March 27, 1928. 1,663,642

J. SPOUSTA

PERMANENT MOLD

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Fig. 1.

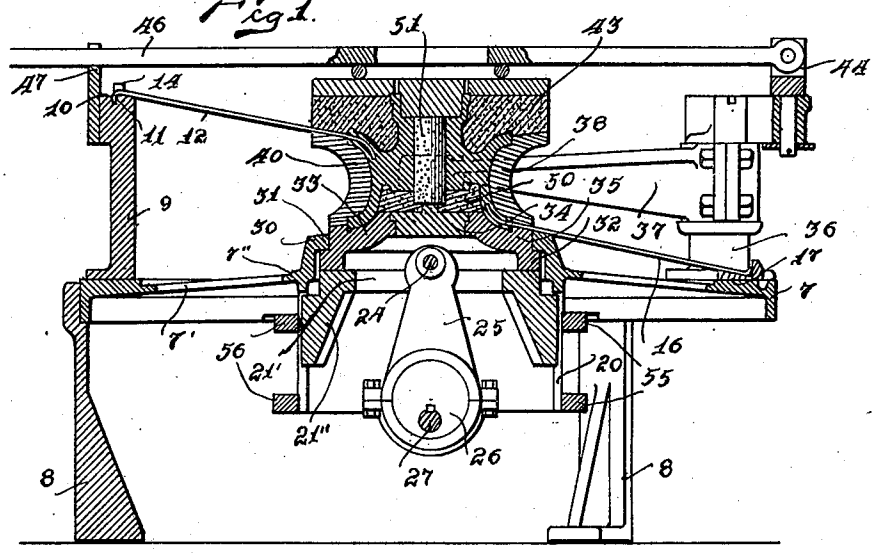

Fig. 2.

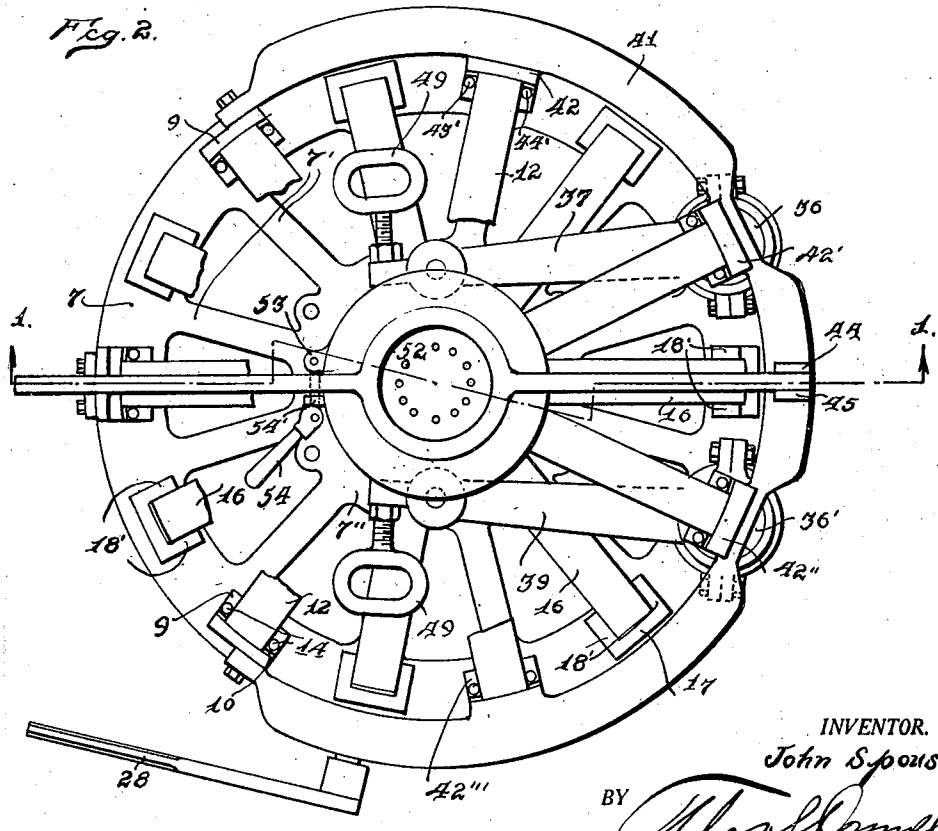

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Fig. 3.

