

No. 733,868.

PATENTED JULY 14, 1903.

J. B. NEESHAM.
METHOD OF FORMING SAND MOLDS.

APPLICATION FILED OCT. 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

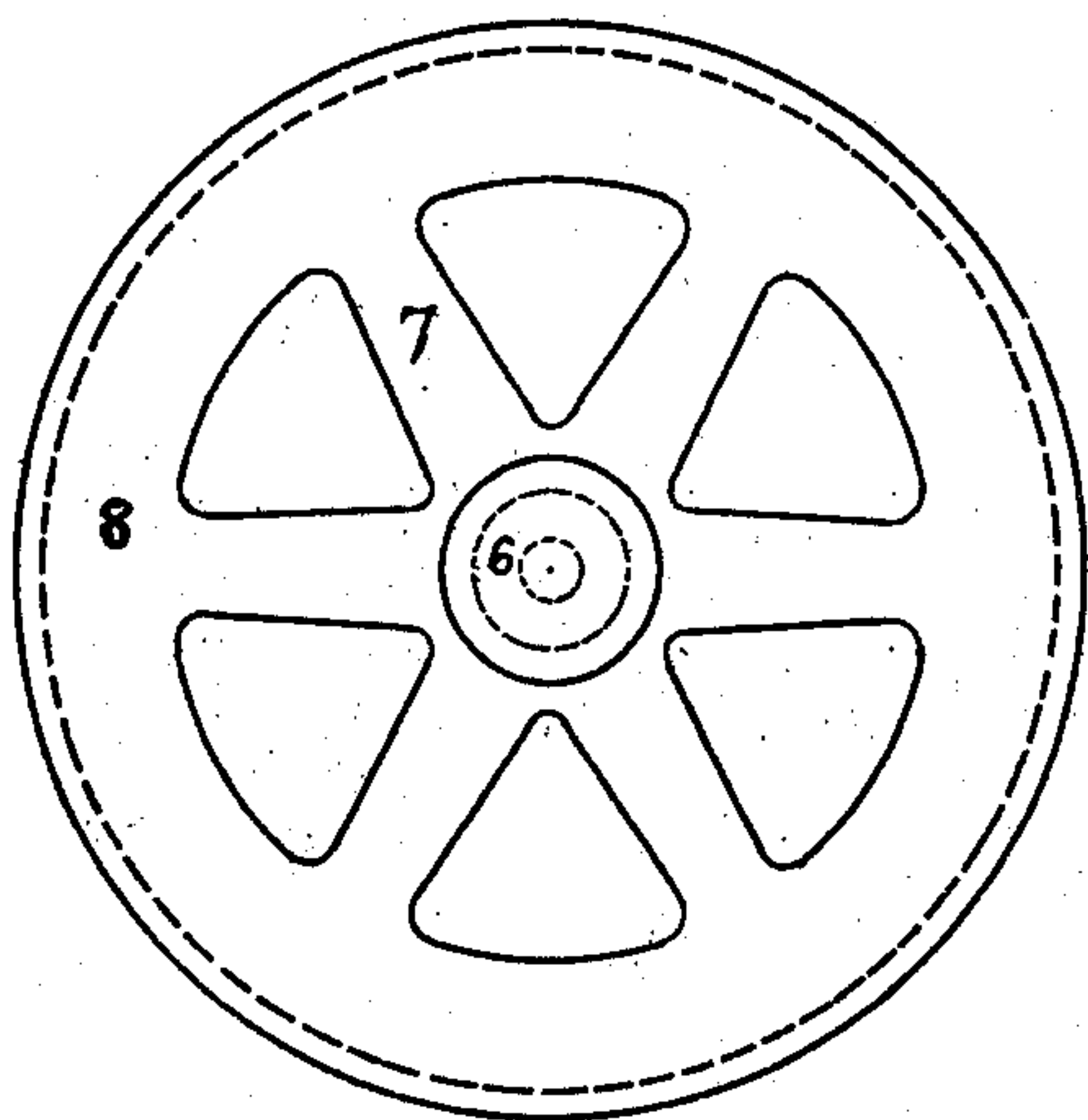


Fig. 2.

