

No. 804,542.

PATENTED NOV. 14, 1905.

H. V. LOSS.  
FORGING PRESS.  
APPLICATION FILED DEC. 21, 1904.

2 SHEETS—SHEET 1.

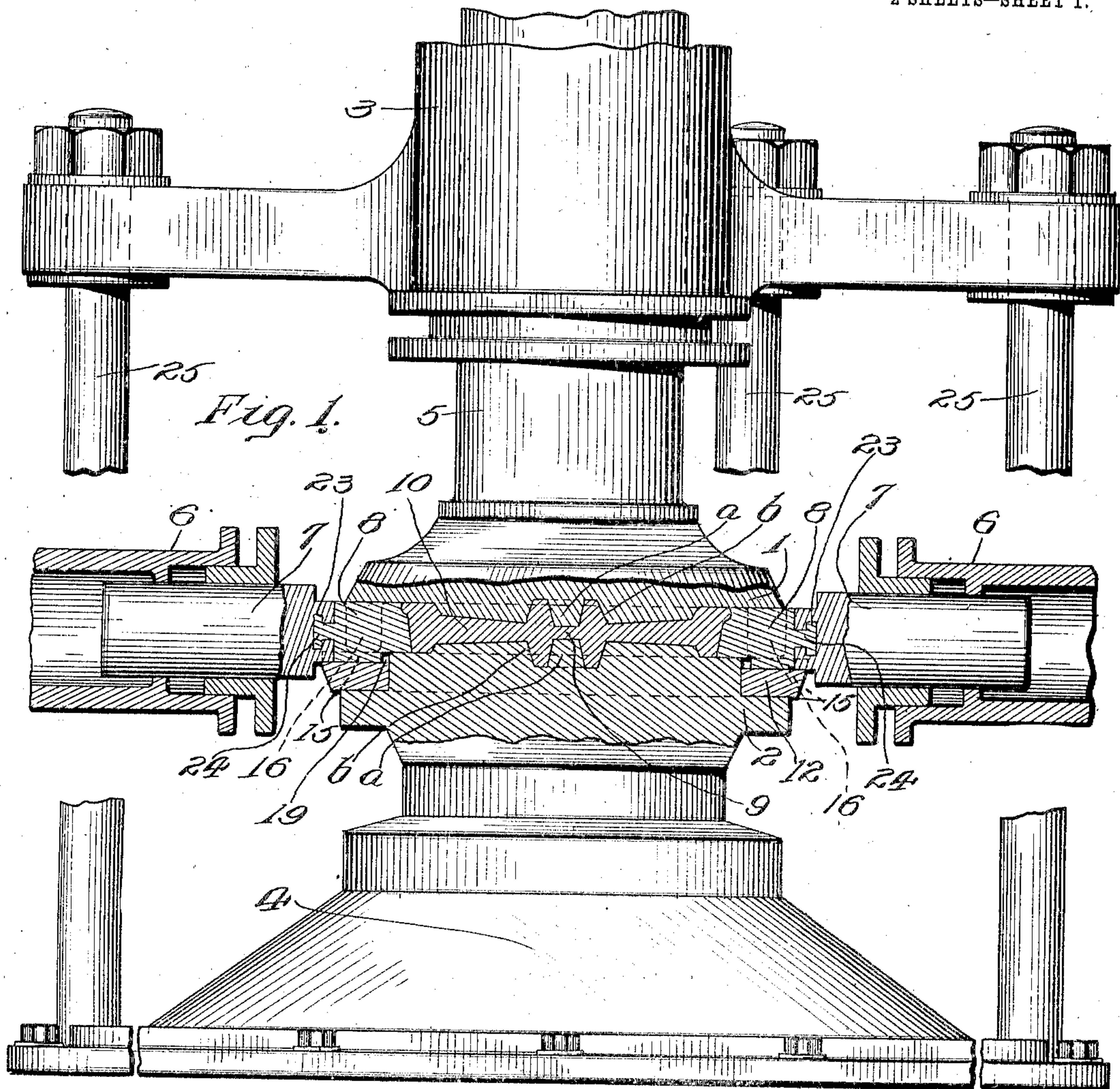