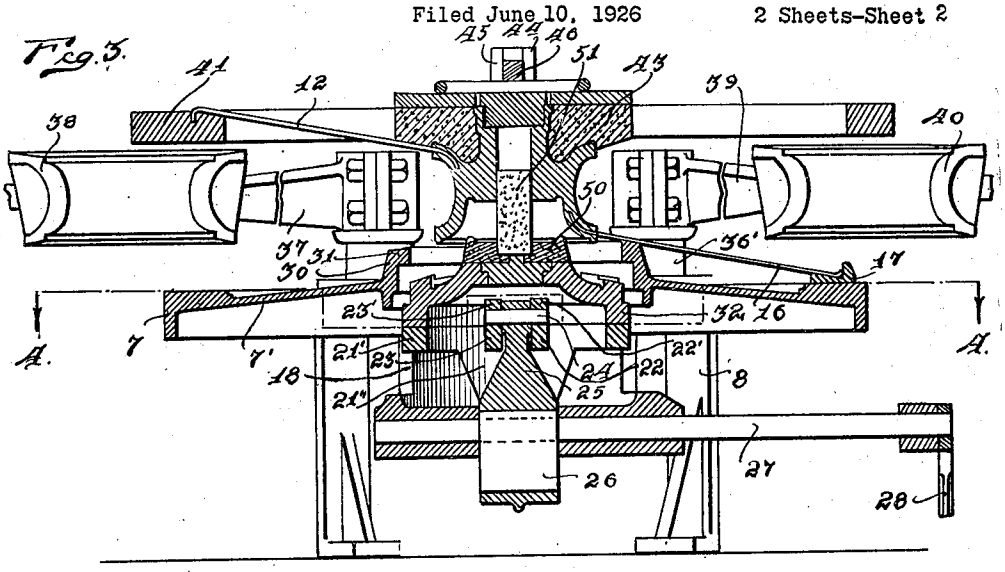
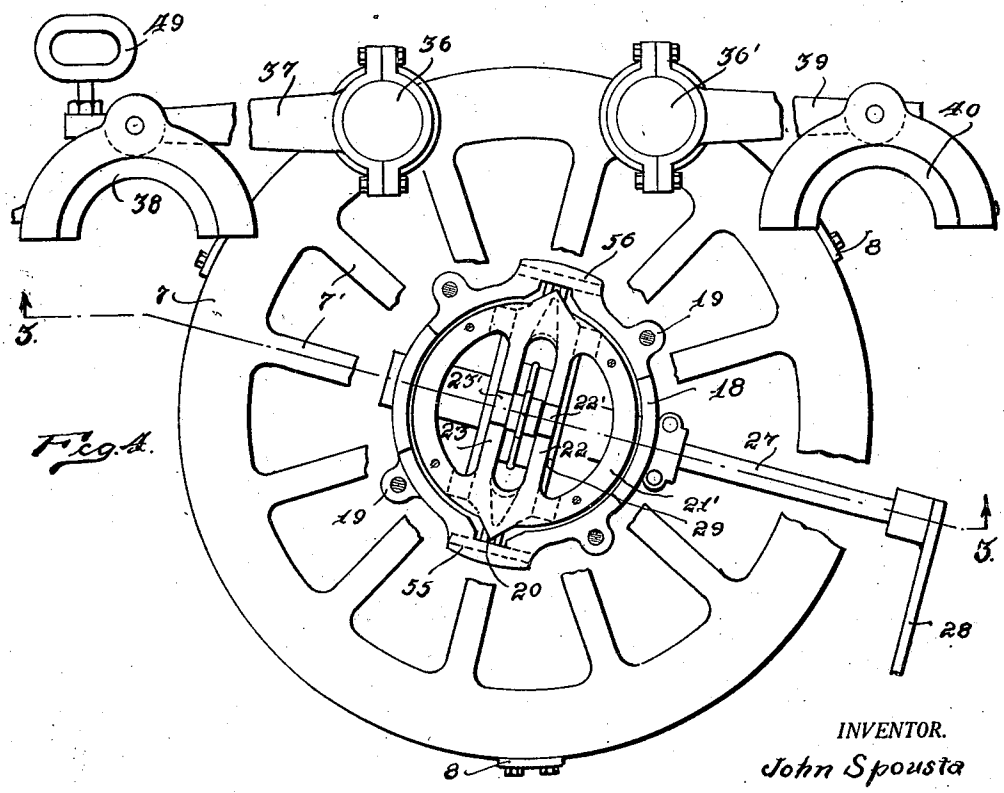


