(No Model.)

J. A. FACER.

MACHINE FOR FORGING CAR WHEELS.

No. 553,156. Patented Jan. 14, 1896.

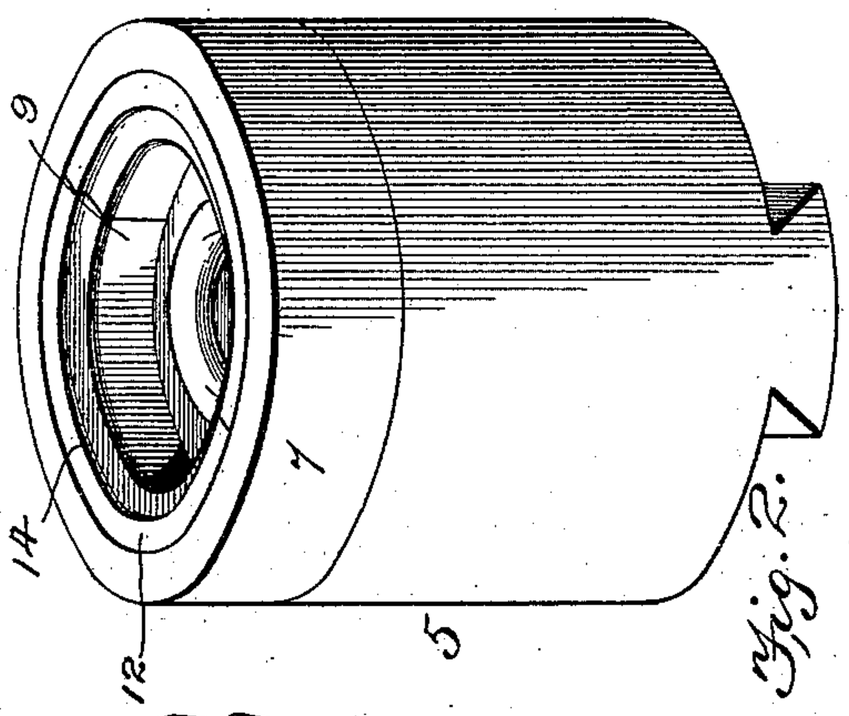

Fig. 2.