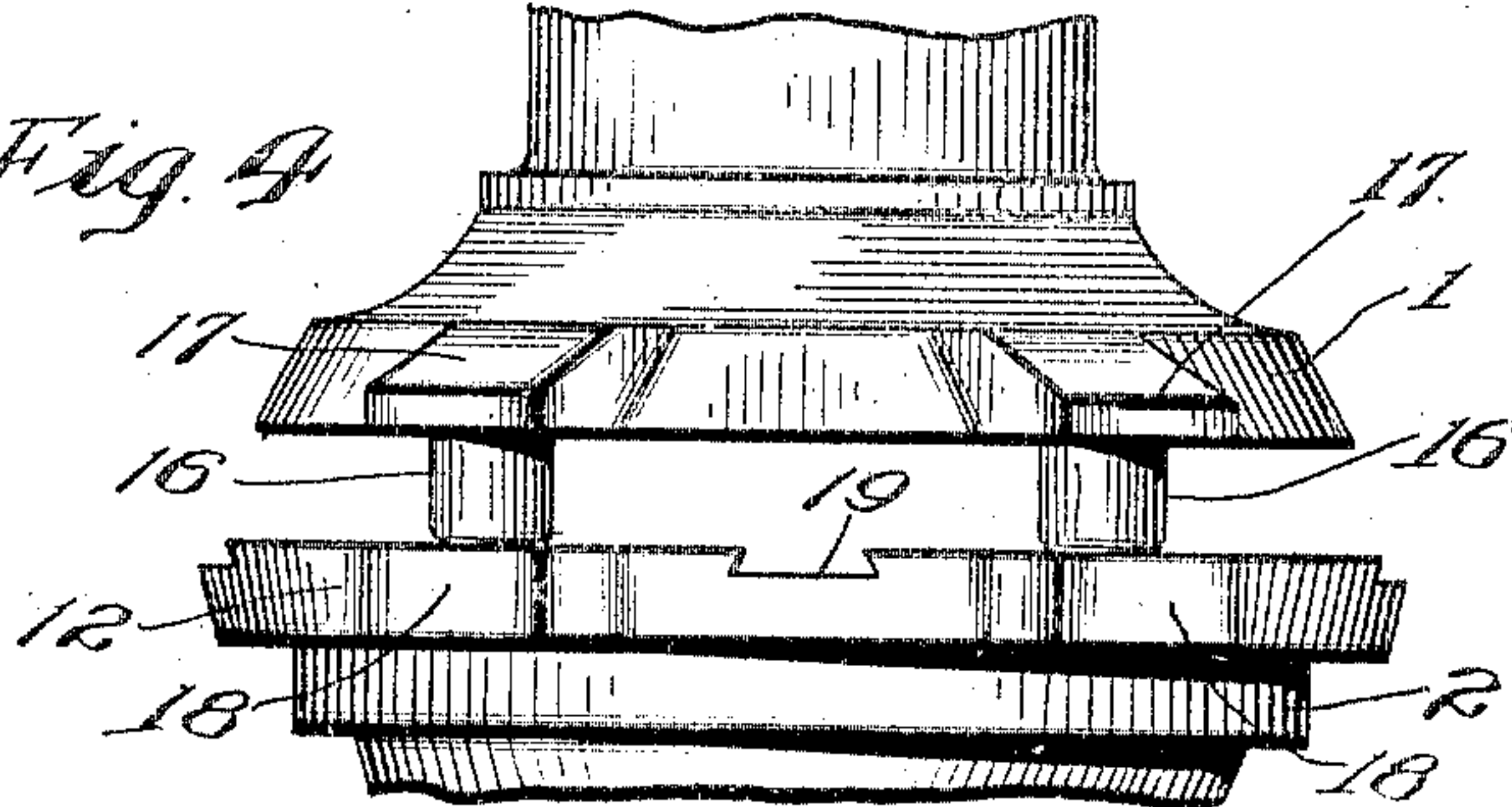


Fig. 4



WITNESSES:  
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George H. H. H.