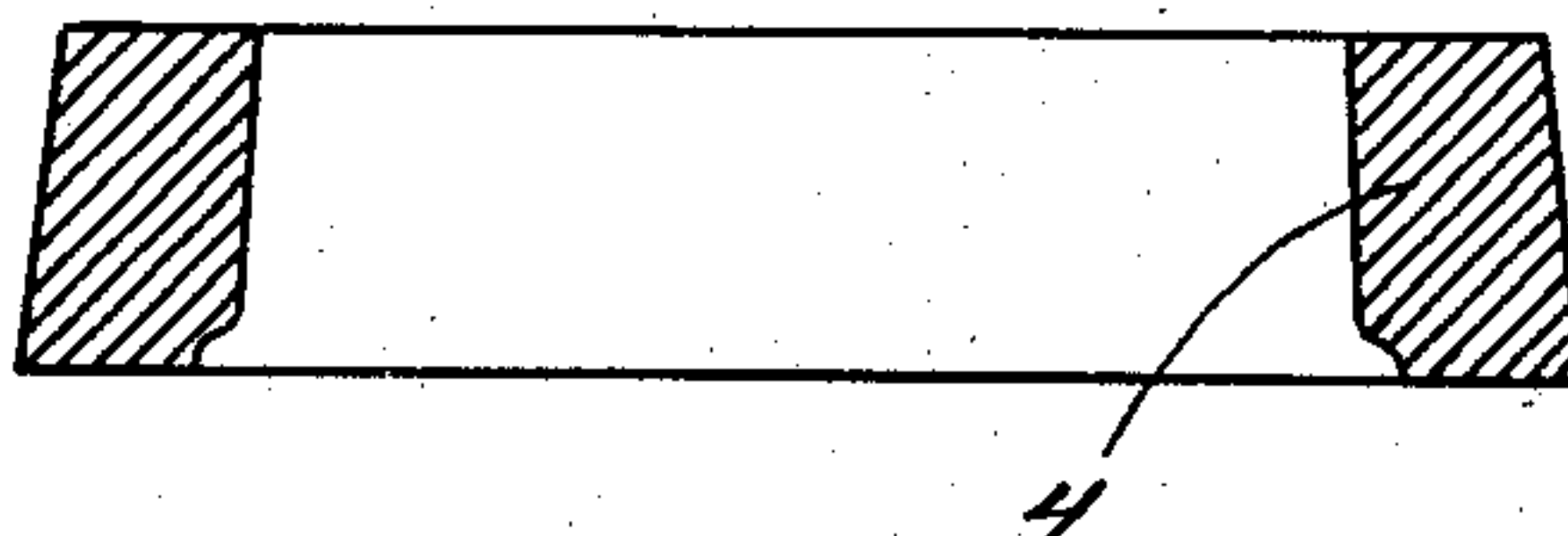


Fig. 6.

