

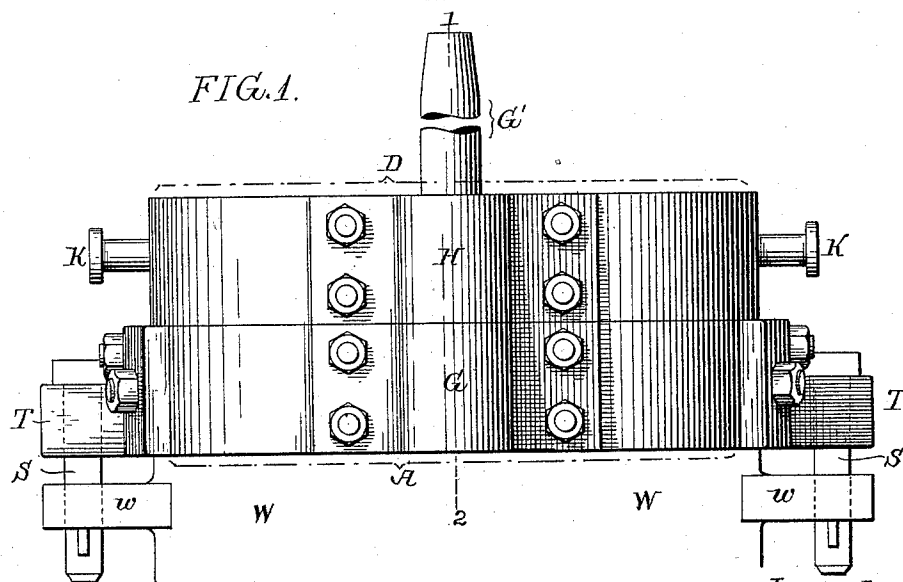
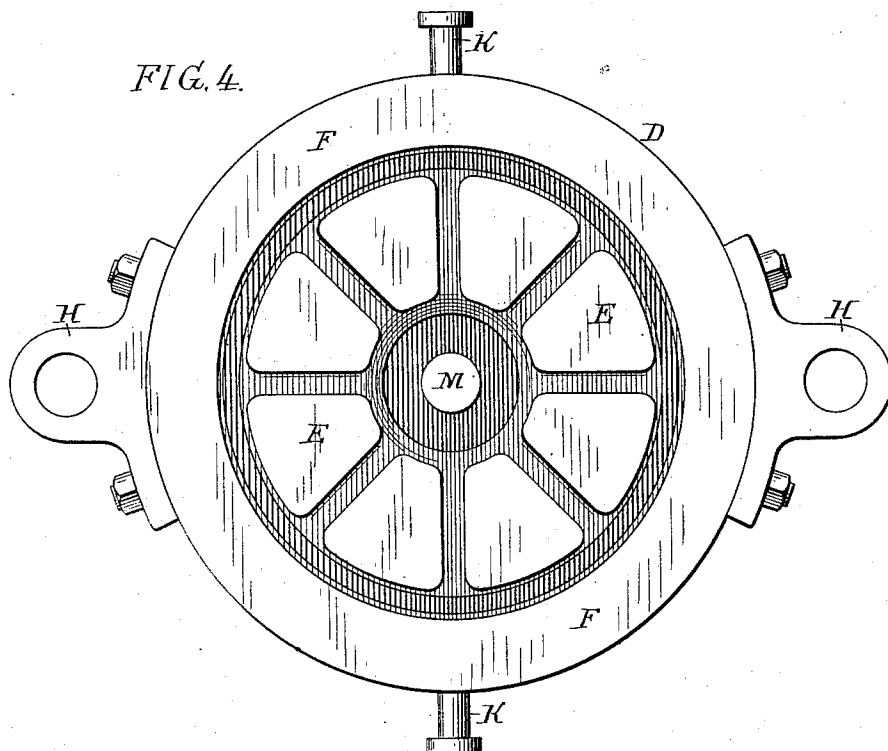
(No Model.)

2 Sheets—Sheet 1.

A. A. STEVENSON.  
DIE FOR FORGING WROUGHT METAL WHEELS.

No. 469,457.

Patented Feb. 23, 1892.



Witnesses:  
A. V. Groupe  
R. Schleicher.