Fig. 5.

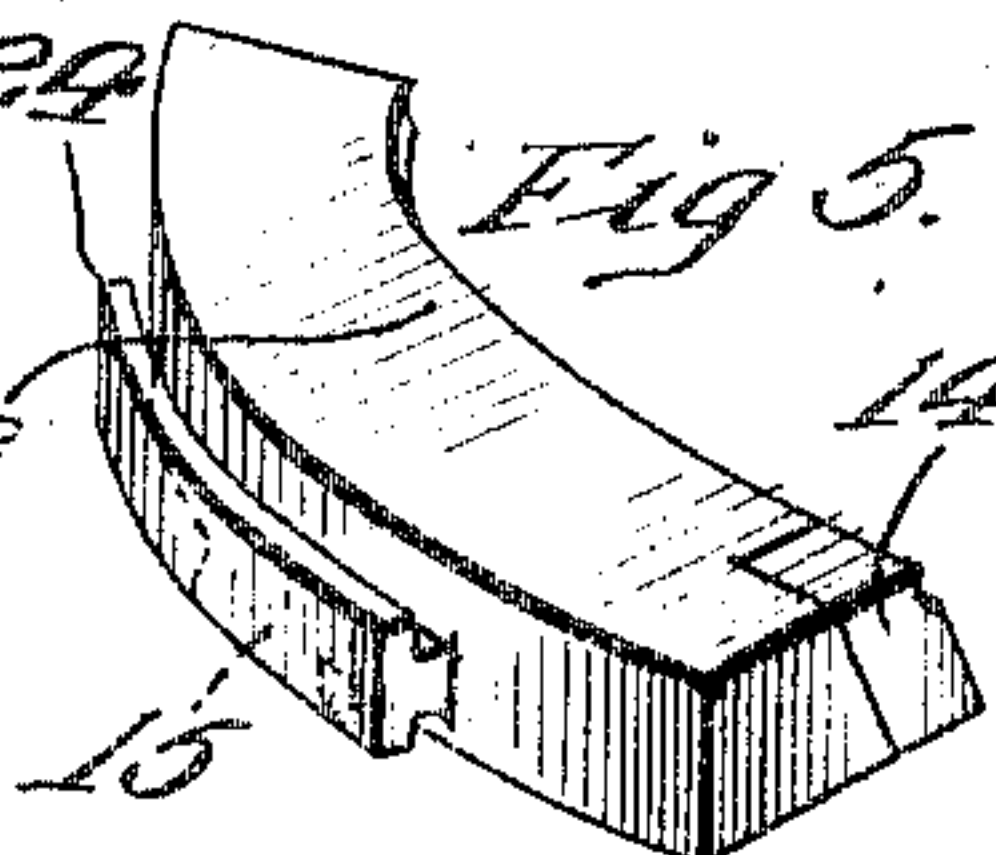
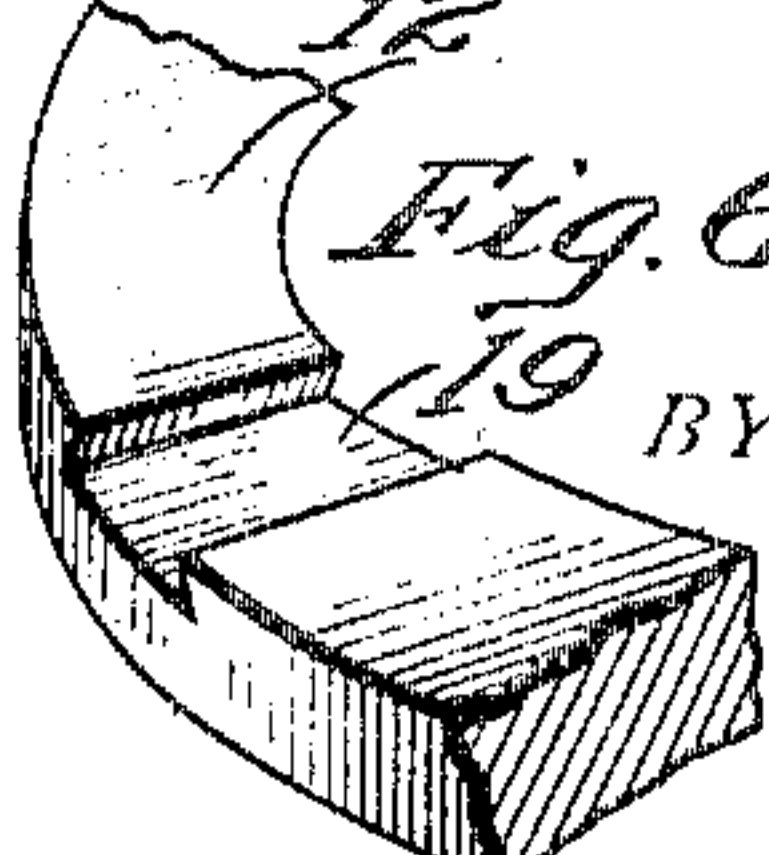


