

W. M. LEE,

Making Metal Wheels,

No. 2,135,

Patented Jan. 2, 1855.

Fig. 2

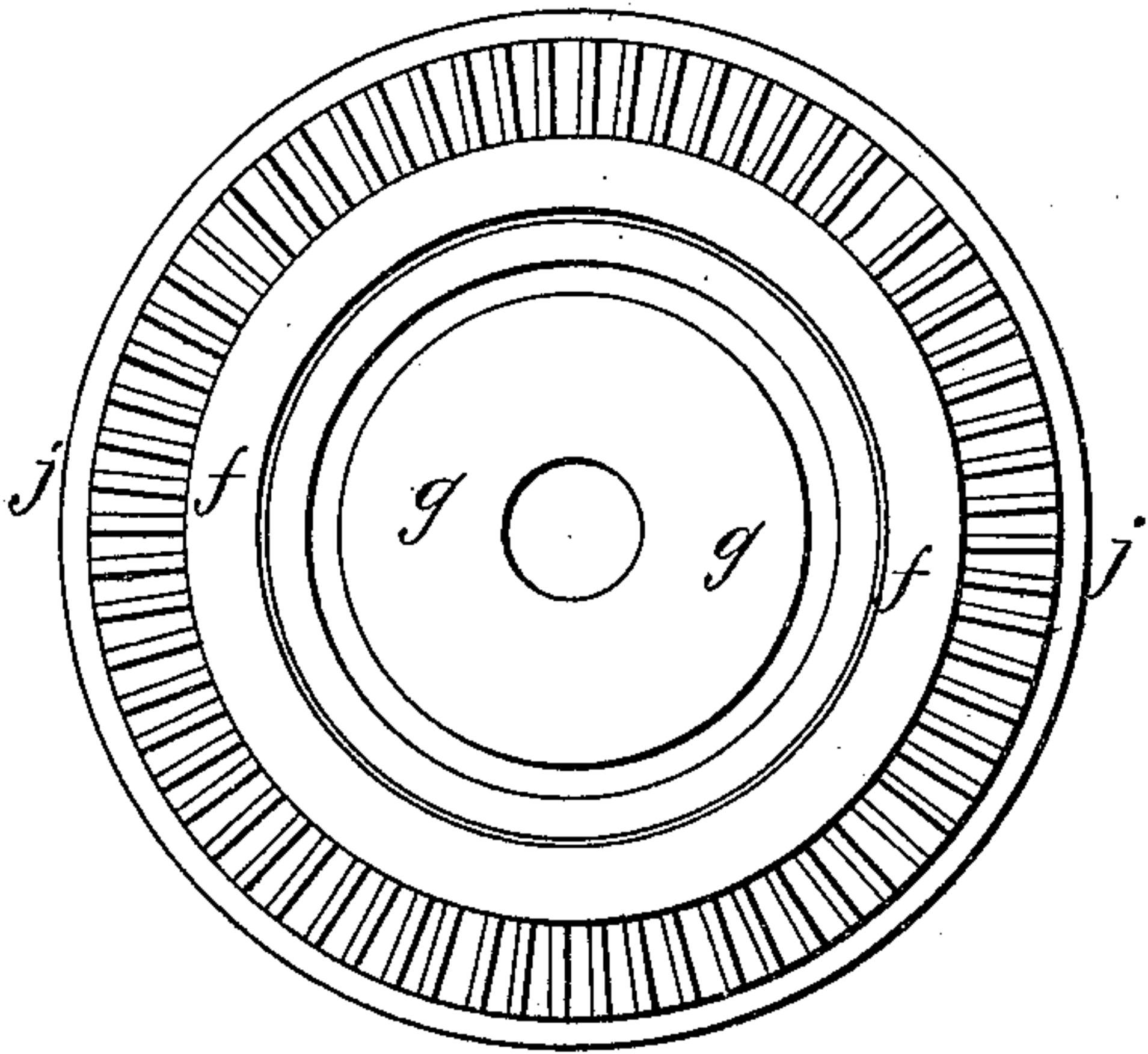


Fig. 5

