

(No Model.)

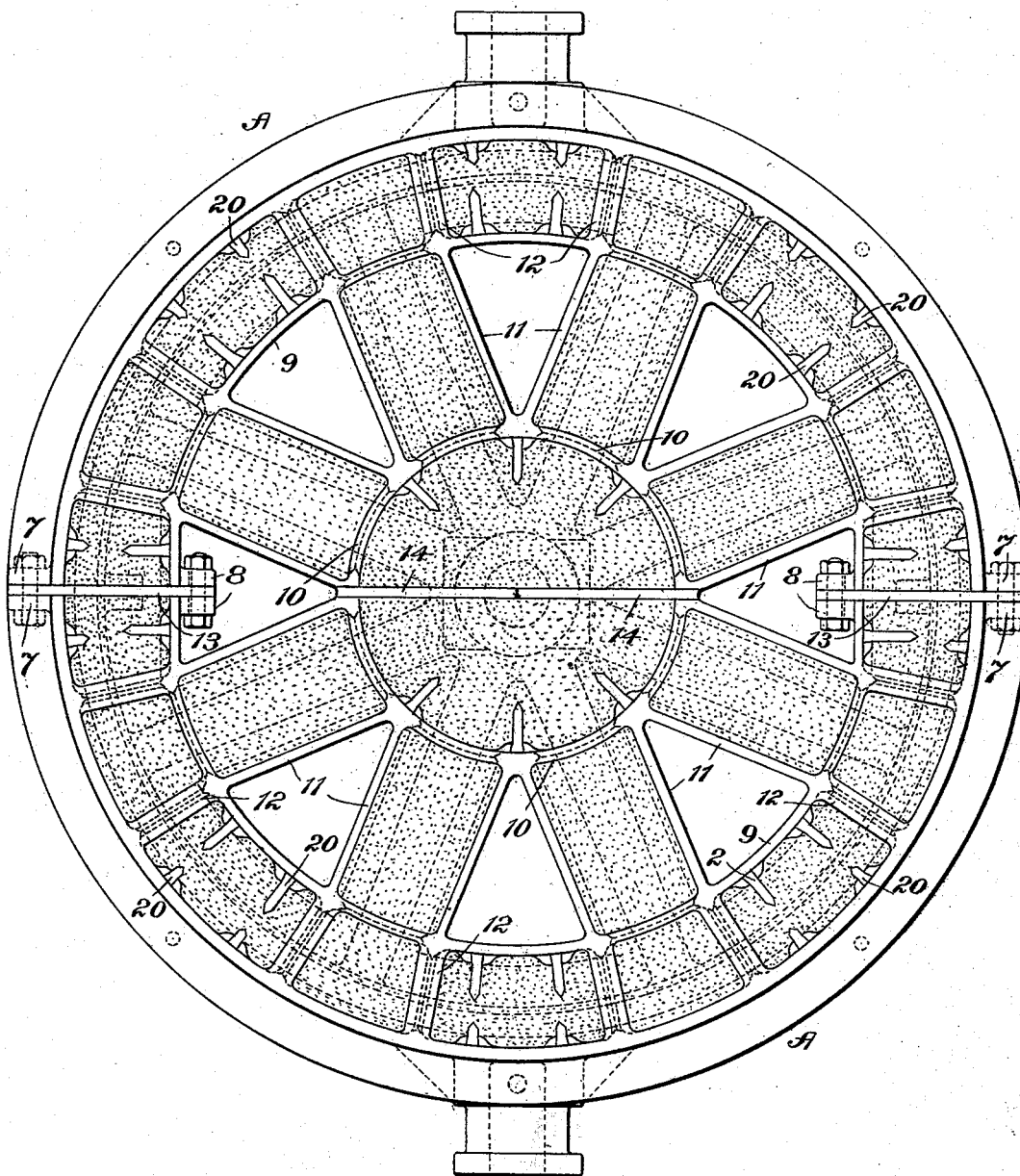
4 Sheets—Sheet 1.

