

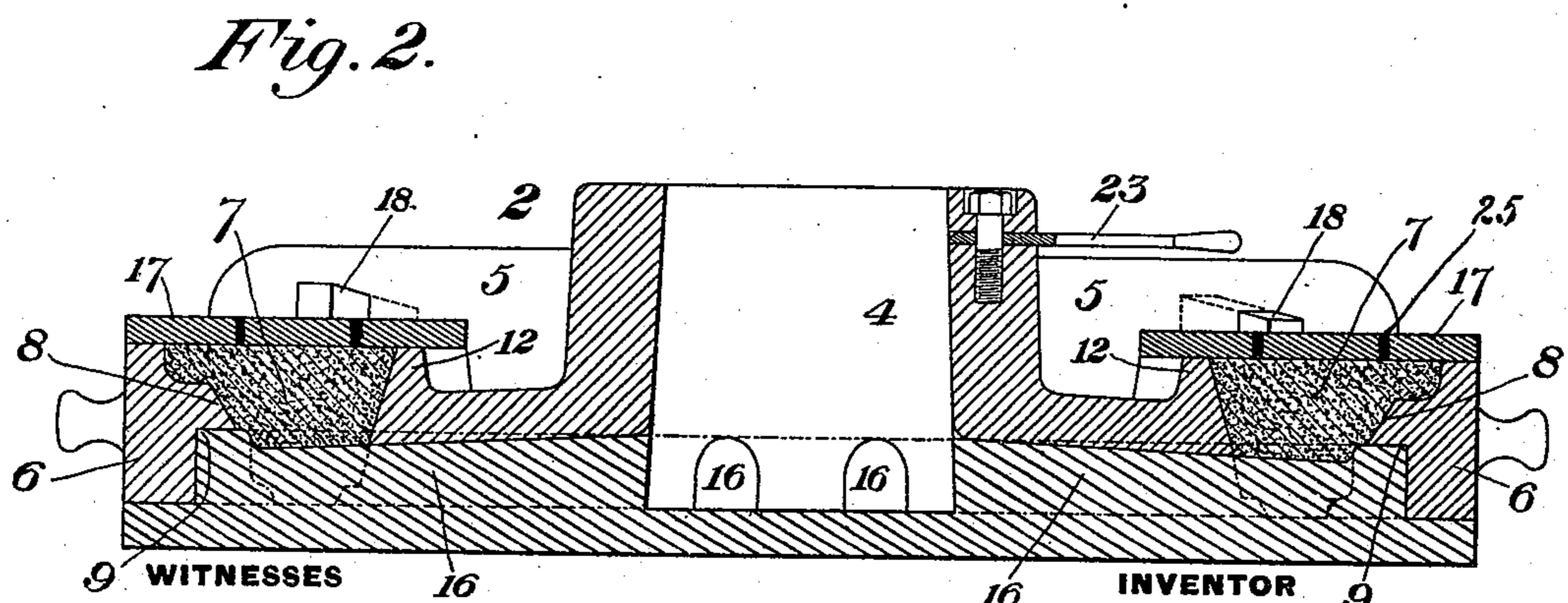