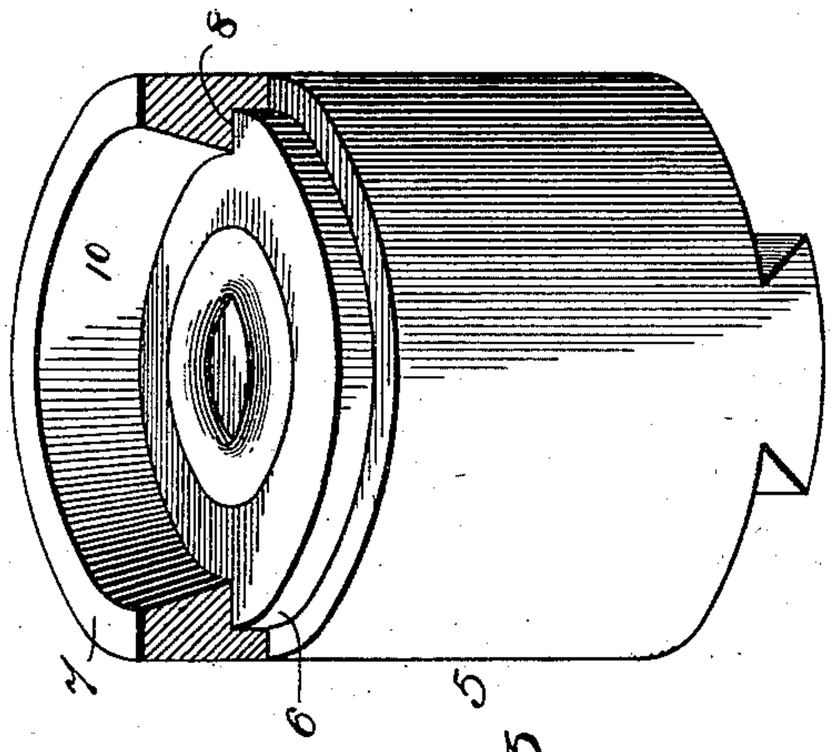

Fig. 3

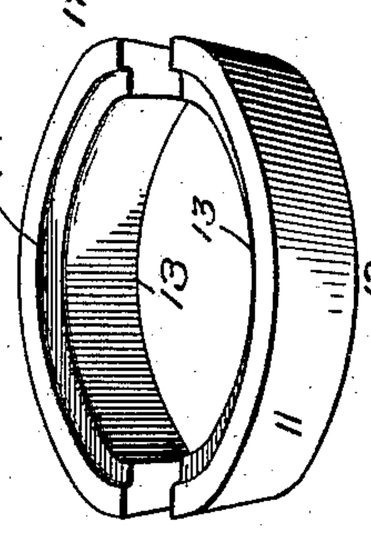

Fig. 4.

