

(No Model.)

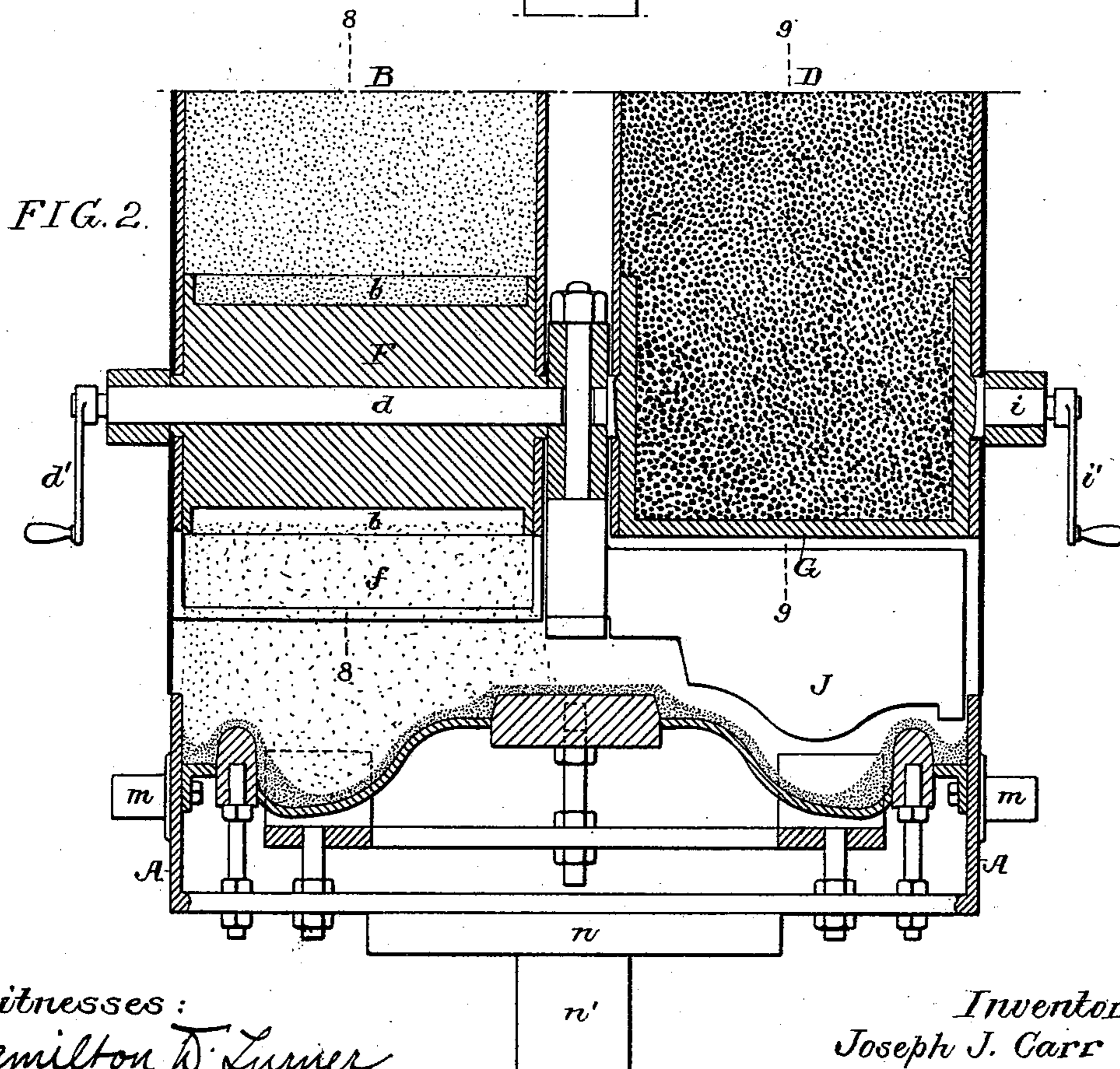