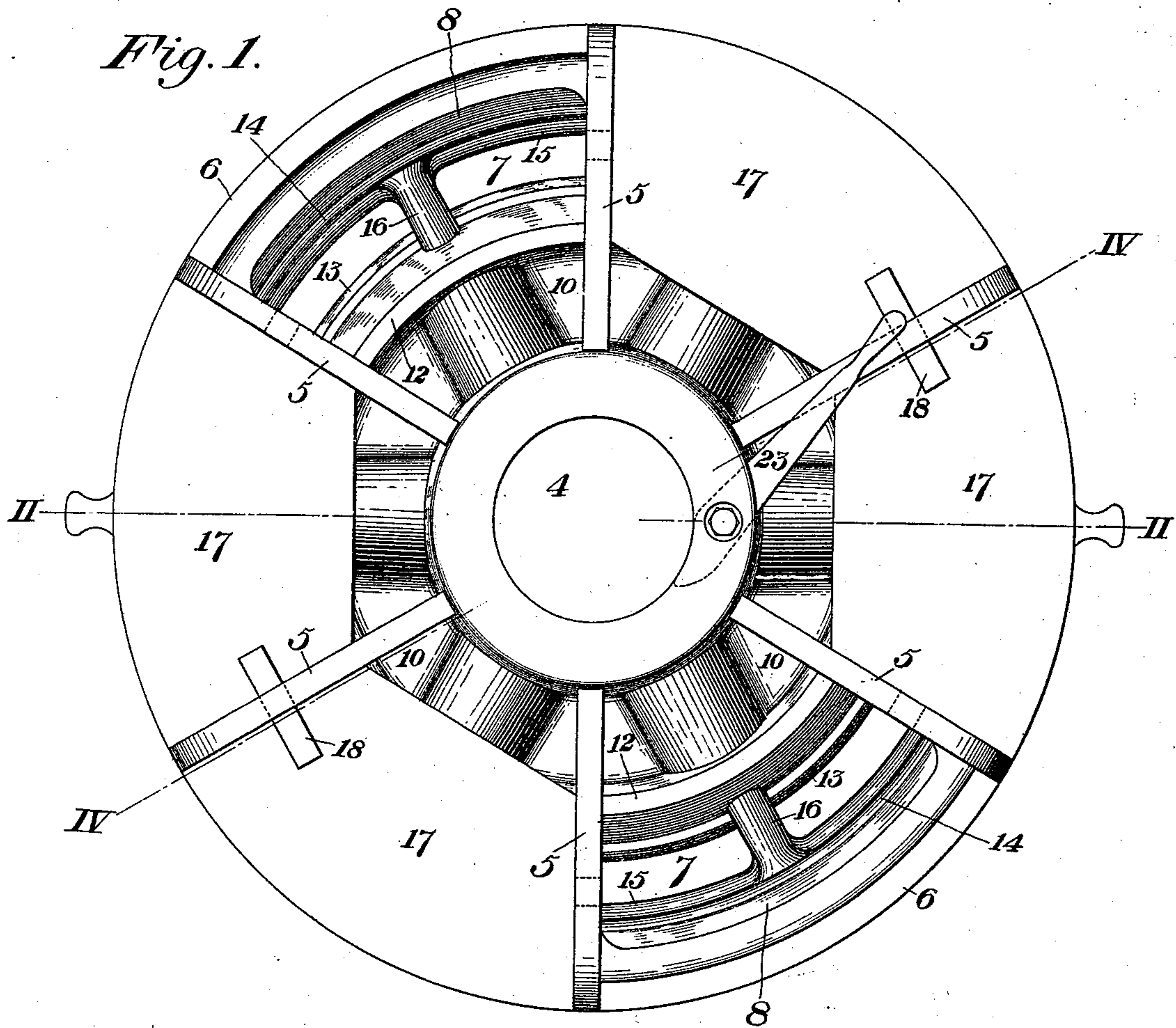
(No Model.)