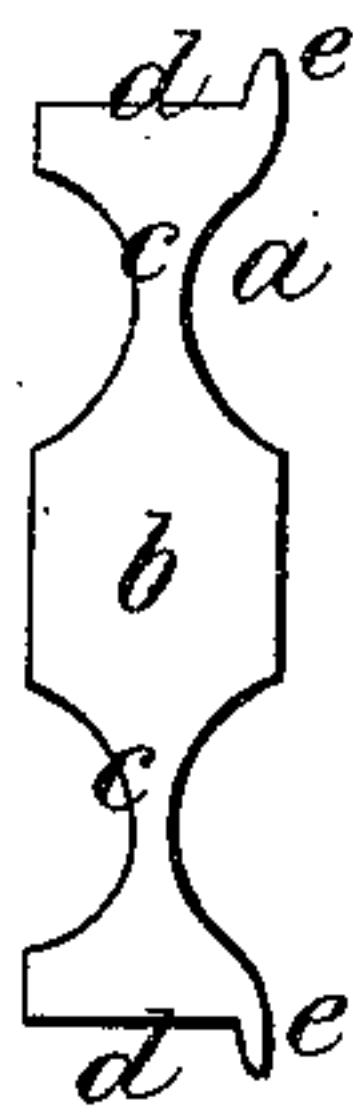


Fig. 4

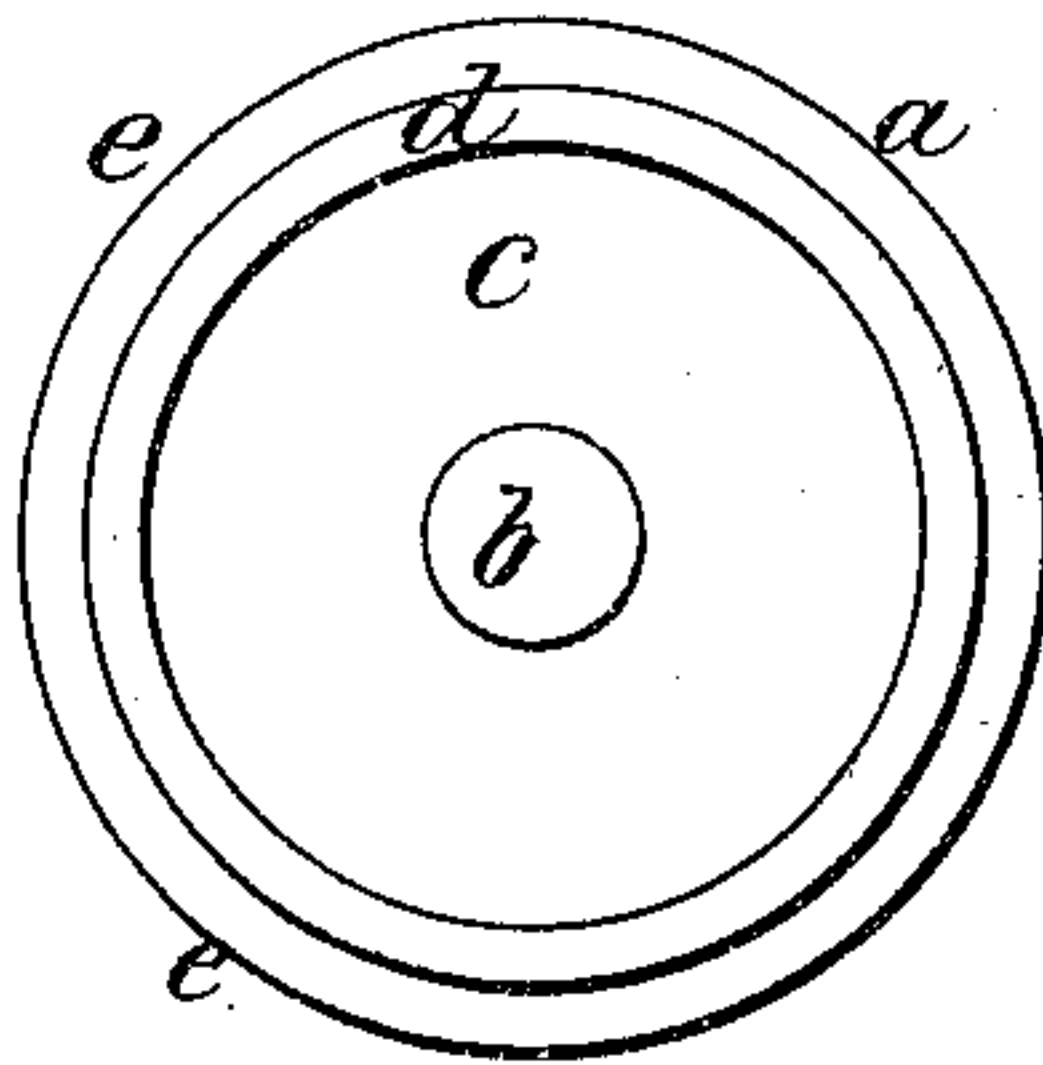