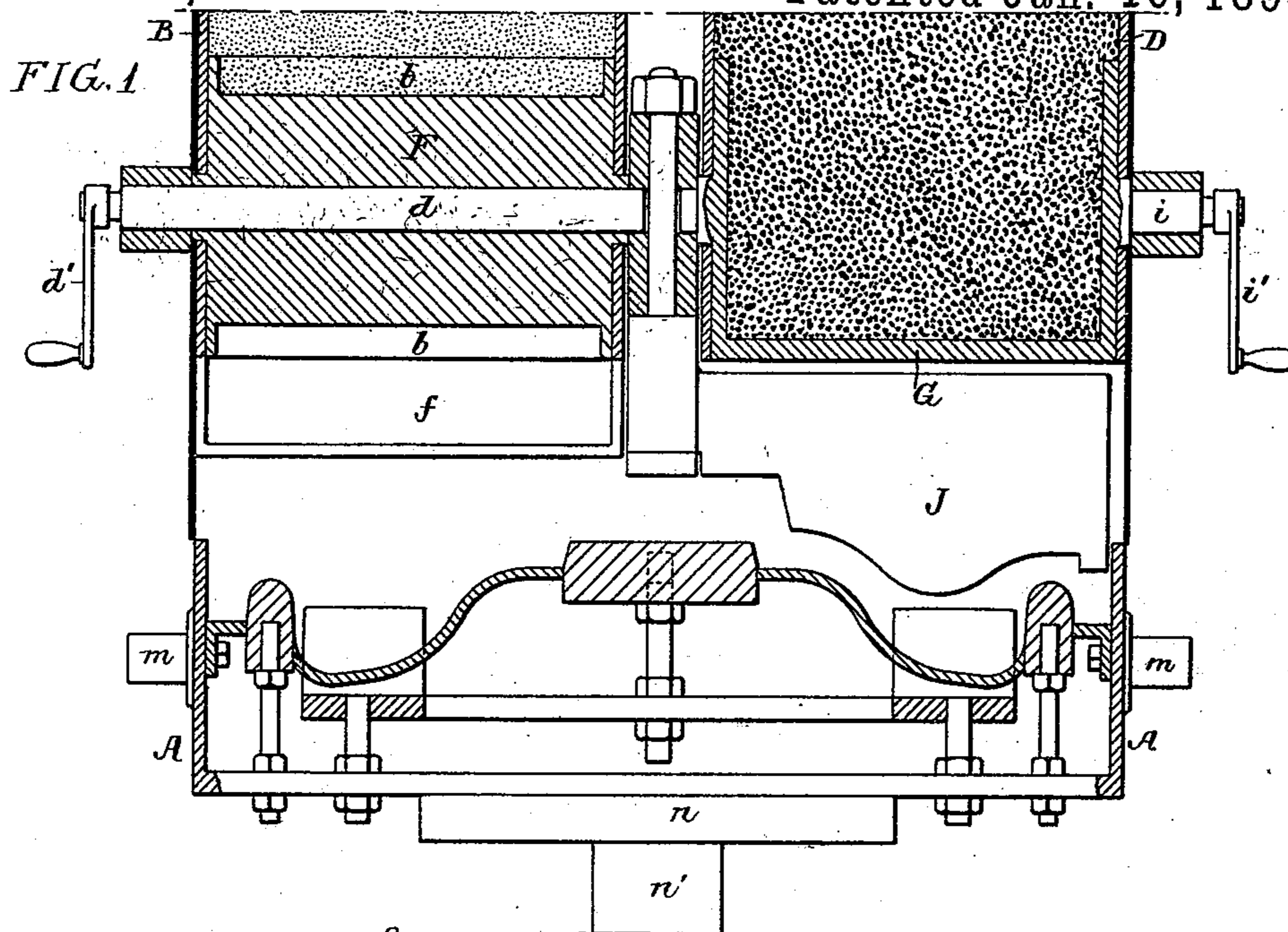
3 Sheets—Sheet 1.