Fig. 6. Heinrich V. Loss



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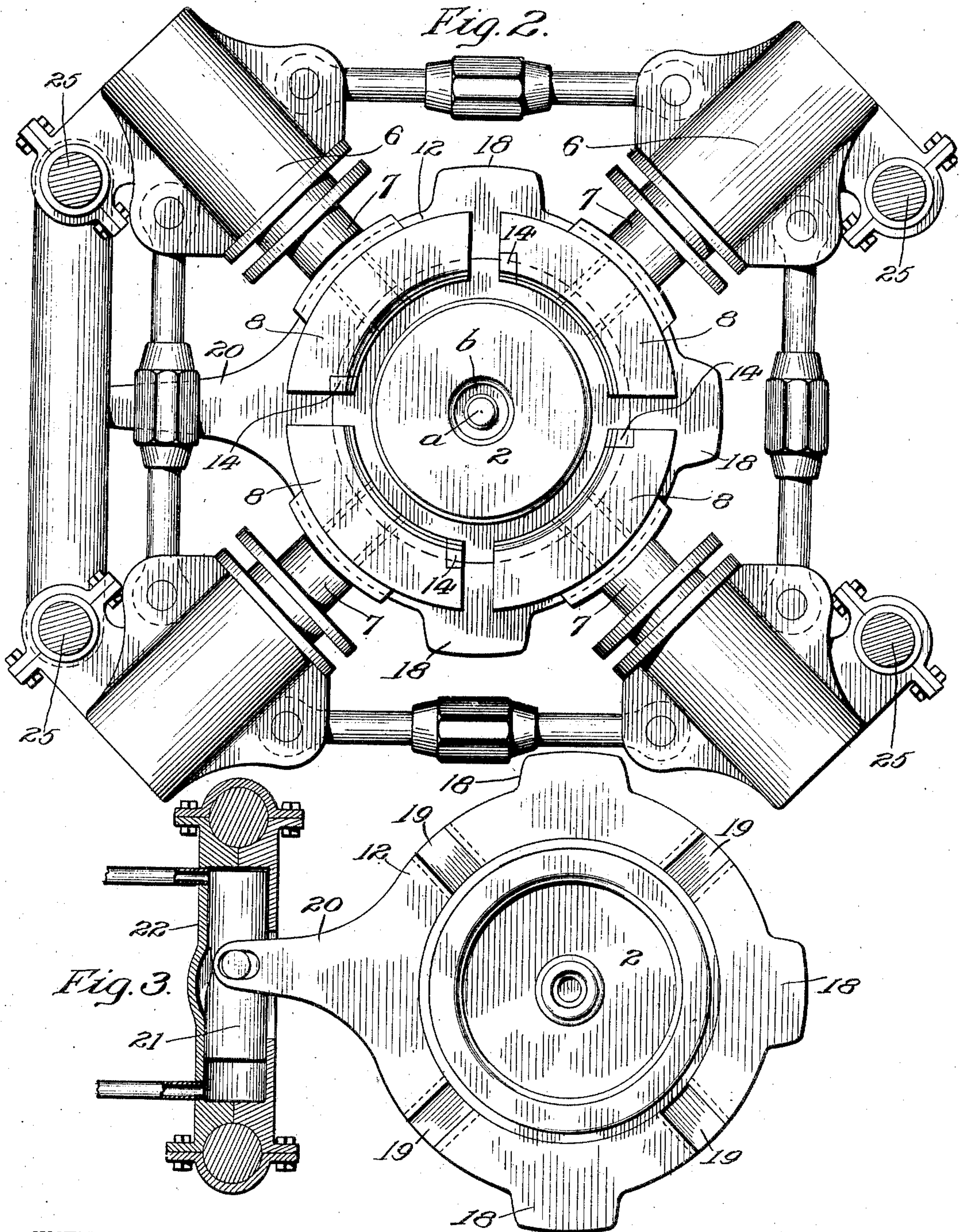
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## FORGING-PRESS.