Fig. 1

Fig. 3

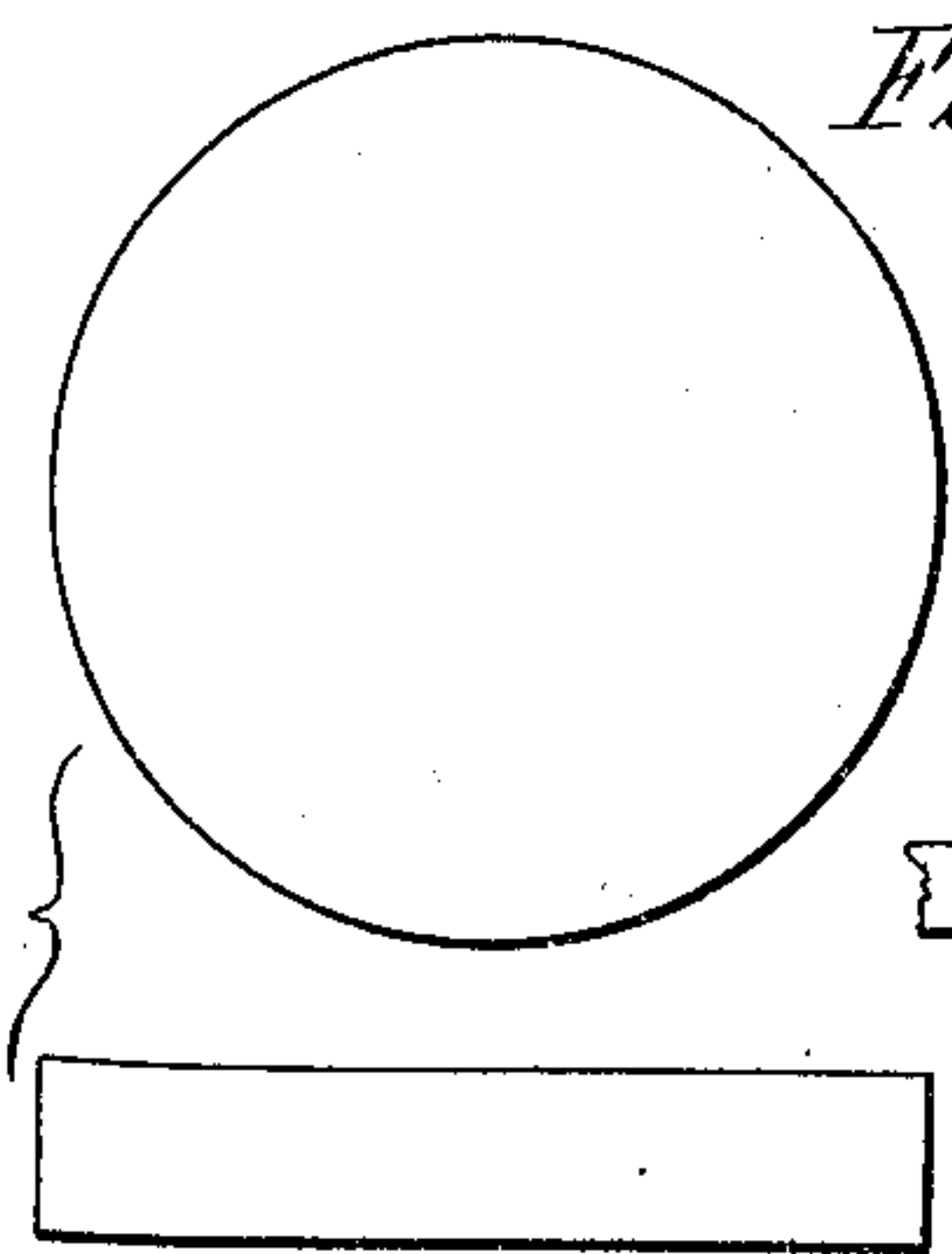