J. J. CARR.

PROCESS OF FORMING MOLDS FOR CASTING CAR WHEELS.

No. 512,946.

Patented Jan. 16, 1894.



Witnesses:  
Hamilton D. Turner  
Alex. Barkoff

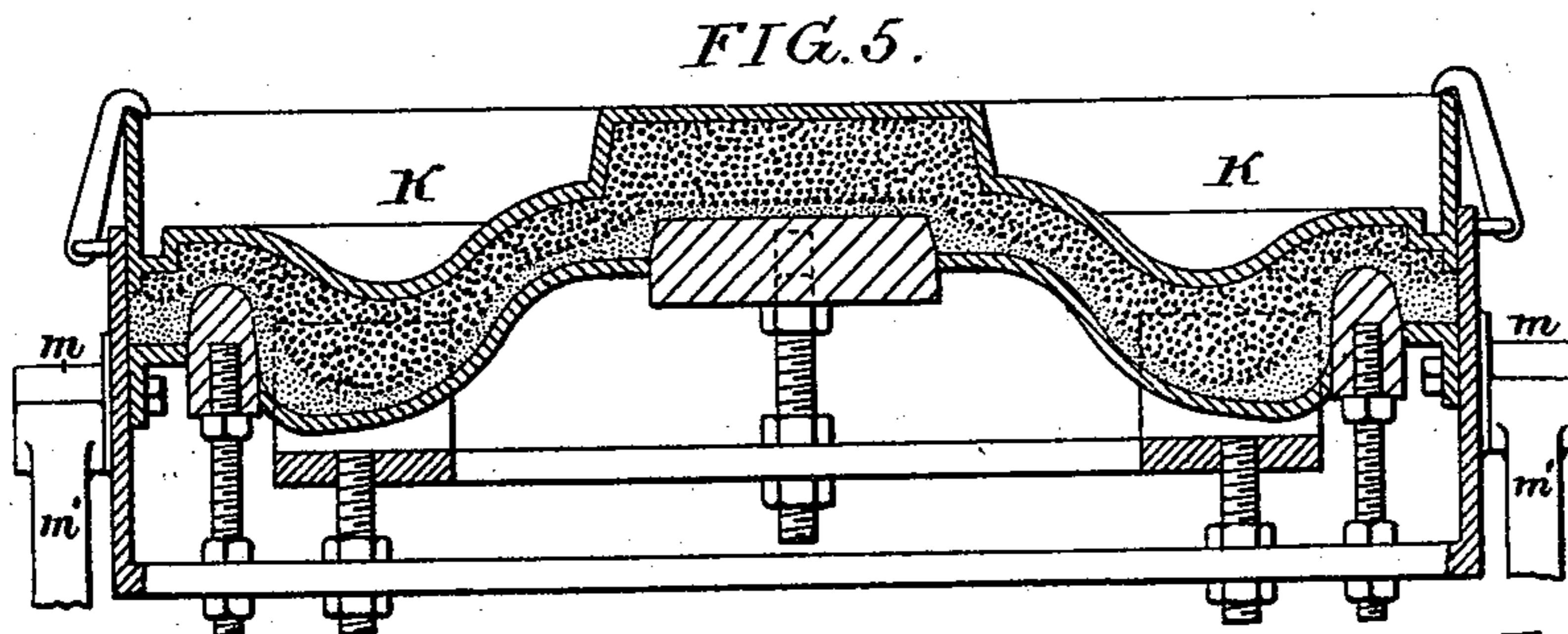