Fig. 4.



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Patented Mar. 27, 1928. 1,663,642

UNITED STATES PATENT OFFICE.

JOHN SPOUSTA, OF RIVER ROUGE, MICHIGAN, ASSIGNOR TO WHITEHEAD & KALES COMPANY, OF RIVER ROUGE, MICHIGAN, A CORPORATION OF MICHIGAN.

PERMANENT MOLD.

Application filed June 10, 1926. Serial No. 114,905.

My invention relates to a new and useful improvement in a permanent mold adapted for use in molding metal of various kinds to various shapes, but in the drawings I have shown the invention constructed to constitute a permanent mold for a vehicle wheel hub, and the invention is particularly adapted for use for this purpose.

It is an object of the present invention to provide a permanent mold constructed and arranged so as to permit a maximum production with the molding, this maximum production resulting from quick pouring and rapid change of the material from the mold in that the material may be removed from the mold after chilling so that it is not necessary to retain the metal in the mold during the entire time of cooling.

Another object of the invention is the provision of castings which are of a higher grade, free from projections requiring chipping and a self-annealed casting, and one possessed of great tensile strength and a close grain.

Another object of the invention is the provision of a permanent mold of this class which will be accurate when in use, the various parts being guided by means of a prominent fixture on which the mold is mounted.

Another object of the invention is the provision of a vehicle hub mold permitting a secure anchoring of the spokes in the hub.

Another object of the invention is the economical pouring of castings in that the structure and arrangement of the mold prevents a wasting of material and eliminates the usual cleaning operation.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood from a reference to the accompanying drawings which form a part of this specification and in which,

Fig. 1 is a sectional view taken on substantially line 1—1 of Fig. 2.

Fig. 2 is a top plan view of the invention.

Fig. 3 is a sectional view taken on substantially line 3—3 of Fig. 4.

Fig. 4 is a sectional view taken on substantially line 4—4 of Fig. 3.