4 Sheets—Sheet 1.

J. SLATTERY.  
WHEEL MOLD.

No. 516,359.

Patented Mar. 13, 1894.



*A. L. Gill*  
*C. B. Jones.*

*John Slattery*  
*by his Attorneys*  
*W. Baxendell & Sons.*

(No Model.)

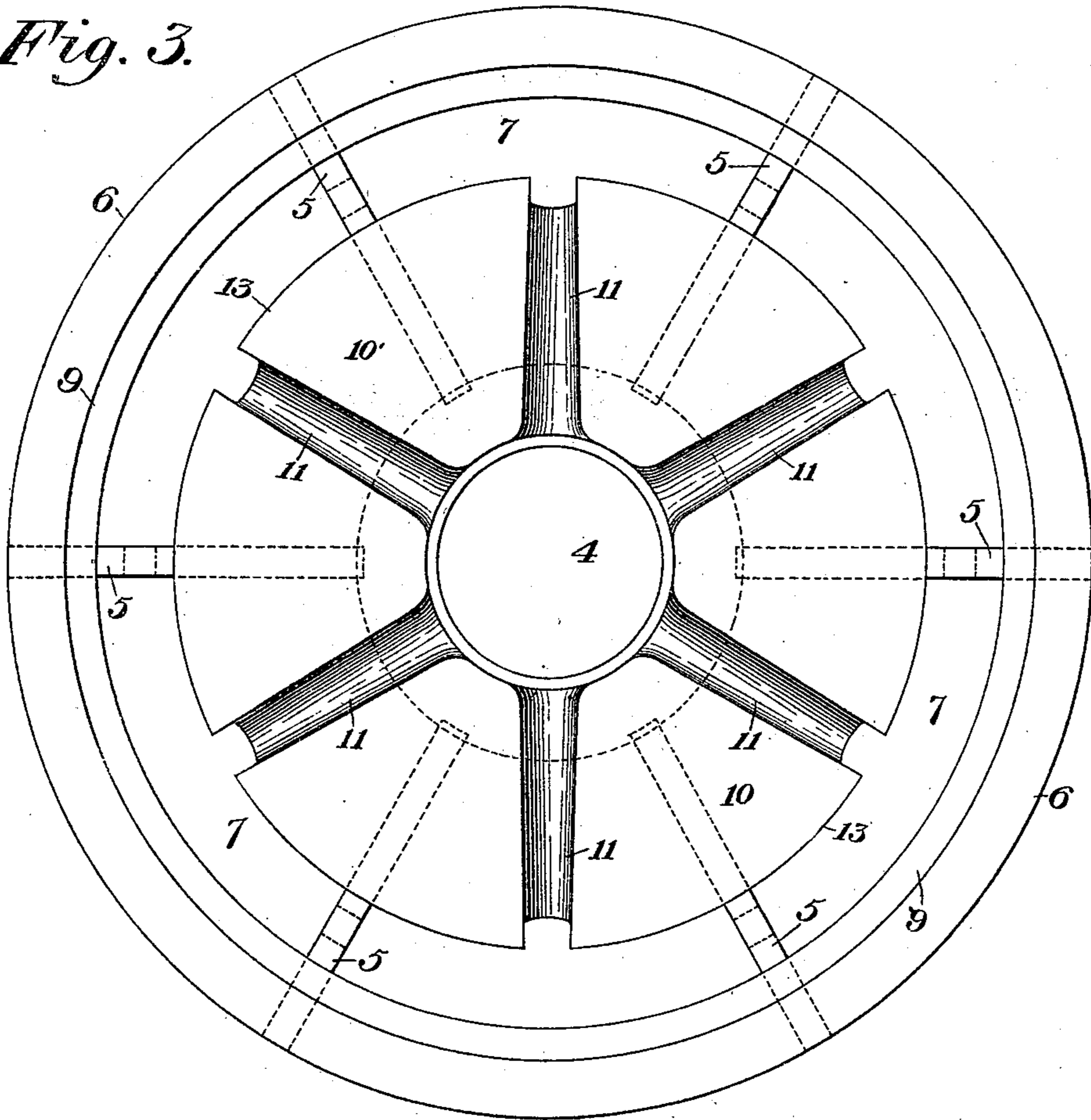
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J. SLATTERY.  
WHEEL MOLD.

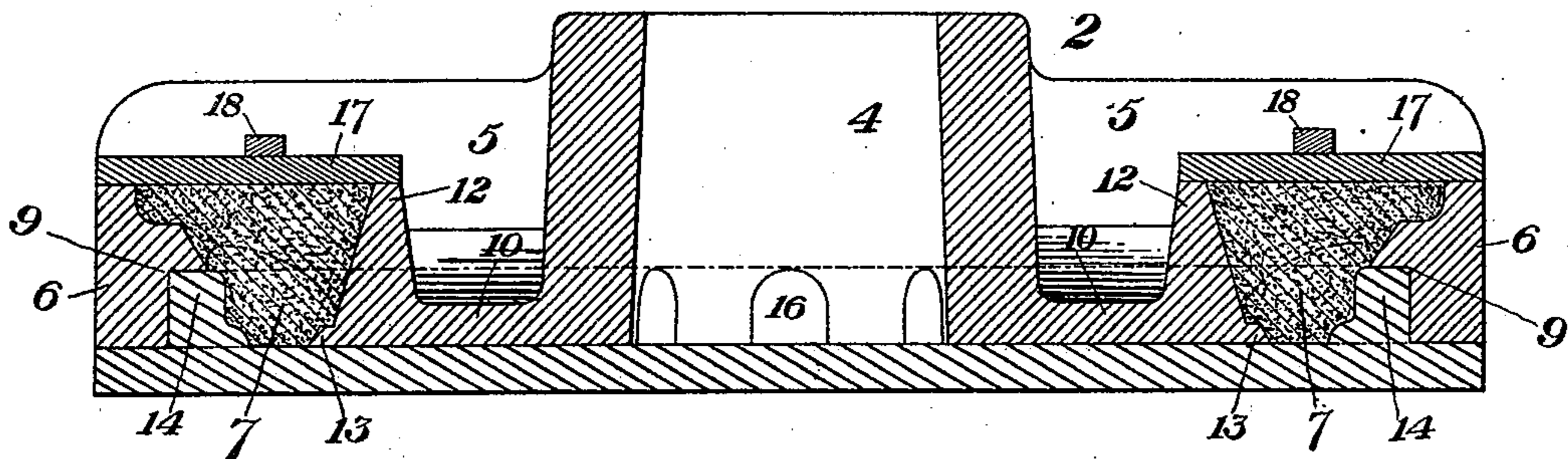
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*Fig. 3.*