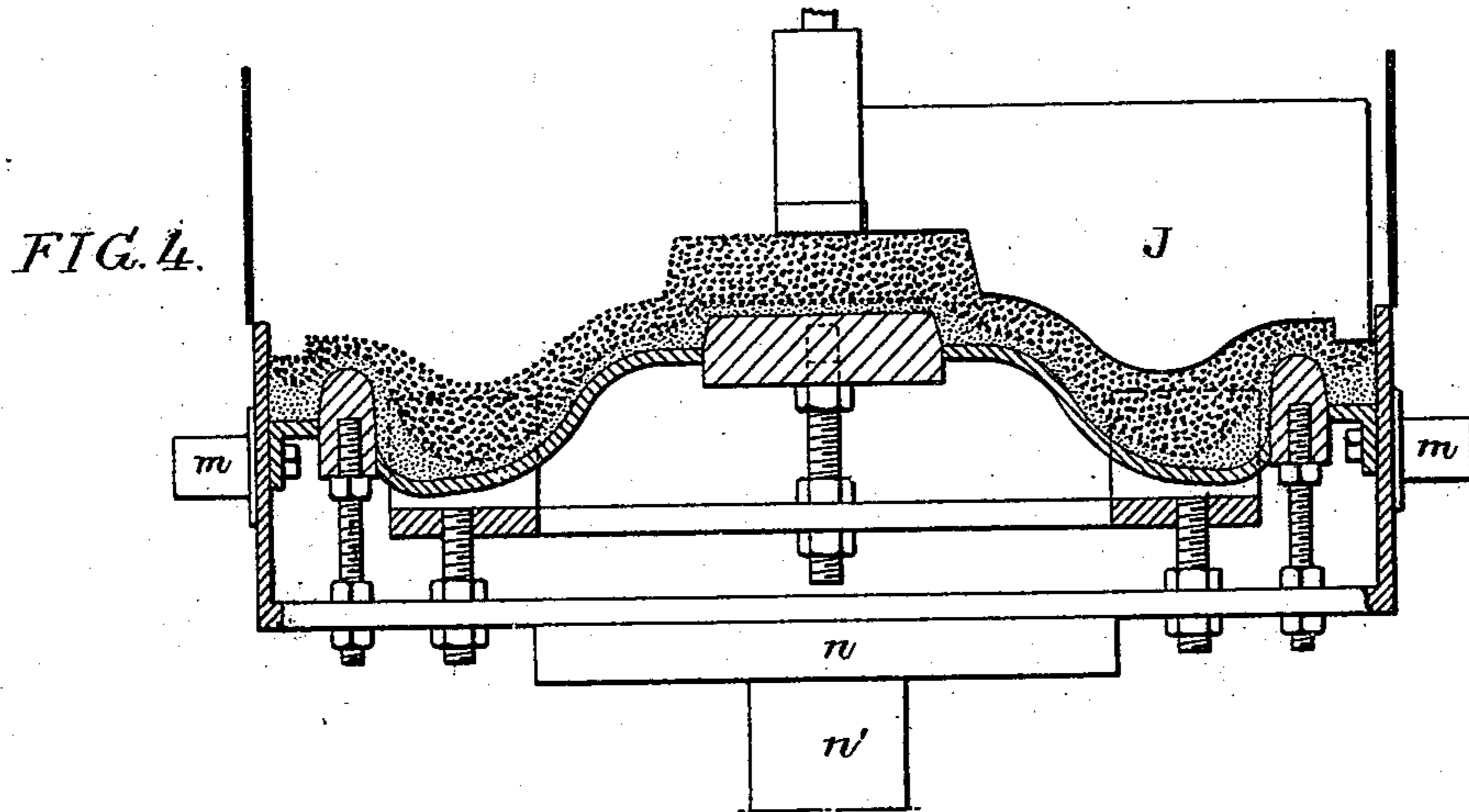
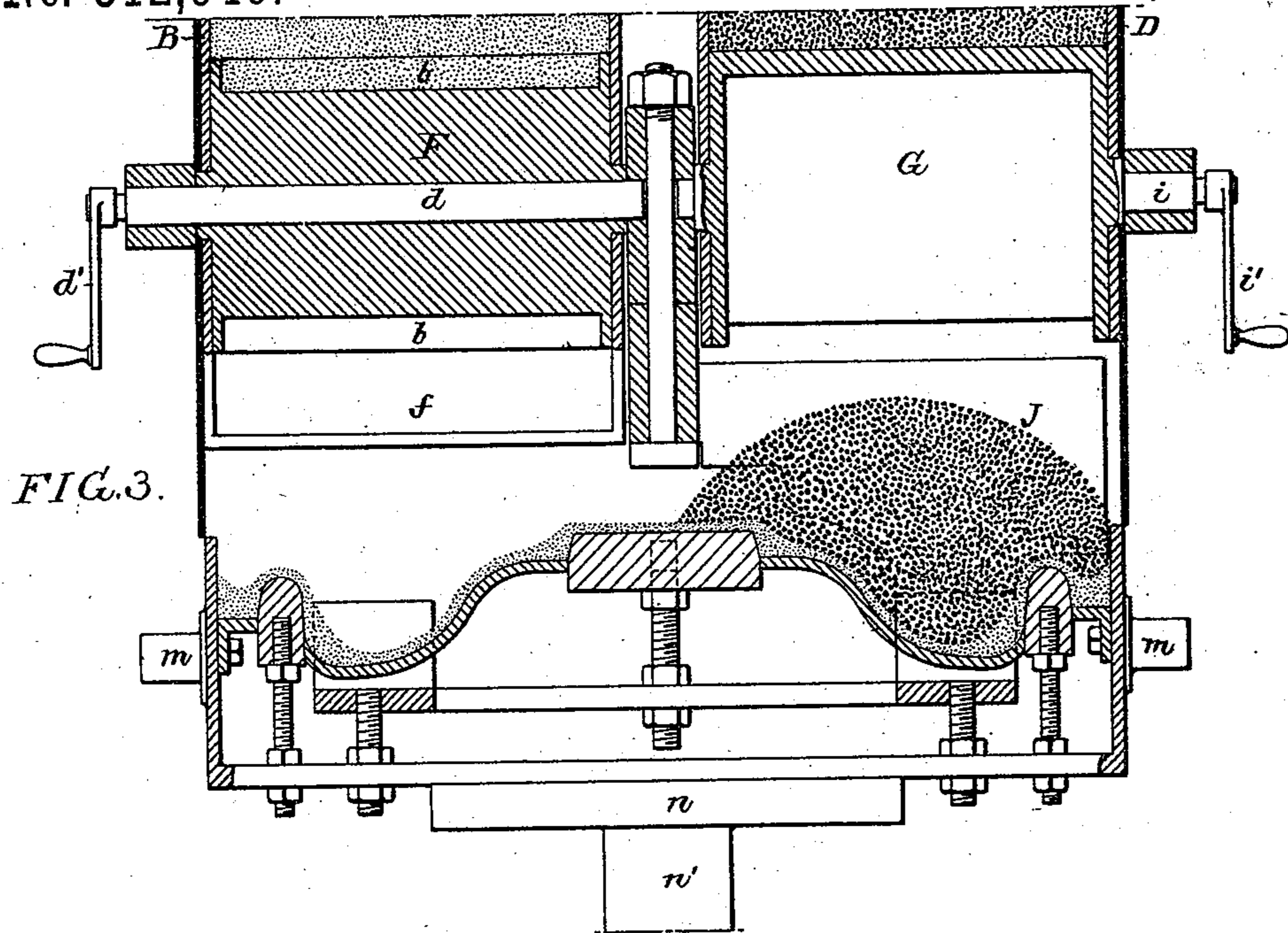
Inventor:  
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by his Attorneys  
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FIG. 6.