A circular table 7 having spokes 7′ is provided, the table 7 proper forming a rim supported by the spokes. The table is supported by standards or legs 8. Projecting upwardly from the rim of the table 7 are supporting legs 9, each provided with a slot 10 in which engages the angularly turned end 11 of the spoke 12, which is to be affixed at its inner end in the hub to be cast. Projecting upwardly from the legs 9 at opposite sides of the spoke 12 are lugs 14 which serve to align the spoke 12 properly relatively to the hub, which is to be cast in the mold centrally located on the supporting table 7. Positioned on the rim of the table 7 at intervals is a plate 17 having spaced lugs 18′ between which engages the outer end of the spokes 16, the spokes 16 radiating outwardly from the hub at one side, and the spokes 12 radiating outwardly from the hub at the opposite sides, the spokes at opposite sides being alternated in a well known manner. The outer rim 7 of the table proper is connected by the spokes 7′ to an inner ring 7″. Bolted or otherwise suitably secured to the undersurface of the inner ring 7 is a stripper plate 18, this stripper plate being clearly shown in Fig. 4 and comprising a circular body having lugs 19 therefrom through which bolts or rivets may be projected into the ring 7″. Projecting downwardly from the stripper plate 18 are guide flanges 20 and slidably positioned between the guide flanges 20 is a stool or supporting member 21, said stool comprising a ring 21′ projecting downwardly from which, at its periphery, and extending slightly outwardly therefrom is a guide sleeve 21″, this guide sleeve being adapted in its slidable movement for engaging the inner surface of the guide flanges 20. Projecting across the stool 21 at opposite sides of its axis are ribs 22 and 23 which are spaced apart, and each of which is provided with an outwardly projecting lug 22′ and 23′ respectively. Projected through the lugs 22′ and 23′ is a shaft 24, connecting one end of an eccentric arm 25 which is operated by the eccentric wheel 26 keyed to the shaft 27, said shaft 27 carrying a crank 28 whereby the same may be rotated at will.

As shown in Fig. 4 the stripper plate is provided with a slot 29 extending at opposite sides of its axis for affording a clear-

ance for the eccentric arm 25. Projecting upwardly from the ring 7'' is a flange 30 terminating in an inwardly projecting flange 31 which is adapted to engage a flange 32 formed on a center strip 33, this center strip being engaged at its lower surface by the stool or supporting member 21. A cap 34 is provided for the central opening formed in the center strip 33. As clearly appears in Fig. 1 the spoke 16 is rested upon a flange 35 formed on the center strip 33.

Swingably mounted on an upwardly projecting shaft 36, which is supported by the table 7, is a connecting arm 37, the opposite end of which is connected to one cheek 38 of the mold. A similar arm 39 is similarly swingably mounted on the table 7 and connected to the cheek 40 of the mold.

The arms 37 and 39 swing outwardly between the upper spokes 12 and the lower spokes 16. Consequently it is necessary there be a clearance provided for the swinging of these arms outwardly into the position shown in Fig. 4 and for this purpose the legs 9 which are shown in Fig. 2 are eliminated and other supporting means provided for the remaining spokes 12. As shown in Fig. 2 a ring 41 is secured at its ends to the legs 9 and directed over the top of the shaft 36 and 36' resting thereon. Projecting inwardly from the ring 41 is a plate 42 carrying spaced lugs 43' and 44', between which the end of the spoke 12 engages. A similar plate 42', 42'', and 42''' is provided constructed as described for the plate 42. Consequently it is thus provided that there is no projections upwardly from the table ring 7 in the path of the arms 37 and 39 or the cheeks 38 and 40. A cope 43 is provided for closing the upper end of the mold formed by the cheeks 38 and 40. Projecting upwardly from the ring 41 are lugs 44 and 45, between which is pivotally mounted a locking arm 46 for engaging the locking lug 47 for locking the cope in position. Hand holds 48 and 49 are mounted on the arms 37 and 39 respectively.

In operation the spokes are positioned as shown in Fig. 1, the upper spoke engaging either the leg 9 or the ring 41 as described, at its outer end, and engaging at its inner end the cheek 40 or 38. The lower spoke is positioned as shown in Fig. 1 and already described. The strip 33 is then moved into position by the stool 21 effected through a rotation of the shaft 27. The cheeks are then moved into proper position and closed, a sand core 50 being formed in the base of the cheeks. The core 51 is also formed from sand after the cheeks are placed in position. One of the cheeks 38 carries a link 52 swingably mounted on a lug 53. An eccentric locking lever 54 being mounted on its free end. This link 52 is adapted to engage a hook lug 54' mounted on the other cheek so that upon moving the eccentric 54 the cheeks may be locked against removal and retained in this position while pouring.

It will be noted that all of the parts are so arranged as to accurately fit and center relatively to each other. In this connection attention is directed to the guide pieces 55 and 56 at opposite sides of the ring 18, these guide strips serving to engage the stool in its movements and assist in centering the stool relatively to the strip and in seating the center strip in proper position.