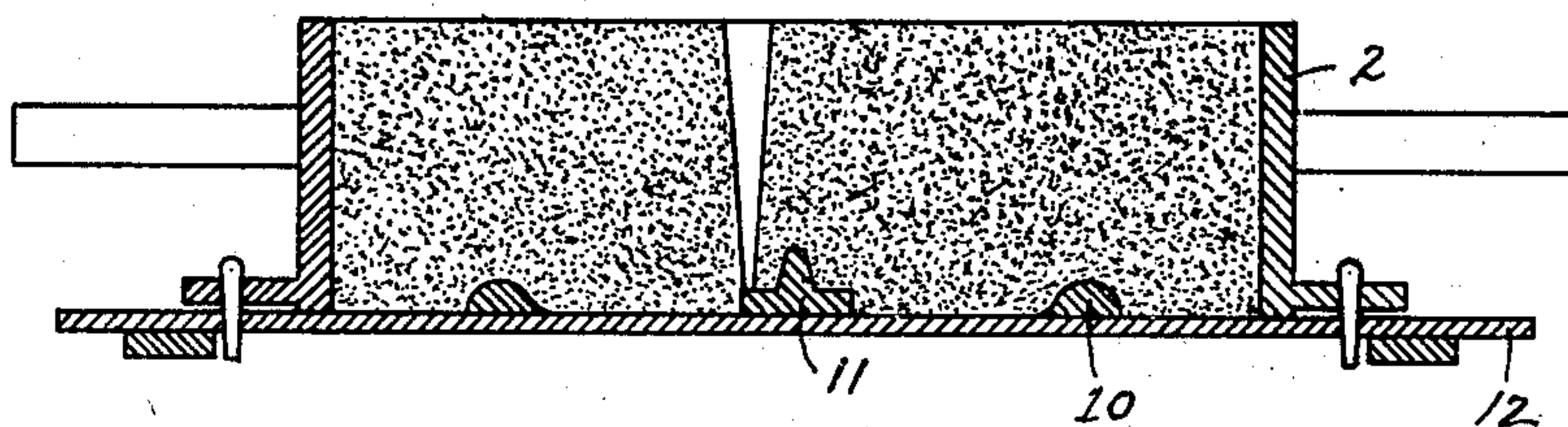
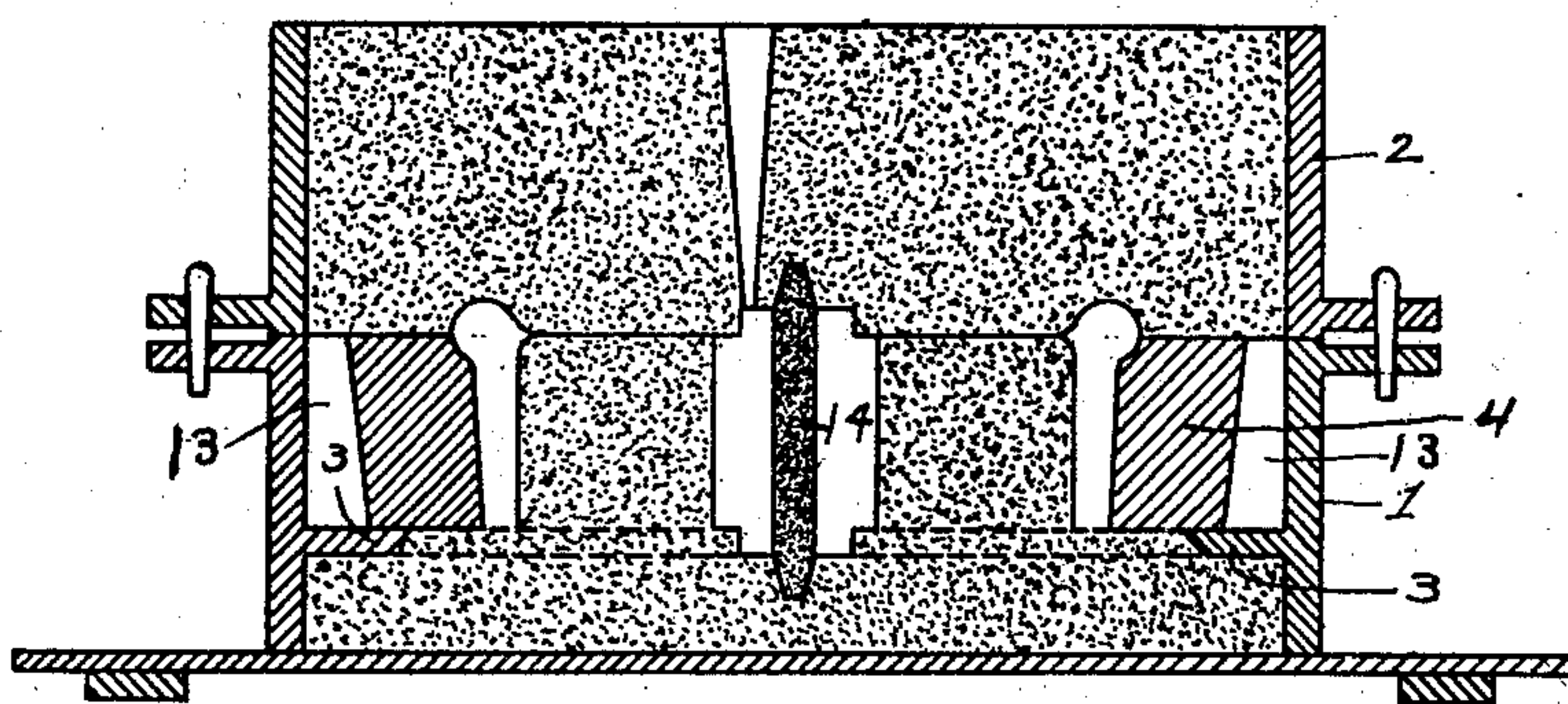


