RADIATOR DISKS.

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WITNESSES
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DIE FOR FORMING RADIATOR-DISKS.

No. 802,029.

Specification of Letters Patent.

Patented Oct. 17, 1905.

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To all whom it may concern:

Be it known that I, BENJAMIN BRISCOE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Dies for Forming Radiator-Disks, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to sheet-metal stamping-dies more particularly designed for forming disks to be used in the construction of radiators.

The invention consists in the peculiar construction, arrangement, and combination of parts, as hereinafter set forth.

In the drawings, Figure 1 is a longitudinal section through the stamping-dies. Fig. 2 is a plan view of one of the dies, and Fig. 3 is a cross-section through the center punch forming a portion of the die, taken in a plane slightly above the upper end of the cylindrical portion thereof.

The disks which are formed by my improved construction of die may be of either circular or polygonal form. The center portion of each disk is struck upward to form a plurality of points perpendicular to the plane of the disk which form seats or bearings for securing the disks upon the radiator-pipe. The disks are also provided with radial corrugations and with an annular bead near the margin.

A is one member of the die, which is mounted upon a stationary bed B and is recessed at C to form a cutting edge *a*, which outlines the disk. D is another die member which is arranged within the disk C and is yieldingly held in normal position by supporting-pins E, which pass through the bed B and rest upon a resilient cushion F. The upper face of the member D is suitably formed to impart the desired shape to the disk, being provided, as shown, with an annular bead portion *b* and the radial corrugations *c*. This member is centrally apertured, and within this aperture is arranged a punch member G, the latter being of a size corresponding to the size of the pipe upon which the disks are intended to be sleeved.

The punch G is fixedly secured to the bed B, preferably by a screw H, and at its upper end it is tapered to a point. The pointed portion of the punch is preferably of star-shaped cross-section, as shown in Fig. 3, so as to form a plurality of cutting edges *d*, adapted

to sever the sheet metal into a corresponding number of sections.

I is the movable member of the die, which is of a form corresponding to that of the recess C and is provided with a cutting edge *e*, complementary to the cutting edge *a*. The lower face of this punch I is in complementary form to that of the upper face of the member D, being provided with an annular groove *f*, corresponding to the annular bead *c*, and with a recess *g*, adapted to receive the pin G. Within the recess *g* is arranged an extractor J, which is connected to a shank K, passing up centrally through the punch I.

The parts being constructed as described, in operation the sheet-metal blank is fed between the punch I and the members A and D, the upper faces of these members being normally substantially flush. The punch G is arranged with its apex just below the plane of the upper face of the members A and D. When the punch I is moved downward, the first operation is the fashioning or partial fashioning of the sheet metal between the complementary faces of the members I and D. Following this the continued downward movement of the punch will sever the fashioned portion from the blank, and the central portion thereof will be pressed against the apex of the punch G, the cutting edges *e* of which will cut the metal into several sections. These sections are then turned upward into the recess *g* within the punch I, and the cylindrical portion of the punch G will form these bent sections into segments adapted to fit about the tube of the radiator. In the further descent of the punch I the member D, which has been permitted to move downward by the compression of the yielding cushion F, will be forced against the bottom of the recess C, whereupon the compression of the punch will complete the fashioning of the metal between the same and the member D.

The sequence of operations just described is important in that the sheet metal is drawn to fashion the same in advance of severing from the blank, and this prevents, on the one hand, the contraction in the size of the disk and, on the other hand, the rupturing of the metal due to excessive straining thereof. If the punch and die were to operate in advance of the forming-dies, so as to first sever the disk and then to form the same, the edges of the disk would be drawn inward during the subsequent forming, and the completed disk would not be of a proper size.

In the return movement of the punch I the resilient cushion F forces the member D upward until the latter is out of engagement with the die A and the punch G. In the further upward movement of the punch I the extractor J will operate to bear against the segmental points of the disk and force them out of the recess g.

It is desirable in forming these radiator-disks to provide perforations therethrough for a freer circulation of air, and to this end I preferably provide the annular bead b with upwardly-projecting pins L, adapted to engage with corresponding recesses N to form the annular groove f' of the member I.

What I claim as my invention is—

1. The combination with coöperating punch and die members for cutting a sheet-metal disk, of a stationary punch arranged centrally within the die member having its upper end of pyramidal form, with its apex below the plane of the cutting edge of said die, said movable punch being provided with a recess for receiving said stationary punch, a member complementary in form to said movable punch and surrounding said stationary punch and movable thereon, and a yielding support for said member.

2. A sheet-metal blanking and forming die comprising a die member having a cutting edge, a coöperating movable punch member having a fashioned face, a stationary punch arranged axially within said die, its upper end being of pyramidal form, a member com-

plementary to said movable punch member arranged within said die and sleeved upon said stationary punch, and a yieldable cushion for supporting said complementary member adapted to cause the forming of the disk in advance of the severing of the same from the blank.

3. A sheet-metal blanking and forming die comprising a die member having a cutting edge for outlining the disk, a stationary punch arranged axially within said die and having a pyramidal upper end, the apex of which is beneath the plane of the cutting edge of said die, a member filling the space within said die and surrounding said stationary punch, the upper face of said member being fashioned, means for yieldably supporting the last-mentioned member with its fashioned face substantially flush with the upper face of said die, a movable punch member arranged in alinement with and complementary in form to said yieldably-supported member within the die, a recess in said movable punch member adapted to receive said stationary punch member in the depression of said movable punch, and an extractor within said recess having an operating-shank passing axially out from said movable punch.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN BRISCOE.

Witnesses:

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FRANK BRISCOE.