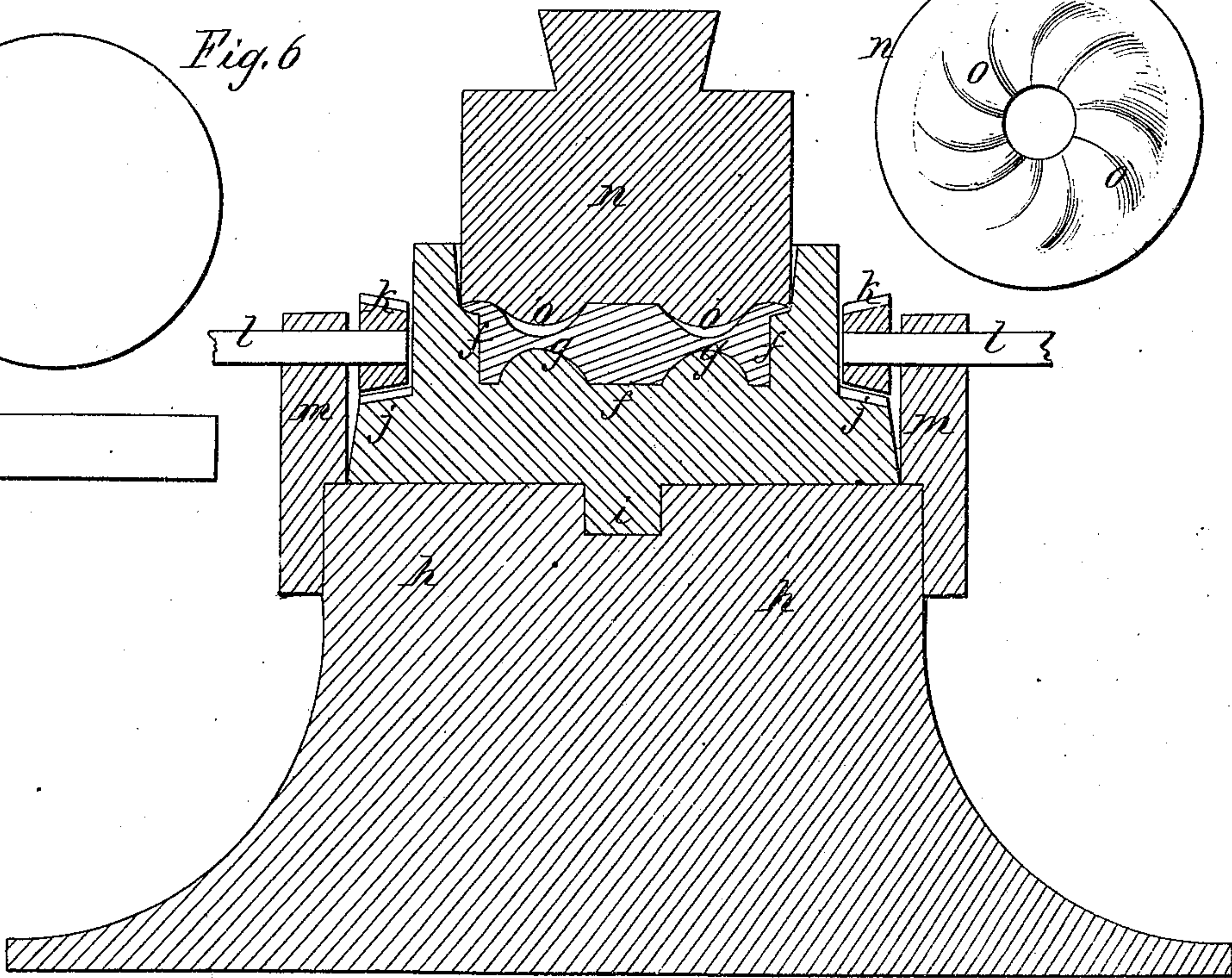
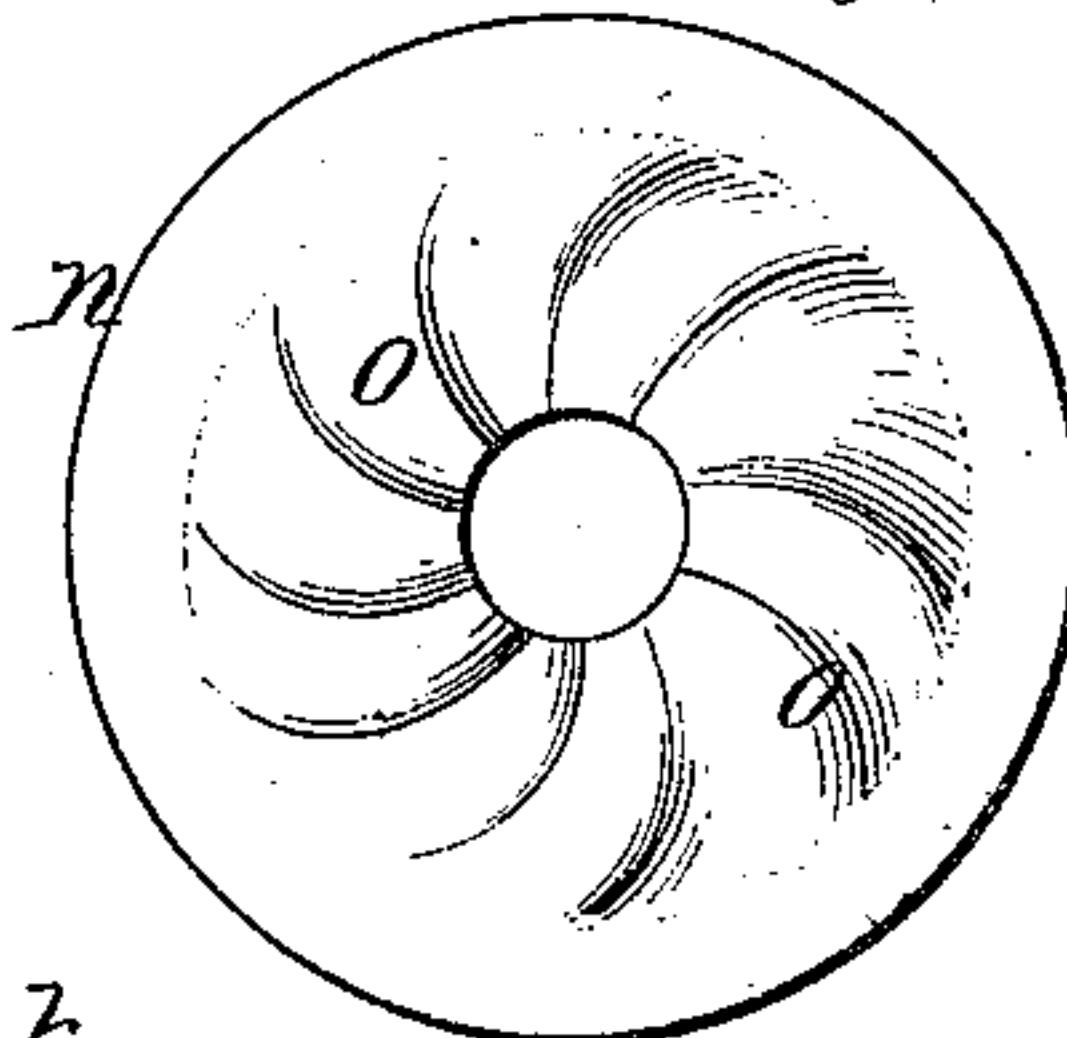