Fig. 7.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

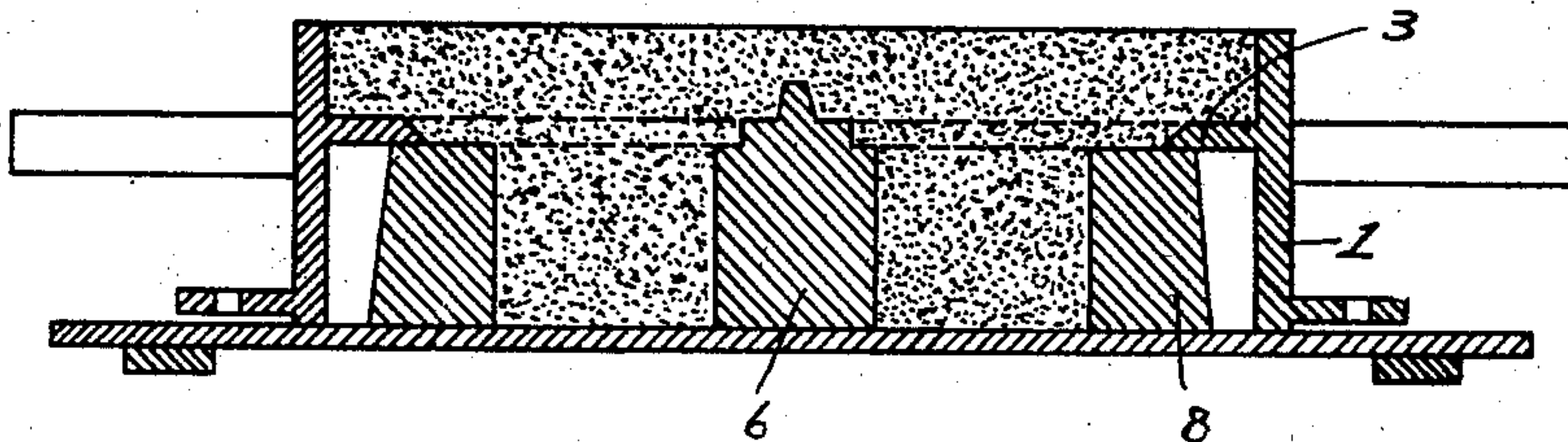


Fig. 4.