*Fig. 4.*



WITNESSES

*A. L. Gill*  
*L. P. Byrnes*

INVENTOR

*John Slattery*  
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(No Model.)

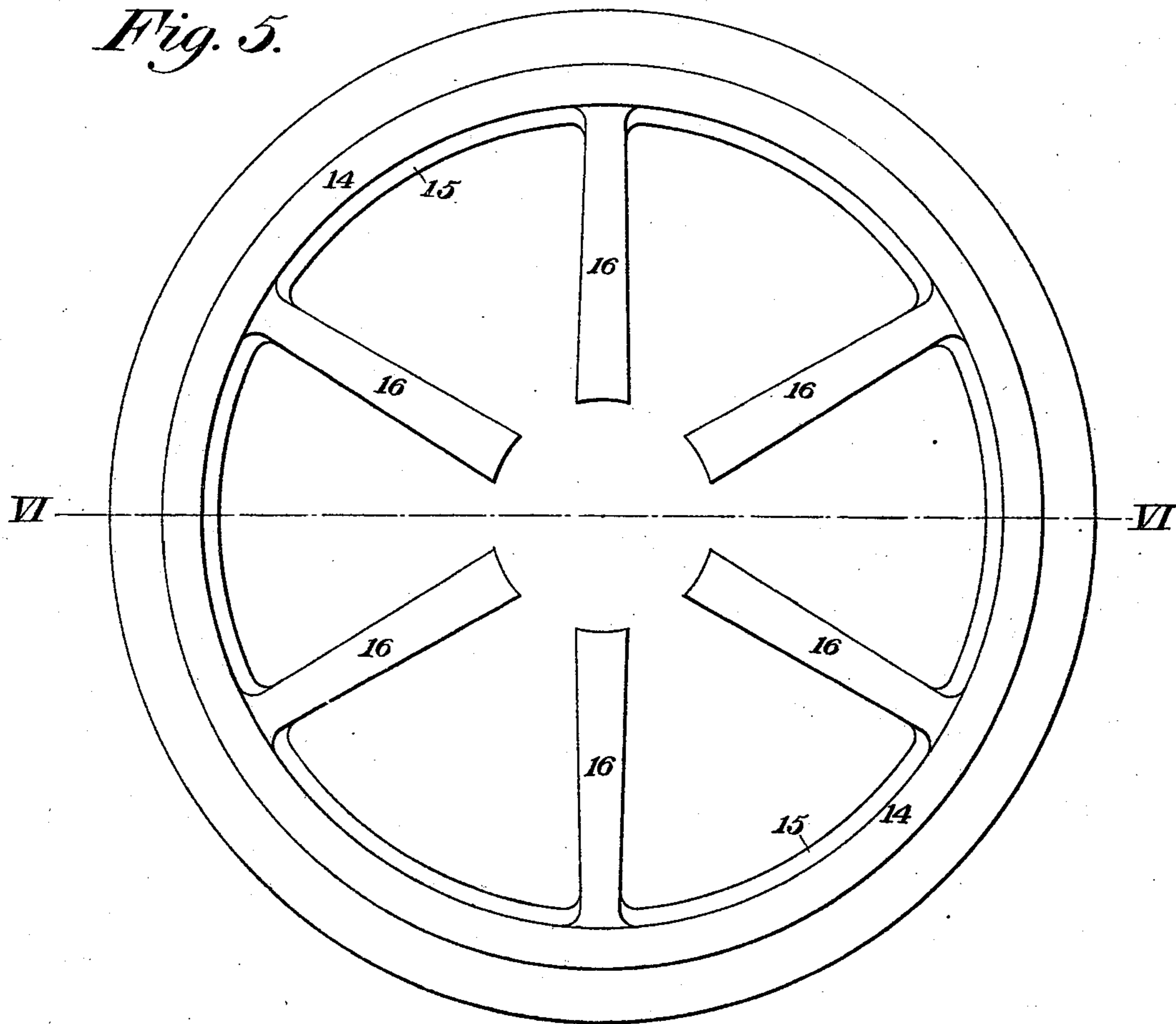
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J. SLATTERY.  
WHEEL MOLD.