G. H. GEYER.
ART OF MOLDING.

No. 524,169.

Patented Aug. 7, 1894.

FIG. 1.



WITNESSES:

Danm. S. Wolcott
Chas. F. Miller

INVENTOR,

George H. Geyer:
by George H. Christy
Att'y.

(No Model.)

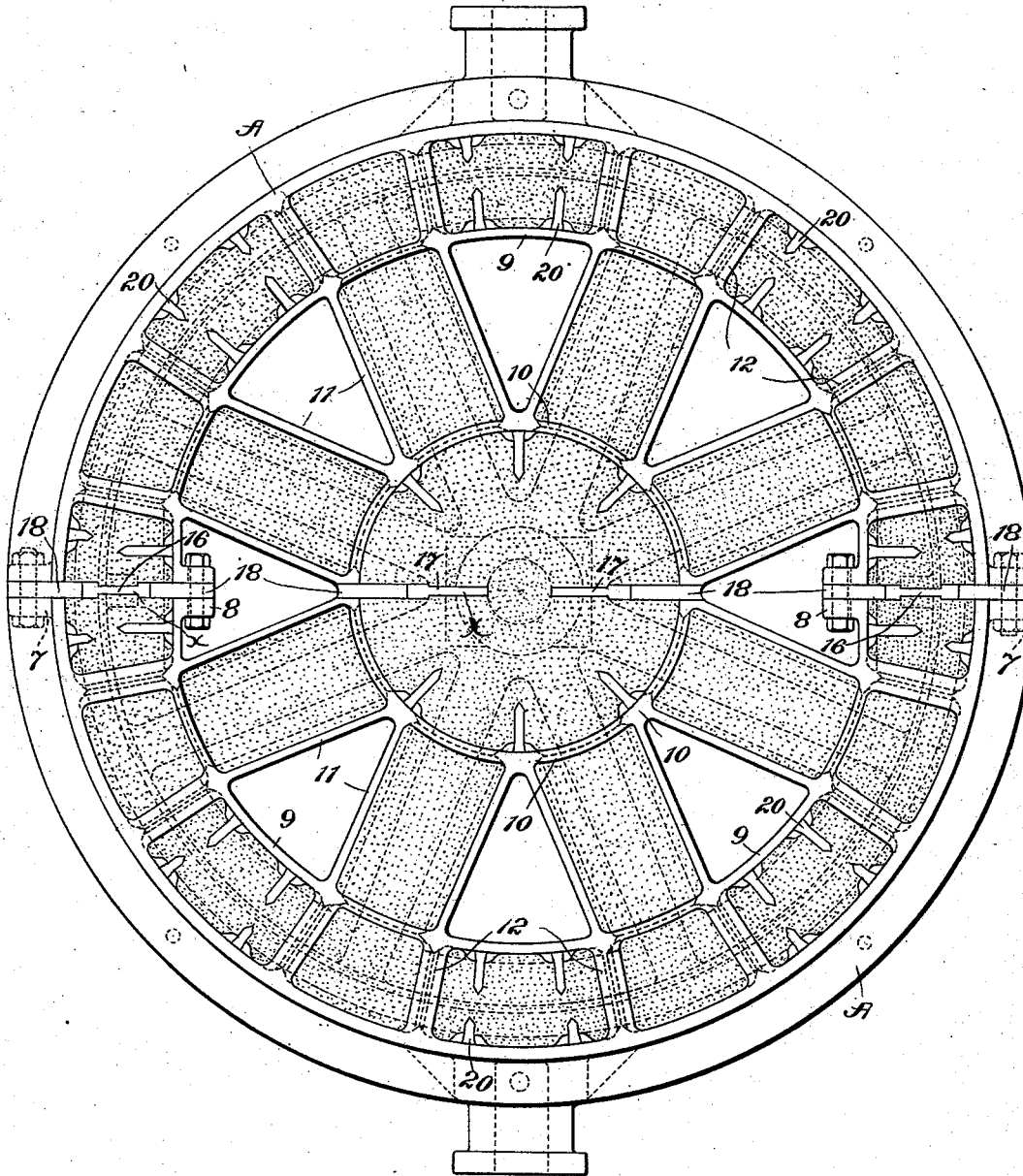
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Patented Aug. 7, 1894.