Inventor:  
Archy A. Stevenson  
by his Attorneys  
Howson & Howson

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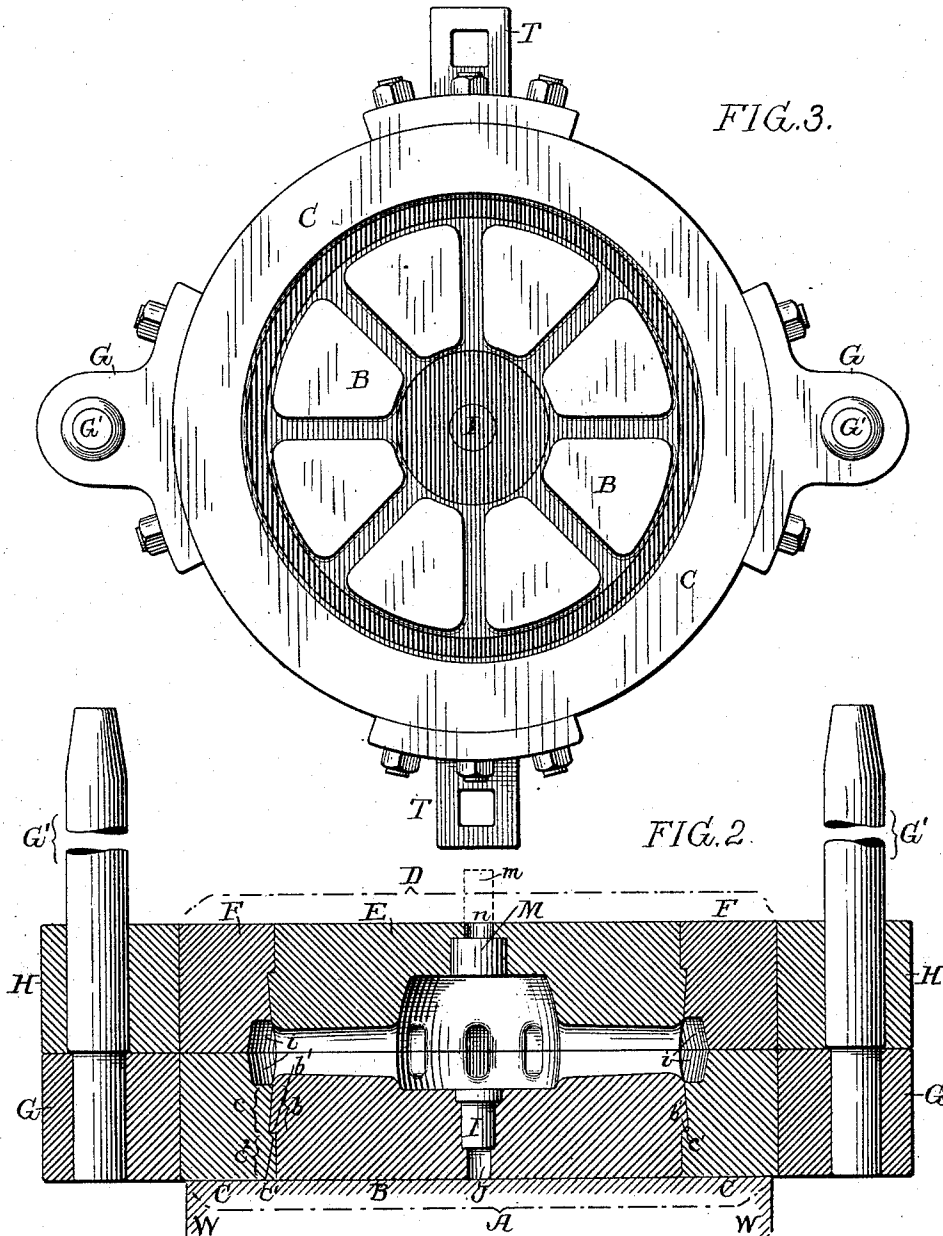
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# UNITED STATES PATENT OFFICE.

ARCHY A. STEVENSON, OF LEWISTOWN, PENNSYLVANIA.

## DIE FOR FORGING WROUGHT-METAL WHEELS.

SPECIFICATION forming part of Letters Patent No. 469,457, dated February 23, 1892.

Application filed December 22, 1891. Serial No. 415,914. (No model.)

*To all whom it may concern:*

Be it known that I, ARCHY A. STEVENSON, a citizen of the United States, and a resident of Lewistown, Mifflin county, Pennsylvania, have invented certain Improvements in Dies for Forging Wrought-Metal Wheels, of which the following is a specification.

The object of my invention is to improve the construction of dies used in forging wrought-metal wheels or wheel-centers. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1 is a side view illustrating my improved dies. Fig. 2 is a transverse section on the line 1 2, Fig. 1. Fig. 3 is a plan view of the lower die. Fig. 4 is an inverted plan view of the upper die. Figs. 5 and 6 are views of modifications.

A is the lower die, composed of a central section B and a ring-section C. These two sections are secured together in the following manner: After the face of the central section B has been suitably shaped to conform to the wheel or center to be forged and the inner edge of the ring has been suitably cut away for the reception of the rim, the inner section of the ring at *c* is beveled, forming a shoulder *c'*, the portion *c''* being preferably parallel with the axial line. The periphery of the central section B is beveled at *b*, conforming to the bevel of the ring-section, and has an annular projection *b'*, which interlocks with the shoulder *C'* of the ring. The ring-section C is heated and then forced over the center section B until its projection *c'* abuts the projection *b'* on the center section. The ring-section is then allowed to cool, shrinking tightly upon the center section. Thus the two sections are interlocked.