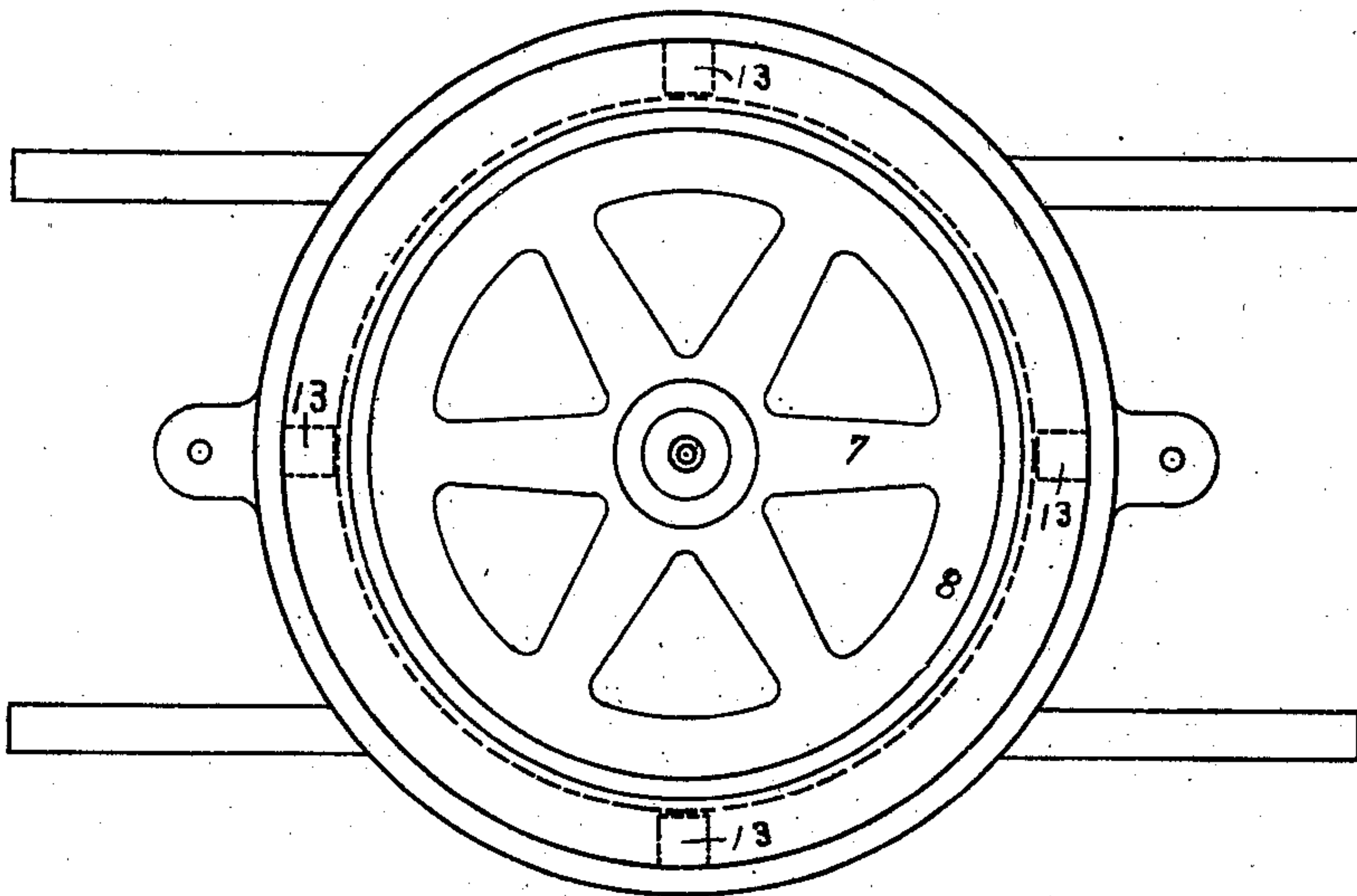
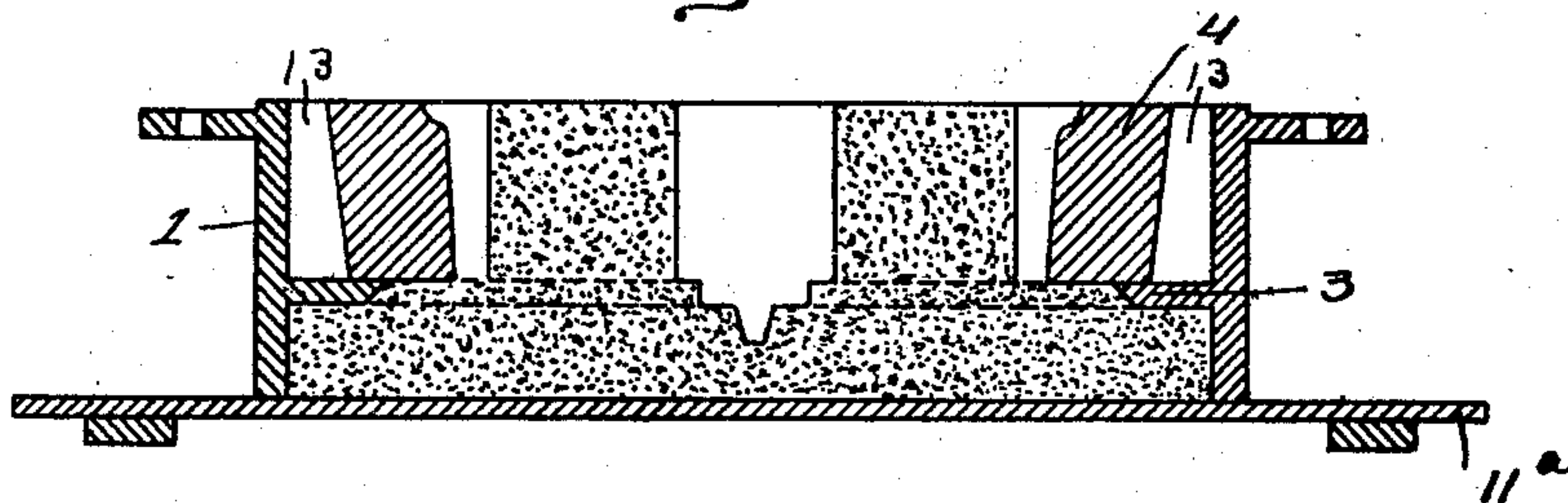