FIG. 2.



WITNESSES:

WITNESSES:
Darius S. Wolcott
Chas F. Miller.

INVENTOR,

George H. Geyer:
by George N. Christy
Atty.

(No Model.)

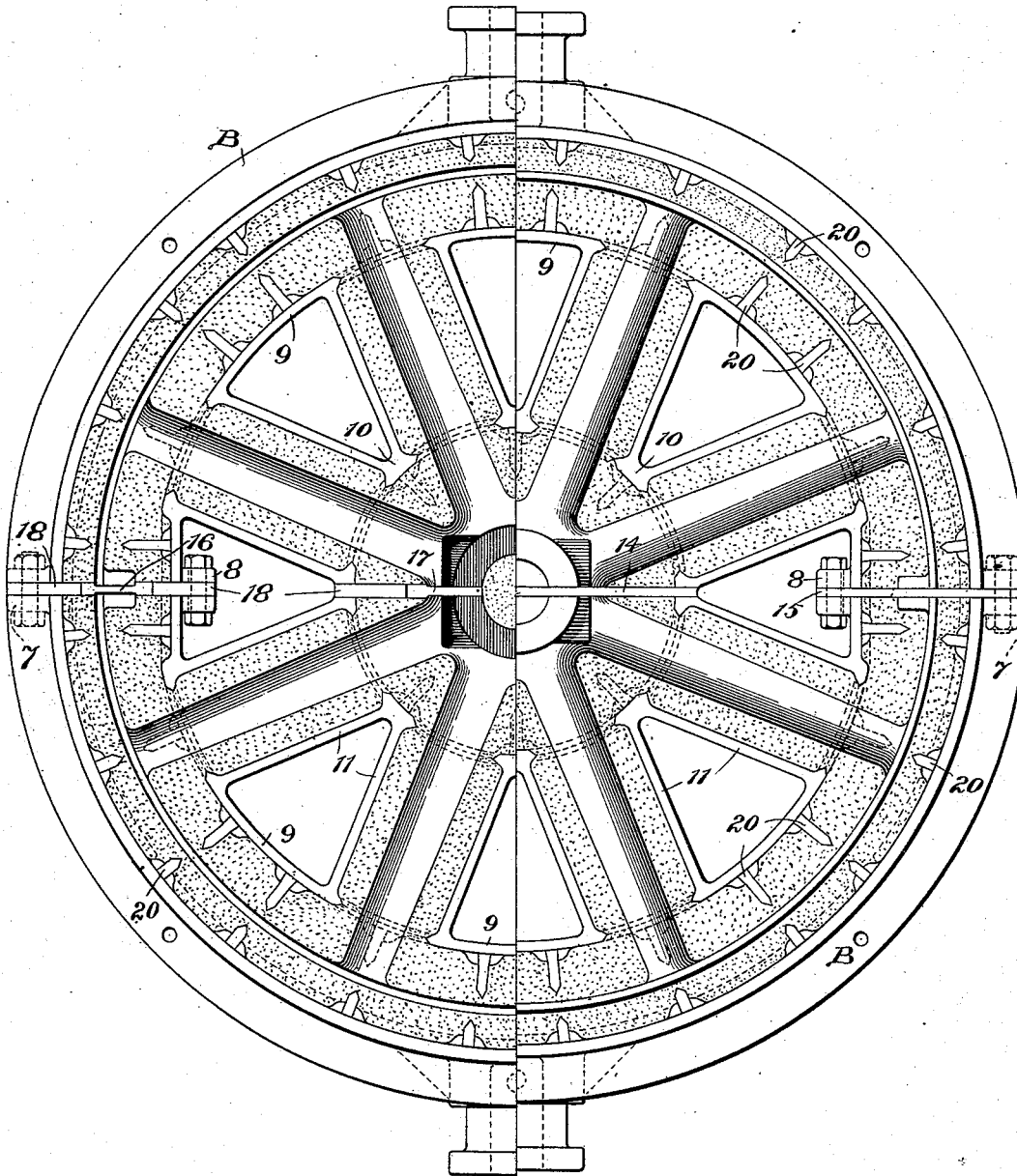
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FIG. 3.