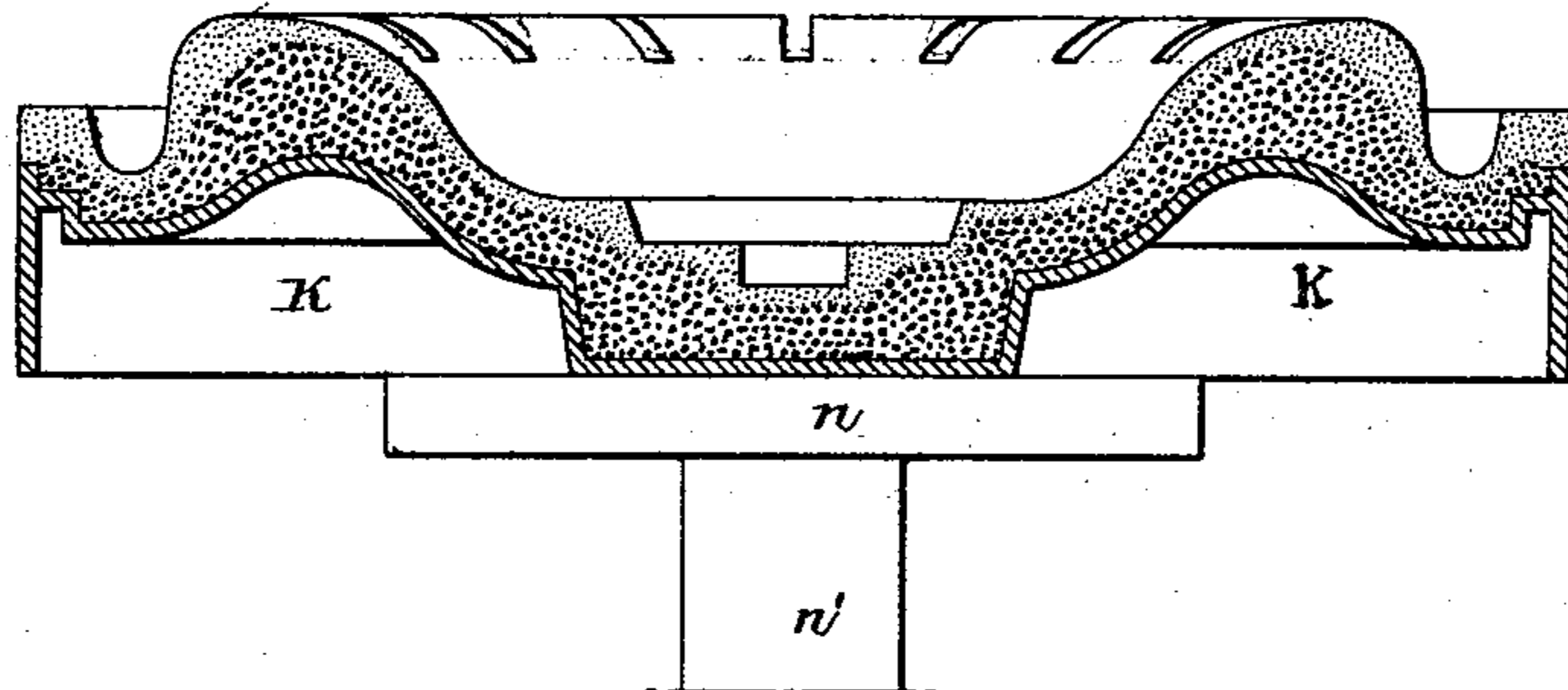


FIG. 7.

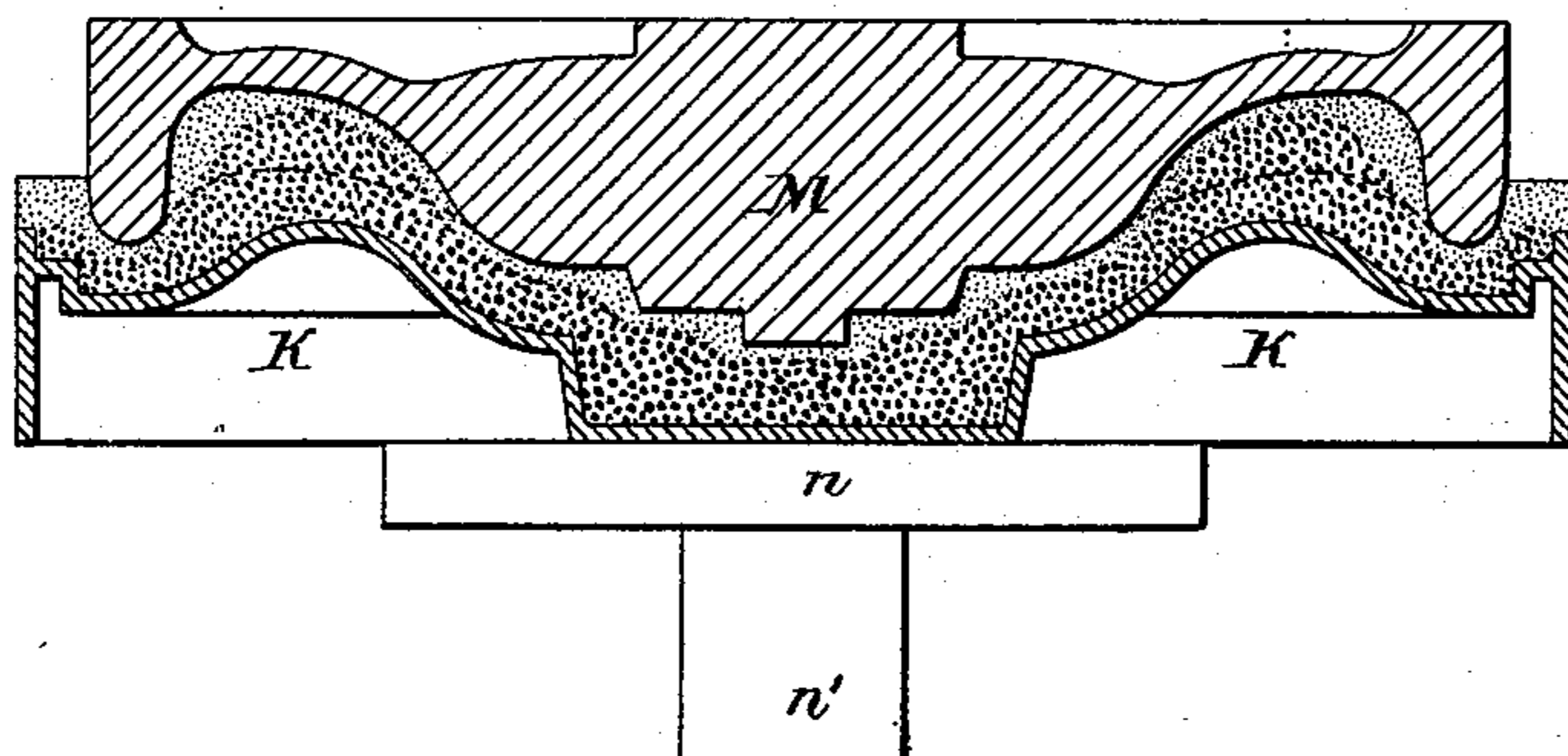


FIG. 8.