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN BIRCH NEESHAM, OF MONONGAHELA, PENNSYLVANIA.

METHOD OF FORMING SAND MOLDS.

SPECIFICATION forming part of Letters Patent No. 733,868, dated July 14, 1903.

Application filed October 21, 1902. Serial No. 128,109. (No model.)

To all whom it may concern:

Be it known that I, JOHN BIRCH NEESHAM, a resident of Monongahela, in the county of Washington and State of Pennsylvania, have
5 invented a new and useful Improvement in Methods of Forming Sand Molds; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the method of making
10 ing sand molds, and more especially molds for making car and similar wheels having a chilled tread; and its object is to provide for the making of these wheel-molds in a much more expeditious and cheap manner than
15 heretofore.

In making sand molds for car and similar wheels having a chilled tread the practice heretofore has been to make a wooden pattern which exactly conforms to the wheel to
20 be made. This pattern, together with the iron chill, was placed in the drag portion of the mold, and the sand was then filled in the spaces between the hubs, spokes, and rim of the wheel and also around the chill. The
25 cope part of the mold was then formed on the pattern and molded drag, after which the cope was removed from the drag and finished, the pattern removed, and the cope again placed on the drag, a suitable core for the
30 axle-opening being first inserted. By reason of the great weight of the iron chill it is not possible under this method to form the drag part of the mold on a jarring-machine, as the inertia of the chill requires considerable
35 power to overcome, and when put in motion its momentum is such that it will rise from the base-plate at each reversal of the jarring stroke at its upper limit. As a consequence the work has to be done entirely by hand,
40 and by reason of the complete pattern of the wheel the cope cannot be made simultaneously with the drag—that is, it is not possible to have one workman making the drag and another workman making the cope; but the
45 latter has to be made after the former is finished. As a result the making of the molds under this process is slow and laborious, thus adding to the cost of the wheels.

The object of my invention is to overcome
50 the defects of the old method of making these sand molds and to provide a method whereby the mold can be made on a jarring-machine

and whereby the cope and drag can be forming simultaneously, in this manner making it possible for two workmen to be employed
55 on the same mold and the machine-work, enabling each of the parts of the mold to be formed very expeditiously.

To this end my invention consists, generally stated, in forming the pattern in two portions, the lesser of which is to be used in making the cope part of the mold, while the greater comprises the hub, spokes, and a rim portion whose inner face conforms accurately to the inner face of the rim of the finished
60 wheel, but said rim portion being very much thicker than the wheel-rim, preferably being as thick as the rim and chill combined, although it need have no special shape given to its outer face. This wooden pattern is
70 placed in the drag of the flask, and the sand is then filled down into the spaces between the rim and hub, care being taken, however, not to have any sand outside of the rim, this being guarded against either by having
75 the pattern extend out to the walls of the flask, but preferably by having a suitable ledge in the flask which will prevent the entrance of the sand outside of the rim of the pattern and will also act as a support for the
80 chill. After the sand has been compacted in the spaces between the rim and hub the flask is turned upside down, the pattern removed, and the iron chill inserted, after which the cope can be immediately placed
85 upon the drag after having first inserted the core for the axle-bearing, and the mold is then ready for pouring. In forming the drag portion of the mold the chill is not inserted until after the sand has been molded in place
90 and the pattern removed. As a consequence only the light wooden pattern is contained in the drag part of the flask during the molding, and thus it is possible to form the drag on an ordinary jarring-machine.
95

In the accompanying drawings, Figure 1 is a plan view of the pattern employed in my method. Fig. 2 is a cross-section through the chill. Fig. 3 is a cross-section through the drag portion of the flask, showing the
100 wooden pattern in place and the sand filled into the same. Fig. 4 is a plan view of the flask with the pattern in place, showing the same prior to filling in the sand. Fig. 5 is a

view similar to Fig. 3, showing the drag turned upside down, the pattern removed, and the chill in place. Fig. 6 is a cross-section through the cope portion of the flask, showing the manner of forming the same; and Fig. 7 is a cross-section through the completed mold.