WITNESSES:

Danwin S. Woleath
Chas. F. Miller.

INVENTOR,

George H. Geyer:
by George H. Christy
Att'y.

(No Model.)

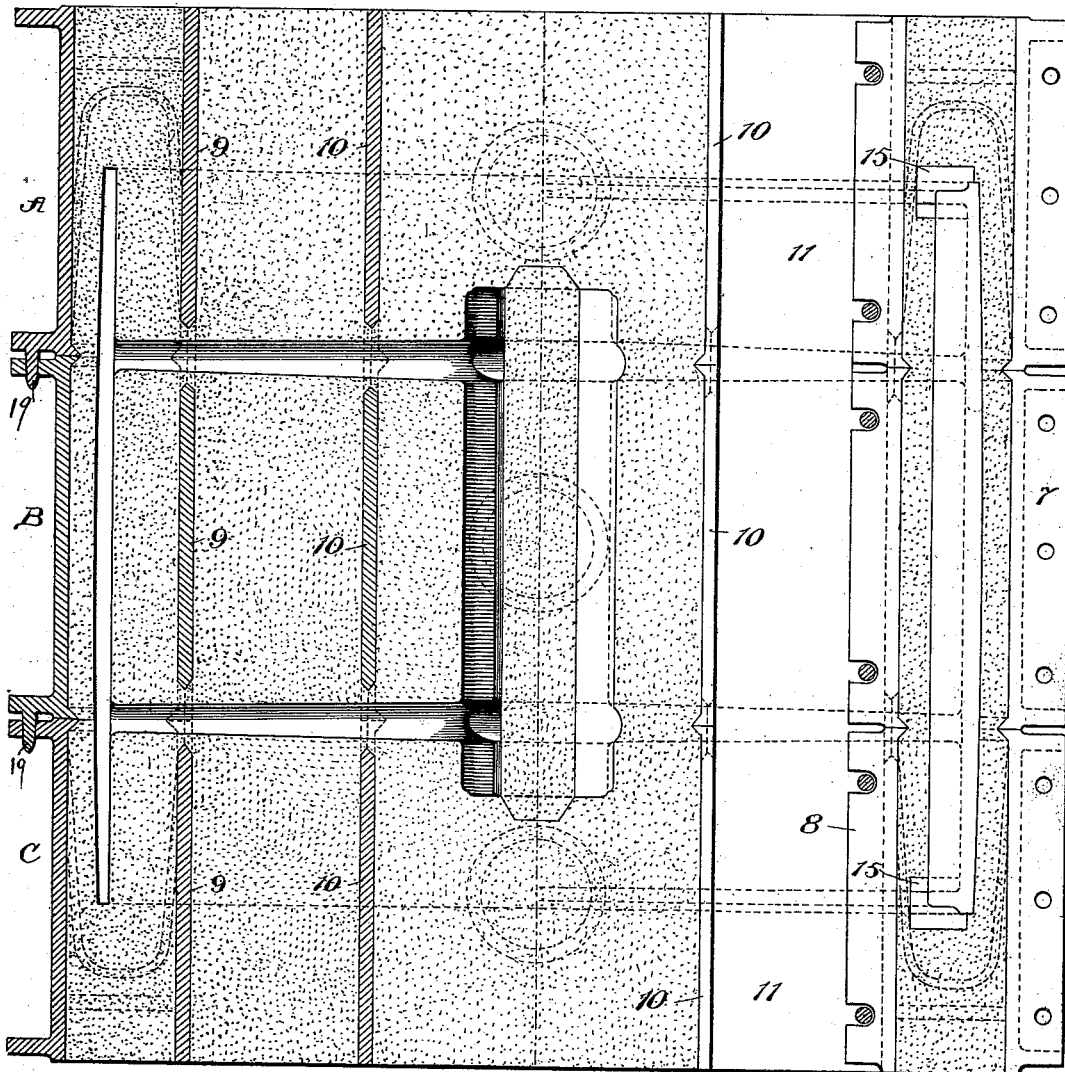
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FIG. 4.