The upper die D has a center section E and a ring-section F, united in substantially the same manner as the section of the lower die.

I prefer in shaping the dies to recess the ring at *i* for the reception of the rim of the wheel or wheel-center and recess the central portion of the dies for the spokes and hub, as clearly shown in Fig. 2, as I find that the dies are more readily shaped in this manner than when the center section has the recesses for the rim, hub, and spokes cut therein, as in dies patented prior to my invention.

In the lower die B is a lifting-plunger I, which can be raised by passing a wedge through a slot J, the wedge raising the plunger and lifting the forged wheel or wheel-center out of the lower die.

In the upper die is a plunger M, which, as shown in Fig. 1, is flush with the surface of the upper die. When the blank has been forged sufficiently, a pin *m* (shown by dotted lines in Fig. 2) is inserted in an opening above this plunger M. The hammer, as it strikes this pin, will force the plunger into the hub of the blank, forcing the metal into the joints between the hub and spokes, forming the necessary fillets, thus insuring a strong and solid joint between the hub and the spokes of the wheel or wheel-center. This plunger may be formed as shown in Fig. 5. In this instance the plunger has an extension *m'*, which projects into the hub-cavity, forming in the first place a cavity in the blank. It is then forced farther into the blank by the hammer striking the pin *m*, which is inserted in the opening *n* above the plunger, or the die may be made as shown in Fig. 6, in which a permanent projection is formed on the upper die, and in this permanent projection is mounted the plunger M, which can be acted upon in the manner described above.

The lower die is attached to the anvil-block of an ordinary steam-hammer by bolts S S, Fig. 1, which pass through slots in wings T T, secured to each side of the lower die, and through wings *w* on the anvil-block W, as shown clearly in Fig. 1. Extending from brackets G G on each side of the lower die (shown in Figs. 2 and 3) are vertical guide-rods G', and adapted to slide on these guide-rods are bearings H H, secured to the upper die D.

I prefer to make the upper die independent of the piston rod or head of the steam-hammer, and consequently it is not lifted by the piston at each stroke; but the upper die simply rests upon the blank on the lower die during the forging operation when the blank has been inserted into the space between two dies. The upper die is raised in any suitable manner. In the present instance I have shown two pins K K at each side of the upper die, to which lifting-tackle is secured. This lifting-tackle is either attached to a crane or to

the head of the steam-hammer, and in the case of a steam-hammer the head is attached to the die by the tackle and raised, lifting the upper die sufficiently to allow the blank to be placed in position between the dies or allow the wheel or wheel-center to be removed from between the dies after forging.

When the blank is in position between the dies, the upper die is lowered and the tackle detached from the pins K and the hammer set in motion, and when the blank is shaped sufficiently the pin *m*, above referred to, is placed in the opening *n* in the upper die, the hammer forcing this pin into the die and consequently forcing the plunger into the blank, making the fillets, as described above. Thus by the arrangement described no care need be exercised in mounting the dies upon the anvil of the hammer, and the upper hammer-head does not have to be removed from the piston-rod for the attachment of a special head. One advantage of this arrangement is that in mills which are using a large steam-hammer for different purposes the dies can be readily mounted in position and secured to the anvil without other preparation, and can be readily removed, so that the hammer can be used for the ordinary work.

I have described my invention as used in connection with a common steam-hammer; but it will be understood that any power-driven mechanism may be used—such, for instance, as a hydraulic press, a drop-hammer, or like device.

I claim as my invention—

1. The combination, in a die for forging wrought-metal wheels or wheel-centers, of

the center section having a beveled rim and a projecting annular shoulder, with a ring-section having a beveled portion and a shoulder on its inner edge meshing with the beveled portion and shoulder on the center section, so that when the ring is shrunk upon the center section the two sections will be locked firmly together, substantially as described.

2. The combination, in dies for forging wheels or wheel-centers, of the upper die having a guideway and an opening with a plunger adapted to said guideway and a pin adapted to the opening back of the guideway, with a mechanism for forcing the plunger through the medium of the pin into the space between the dies, substantially as described.

3. The combination, in a die for forging wheels or wheel-centers made of two sections, of the center section having grooves for the hub and spokes only and a ring-section having a groove for the rim, substantially as described.

4. The combination, in pressure mechanism, of the anvil having projections *w*, a lower die having projections *T*, and bolts *S*, passing through the said projections and securing the lower die to the anvil, with an upper die guided by the lower die and adapted to receive the pressure from a power-driven plunger, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARCHY A. STEVENSON.

Witnesses:

EUGENE ELTERICH,  
HENRY HOWSON.