No. 804,542.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed December 21, 1904. Serial No. 237,763.

*To all whom it may concern:*

Be it known that I, HENRIK V. LOSS, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Forging-Presses, of which the following is a specification.

My invention relates to improvements in machines for forging car-wheels or similar blanks which are to be subsequently finished in a rolling-machine; and the objects of my invention are to furnish a machine having a pair of dies for forging the sides of a circular blank and two or more pairs of dies for operating upon the rim of the blank to insure the proper density of the metal at this point. The dies of each pair of dies are arranged opposite one another, and all of the dies which operate upon the rim of the blank operate at right angles to the line of movement of the dies which forge the sides of the blank.

My invention further relates to a means for shearing off any fins that may be formed upon the rim or periphery of the blank by the action of the dies which operate upon the rim, so as to leave the blank when it is taken from the forging-machine in condition to be operated upon by the rolling-machine without any further treatment.

In the accompanying drawings, forming part of this specification, and in which similar characters of reference indicate similar parts throughout the several views, Figure 1 is a side elevation, partly in central sectional elevation, of a forging-press embodying my improvements; Fig. 2, a plan of the machine, the upper die and its actuating hydraulic cylinder being removed; Fig. 3, a plan of the lower die, the movable ring surrounding this die, and a longitudinal sectional view of the hydraulic cylinder, the piston of which actuates the die-surrounding ring; Fig. 4, a side elevation of the upper and lower dies for forging the sides of the blank and of the movable ring surrounding the lower die; Fig. 5, a perspective view of one of the dies for forging the rim of the blank; Fig. 6, a perspective view of part of the movable ring surrounding the lower side-forging die, showing dovetail guide for one of the rim-forging dies.

1 is an upper and 2 a lower die, the former carried by the piston 5 of a vertically-placed hydraulic cylinder 3 and the latter by a suitable foundation or bed 4.

6 represents a number of horizontally-disposed hydraulic cylinders, in the present case four, the plungers 7 of which carry dies 8, which are adapted to engage the periphery of the blank forged between the dies 1 2 to forge the tread of the wheel.

The sides of the web, hub, and tread are forged between the dies 1 and 2, which are each surrounded with a central teat *a*, surrounded by a groove *b*, to form in the center of the sides of the blank depressions which are separated by a web of metal 9, which is not removed until after the wheel has been completely formed in the forging-machine, for which I have filed an application for patent simultaneously with this application, said machine being an improvement upon Letters Patent of the United States granted to me on the 12th day of August, 1902, No. 706,674.