While I have illustrated and described the preferred form of structure I do not wish to limit myself to the precise form of structure shown but desire to avail myself of such variations and modifications as may come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A mold of the class described comprising, a cope forming portion; a table; a base forming member for said mold movable relatively to said table into and out of engagement with an opening formed in said table; retaining members mounted on said table; a pair of swingably mounted side wall forming members for said mold adapted for movement into operative and inoperative position without disturbing members supported by said retaining members.

2. A mold of the class described comprising a table having an opening therein, a cope forming portion positioned above said table; a movable stool for forming the base of said mold movable into and out of engagement with the opening in said table; a pair of swingably mounted cheeks for forming the side walls of said mold; and means for locking said cheeks in co-operative mold forming relation.

3. A mold of the class described comprising a table having an opening therein, a member positioned above said table, and constituting the cope of said mold; a movable stool for forming the base of said mold movable into and out of engagement with the opening in said table; a pair of swingably mounted cheeks for forming the side walls of said mold; means for locking said cheeks in co-operative mold forming relation; and means for moving said stool relatively to said table at will.

4. A mold of the class described comprising a table having an opening formed in its center; a member positioned above said table and constituting the cope of said mold; a movable stool for forming the base of said mold movable into and out of engagement with a central opening in said table; a pair of swingably mounted cheeks for forming the side walls of said mold; means for locking said cheeks in co-operative mold forming relation; means for moving said stool rela-

tively to said table at will; and a stripper plate for engaging the periphery of said stool upon its movements relatively to said table.

5. A mold comprising a pair of swingingly mounted cheeks forming the side walls of a mold, a reciprocably mounted stool plate forming the base of the mold, a stripper plate and means associated with said stripper plate for accurately guiding said stool plate.

6. A mold for forming spoked wheels including a table having an opening therein, a pair of cheeks swingingly mounted on said table forming the side walls of a mold and constituting a support for one series of spokes, and a member reciprocable within said opening and cooperating with the table to position a second series of spokes and to form the base of the mold.

7. In a mold the combination with a table having an opening therein, of cheeks swingingly mounted on said table constituting the side walls of a mold, a member reciprocable within said opening constituting the bottom of the mold, and a member positioned substantially above said table constituting the cope of the mold.

8. In a mold the combination of a pair of swingingly mounted cheeks forming the side walls of a mold, a reciprocably mounted stool forming the bottom of the mold, and a member cooperating with said cheeks constituting the top of the mold.

9. In a mold for forming spoked wheels the combination with a table having spaced upwardly extending projections, of a ring mounted upon said projections constituting a support for one end of one series of spokes, and cheeks swingingly mounted upon said table forming the side walls of the mold and having an inclined upper surface constituting a support for the inner ends of the spokes.

10. In a mold for forming spoked wheels the combination with a table having an opening therein, of a stool reciprocable within said opening forming the base of a mold, a flange projecting upwardly from the periphery of said opening terminating in an upwardly extending flange engageable with said stool for limiting the upward movement thereof and constituting a support for the inner ends of one series of spokes, and means for retaining the outer ends of said spokes in position including projections positioned adjacent the outer edge of said table.

11. A mold for forming vehicle spoked wheels including a table having a centrally arranged upwardly extending portion, a stool plate for forming the base of the mold reciprocably mounted within the centrally arranged portion aforesaid, and a flange extending inwardly from said portion constituting a support for one series of spokes and forming an abutment for said stool plate.

12. A mold for forming vehicle spoked wheels including a table having a centrally arranged upwardly extending portion, a stool movable within said upwardly extending portion and cooperating therewith to form a support for one series of spokes, and means upon said upwardly extending portion extending in the path of travel of said stool for limiting the upward movement thereof.

In testimony whereof I have signed the foregoing specification.

JOHN SPOUSTA.