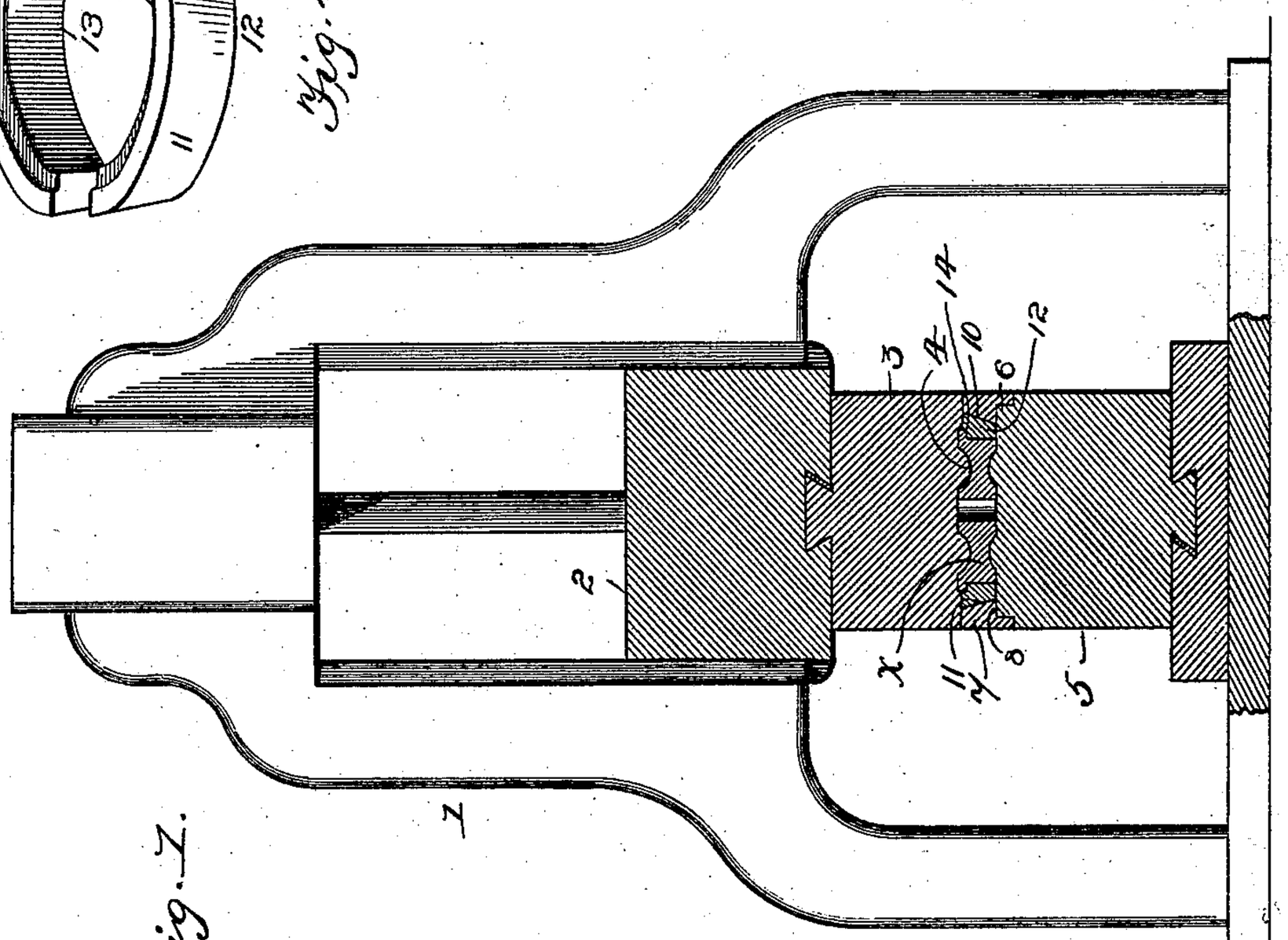

Fig. 1.

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Witnesses
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By his Attorneys,
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UNITED STATES PATENT OFFICE.

JAMES A. FACER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE FACER FORGED STEEL CAR WHEEL AND LOCOMOTIVE WHEEL COMPANY, OF SAME PLACE.

MACHINE FOR FORGING CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 553,156, dated January 14, 1896.

Application filed September 6, 1895. Serial No. 561,678. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. FACER, a citizen of the United States, residing at Philadelphia, (Germantown,) in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Machine for Forging Car-Wheels, of which the following is a specification.

This invention relates to machines for forging car-wheels; and it has for its object to effect certain improvements in the finishing-die of such machines, whereby the tread of the wheel can be forged to the exact finished size ready for running on the road without the necessity of planing the tread after the forged wheel leaves the steam-hammer or forging-machine.

Heretofore in steam-hammers adapted for forging steel car-wheels the recess-wall of the finishing-die has been provided with a tapered or beveled inner side, and consequently the wheel forged within the recess of the finishing-die would have the tread thereof tapered or beveled to correspond with the taper or bevel of the inner side of the wall surrounding the recess of the die. This tapering or beveling of the recess-wall of the finishing-die has been necessary to obviate a wedging of the forged wheel within the die, but notwithstanding this tapering or beveling of the wall of the die-recess the forged wheel very frequently wedges or fastens itself tightly in the die and sometimes causes a delay in the work by having to wait until the wheel cools sufficiently so as to shrink itself from the wall of the die-recess. In addition to this objection to the ordinary construction of finishing-die the said die forms the tread of the wheel with such a sharp taper or bevel that it is necessary to remove the wheel when cold to the planing-mill and have the surplus taper or bevel planed off before the wheel is ready for use, and this extra planing of the tread of the wheel is necessarily attended with some expense, besides involving a great waste of metal on each wheel.

The present invention contemplates the obviating of the foregoing objections by positively preventing the forged wheel from wedging itself in the die-recess of the finishing-die, and by providing for the forging of the wheel to the exact size ready for running on the road without the necessity of extra planing.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a vertical sectional view of a machine for forging a car-wheel, having a finishing-die constructed in accordance with this invention. Fig. 2 is a detail in perspective of the finishing-die separate from the other parts of the machine. Fig. 3 is a view similar to Fig. 2, partly in section, with the sectional inner wall removed. Fig. 4 is a detail in perspective of the inner sectional removable annular wall.

Referring to the accompanying drawings, the numeral 1 designates an ordinary steam-hammer frame, within which is mounted to reciprocate the vertically-movable hammer, 2, which carries an ordinary hammer-die 3, provided on its lower side with a die-face 4, which conforms in shape to the finished appearance of one side of an ordinary car-wheel, and the said hammer-die 3 is arranged to work above and onto the finishing-die 5, mounted in position in the usual way on the bed of the hammer-frame.