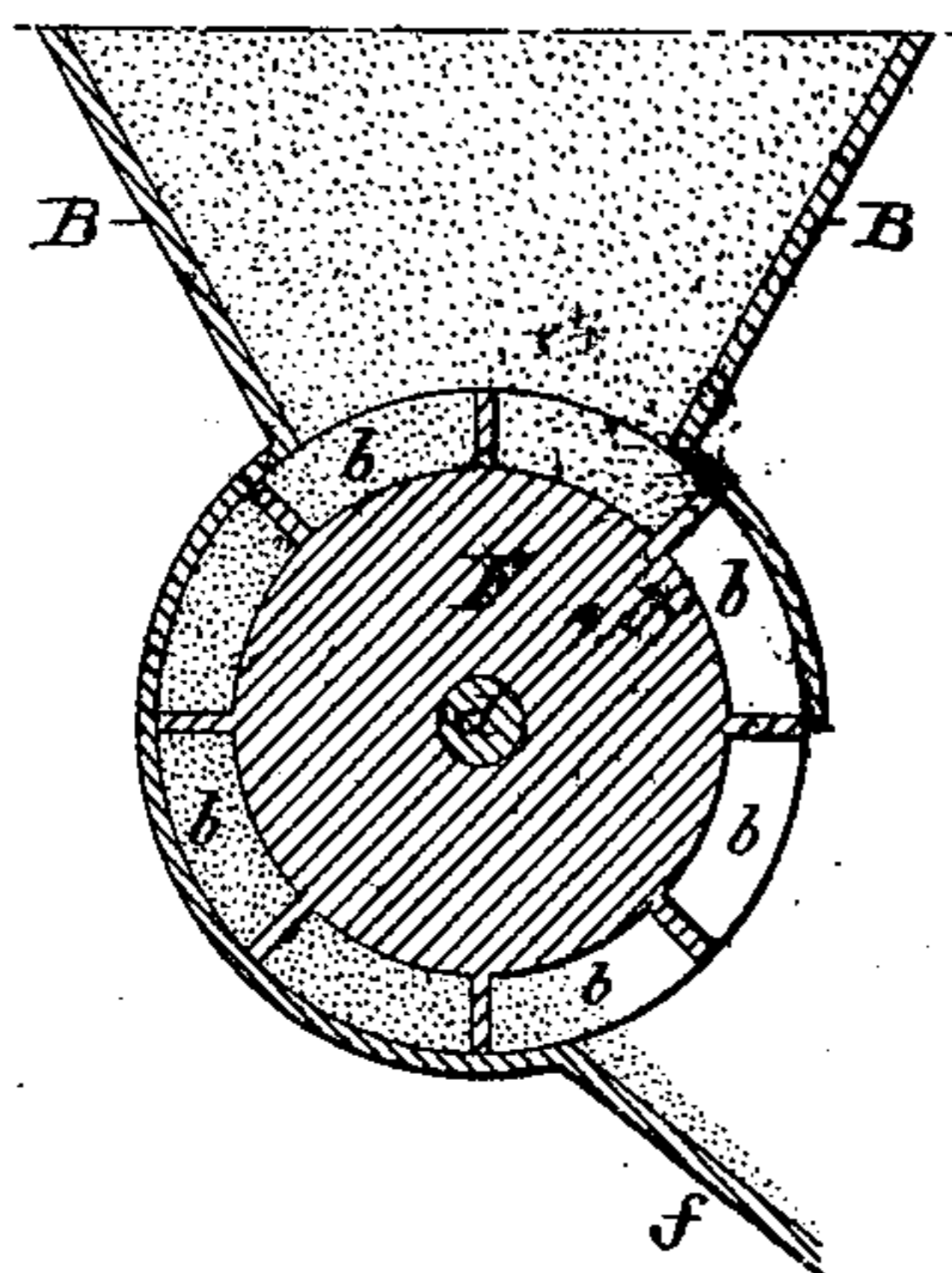
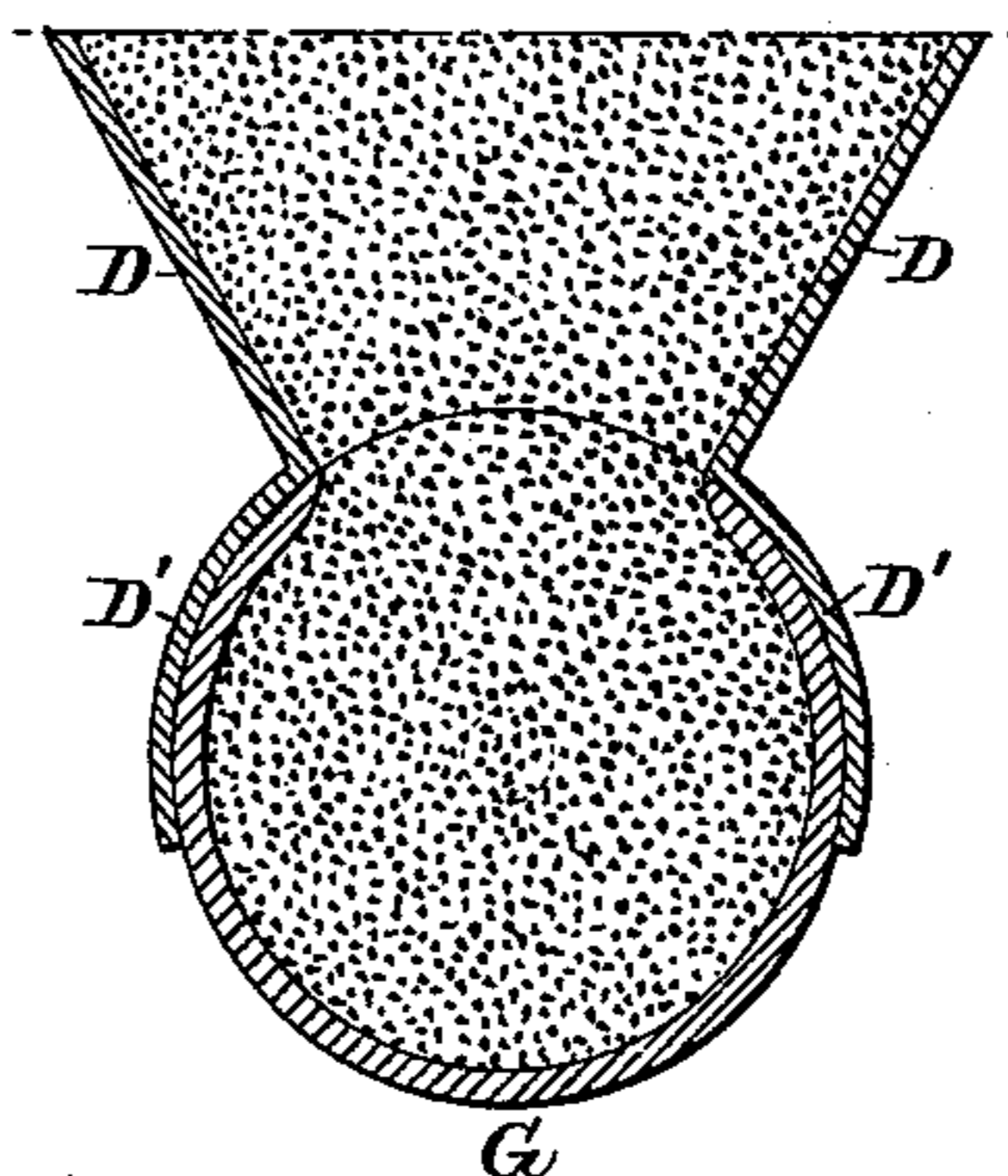