Fig. 6



Witnesses

Wm A Bishop
Andrew de Lacy

Inventor

Wm M Lee

UNITED STATES PATENT OFFICE.

WESLEY M. LEE, OF NEW YORK, N. Y.

MACHINE FOR FORGING CAR-WHEELS.

Specification of Letters Patent No. 12,135, dated January 2, 1855.

To all whom it may concern:

Be it known that I, WESLEY M. LEE, of the city, county, and State of New York, have invented a new Method of Forging or
5 Swaging Railroad-Car and other Wheels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1, is a vertical section of the machinery; Fig. 2, a plan of the rotating anvil; Fig. 3, a face view of the hammer or upper die; and Figs. 4, and 5, an elevation and
15 section of the wheel produced on my improved plan.

The same letters indicate like parts in all the figures.

The object of my invention is to make wrought-iron railroad car and other
20 flanged wheels in one piece by swaging or hammering, from one piece of heated metal; and my said invention consists in making the face of the hammer die with a series of flutes or swells extending from
25 near the hub toward the rim in curved lines or in lines tangent to some circle of less diameter than the rim of the wheel when this is employed in combination with the turning of the anvil or the hammer die dur-
30 ing the operation and between the blows so that the projections on the hammer die shall strike on the projections left on the face of the block of iron formed by the previous blow or blows, whereby the heated iron is
35 gradually forced outward toward the rim.

In the accompanying drawings *a*, represents the wheel as it comes from the dies, with the hub *b*, plate *c*, rim or tread *d*, and
40 flanch *e*, all forged or swaged from one block of iron.

A block of iron of the required size and of the form represented in Fig. 6, or any other suitable form, and heated to a white or welding heat, is put into an anvil die box
45 *f*, the cavity *g*, of which is the reverse of the outer face, the tread and flanch of the wheel to be formed, and thence extending up to about an equal height above in a cylindrical form of the diameter a little
50 greater than that of the wheel at the flanch. This die is made of great strength below and around the cavity and its base is made flat and rests on a base block *h*, and kept cen-

trally thereon by a spindle *i*, fitted to turn in a corresponding socket in the base block. 55 This die box is formed with a ledge *j*, or projection, all around, the upper surface of which is cogged to receive the cogs of two beveled pinions *k*, *k*, one on each side, the
60 arbors *l*, *l*, of which are mounted in suitable boxes in standards *m*, *m*, attached to the base block; and these arbors can be provided with crank handles, or ratchets, or other suitable means by which the anvil die
65 box can be turned a portion of a revolution after every stroke of the hammer or upper die *n*, which is to be attached to the slide of a steam or other hammer having vertical motion. The circumference of this die
70 or swage fits freely the upper part of the cavity of the die box above the part representing the flanch, and the face represents the reverse of the other or flanch face of the wheel to be produced, so that when this
75 die is in the die box to the depth required the cavity between the two will represent a mold of the form of the intended wheel. The projecting part *o*, of the face of the hammer die is fluted from the hub to the
80 rim of the wheel, the reverse of the flanch face of the wheel.

After the heated block of metal is placed in the die box the hammer die is made to strike rapid and heavy blows in succession, and between each blow and whilst the ham-
85 mer die is raising, the anvil or box die is turned a portion of a revolution about equal to half of the space between the flutes on the face of the die, so that at the next blow the ridges of the die will strike on the ridges
90 formed on the block of iron by the cavities of the hammer die by the previous blow. And this operation is repeated until the required form of a wheel has been given to the block. The ridges on the hammer die, and
95 the rotation of the die box with the block of iron, facilitates the spreading of the metal toward the periphery of the die box to form and complete the tread and flanch which is thus thoroughly compacted. 100

It will be obvious from the foregoing that instead of rotating the die box and block of metal the die hammer can be rotated instead and produce a like result.

I do not wish to confine myself to the special structure of the parts, nor to the means 105

employed for operating them, as these may be varied at pleasure without changing the principle or character of my invention.

What I claim as my invention and desire
5 to secure by Letters Patent in forging or swaging wrought-iron wheels, is—

Forming the face of the hammer die with flutes or projections substantially as speci-

fied when combined with the turning of the die or anvil during the operation of forging 10 or swaging substantially as and for the purpose specified.

WESLEY M. LEE.

Witnesses:

WM. H. BISHOP,
ANDREW DE LACY.