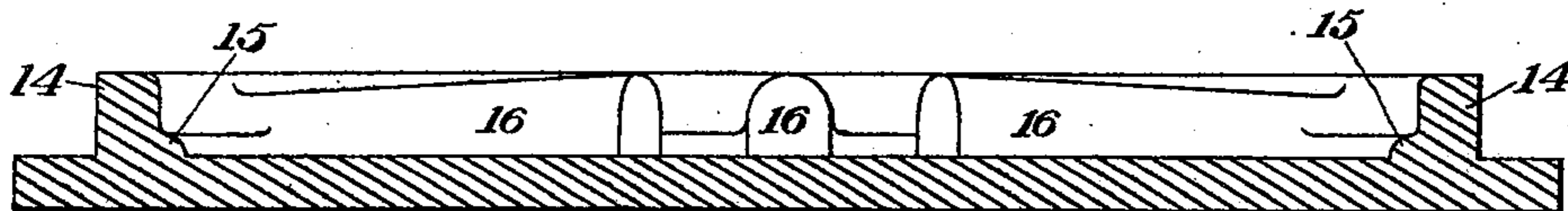
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*Fig. 5.*



*Fig. 6.*



WITNESSES

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INVENTOR

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*W. Bassett & Sons*



# UNITED STATES PATENT OFFICE.

JOHN SLATTERY, OF PHILADELPHIA, ASSIGNOR OF ONE-HALF TO J. K. GRIFFITH, OF LATROBE, PENNSYLVANIA.

## WHEEL-MOLD.

SPECIFICATION forming part of Letters Patent No. 516,359, dated March 13, 1894.

Application filed June 27, 1893. Serial No. 478,959. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SLATTERY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Wheel-Molds, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a top plan view of half of my improved mold, with two of the cover plates removed. Fig. 2 is a vertical central section on the line II—II of Fig. 1. Fig. 3 is a bottom plan view of the half mold before tamping. Fig. 4 is a section on the line IV—IV of Fig. 1. Figs. 5 and 6 are plan and sectional views, respectively, of the pattern and follow-board. Fig. 7 is a central sectional view of the finished mold; and Fig. 8 is a detail sectional view of a portion of the same.

My invention relates to the casting of wheels, and more particularly steel wheels and wheel centers for locomotives and passenger or freight cars; and it consists in an improved mold therefor. Heretofore, in the casting of these wheels in steel when iron molds were used, the contraction of the metal in cooling would tear the various portions of the wheel apart and destroy the wheel, and if removable mold portions are employed, they make the mold extremely expensive on account of the close joints necessary, and are also costly to operate as each mold requires an attendant. In sand molds, it is very difficult to tamp the sand loosely enough or so construct the mold as to allow for the contraction of the metal, and their manufacture requires highly skilled labor. My improved mold combines the advantages of both iron and sand molds, while all liability of rupture of the metal is removed, and the molds are quickly and cheaply made and operated.

45 In the drawings, 2 indicates the half of an iron mold, the cope and drag portions of which are substantially the same and are each provided with a chill-ring, which forms one-half of the chill 3 and is secured to the half mold and forms a part thereof.

50 Referring to Figs. 1, 2, 3 and 4, the drag consists of a central hollow hub-portion 4, having radiating arms 5, to the outer ends of