FIG. 9.



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# UNITED STATES PATENT OFFICE.

JOSEPH J. CARR, OF WILKES-BARRÉ, PENNSYLVANIA, ASSIGNOR TO THE  
WILKES-BARRÉ MOLDING MACHINE COMPANY, OF SAME PLACE.

## PROCESS OF FORMING MOLDS FOR CASTING CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 512,946, dated January 16, 1894.

Application filed April 10, 1893. Serial No. 469,680. (No specimens.)

### *To all whom it may concern:*

Be it known that I, JOSEPH J. CARR, a citizen of the United States, and a resident of Wilkes-Barré, Luzerne county, Pennsylvania, have invented certain Improvements in Processes of Forming Molds for Casting Car-Wheels, of which the following is a specification.

My invention consists of certain improvements in the processes of molding car wheels for which Letters Patent have previously been granted to me, my present invention involving certain features of previous inventions set forth in Patents Nos. 360,086; 371,820 and 408,579, and comprising further, certain modifications whereby some defects developed in the practical carrying out of the previously patented processes have been remedied, the advantage of my present process being that it provides for the formation of accurate and staple impressions in the sand so that perfect castings can be produced.

In the accompanying drawings:—Figure 1, represents a sectional view of apparatus employed in carrying out my invention, and illustrating the first step in the process of molding. Figs. 2, 3 and 4, are similar views illustrating further preliminary steps in the process. Figs. 5 and 6, are sectional views illustrating intermediate steps in the process. Fig. 7, is a sectional view illustrating the final step; and Figs. 8 and 9, are sections respectively on the lines 8—8 and 9—9, Fig. 2.

In Figs. 1 to 5, A represents a mold box containing a suitable preliminary pattern, that shown in the drawings being similar to the one for which I have filed a separate application bearing even date herewith, Serial No. 469,679, although any desired form of preliminary pattern may be used as desired. This mold box is mounted upon the head *n* of a hydraulic plunger *n'*, said head or plunger being free to turn so as to rotate the mold box. Above said mold box are two sand boxes B and D, the box B containing the fine facing sand or other granular material used for facing purposes, and the box D containing the ordinary coarse molding sand.

In the lower portion of the box B is a drum F having pockets *b*, this drum being mounted

upon a shaft *d* which has a handle *d'* by which it can be turned, or the drum may be turned in any other suitable manner.

Beneath the drum F is an inclined shelf *f*, which, when the drum is turned, receives the sand from the pockets *b* and delivers the same in a thin stream.

In the lower portion of the box D is a measuring box which is in the form of a hollow cylinder G having an opening through which it may communicate with the box D, the lower portion of said box having segmental wings *D'*, Fig. 9, which partially inclose the cylinder G. The cylinder G has a shaft *i* provided with a handle *i'* so that it can be turned in order to bring the opening uppermost and permit sand to flow from the box D into the interior of the cylinder, or so that it can be turned to cut off the flow from the box D and discharge the sand with which it has been filled.

Below the sand box D is a shaping wing or blade J, the lower edge of which conforms approximately with the outline of the upper face of the pattern carried by the mold box A.