WITNESSES:

Danm. S. Wolcott
Chas. F. Miller.

INVENTOR,

George H. Geyer.
by George H. Christy
Atty.

UNITED STATES PATENT OFFICE.

GEORGE H. GEYER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
JONES & LAUGHLINS, LIMITED, OF SAME PLACE.

ART OF MOLDING.

SPECIFICATION forming part of Letters Patent No. 524,169, dated August 7, 1894.

Application filed April 21, 1894. Serial No. 508,409. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE H. GEYER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Molding, of which improvements the following is a specification.

The invention described herein relates to certain improvements in the manufacture of large pulleys, such as are usually formed in two parts or sections to be subsequently connected by suitable bolts. It has heretofore been the practice to employ built up molds for the production of such large sizes of pulleys, the matrices being formed by suitably shaped movable sweeps. Such molds are not only difficult of construction requiring considerable time and labor, but it is almost impracticable to replace the parts of the sections of the mold when separated for the purpose of removing the temporary filling of the matrix and drying the mold, exactly in the same relation to each other, as they had when constructed, so that the article when removed from the mold, has ribs or projections corresponding to the lines of junction of the parts of the mold. These ribs or irregularities must be removed before the pulleys can be used, thereby adding materially to the cost of production. And further these built up molds are so rigid that they will not yield as the metal contracts and hence portions of the pulley are frequently pulled apart.

The object of this present invention is to provide for the production of such pulleys in green sand molds, and consists generally stated, in certain improvements in the manner of forming the molds for such divided pulleys and in the construction of the flask employed in the practice of such method.

The invention is hereinafter more fully described and particularly claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a top plan of my improved flask, the pattern being shown in dotted lines embedded in the sand. Fig. 2 is a similar view, the pattern being removed and the sections being separated ready for the casting operation. Fig. 3 is a top plan view of the middle part of the flask, the cope

being removed, the right hand portion showing the pattern in position, while the left hand portion shows the matrix, the pattern having been removed and the sections separated ready for casting, and Fig. 4 is a view partly in elevation and partly in section of one half of the mold.

In casting pulleys with two sets of arms I employ a flask consisting of a cope A, a middle part B and a drag C, each of the parts being divided vertically in two halves or sections. Each of the sections or halves is provided with flanges 7 and 8, through which are passed bolts for securing the halves or sections together. As shown in Fig. 4, the inner flange 8 is notched for convenience in placing the bolts in position.

The cope and drag are similar in construction and are divided into an outer annular compartment, and an inner circular compartment by the annular webs 9 and 10, which are connected by parallel or approximately parallel webs 11. The webs 9 are connected by radial webs 12 with the outer shells of the drag and cope. The annular webs 9 and 10, and the parallel webs 11 are made of the same width as the shell of the drag or cope, but the radial webs 12, which are formed at the outer ends or sides of the cope and drag are made comparatively narrow, so as to provide uninterrupted annular compartments for the formation of the outer portions of the rim of the pulley, while securing the webs 9 firmly to the outer shells of the cope and drag. The parallel webs 11 form radial compartments for matrices for the arms of the pulley and the annular web 10 forms a central circular compartment for the matrix of the hub. As shown in Figs. 3 and 4, portions of the webs 9 and 10, between the parallel webs, are notched so as to permit of the continuation of the matrices of the arms into the rim and hub compartments of the cope and drag.