The metal to be forged is placed between the dies 1 2, which are closed to form the blank 10, the closing movement of the dies 1 2 being limited to the desired extent by stops 16, which in the present case are merely lugs cast or secured to arms 17, forming part of die 1 and adapted to engage projections 18, carried by the ring 12. (See Figs. 2, 3, and 4.) The dies 1 2 having been closed upon the blank, the hydraulic liquid is admitted to cylinders 6, causing their pistons to be projected and the dies 8 to engage the periphery of the blank to form the tread of the wheel. The dies 8 work freely between the dies 1 2—that is, their movement is not impeded by these dies in any manner.

In order to insure a perfect forging, the blank in its rough form contains a greater amount of metal than it does in its finished form. When the dies 1 2 are closed, their interior parts are filled with metal, the surplus being forced out at the periphery of the blank. The action of the dies 8 is to crowd the metal in upon itself at the periphery of the blank, so as to obtain the greatest density possible at this point; but there will be still a greater amount of metal than is necessary, and in order to permit this to escape when the dies 8 are closed the ends of the dies 8 are separated from one another, as shown in Fig. 2.

After the dies 8 have been completely closed to forge the rim of the wheel the surplus metal which has escaped between the ends of the dies 8 can be removed by causing these dies while still held against the periphery of the



blank to be moved circumferentially around the blank. To this end I fit into each die 8 a cutter 14, which when these dies are circumferentially moved shears from the blank the projecting fins caused by the escaped surplus metal. In order to move the dies 8 circumferentially, I form upon their under sides tongues 15, which are adapted to travel in grooves 19, formed in the movable ring 12. The ring 12 has an arm 20, which is secured to a hydraulic piston 21, working in a cylinder 22. When the piston 21 is actuated, it causes the ring 12 and the dies 8 to be moved around the die 2 and the cutters 14 to shear off the fins. The shoulder carried by the die 2 for carrying the ring 12 is best shown in Fig. 1.

In order to permit the movement of the dies 8 as above, they may be secured to the pistons 7 by a sliding joint, as shown, 23 denoting transverse grooves in the outer ends of the pistons, which are adapted to receive correspondingly-shaped necks 24, carried by the dies 8.

The cylinder 3 is tied to the bed 4 by bolts 25 or in any other convenient manner.

In some cases the dies 8 would be used to forge in any surplus metal that might be forced out between them, the sliding connection of the dies to the pistons 7 permitting the dies to be moved to either side, so as to cause them to engage and forge all parts of the periphery of the wheel-blank equally. This feature of the press would be particularly valuable were the cutters removed from the dies 8 or when the cutters, becoming dull, would fail to make a clean cut. In such cases any traces of a fin upon the blank would create a sliver upon the wheel when subsequently operated upon by a rolling-machine.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a forging-machine, in combination, a pair of dies adapted to form opposite sides of

the blank, a multiplicity of dies operating at right angles to said first dies adapted to form the periphery or tread of the blank, means for carrying the heads of said latter dies so that they can be moved circumferentially around said blank, and means for imparting said latter movement to said latter dies.

2. In a forging-machine, in combination, an upper and a lower die between which the sides of the blank are formed, a circumferentially-movable ring carried by one of said dies, a multiplicity of dies adapted to operate at right angles to said first dies to form the periphery or tread of the blank, the heads of said latter dies being carried in guides in said ring, and means for circumferentially moving said ring and die-heads.

3. In a wheel-blank-forging machine, in combination, an upper and a lower die between which the sides of the blank are formed, a multiplicity of dies operating at right angles to and between said first dies adapted to form the periphery or tread of the blank, cutters carried by the outer end of said latter dies, and means whereby said latter dies may be moved circumferentially in relation to said first dies and the blank.

4. In a forging-machine, in combination, an upper and a lower die, a circumferentially-movable ring carried by one of said dies and having radial guides, a hydraulic cylinder, a piston in said cylinder, a connection between said piston and said ring, a multiplicity of hydraulic cylinders the pistons of which operate at right angles to the movement of said first dies, dies carried by said ring and movable along the guides carried thereby and adapted to be operated by said latter pistons, and cutters carried by said dies.

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Witnesses:

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