In starting to form the mold, the mold box A is lifted to the position shown in Fig. 1, the drum F and box G preventing any escape of sand from either the box B or the box D. The mold box is then rotated by any suitable means and the drum F is also turned so as to distribute the fine facing sand or facing material upon the surface of the pattern until the desired thickness of said facing material has been deposited thereon, as shown in Fig. 2, whereupon the rotation of the drum F is stopped. The measuring box G is then reversed as shown in Fig. 3 so as to dump its contents into the mold box, the mass of sand thus delivered being sufficient in quantity to fill the mold box to the desired extent. The continued rotation of the mold box causes this mass of sand to be distributed throughout the box by reason of the action of the sweeping or shaping bar J, as shown in Fig. 4, so that the upper face (or back) of the mold conforms approximately to the shape of the pattern, there being, if desired, an excess of sand in certain parts of the mold, as set forth in my Patent No. 360,086. The plunger *n'* is

then lowered until trunnions *m* projecting from the sides of the mold box rest in bearings in suitable supports *m'*, and a flask *K*, conforming in shape to the top or back of the mold is then applied to said back of the mold as shown in Fig. 5 and secured in any appropriate manner. The mold box and flask are then reversed by turning said mold box on its trunnions so as to bring the flask *K* undermost, and the mold box with its pattern are then removed so as to leave the mold in the condition shown in Fig. 6. The mold having been brought into proper position and suitably supported, as for instance by the head *n* of a plunger *n'*, the final pattern *M* is pressed into the face of the sand of the desired impression for the casting, as shown in Fig. 7, this operation being effected either by raising the flask so as to press the sand against the pattern *M*, or by supporting the flask and forcing the pattern down into the sand contained in said flask.

The use of the flask *K* conforming approximately in contour with the face of the pattern and the shaping of the top face or back of the mold, as shown in Fig. 4, so that said flask can be applied to said top surface or back of the mold after the completion of the first stage of formation, are important features in the carrying out of my improved process, since they provide for the maintenance of a mass of sand of the proper thickness throughout and in which the final impression is made so that all parts of the mold can be compressed to the proper degree and the formation of perfect castings is thus insured.

In carrying out my invention, although it is preferable to use both the preliminary and final patterns, the use of the preliminary pattern may be dispensed with in some cases, the sand being distributed over the face of the final pattern and properly shaped to accord therewith and the flask *K* being then applied to the top or back surface of the mold and final pressure imparted to complete the mold, and in this case it will not be necessary to reverse the flask and mold after the application of said flask, the object in thus reversing the flask and mold being to prevent the dropping of the sand after the preliminary pattern is withdrawn and before the final pressure is imparted to complete the mold, the sand, before the application of this final pressure, being comparatively loose and incapable of retaining its form without support.

I have shown my invention as applied to the formation of only the drag side of the finished mold, this being the part in which the ribbed portion of the wheel is cast.

In forming the cope side of the mold the ordinary method of molding may be resorted to, or the coarse sand may be first deposited in the flask, the facing sand then deposited

on the top of this coarse sand and the pattern then pressed into the sand in order to form the mold.

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

1. The mode herein described of preparing molds for casting car wheels, said mode consisting in distributing sand over the face of a preliminary pattern, shaping the upper or back face of the sand so as to cause it to accord approximately with the face of the said pattern, applying to said shaped face of the sand a flask conforming thereto, withdrawing the preliminary pattern and forcing a final pattern into the impression formed by said preliminary pattern, substantially as specified.

2. The mode herein described of forming molds for casting car wheels, said mode consisting in distributing the sand over the face of a pattern, shaping the upper or back surface of the sand so as to accord approximately with the face of the pattern, applying to said shaped face of the sand a flask conforming thereto, reversing the flask and mold so as to bring said flask undermost, and then forcing a pattern into the sand so as to press it downward within or against said flask, substantially as specified.

3. The mode herein described of forming a mold for casting car wheels, said mode consisting in distributing the sand over the face of a preliminary pattern, shaping the upper or back surface of the sand so as to cause it to accord approximately with the face of the pattern, applying to said shaped face of the sand a flask conforming thereto, reversing the flask and mold so as to bring said flask undermost, removing the preliminary pattern and forcing a final pattern into the impression formed by said preliminary pattern, so as to compress the same within or against the flask, substantially as specified.

4. The mode herein described of forming a mold for casting car wheels, said mode consisting in rotating the pattern, and, while the same is so rotated, delivering in a thin stream onto the face of the same a layer of fine sand or facing material, filling in behind the same a mass of molding sand, shaping the upper or back face of said molding sand to accord approximately with the face of the pattern, applying to said shaped face of the molding sand a flask conforming thereto, and impressing a pattern into the sand so as to compress it within or against said flask, substantially as specified.

5. The mode herein described of forming molds for casting car wheels, said mode consisting in measuring the proper quantity of sand to form the mold, dumping said sand onto the face of a pattern, rotating the pattern with the sand dumped thereon, and causing a sweep or shaper bar to distribute the sand evenly over the face of the pattern

and to impart to the upper or back face of  
the sand a shape approximating to that of the  
pattern, applying to said shaped face of the  
sand a flask conforming thereto, and impress-  
5 ing a pattern into the sand so as to compress  
the latter within or against said flask, sub-  
stantially as specified.

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

JOSEPH J. CARR.

Witnesses:

F. C. STURGES,  
EDWARD E. HOYT.