Prior to the molding operation the sections of each part of the flask are bolted together, plates 13 and 14 being inserted between the sections of each part, thereby dividing the rim and hub compartments into two semi-annular and two semi-circular compartments respectively, as shown in Fig. 1. The matrices are then formed in the drag middle or

cheek portions and cope, in the usual or any suitable manner known in the art. As the matrix for the rim of the pulley extends through the rim compartment of the cheek or middle portion of the flask, the web 9 of this part is not connected with its outer shell by radial webs 12, but is entirely unconnected therewith except by the dividing plates 13.

If it be desired to form an inwardly projecting flange on the rim of the pulley suitably shaped cores 15 are applied to the patterns in molding the drag and cope, as shown at the right of Fig. 4. These cores are firmly held in place by the sand packed around them, and are not disturbed by the withdrawal of the pattern.

After the molding operation has been completed the drag middle portion or cheek and the cope are put together, as is customary. The bolts securing the sections of the several parts together are slackened up and the dividing plates 13 and 14 removed. Stopper plates 16 and 17 preferably formed of core material and about half an inch thicker than the dividing plates, except as at *x* in line with the several matrices of the hub, rim and the flanges or lugs to be formed on the rim for securing the two halves of the pulley together, are substituted for the dividing plates 13 and 14.

The portions *x* of the stopper plates 16 and 17 are made of the same width as the plates 13 and 14, so that when the sections of the flask are drawn against the plates 16 and 17 by tightening the connecting bolts, the several matrices in each section will be lengthened or enlarged by a quarter of an inch, more or less. This quarter of an inch added to the finished article affords sufficient metal for truing the adjacent faces of the two parts of the pulley, so that they will fit accurately together. The stopper plates 16 and 17 closing the matrices as described, are formed of core material, and are held in position by holding plates 18 formed of metal or wood and of thickness about half an inch, more or less, greater than that of the dividing plates.

In order that the parts of the flask may be placed together in proper alignment with each other, they are provided with suitable guide pins 19, as is customary.

In forming molds for pulleys with a single set of arms, only the cope and drag are employed, and the operation of forming the mold is similar to that hereinbefore stated, except as regards the middle portion of the flask.

The construction of the flask with compartments of proper size and shape for the formation of the desired matrices permits of the use of a comparatively small quantity of sand, thereby reducing the labor required to form the mold, and materially lessening the weight of the parts of the flask.

As shown in Figs. 1, 2 and 3, the walls of the rim and hub compartments are provided with pairs of projections, each pair forming a dovetailed recess for holding strips of wood 20 projecting into the compartments and serving to support the body of sand therein.

In forming pulleys having more than two sets of arms, an additional cheek or middle portion will be employed for each additional set of arms, the manner of forming the mold and adjusting the sections of the parts of the flask being the same as hereinbefore described.

I claim herein as my invention—

1. As an improvement in the art of manufacturing sectional pulleys and other like articles, the method herein described, which consists in forming complementary parts of a mold-matrix on opposite sides of a dividing plate or plates interposed between the flask-sections, separating the flask sections, removing the dividing plate and clamping the flask sections against an interposed core plate adapted to close portions of the matrices in each flask-section, and constructed to enlarge the matrices so closed, substantially as set forth.

2. In a molder's flask, the combination of a cope, a drag, each consisting of two or more adjustable sections and dividing plates interposed between said sections, substantially as set forth.

3. In a pulley flask, the combination of a cope and a drag, each consisting of two adjustable sections provided with independent pockets or compartments for the matrices of the hub, rim and each of the arms, substantially as set forth.

4. In a pulley flask, the combination of a cope, a drag and an intermediate part, the latter consisting of an inner body portion and an independent outer shell or band, substantially as set forth.

In testimony whereof I have hereunto set my hand.

GEORGE H. GEYER.

Witnesses:

DARWIN S. WOLCOTT,
F. E. GAITHER.