which is secured the half chill 6. This chill is provided on its interior with an annular recess 7 for the sand and a projecting inclined flange 8, having beneath it a square annular shoulder 9. Carried by the intermediate portions of the arms 5, is an annular chill-plate 10, which, on its interior, is joined to and preferably integral with the hub 4. This plate, upon its under side, is provided with a series of radial grooves 11, to receive the half spokes of the pattern, in case a spoke wheel is to be cast. If a plate wheel is desired, the spokes are substituted by a plate-center. The outer face of the plate may be recessed between the grooves if desired to lighten it, in either case leaving an outer ring-portion 12, with a projecting flange 13 to retain the sand. The outer face of the ring 12 is inclined or beveled outwardly, so that a tapering annular recess is formed between the outer and inner rings which on account of its downwardly-converging sides, will hold the sand which is tamped loosely therein. This tapering slot is an important feature of my invention, as applied to the cope since, by its use, the sand may be tamped so loosely therein as to allow contraction of the metal. With this half mold is employed the follow-board of Figs. 5 and 6, having secured to its face the half of a wheel pattern, consisting of a rim 14, having, if desired, for extra strength, a lower innerly projecting flange 15, and a series of spokes 16 extending inwardly therefrom. The face of the follow-board or bottom-plate is provided with suitable pins to cause the parts to register correctly, and when united the pattern-rim fits snugly against the shoulder 9 of the chill 6. When the half flask and bottom-board are so joined, the sand is tamped from above into the annular space between the chill 6 and the ring 12, and segmental covers 17 having vent holes 25 for the gases are placed between the arms 5 and secured in position by wedge-pins 18 driven through slots in the arms, thus holding the sand in place, after which the mold is turned over and the pattern withdrawn. When two half molds are thus formed, one of them is turned over to form the drag, and the other or cope is laid on and secured thereto by suitable clamps, the usual pins and holes being used to cause a register-

ing of the parts. With the drag is employed a baked sand core 19, which fills the central hole in the flask and is provided with a central projecting stem 20, forming a core for the hub of the cast-wheel. Through this sand core passes the gate 21, connecting the mold-cavity, and a suitable runner 22; and within the drag is pivoted a swinging lever 23, by which the sprue may be cut off. An extension 24 of sand may be formed upon the cope in order to furnish a head of molten metal and preserve its liquidity, so that it may feed down into the hub as contraction and shrinkage take place.

Instead of forming the outer chill ring in two parts, one secured to each half of the mold, I may make the mold in three or more parts, as in Fig. 8, the chill ring 3' forming the third part or cheek-piece, which is properly guided and held in place between the cope and drag.

The advantages of my invention will be apparent to those skilled in the art. The mold has all the advantages of a metal mold in quickness of working, while the use of the annular loosely packed sand portion between the metal interior part of the mold and the flange portion of the casting allows concentric contraction and prevents the spokes or middle part of the casting tearing away from the rim or hub during such contraction. The taper of the sand recess prevents the falling of the sand and allows its loose packing, and this is the only part of the mold which is renewed after each pour. By this mold perfect wheels are produced quickly and at low cost as little work and no skilled labor is required.

Many changes may be made in the form and arrangement of the parts without departure from my invention, since I consider myself the first to use a metal-mold for flanged castings having an intermediate sand-cushion between the flange portion and the metal interior part of the mold to allow contraction of the steel or other metal which is cast therein.

I claim—

1. A metal mold for flanged castings, having a metal interior portion, and a cushion of sand between said inner portion and the flange portion of the matrix; substantially as described.

2. A metal mold for flanged castings, having a metal interior portion, a cushion of

sand between said interior portion and the flange portion of the matrix, and an exterior metal chill with which the outer part of the casting contacts; substantially as described.

3. A metal mold having between its periphery and center, a recess to receive a sand filling, said recess having a narrowed interior mouth, and being open outwardly to permit access thereto; substantially as described.

4. A metal mold having between its periphery and center a downwardly tapering recess to receive a sand filling, said recess being open outwardly to permit access thereto; substantially as described.

5. A metal half mold for wheels, consisting of a hollow hub, and an outer chill ring carried by an arm or arms extending from said hub, said mold having an annular outwardly open space for sand within the outer ring; substantially as described.

6. A metal half mold for wheels, consisting of a hollow hub having an encircling chill-plate provided with radial grooves, and an outer chill ring supported on radial arms, said mold having an annular space for sand within the outer ring; substantially as described.

7. A metal half mold for wheels, consisting of a hollow hub, and an outer chill ring carried upon radial arms extending from said hub, said mold having an annular space for sand within the outer ring, and covers for the spaces between the arms; substantially as described.

8. A metal drag for wheel molds, consisting of a hollow hub, a baked sand core within the hub, having a gate therethrough, an outer chill connected to the hub by radial arms, an annular sand filling within the chill, and removable covers between the arms; substantially as described.

9. A metal half mold consisting of a hollow hub, a chill plate encircling the same and having radial grooves, an outer chill joined by radial arms to the hub, a sand filling between the two chills, and removable plates arranged to hold the sand in place; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN SLATTERY.

Witnesses:

DANIEL L. STEWART,  
LIZZIE SLATTERY.