In the present invention the finishing-die 5 consists of a suitable-sized casting and is provided at its upper edge with an annular shoulder 6, on which is fitted the outer annular wall 7. The outer annular wall 7 is made of forged steel and is provided at its inner lower edge with an annular recess 8, which registers with the annular shoulder 6 at the upper edge of the die-casting, and in fitting the wall 7 in position the same is heated to a sufficient degree, whereby it will be expanded to a size permitting the same to be readily placed on the shoulder 6 at the top of the die 5, and by then allowing the wall 7 to cool the same will shrink itself onto the die 5, so as to form a rigid part thereof. The annular wall 7 forms the outer wall of the cir-

cular die-recess 9 at the top of the finishing-die 5, and by reason of making the wall 7 of forged steel the same will withstand the excessive wear that is placed thereon, while at the same time by reheating the wall 7 at any time the same can be readily removed from the die 5 and replaced by a new wall, thereby saving the expense of making an entirely new finishing-die when the recess-wall thereof has become defective or worthless.

The die 5 is provided within the bottom of the recess 9, inclosed by the wall 7, with the usual die projections and depressions which form a working face in opposition to the die-face 4 to provide for giving the finished shape to the opposite side of the car-wheel from that which is finished by the die-face 4, as will be readily understood by those skilled in the art. The outer annular wall 7 of the die-recess of the finishing-die is provided with an inner beveled side 10, which corresponds to the beveled outer side 11 of the sectional inner annular wall 12 of the die-recess 9. The inner annular wall 12 is also made of forged steel, but is much lighter than the outer wall 7, which bears substantially all of the resistance to the blow of the hammer, and the said inner wall consists of the separate semicircular sections 13, which register together to form a complete annular wall or ring which loosely and snugly registers within the die-recess 9 and fits against the inner beveled side 10 of the wall 7.

The inner side of the inner wall 12 is shaped to conform to the shape and disposition of the tread and flange of the finished car-wheel, and at its inner upper edge the said wall 12 is provided with an annular groove 14, which corresponds to the shape of one side of the flange of the wheel which is partly upset in said groove.

During the operation of the machine the wheel-blank X, while in a heated condition, rests within the die-recess 9 of the finishing-die, and is forged into shape by the descent of the hammer-die thereon, and as the car-wheel shapes itself the same will completely fill the die-recess of the finishing-die, and spreads out against the inner sides of the sectional inner annular wall 12. The said wall 12 necessarily becomes heated and will in turn expand somewhat, but by reason of the registering bevels 10 and 11 of the walls 7 and 12 any tendency of the wall 12 to wedge itself within and against the outer wall 7 will be corrected, inasmuch as any material expansion of the inner wall 12 will cause the same to force itself slightly upward on the inner beveled side 10 of the wall 7. It will further be noted at this point that after the wheel has been forged to the exact finished size the same can be readily lifted out of the die-recess of the finishing-die, owing to the fact that the sections of the wall 12 will easily come out of said die-recess, and in the event of said sections of the inner wall clinging to the finished wheel the same can be readily clipped back into the die-recess by a slight blow thereon.

Many advantages for the construction herein described will readily suggest themselves to those skilled in the art, and it will be understood that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

In a machine for forging car-wheels, the finishing die having at the top an open die recess provided with a renewable outer wall, said outer wall of the die recess having an inner beveled side, and an inner sectional annular wall registering in the die recess within the outer wall thereof and consisting of duplicate semi-circular sections provided at their inner upper edges with continuations of an annular flange-forming groove, and with beveled outer sides having a slidable registering fit against the inner beveled sides of said outer wall of the die recess, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES A. FACER.

Witnesses:
CHARLES H. WEISS,
WM. H. EMHARDT, Jr.