In carrying out my method I may use a flask having the drag portion 1 and the cope portion 2, which may be of the usual construction, except that the drag portion is preferably provided with the inwardly-projecting rim or ledge 3. The chill employed is shown at 4 and may be of the usual construction. The pattern is formed of two parts, one part (shown in Figs. 3 and 4) comprising the hub portion 6, the spokes 7, and the rim portion 8, which rim portion, however, only defines the inner surface of the rim of the wheel. The other part of the pattern comprises only the part 10, corresponding to the flange of the wheel and a small portion 11 of the hub thereof. The other necessary apparatus comprises suitable base boards or plates 11^a and 12. The part of the pattern used in molding the cope preferably is secured to one of these boards, as shown in Fig. 6.

In carrying out my method by means of the apparatus shown the main portion of the pattern is placed upon a base-board 11 and the drag portion of the flask 1 is then placed over the same in inverted position, as shown in Fig. 3. Preferably the rim portion 8 of the pattern is as thick as the combined wheel-rim and chill 4, and the drag has a number of inwardly-projecting ribs 13, against which this pattern bears and which serve to center the latter. In this position the inner edge of the ledge 3 projects over the upper face of the rim portion of the pattern. The sand is then filled into the flask into the space between the hub, spokes, and rim, and over the rim, but none of it can pass outside of the rim, because the ledge 3 closes up the space outside of the pattern-rim. The sand may be compacted into these spaces by hand, but preferably on a jarring-machine. While the drag is being formed, as shown in Fig. 3, the cope will be formed, as shown in Fig. 6, by merely filling the sand into the cope part over the pattern portions 10 and 11. Two workmen and two machines may be employed making the drag and cope simultaneously. As soon as the drag and cope are formed as shown a board is placed over the top of the drag and the latter is turned upside down to the position shown in Fig. 5. The wooden pattern is then drawn out and the chill 4 is dropped down into the flask, the outer edge of said chill bear-

ing against the projections 13 and the lower edge of the chill resting upon the ledge 3. A core 14 is then put in place and the cope is placed on the drag, as shown in Fig. 7, after which the flask-sections are secured together, and the mold is ready for pouring.

It will be observed that during the formation of the drag only the wooden pattern is in the flask, and as a consequence the weight is not so great but that a jarring-machine may be employed, thus greatly increasing the number of molds that can be made. Furthermore, by having the mold in two portions the cope may be forming simultaneously with the drag, and this further increases the number of molds that can be made in a given time.

While I have shown and described my invention as applied to the making of molds for ordinary mining-car wheels having spokes, it will be understood that it is not limited thereto, as it is equally adapted for making wheels of different design, and even to those which are provided with a web instead of spokes. To do this, it is only necessary to form the necessary pattern in two sections.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The method of forming chilled wheel-molds, which consists in placing a pattern representing the body of the wheel in the inverted drag portion of the mold, filling sand in between the hub and rim and over the rim portion of said pattern but not outside the rim thereof, inverting the drag, removing the pattern, placing the chill in the flask, and forming the cope and placing the same on the drag.

2. The method of forming chilled wheel-molds, which consists in making a pattern in two portions, one comprising the main body and inside rim-surface of the wheel and the other comprising the flange and a portion of the hub, placing the latter in the cope part of the flask and filling sand into the same, placing the former in the drag part of the flask, filling sand into the space between the hub and the rim portions and over the rim portion but not outside said rim portion, inverting the drag part of the flask, removing the pattern therefrom, placing a chill in the space left by the rim portion of the pattern, and then placing the cope on the drag.

In testimony whereof I, the said JOHN B. NEESHAM, have hereunto set my hand.

JOHN BIRCH NEESHAM.

Witnesses:

F. W. WINTER,
ROBERT C. TOTTEN.